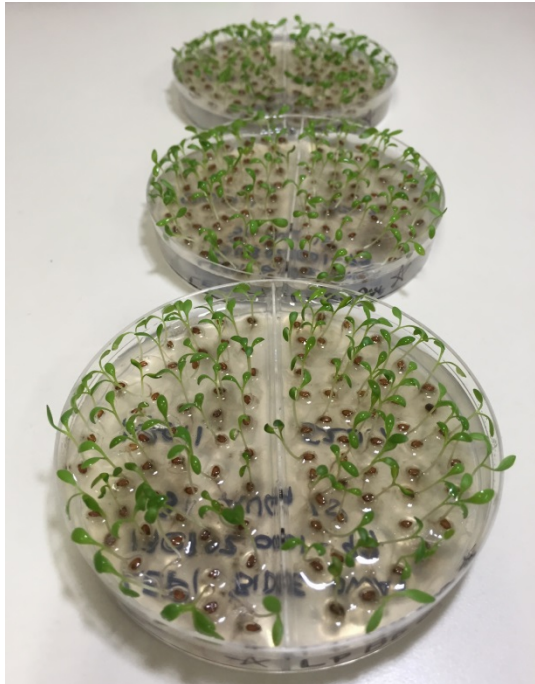




USFWS Grant F13AC00918/F13AC00987
*Seed Storage Research and Strategy for the
Lyon Arboretum Seed Storage Facility*



Seed Storage Research and Strategy for the Lyon Arboretum Seed Storage Facility

Final Report for Grant Period: May 1, 2014 – September 30, 2016

USFWS Grant F13AC00918 and F13AC00987

Scope of Work

This was a 2.3 year project, and the funding requested provided salaries, supplies, and travel to provide coordination, development, and implementation of seed storage policies, guidelines, and research, and to develop an overall strategy for the Harold L. Lyon Arboretum Seed Conservation Laboratory.

The islands of Hawai'i harbor more endangered species per hectare than any other place in the world. As a consequence of the high endemism and tropical/subtropical climate with diverse rainfall patterns, plant species of Hawai'i produce seeds with diverse post-harvest physiologies. Typically seeds are classified as recalcitrant, orthodox, or intermediate. Orthodox seeds can be dried to a low relative humidity and stored in freezers at -18°C , or refrigerators at 5°C . Seeds from tropical plant species were assumed to be recalcitrant (not viable after drying or freezing) and unable to be stored for long periods of time without losing viability. Yoshinaga and Walters (2003) concluded that approximately 95% of the Hawai'i taxa tested (200+) appeared to be storable by conventional seed banking methods. Today, many taxa appear to store dried and frozen for more than 10 years; however, some decline after < 5 years and may be freeze-sensitive, falling into the range of intermediate seed storage behavior.

University of Hawai'i's (UH) Lyon Arboretum Seed Conservation Laboratory (LASCL) began in 1995 in cooperation with the UH Center for Conservation, Research, and Training (CCRT) as part of the Hawaiian Rare Plant Program. Currently, the lab holds over 14 million seeds of native Hawaiian plants. Approximately 7.5 million (52%) are from taxa federally listed as threatened or endangered (T&E). LASCL relies on the concept that preserved genetic material is not an endpoint of conservation, only an essential tool. With the wild habitat of so many rare plants in decline, *ex situ* (off-site) protection allows land managers in Hawai'i the time to plan and execute habitat protection and restoration programs, and ultimately, to recover species and the habitat upon which they depend. The staff position funded by this grant developed species guidelines for viability testing and re-collection intervals, identified species and collections at high risk of low viability, and began developing collection strategies and protocols.

Cover photographs, clockwise from top left: *Cyanea konahuanuiensis* seedlings; *Dubautia menziesii* seed; fruit and seed processing; *Drosera anglica* seedling; research viability testing; *Keyseria maviensis* seeds. Photos by LASCL.

Grant Deliverable 1: Ranking of all species in reference to storage potential

Summary

All native Hawaiian seed-bearing plant taxa are ranked with respect to seed storage potential, based on research at LASCL through the grant period (see Appendix for full list of taxa and rankings). Out of 1188 seed-bearing taxa, 303 (26%) have been directly tested for storage potential, and for another 506 taxa (43%) storage behavior can be inferred from testing with reasonable certainty. Thus, storage practice for 809 taxa (68%) has been informed by research conducted by LASCL. Tests are in progress for 391 taxa (33%), including 54 taxa (5%) with currently unknown storage behavior. See Table 1 for a summary of rankings.

Rank	# Taxa	% Total Taxa	% Taxa Studied
High	643	54	79
High, Tested	218	18	27
High, Inferred	425	36	53
Medium	133	11	16
Low	34	3	4
Unknown	378	32	
Medium + Unknown	511	42	

Table 1. Summary of seed storage potential rankings for native Hawaiian plant taxa. High – present knowledge sufficient for long-term storage, Medium – some knowledge about storage potential but more information/research needed; Low – current knowledge indicates very low storage potential; and Unknown – little to no knowledge about storage potential. Taxa Studied includes directly tested and inferred taxa. Medium + Unknown refers to all taxa that need further research.



Examples of taxa with High (*Argemone glauca*, left), Medium (*Melicope ovalis*, center), and Low (*Cryptocarya oahuensis*, right) seed storage potential.

Note on taxa in the lobeliad genera of *Brighamia*, *Clermontia*, *Cyanea*, *Delissea*, and *Lobelia*:

This lineage was a case where storage ranking was subjective, and a judgement call was made. All other taxa with freeze-sensitive seeds were conservatively ranked Medium. However, despite having freeze-sensitive seeds, these lobeliads are ranked with High storage potential because taxa in each genus have been directly tested after 15-20 years in refrigerated storage and maintained viability. While they likely cannot be stored this way for many decades, two decades is considerably high storage potential for the purposes of conservation and restoration in Hawai'i. However, as a caveat, we recommend careful monitoring of taxa that have been inferred and not directly tested, as well as continued research into longer-term storage. This includes ongoing collaboration with Dr. Christina Walters at the USDA-ARS National Laboratory for Genetic Resources Preservation (NLGRP), who is investigating alternative storage methods to extend longevity, and agreed to continue accepting Hawaiian lobeliad seeds for research. In contrast to the trend, LASCL found that taxa in the lobeliad genus *Trematolobelia* (which have dry capsules instead of fleshy fruits) are orthodox. Results also suggest that two *Lobelia* taxa may have orthodox seeds, while other *Lobelia* appear to be freeze-sensitive. Further research on seed storage behavior in this Hawaiian adaptive radiation will be of continuing interest.



Examples of lobeliad taxa with freeze-sensitive seeds, but high storage potential (*Cyanea*, *Clermontia*) and with orthodox seeds (*Trematolobelia*).

Note on ferns: In addition to seed-bearing plants, LASCL also stores fern spores. Research is still in the early stages and is in need of funding and dedicated staff, but there is evidence from the literature that many ferns with non-green spores behave similarly to orthodox seeds. Preliminary results from a *Doryopteris takeuchii* research accession at LASCL showed no decline in viability after 3 years of dry frozen storage. Spores from 35 fern taxa (19% of 180 native fern and lycophyte taxa) in 11 families are stored at LASCL. Out of 75 total collections, 49 represent 11 taxa that are federally listed T&E. There are 25 research accessions established, representing 22 taxa. LASCL aims to expand spore storage and research in the coming years.



Examples of fern taxa with spores stored at LASCL, *Doryopteris angelica* and *Ctenitis squamigera*.

Federally Threatened and Endangered Species

Out of 429 seed-bearing T&E taxa, storage behavior has been directly tested or inferred for 312 (73%). Of 117 taxa (27%) that have unknown storage behavior, 31 taxa have tests in progress. See Table 2 for a summary of T&E rankings.

Rank	# Taxa	% Total T&E Taxa	% T&E Taxa Studied
High	267	62	86
Medium	37	9	12
Low	8	2	3
Unknown	117	27	
Medium + Unknown	154	36	

Table 2. Summary of seed storage potential rankings for federally listed native Hawaiian plant taxa. See legend for Table 1.

For T&E taxa with unknown storage behavior, 86 taxa do not have tests in progress, but the majority of these do have some information or tests in progress from congener species. Only 22 T&E taxa have unknown behavior and no congener tests, and we recommend non-T&E taxa to be targeted as priorities for research to inform storage of extant T&E taxa (Table 3).

Data Deficient T&E Taxa	Non-T&E Target Recommended for Research
<i>Acaena exigua</i>	Possibly extinct, no congeners, family behavior may apply (seeds orthodox for confamilial genera tested)
<i>Amaranthus brownii</i>	
<i>Geranium arboreum</i> , <i>G. hanaense</i> , <i>G. hillebrandii</i> , <i>G. multiflorum</i>	<i>Geranium cuneatum</i> , <i>G. kauaiense</i>
<i>Haplostachys haplostachya</i>	<i>Haplostachys bryanii</i> , <i>H. linearifolia</i> , <i>H. munroi</i> , <i>H. truncata</i>
<i>Korthalsella degeneri</i>	<i>Korthalsella complanata</i> , <i>K. cylindrica</i> , <i>K. latissima</i> , <i>K. platycaula</i> , <i>K. remyana</i>
<i>Nothocestrum breviflorum</i> , <i>N. latifolium</i> , <i>N. peltatum</i>	<i>Nothocestrum longifolium</i>
<i>Ochrosia haleakalae</i> , <i>O. kilaueaensis</i>	<i>Ochrosia compta</i> , <i>O. kauaiensis</i>
<i>Pteralyxia kauaiensis</i> , <i>P. macrocarpa</i>	No non-T&E congeners, family behavior may inform: <i>Alyxia stellata</i> (short-lived – replicate test), <i>Rauvolfia sandwicensis</i> (test in progress), <i>Ochrosia compta</i> , <i>O. kauaiensis</i>
<i>Stenogyne angustifolia</i> , <i>S. bifida</i> , <i>S. campanulata</i> , <i>S. cranwelliae</i> , <i>S. kanehoana</i> , <i>S. kauaulaensis</i> , <i>S. kealiae</i>	<i>Stenogyne kaalae</i> subsp. <i>sherffii</i> (test in progress), <i>S. calminthoides</i> , <i>S. kaalae</i> subsp. <i>kaalae</i> , <i>S. kamehamehae</i> , <i>S. microphylla</i> , <i>S. purpurea</i> , <i>S. rotundifolia</i> , <i>S. rugosa</i> , <i>S. scrophularioides</i> , <i>S. sessilis</i>

Table 3. Recommended taxa to target for research to inform data deficient T&E taxa. Data deficient taxa are those that have unknown storage behavior and no data from congener tests.

Grant Deliverable 2: Develop collection policies for species with High storage potential

Collection Policies

Phenology is always variable in relation to climate and weather conditions, pollinator and disperser interactions, and other biotic and abiotic conditions, but we always provide data as needed to guide collections. A Seed Bank User's Guide has been developed that lists all taxa studied with primary storage behavior categories (desiccation-tolerant or desiccation-sensitive/recalcitrant), secondary storage behavior categories (orthodox, freeze-sensitive, or short-lived), seed banking potential (short-, medium-, or long-term), recommended storage temperature, recommended germination pre-treatment, number of accessions with storage results/strength of data, expected dormancy class, recommended re-collection intervals, and other notes. This document has been compiled in collaboration with seed bank facilities at Hawai'i Seed Bank Partnership member institutions O'ahu Army Natural Resources Program (OANRP), National Tropical Botanical Garden (NTBG), and NLGRP. It is currently in preparation for publication.

Seed Production

Regarding growing *ex situ* plants for seed production, Hawai'i does not yet have the resources to do this on a wide scale. It is practiced on a small scale at the Lyon Arboretum and Mid-Elevation Rare Plant Facilities, and F2 seeds of rare species (as well as F1 seeds from clones) from these nurseries are regularly accepted and stored at LASCL. Ideally, the best practice would be to have an *ex situ* controlled breeding program for rare plants. This is not currently possible at Lyon Arboretum due to lack of funding, staffing, and nursery space, but was integrated by the Hawaiian Rare Plant Program staff into the Arboretum's Strategic Plan drafted in 2016.

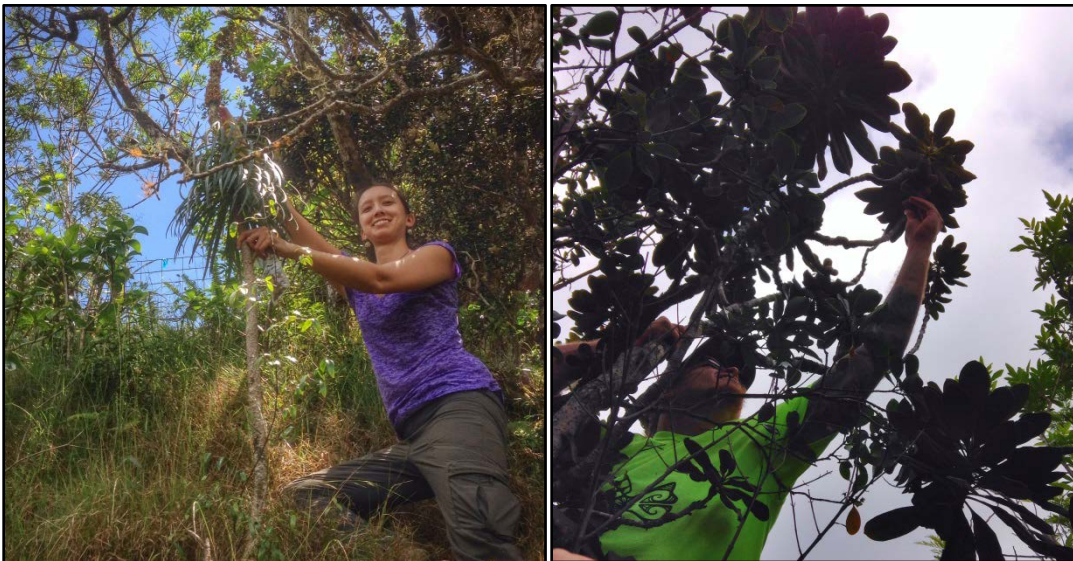


Lyon Arboretum Rare Plant Greenhouse

Grant Deliverable 3: Coordination of seed collections, storage, and disbursement

Coordination of Collections

The primary *in situ* partners of LASCL are the State of Hawai'i Plant Extinction Prevention Program (PEPP) and the State of Hawai'i Department of Land and Natural Resources – Division of Forestry and Wildlife (DLNR-DOFAW). Field botanists employed by these agencies are responsible for planning, monitoring, and making seed collections, but the LASCL Manager helps coordinate these collections by providing collection and post-harvest handling protocols, as well as recommendations for re-collection intervals, and by joining field botanists on collection trips to better understand the *in situ* operations and *ex situ* needs of our partner agencies.



LASCL staff assisting with DLNR-DOFAW collections of *Lobelia yuccoides* and making an opportunistic collection of *Pittosporum confertiflorum*, a taxon with previously Unknown ranking.

Coordination of Storage and Disbursement

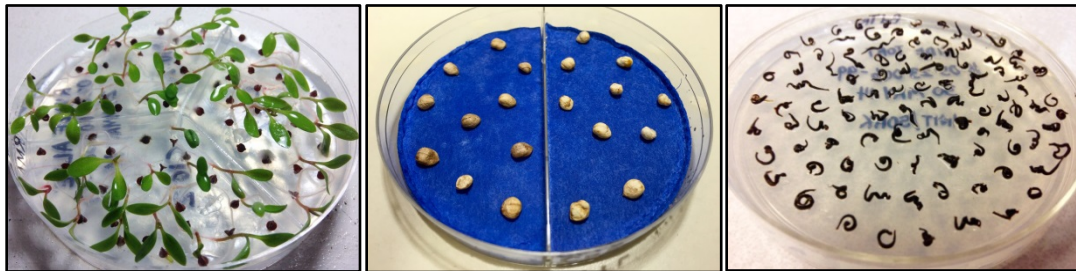
The LASCL Manager also oversees all activities related to seed storage (including processing, accessioning, viability testing, drying, packaging, and monitoring collections, and management of LASCL staff) and disbursement or withdrawal of seeds for all T&E and other native Hawaiian plant taxa (including establishing seed ownership agreements, obtaining permissions, maintaining all required LASCL state and federal permits, and obtaining proof of all requesters' necessary permits or letters required for seed transfers).

Grant Deliverable 4: Research for species with Medium and Unknown storage potential

Research at Lyon Arboretum Seed Conservation Laboratory

Research is conducted at LASCL in two major ways:

- I. Research accessions are established when LASCL staff make targeted collections from non-rare species or from plants in botanical gardens that are multiple generations removed from wild, or when partner collectors make large enough collections that they allow some seeds to be set aside for research. Research accessions are split into different storage treatments, including different temperatures (frozen at -18°C , refrigerated at 5°C , and ambient at 25°C) and possibly different relative humidity levels. They are then tested at regular intervals, typically 6 months, 1 year, 2 years, 5 years, and every 5 years after that until seed lots are exhausted – although adjustments are often made on a case by case basis.



Examples of viability testing of research accessions.

During this grant period, 43 research accessions were initiated for taxa that were previously ranked as Medium or Unknown storage potential (Table 4). Of these taxa, 26 are now ranked more conclusively. Two taxa were confirmed to have freeze-sensitive seeds and identified as candidates for ultralow freezing or cryopreservation storage. The remaining taxa have tests ongoing that will inform storage potential ranking.

Note on freeze-sensitive taxa: Research at LASCL, OANRP, and NLGRP has uncovered a unique phenomenon. Approximately one third of taxa studied exhibit intermediate seed storage behavior, particularly with seeds that are sensitive to freezing (i.e. unable to be stored under globally standard seed banking conditions). This research is innovative, as Hawai'i is the first region to discover this trend in a substantial portion of its native flora, and HSBP member seed banks have ongoing investigations of best practices and storage protocols for these species. Research will potentially improve conservation of collections worldwide, as more tropical and subtropical areas begin to investigate seed storage behavior of their own native floras.

TaxonName	Previous Rank	Current Rank	Notes
<i>Alphitonia ponderosa</i>	Unknown	Medium	
<i>Argemone glauca</i> var. <i>glauca</i>	Medium	High	
<i>Astelia argyrocoma</i>	Unknown	Medium	
<i>Brighamia insignis</i>	Medium (inferred)	High	
<i>Capparis sandwichiana</i>	Medium	Medium	Confirmed freeze-sensitive, candidate for ultralow/cryopreservation
<i>Clermontia parviflora</i>	Medium (inferred)	High	
<i>Coprosma kauensis</i>	Unknown	Medium	
<i>Cuscuta sandwichiana</i>	Unknown	Medium	
<i>Cyanea stictophylla</i>	Medium (inferred)	High	
<i>Cyrtandra cordifolia</i>	Unknown	Medium	
<i>Cyrtandra grandiflora</i>	Unknown	Medium	
<i>Drosera anglica</i>	Unknown	Medium	
<i>Embelia pacifica</i>	Unknown	Unknown	Not yet conclusive
<i>Hillebrandia sandwicensis</i>	Medium	Medium	Not yet conclusive
<i>Ipomoea pes-caprae</i>	Unknown	Unknown	Not yet conclusive
<i>Lepidium bidentatum</i>	Unknown	High	
<i>Lobelia grayana</i>	Medium (inferred)	High	
<i>Lysimachia remyi</i>	Medium (inferred)	Medium	Not yet conclusive
<i>Marsilea villosa</i>	Unknown	Medium	
<i>Melicope clusiifolia</i>	Unknown	Medium	
<i>Melicope oahuensis</i>	Unknown	Unknown	Not yet conclusive
<i>Myoporum stellatum</i>	Unknown	Medium	
<i>Nama sandwicensis</i>	Unknown	Medium	
<i>Peucedanum sandwicense</i>	Unknown	Unknown	Not yet conclusive
<i>Pittosporum confertiflorum</i>	Unknown	Medium	
<i>Planchonella sandwicensis</i>	Unknown	Low	
<i>Polyscias racemosa</i>	Medium	Medium	Not yet conclusive
<i>Polyscias sandwicensis</i>	Medium	Medium	Not yet conclusive
<i>Polyscias waialealae</i>	Unknown	Medium	
<i>Pritchardia remota</i>	Unknown	Medium	
<i>Pritchardia schattaueri</i>	Unknown	Unknown	Not yet conclusive
<i>Psychotria kaduana</i>	Unknown	Medium	
<i>Ranunculus mauiensis</i>	Unknown	Unknown	Not yet conclusive
<i>Rauwolfia sandwicensis</i>	Unknown	Unknown	Not yet conclusive
<i>Rubus hawaiensis</i>	Unknown	Medium	
<i>Santalum ellipticum</i>	Medium	Medium	Confirmed freeze-sensitive, candidate for ultralow/cryopreservation
<i>Sapindus oahuensis</i>	Medium	Medium	Not yet conclusive
<i>Scaevola procera</i>	Medium	Medium	Not yet conclusive
<i>Sideroxylon polynesianum</i>	Unknown	Low	
<i>Trematolobelia macrostachys</i>	Unknown	High	
<i>Urera kaalae</i>	Medium (inferred)	Medium	
<i>Zanthoxylum hawaiiense</i>	Unknown	Unknown	Not yet conclusive

Table 4. Current rank for taxa that were previously ranked as Medium or Unknown, for which research accessions were initiated during this grant period.

- II. Germplasm accessions are established when species are rare, especially if seed lots are small. These accessions are stored at the best known or inferred storage conditions; if there is little information to base a decision on, they may be stored refrigerated as the most conservative or “safe” approach; or if there are enough seeds they may be stored under two or more conditions to gain some knowledge. Regardless of storage, all collections with more than ≈100 seeds are viability tested at least every 5 years to monitor the collection. Data are more limited, but still inform research.

During this grant period, 21 germplasm accessions were initiated for new taxa that were previously ranked as Medium (inferred) or Unknown storage potential (Table 5). Storage data have not yet been collected, but will be monitored over the coming years.

Taxon Name	Previous Rank
<i>Coprosma cordicarpa</i>	Medium (inferred)
<i>Cyanea hamatiflora</i> subsp. <i>carlsonii</i>	Medium (inferred)
<i>Cyrtandra ferripilosa</i>	Medium (inferred)
<i>Cyrtandra filipes</i>	Medium (inferred)
<i>Cyrtandra hematos</i>	Medium (inferred)
<i>Cyrtandra oxybapha</i>	Medium (inferred)
<i>Cyrtandra tintinnabula</i>	Medium (inferred)
<i>Gahnia aspera</i> subsp. <i>globosa</i>	Unknown
<i>Gynochthodes trimera</i>	Unknown
<i>Kadua formosa</i>	Unknown
<i>Labordia cyrtandrae</i>	Medium (inferred)
<i>Lepidium orbiculare</i>	Unknown
<i>Lysimachia remyi</i>	Medium (inferred)
<i>Melicope hiiakae</i>	Unknown
<i>Melicope volcanica</i>	Unknown
<i>Myrsine punctata</i>	Unknown
<i>Myrsine vaccinioides</i>	Unknown
<i>Neraudia sericea</i>	Unknown
<i>Platydesma spathulata</i>	Unknown
<i>Portulaca villosa</i> ssp. <i>nova</i>	Unknown
<i>Scaevola mollis</i>	Unknown

Table 5. Taxa that were previously ranked as Medium (inferred) or Unknown, for which germplasm accessions were initiated during this grant period.

Research at National Laboratory for Genetic Resources Preservation

A separate federal grant (CFDA Number 15.650) was awarded to the State of Hawai‘i and Lyon Arboretum, including partnership with Dr. Christina Walters of NLGRP to conduct research on seeds of Hawaiian taxa with recalcitrant or intermediate storage behavior. Part of the agreement for this grant was that LASCL would facilitate collection and shipping of seeds or fruits of these taxa to NLGRP for research. In 2014 LASCL helped coordinate shipments from Hawai‘i Island Seed Bank (HISB) and OANRP, and in 2015 LASCL sent several shipments directly (Table 6).

Species that were ranked Low storage potential (recalcitrant or short-lived) or have freeze-sensitive seeds (Medium or High rank) were sent so that NLGRP could test alternate methods of storage to increase longevity, including ultralow freezing (-80°C) and cryopreservation (-196°C). For all collections sent from LASCL, collections were accessioned, parallel initial viability tests were conducted, and remaining seeds were immediately “withdrawn” and shipped to NLGRP. For any T&E species, all permits and transfer letters were in place prior to collection and shipment.

Date Sent	Taxon Name	Qty	Propagule	Sent By	Storage Rank
9/15/2014	<i>Chrysodracon hawaiiensis</i>	200	fruit	HISB	Low (recalcitrant)
11/19/2014	<i>Diospyros sandwicensis</i>	100	fruit	HISB	Low (recalcitrant)
11/19/2014	<i>Neraudia angulata</i>	2000	seeds	OANRP	Medium (freeze-sensitive)
2/2/2015	<i>Polyscias racemosum</i>	1200	fruit	LASCL	Medium (freeze-sensitive)
2/2/2015	<i>Trematolobelia macrostachys</i>	19000	seeds	LASCL	High (orthodox)*
4/29/2015	<i>Brighamia insignis</i>	2000	seeds	LASCL	High (freeze-sensitive)
6/23/2015	<i>Cyrtandra cordifolia</i>	100000	seeds	LASCL	Medium (freeze-sensitive)
8/4/2015	<i>Pritchardia remota</i>	500	fruit	LASCL	Low (short-lived)
12/1/2015	<i>Lobelia grayana</i>	20000	seeds	LASCL	High (possibly orthodox)*

Table 6. Collections sent to NLGRP for research during this grant period. *Seeds of these taxa were sent despite being orthodox/possibly orthodox because species in all other lobeliad genera studied have freeze-sensitive seeds. Since the majority are T&E taxa, additional research on this lineage will be useful for *ex situ* conservation.



Examples of fruits being bagged and monitored by LASCL staff for collection and shipment to NLGRP (*Polyscias racemosum* in a living collection and *Cyrtandra cordifolia* at a restoration site).

Grant Deliverable 5: Develop strategies for seed collections that need to be replenished ASAP

As mentioned above, the best practice for replenishing seed collections would be establishing an *ex situ* controlled breeding program for rare plant taxa. Due to lack of resources, this is not currently possible on a large scale at any facility in Hawai'i, including Lyon Arboretum. However, it was integrated into the Arboretum's Strategic Plan drafted in 2016 and will continue to be a target objective for this facility. In the meantime, the following strategies have been employed at LASCL.

Seed Replenishment Strategies

- I. When a steep drop in viability is detected in a stored collection, seeds are transferred to the Lyon Arboretum Micropropagation Laboratory, Lyon Arboretum Rare Plant Greenhouse, and/or Mid-Elevation Rare Plant Facilities on each island. The agency managing that species *in situ* is informed that the collection needs to be transferred and refreshed as soon as possible. An example during this grant period is *Lobelia monostachya*, for which seeds were transferred to tissue culture and propagated for restoration and/or potential F2 seed collection in the greenhouse.



Lobelia monostachya in tissue culture at Lyon Arboretum Micropropagation Laboratory.

- II. For all propagation requests, standard procedure is to withdraw seeds from the oldest stored collections first, to the degree possible while still balancing coverage from founders and meeting the needs of the partner agency. Fulfilling propagation requests by initially sowing seeds in LASCL under research conditions also allows data to be collected to inform the managing agency of viability and continued storage potential. An example during this grant period is *Urera kaalae*, a species with Medium storage potential, for which we fulfilled propagation requests from older seed collections and informed Oahu PEP of viability results.

Grant Deliverable 6: Develop collection connections with cooperators

The LASCL Manager developed connections through the following activities:

Local Connections

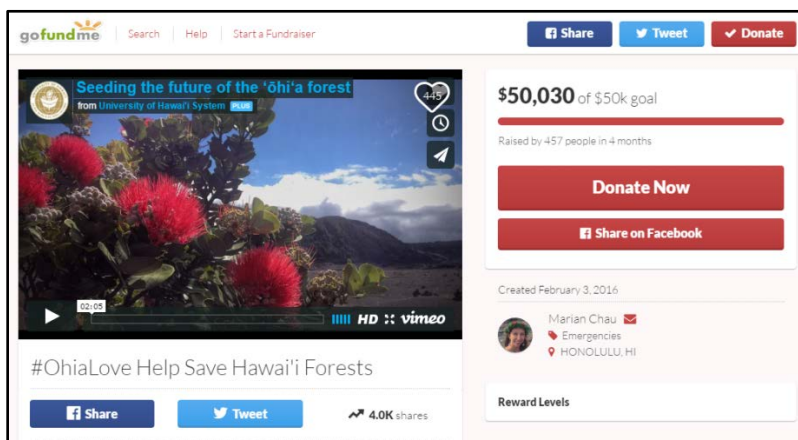
- Along with other Hawaiian Rare Plant Program employees, attended the PEPP Retreat in October 2015 and gave a presentation on seed banking.
- Regularly attends O'ahu PEP propagation meetings (approximately biannually), and assists with O'ahu PEP seed collections, hand pollination, monitoring or outplantings a few times per year.



Assisting O'ahu PEP with hand pollination of *Cyanea grimesiana* subsp. *grimesiana*; assisting DLNR-DOFAW O'ahu with seed collection of *Gossypium tomentosum* for germplasm storage.

- Assists DLNR-DOFAW O'ahu Botanist with seed collections, monitoring, or outplantings a few times per year.
- Provided seed bank training to staff from the recently established DLNR-DOFAW Kaua'i Seed Bank, serves as a backup facility for common species collections banked at DOFAW Kaua'i Seed Bank.
- Provided seed bank training to staff from DLNR-DOFAW O'ahu and Snail Extinction Prevention Program.
- Began providing seed storage services for the National Park Service, both Haleakala and Hawai'i Volcanoes National Parks, and in discussions with Kalaupapa National Park.

- After closing of Amy Greenwell Botanical Garden, accepted seed collections of G1 ranked T&E species and took over curation of these collections, with funding from the Center for Plant Conservation.
- Provides non-T&E seedlings to partners such as Koolau and Waianae Mountain Watershed Partnerships for restoration; Honolulu Botanical Gardens and Waimea Valley Botanical Garden for living collections; and UH Mānoa and Leeward Community College for research.
- Attends all meetings of the Hawai'i Rare Plant Restoration Group/IUCN Hawaiian Plant Specialist Group.
- Participated in "IUCN Red List Assessor Training and Assessment Workshop" at NTBG, August 2015. Active in the Hawai'i Red Listing Group, helping to assess hundreds of native plant species, especially federally listed species.
- Works closely with Matt Keir, Coordinator of Laukahi Hawai'i Plant Conservation Network and administrator of the Hawai'i Seed Bank Partnership (HSBP). Helped to expand the HSBP from four agencies to over 30 partners, and hosted and co-chaired meetings.
- Wrote collaborative grants with partners including Laukahi, HSBP, NTBG, and PEPP; including Institute for Museum and Library Services National Leadership Grant 2016, Mitsubishi Corporation Grant for Environmental Conservation 2016, Hawai'i Tourism Authority Aloha Aina Grant 2017, and Institute for Museum and Library Services National Leadership Grant 2017.
- Continued seed research collaborations with OANRP and NTBG.
- Served as Adjunct Faculty for the UH Mānoa Department of Botany, giving guest lectures and serving on a graduate student committee.
- Spearheaded the #OhiaLove Crowdfunding Campaign and raised \$50,000 to collect and preserve seeds of *Metrosideros* species in response to the threat of Rapid 'Ōhi'a Death.
- Became a member of the Rapid 'Ōhi'a Death Working Group.



#OhiaLove Crowdfunding Campaign on GoFundMe.com.

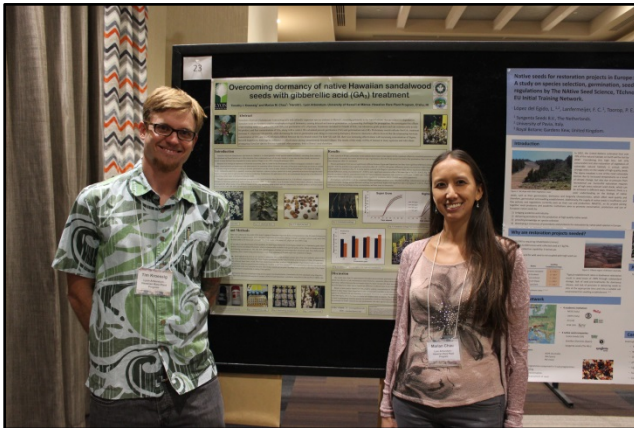
- Established direct partnership with Hawai'i Island Seed Bank (HISB) for the OhiaLove Seed Storage Project. Purchased a dedicated freezer, drying cabinet, and other supplies for HISB to store 'ōhi'a seeds collected on Hawai'i Island. Collaborated with Jill Wagner of HISB to make 'ōhi'a seed collections in three seed zones on the Kona side of Hawai'i Island.
- Established partnership with U.S Forest Service Pacific Southwest Research Station, Institute of Pacific Islands Forestry in Hilo. Assisting staff to create a USFS 'ōhi'a seed bank repository for Hawai'i Island, which will also become a member of HSBP. Collaborated with staff to make 'ōhi'a seed collections in two seed zones on the Hilo side of Hawai'i Island.
- Hosted and co-organized (with Vickie Caraway, USFWS) "Ex Situ Conservation of Hawaiian Flora: Role of Gene Banks" Workshop by Christina Walters and Lisa Hill of NLGRP, held at Lyon Arboretum, November 2015 (30 participants).
- Chaired the organizing committee for the 1st Hawai'i Native Seed Conference, including "Seed Dormancy and Germination: Basic Biology and Sources of Variation" Workshop by Carol and Jerry Baskin of University of Kentucky, held at UH Mānoa, May 2016 (75 participants).



Participants of the 1st Hawai'i Native Seed Conference 2016.

National and International Connections

- Serves on Lyon Arboretum's Research Committee, working to facilitate research activities by faculty and graduate students from UH Mānoa and other universities worldwide.
- Provided in-depth seed bank training to visiting staff from Guam PEPP.
- Hosted a Pacific Exchange Emerging Professional Fellow from New Zealand.
- Presented and networked at the 2015 National Native Seed Conference.



One of LASCL's presentations at the 2016 National Native Seed Conference.

- Presented and networked at 2014, 2015, and 2016 Botany Annual Meetings. Continued service to the Botanical Society of America, serving as Co-Chair of the Public Policy Committee and member of the Strategic Planning Committee.
- Served on organizing committee for "Plant Extinction Prevention Program Model: Partnering for Effective Conservation on Oceanic Islands" Conservation Campus, 2016 IUCN World Conservation Congress (WCC; 21 participants). Co-authored "A Handbook of *In Situ* and *Ex Situ* Practices for Preventing Plant Extinction on Oceanic Islands."
- Led "Initiating a new IUCN Species Survival Commission Specialist Group: Seed Conservation" Knowledge Café at 2016 IUCN WCC (30 participants).
- Continued the relationship established by Alvin Yoshinaga with Steve Weller and Ann Sakai of University of California Irvine, who conduct research on breeding systems of Hawaiian Caryophyllaceae.

- Continued the relationship established by Alvin Yoshinaga with Christina Walters and Lisa Hill of NLGRP, who conduct seed storage behavior research on many Hawaiian taxa.



Visits to Hawai'i and LASCL by Christina Walters and Lisa Hill of NLGRP, and Carol and Jerry Baskin of University of Kentucky.

- Continued the relationship established by Alvin Yoshinaga with Carol and Jerry Baskin of University of Kentucky, who conduct seed dormancy and germination research on many Hawaiian taxa.
- Along with HSBP co-chairs, established a relationship with Ruth Bone, Pacific Coordinator for Kew Millennium Seed Bank Partnership, to work towards a Memorandum of Agreement between Kew and HSBP. Took over curation of seed collections made by the now defunct University of Hawai'i Rock Herbarium Seed Bank, previously funded by Kew.
- Began serving as Co-Chair of the IUCN Seed Conservation Specialist Group, with Dustin Volkis (NTBG) and Uromi Goodale (Guangxi University), and with secretariat support from Botanic Gardens Conservation International. In 2017 will develop an online seed conservation knowledge hub, with funding from the U.S. Forest Service.

Public Outreach – Local and Online Media Appearances

- “Protecting What’s Ours: Can We Save Our Threatened Ecosystem?” 2016. Insights on PBS Hawai‘i. Invited roundtable panelist. <http://www.pbs.org/video/2365777942/>
- “Seeding the future of the ‘ōhi‘a tree” 2016. KHON “Wake Up2Day” Morning News Show. <http://khon2.com/2016/02/08/seeding-the-future-of-theohia-tree/>
- “Crowdfunding campaign aims to save ‘ōhi‘a trees” 2016. Hawai‘i News Now “Sunrise” Morning News Show. <http://www.hawaiinewsnow.com/story/31179681/crowd-funding-campaign-aims-to-save-ohia-trees>



Television appearances on PBS Insights for a roundtable discussion and on a local news morning show to promote the #OhiaLove Campaign.

- “Seeding the future of the ‘ōhi‘a tree” 2016. University of Hawai‘i News article/video. <http://www.hawaii.edu/news/2016/02/07/seeding-the-future-of-the-ohia-tree/>
- “Hawai‘i Historic Sites – Lyon Arboretum Rare Plant Program” 2015. Hawai‘i Department of Education. <https://vimeo.com/147769148>
- “Hawai‘i Historic Sites – Lyon Arboretum” 2015. Hawai‘i Department of Education. <https://vimeo.com/147769146>
- “Saving endangered Native Hawaiian plants one seed at a time.” 2015. University of Hawai‘i News article/video. <http://www.hawaii.edu/news/2015/04/29/saving-endangered-native-hawaiian-plants-one-seed-at-a-time/>
- “Legend of the Predator-Proof Fence: Plants are Cool, Too! Hawai‘i.” 2014. Episode of Plants Are Cool, Too! Web series. <https://www.youtube.com/watch?v=w2b5k1ur--g>

Originally Listed Cooperators

National Tropical Botanical Garden; Pahole Rare Plant Facility; Olinda Rare Plant Facility; Volcano Rare Plant Facility; Kokee Rare Plant Facility; watershed partnerships for Koolau Mountains, West Maui Mountains, Leeward Haleakaka, East Maui, East Moloka'i, and the Three Mountain Alliance on Hawai'i Island; Kaua'i Watershed Alliance; Hawai'i Island Seed Bank; Maui Nui Botanical Garden; Hawai'i Division of Forestry and Wildlife; University of Hawai'i's Lyon Arboretum Micropropagation Laboratory; Hawai'i Biodiversity Mapping Program; Bishop Museum Herbarium Pacificum; City and County of Honolulu; Board of Water Supply; Invasive Species Committees, U.S. Army, National Park Service, U.S. Fish and Wildlife Service; and various private landowners.

Additional Cooperators

Plant Extinction Prevention Program; DLNR-DOFAW Kaua'i Seed Bank; Amy Greenwell Botanical Garden; Center for Plant Conservation; Waimea Valley Botanical Garden; Leeward Community College; Laukahi Hawai'i Plant Conservation Network; Rapid 'Ōhi'a Death Working Group; U.S. Forest Service Pacific Southwest Research Station, Institute of Pacific Islands Forestry; USDA ARS National Laboratory for Genetic Resources Preservation; University of Kentucky; University of California Irvine; Botanical Society of America; International Union for Conservation of Nature; Kew Millennium Seed Bank Partnership; Guangxi University; Botanic Gardens Conservation International.

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Appendix: Seed Storage Ranking for Hawaiian Plants

All native Hawaiian seed-bearing plant taxa are ranked with respect to seed storage potential, based on research at Lyon Arboretum Seed Conservation Laboratory (LASCL) through the grant period. See report section 1 for summary data.

Key	
High	Present knowledge sufficient for long-term storage, seeds orthodox if not otherwise noted
Medium	Some knowledge about storage potential but more info/research needed, seeds may be freeze-sensitive
Low	Current knowledge indicates very low storage potential, recalcitrant or short-lived seeds
Unknown	Little to no knowledge about storage potential
Tested	Taxon has been experimentally tested at LASCL
Inferred	Congeneric storage behavior is very likely (or family if noted) based on LASCL research

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Aizoaceae	<i>Sesuvium portulacastrum</i>	ind		Unknown				x	
Amaranthaceae	<i>Achyranthes atollensis</i>	end	SOC	High		x			
Amaranthaceae	<i>Achyranthes mutica</i>	end	E	High		x			
Amaranthaceae	<i>Achyranthes splendens</i> var. <i>rotundata</i>	end	E	High		x	x		
Amaranthaceae	<i>Achyranthes splendens</i> var. <i>splendens</i>	end	SOC	High	x		x		
Amaranthaceae	<i>Amaranthus brownii</i>	end	E	Unknown					
Amaranthaceae	<i>Charpentiera densiflora</i>	end	E	Unknown			x		
Amaranthaceae	<i>Charpentiera elliptica</i>	end		Unknown				x	
Amaranthaceae	<i>Charpentiera obovata</i>	end		Unknown			x		
Amaranthaceae	<i>Charpentiera ovata</i> var. <i>niuensis</i>	end		High	x				
Amaranthaceae	<i>Charpentiera ovata</i> var. <i>ovata</i>	end		High	x		x		
Amaranthaceae	<i>Charpentiera tomentosa</i> var. <i>maakuaensis</i>	end		High	x		x		
Amaranthaceae	<i>Charpentiera tomentosa</i> var. <i>tomentosa</i>	end		High	x				
Amaranthaceae	<i>Chenopodium oahuense</i>	end		High	x		x		
Amaranthaceae	<i>Nototrichium divaricatum</i>	end	SOC	High		x	x		
Amaranthaceae	<i>Nototrichium humile</i>	end	E	High		x			
Amaranthaceae	<i>Nototrichium sandwicense</i>	end		High		x	x		
Anacardiaceae	<i>Rhus sandwicensis</i>	end		Unknown				x	Low viability
Apiaceae	<i>Peucedanum sandwicense</i>	end	T	Unknown			x		
Apiaceae	<i>Sanicula kauaiensis</i>	end	SOC	Unknown				x	
Apiaceae	<i>Sanicula mariversa</i>	end	E	High	x				
Apiaceae	<i>Sanicula purpurea</i>	end	E	Unknown					
Apiaceae	<i>Sanicula sandwicensis</i>	end	E	Unknown			x		
Apiaceae	<i>Spermolepis hawaiiensis</i>	end	E	High	x		x		
Apocynaceae	<i>Alyxia stellata</i>	ind		Low	x			x	Short-lived
Apocynaceae	<i>Ochrosia compta</i>	end	SOC	Unknown				x	Family behavior likely

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Apocynaceae	Ochrosia haleakalae	end	E	Unknown				x	Family behavior likely
Apocynaceae	Ochrosia kauaiensis	end	SOC	Unknown				x	Family behavior likely
Apocynaceae	Ochrosia kilaueaensis	end	E	Unknown				x	Family behavior likely
Apocynaceae	Pteralyxia kauaiensis	end	E	Unknown				x	Family behavior likely
Apocynaceae	Pteralyxia macrocarpa	end	E	Unknown				x	Family behavior likely
Apocynaceae	Rauvolfia sandwicensis	end		Unknown			x		
Aquifoliaceae	Ilex anomala	ind		Medium	x		x	x	May be short-lived
Araliaceae	Cheiodendron dominii	end	SOC	Unknown					
Araliaceae	Cheiodendron fauriei	end		Unknown				x	
Araliaceae	Cheiodendron forbesii	end		Unknown				x	
Araliaceae	Cheiodendron platyphyllum subsp. kauaiense	end		Unknown				x	
Araliaceae	Cheiodendron platyphyllum subsp. platyphyllum	end		Unknown				x	Low viability
Araliaceae	Cheiodendron trigynum subsp. helleri	end		Unknown				x	
Araliaceae	Cheiodendron trigynum subsp. trigynum	end		Medium	x		x		Freeze-sensitive
Araliaceae	Polyscias bisattenuata	end	E	Unknown			x		
Araliaceae	Polyscias flynnii	end	E	Unknown					
Araliaceae	Polyscias gymnocarpa	end	E	Unknown			x		
Araliaceae	Polyscias hawaiiensis	end		Unknown				x	
Araliaceae	Polyscias kawaiensis	end		Unknown				x	
Araliaceae	Polyscias lydgatei	end	E	Medium	x		x		May be short-lived
Araliaceae	Polyscias oahuensis	end	SOC	Unknown				x	
Araliaceae	Polyscias racemosa	end	E	Medium	x		x		Freeze-sensitive
Araliaceae	Polyscias sandwicensis	end	SOC	Medium	x		x	x	Apparently orthodox, but differs from congeners
Araliaceae	Polyscias waialealae	end		Medium	x		x	x	May be short lived
Araliaceae	Polyscias waimeae	end		Unknown				x	
Arecaceae	Pritchardia arecina	end	SOC	Unknown					
Arecaceae	Pritchardia bakeri	end	E	Unknown					
Arecaceae	Pritchardia beccariana	end	SOC	Unknown					
Arecaceae	Pritchardia flynnii	end	SOC	Unknown					
Arecaceae	Pritchardia forbesiana	end	SOC	Unknown					
Arecaceae	Pritchardia glabrata	end	SOC	Unknown					
Arecaceae	Pritchardia gordonii	end		Unknown				x	
Arecaceae	Pritchardia hardyi	end	E	Unknown					
Arecaceae	Pritchardia hillebrandii	end	SOC	Unknown					
Arecaceae	Pritchardia kaalae	end	E	Unknown					
Arecaceae	Pritchardia kahukuensis	end		Unknown					
Arecaceae	Pritchardia lanigera	end	E	Unknown					
Arecaceae	Pritchardia lowreyana	end	SOC	Unknown					
Arecaceae	Pritchardia maideniana	end	E	Unknown					
Arecaceae	Pritchardia martii	end	SOC	Unknown					
Arecaceae	Pritchardia minor	end	SOC	Unknown					

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Arecaceae	Pritchardia munroi	end	E	Unknown					
Arecaceae	Pritchardia napaliensis	end	E	Unknown					
Arecaceae	Pritchardia perlmanii	end	SOC	Unknown					
Arecaceae	Pritchardia remota	end	E	Low	x		x		Short-lived, cold temperature sensitive
Arecaceae	Pritchardia schattaueri	end	E	Unknown			x		
Arecaceae	Pritchardia viscosa	end	E	Unknown					
Arecaceae	Pritchardia waialealeana	end		Unknown				x	
Arecaceae	Pritchardia woodii	end		Unknown				x	
Asparagaceae	Chrysodracon aurea	end		Low		x			
Asparagaceae	Chrysodracon auwahiensis	end		Low	x				Recalcitrant
Asparagaceae	Chrysodracon fernaldii	end	E	Low		x			
Asparagaceae	Chrysodracon forbesii	end	E	Low		x			
Asparagaceae	Chrysodracon halapepe	end		Low		x			
Asparagaceae	Chrysodracon hawaiiensis	end	E	Low	x				Recalcitrant
Asteliaceae	Astelia argyrocoma	end		Medium	x		x		Freeze-sensitive
Asteliaceae	Astelia menziesiana	end		Medium	x		x		Freeze-sensitive
Asteliaceae	Astelia waialealae	end	E	Unknown					
Asteraceae	Adenostemma viscosum	ind		High	x		x		
Asteraceae	Argyroxiphium caliginis	end	SOC	High		x			Family behavior likely
Asteraceae	Argyroxiphium grayanum	end		High		x			Low viability, but family behavior likely
Asteraceae	Argyroxiphium kauense	end	E	High		x			Family behavior likely
Asteraceae	Argyroxiphium sandwicense subsp. macrocephalum	end	T	High		x			Low viability, but family behavior likely
Asteraceae	Argyroxiphium sandwicense subsp. sandwicense	end	E	High		x			Family behavior likely
Asteraceae	Argyroxiphium virescens	end	SOC	High		x			Family behavior likely
Asteraceae	Artemisia australis	end		High		x			
Asteraceae	Artemisia kauaiensis	end		High		x			
Asteraceae	Artemisia mauiensis	end		High	x		x		
Asteraceae	Bidens amplexans	end	E	High	x		x		
Asteraceae	Bidens asymmetrica	end		High		x			
Asteraceae	Bidens campylotheca subsp. campylotheca	end		High		x	x		
Asteraceae	Bidens campylotheca subsp. pentamera	end	E	High		x			
Asteraceae	Bidens campylotheca subsp. waihoiensis	end	E	High		x			
Asteraceae	Bidens cervicata	end		High		x			
Asteraceae	Bidens conjuncta	end	E	High		x	x		
Asteraceae	Bidens cosmoides	end	SOC	High		x			
Asteraceae	Bidens forbesii subsp. forbesii	end		High		x			
Asteraceae	Bidens forbesii subsp. kahiliensis	end		High		x			
Asteraceae	Bidens hawaiiensis	end		High	x		x		
Asteraceae	Bidens hillebrandiana subsp. hillebrandiana	end	E	High		x			
Asteraceae	Bidens hillebrandiana subsp. polycephala	end		High		x			

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Asteraceae	<i>Bidens macrocarpa</i>	end		High		x			
Asteraceae	<i>Bidens mauianensis</i>	end		High		x			
Asteraceae	<i>Bidens menziesii</i> subsp. <i>filiformis</i>	end		High	x		x		
Asteraceae	<i>Bidens menziesii</i> subsp. <i>menziesii</i>	end		High		x			
Asteraceae	<i>Bidens micrantha</i> subsp. <i>ctenophylla</i>	end	E	High		x	x		
Asteraceae	<i>Bidens micrantha</i> subsp. <i>kalealaha</i>	end	E	High		x	x		
Asteraceae	<i>Bidens micrantha</i> subsp. <i>micrantha</i>	end		High		x			
Asteraceae	<i>Bidens molokaiensis</i>	end		High		x			
Asteraceae	<i>Bidens populifolia</i>	end	SOC	High	x		x		
Asteraceae	<i>Bidens sandvicensis</i> subsp. <i>confusa</i>	end		High	x				
Asteraceae	<i>Bidens sandvicensis</i> subsp. <i>sandvicensis</i>	end	SOC	High	x		x		
Asteraceae	<i>Bidens torta</i>	end		High	x		x		
Asteraceae	<i>Bidens valida</i>	end		High		x			
Asteraceae	<i>Bidens wiebkei</i>	end	E	High		x			
Asteraceae	<i>Dubautia arborea</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia carrii</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia ciliolata</i> subsp. <i>ciliolata</i>	end		High		x			
Asteraceae	<i>Dubautia ciliolata</i> subsp. <i>glutinosa</i>	end		High		x			
Asteraceae	<i>Dubautia hanaulaensis</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia herbstobatae</i>	end	E	High	x				
Asteraceae	<i>Dubautia imbricata</i> subsp. <i>acronaea</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia imbricata</i> subsp. <i>imbricata</i>	end	E	High		x			
Asteraceae	<i>Dubautia kalalauensis</i>	end	E	High	x		x		
Asteraceae	<i>Dubautia kenwoodii</i>	end	E	High		x			
Asteraceae	<i>Dubautia knudsenii</i> subsp. <i>filiformis</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia knudsenii</i> subsp. <i>knudsenii</i>	end		High		x			
Asteraceae	<i>Dubautia knudsenii</i> subsp. <i>nagatae</i>	end		High		x			
Asteraceae	<i>Dubautia laevigata</i>	end		High		x			
Asteraceae	<i>Dubautia latifolia</i>	end	E	High		x			
Asteraceae	<i>Dubautia laxa</i> subsp. <i>bryanii</i>	end		High	x		x		
Asteraceae	<i>Dubautia laxa</i> subsp. <i>hirsuta</i>	end		High	x				
Asteraceae	<i>Dubautia laxa</i> subsp. <i>laxa</i>	end		High	x				
Asteraceae	<i>Dubautia laxa</i> subsp. <i>pseudoplantaginea</i>	end		High	x				
Asteraceae	<i>Dubautia linearis</i> subsp. <i>hillebrandii</i>	end		High		x			
Asteraceae	<i>Dubautia linearis</i> subsp. <i>linearis</i>	end		High		x			
Asteraceae	<i>Dubautia menziesii</i>	end		High	x		x		
Asteraceae	<i>Dubautia microcephala</i>	end	SOC	High		x			
Asteraceae	<i>Dubautia paleata</i>	end		High		x			
Asteraceae	<i>Dubautia pauciflorula</i>	end	E	High		x			
Asteraceae	<i>Dubautia plantaginea</i> subsp. <i>humilis</i>	end	E	High	x				
Asteraceae	<i>Dubautia plantaginea</i> subsp. <i>magnifolia</i>	end	E	High		x			
Asteraceae	<i>Dubautia plantaginea</i> subsp. <i>plantaginea</i>	end		High	x		x		
Asteraceae	<i>Dubautia platyphylla</i>	end	SOC	High		x	x		

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Asteraceae	Dubautia raillardiioides	end		High		x			
Asteraceae	Dubautia reticulata	end	SOC	High	x		x		
Asteraceae	Dubautia scabra subsp. leiophylla	end		High		x			
Asteraceae	Dubautia scabra subsp. scabra	end		High		x			
Asteraceae	Dubautia sherffiana	end	SOC	High		x			
Asteraceae	Dubautia syndetica	end	SOC	High		x			
Asteraceae	Dubautia waialealae	end	E	High		x			
Asteraceae	Dubautia waiianapanapaensis	end		High		x			
Asteraceae	Hesperomannia arborescens	end	E	High		x			Family behavior likely
Asteraceae	Hesperomannia lydgatei	end	E	High		x			Family behavior likely
Asteraceae	Hesperomannia oahuensis	end	E	High		x			Family behavior likely
Asteraceae	Hesperomannia swezeyi	end		High		x			Low viability, but family behavior likely
Asteraceae	Keysseria erici	end	E	High		x			Low viability, but family behavior likely
Asteraceae	Keysseria helenae	end	E	High		x			Low viability, but family behavior likely
Asteraceae	Keysseria maviensis	end	SOC	High		x	x		Family behavior likely
Asteraceae	Lipochaeta connata subsp. acris	end		High		x			
Asteraceae	Lipochaeta connata subsp. connata	end		High		x			
Asteraceae	Lipochaeta degeneri	end	SOC	High		x			
Asteraceae	Lipochaeta heterophylla	end		High	x		x		
Asteraceae	Lipochaeta lobata subsp. leptophylla	end	E	High		x			
Asteraceae	Lipochaeta lobata subsp. lobata	end		High	x		x		
Asteraceae	Lipochaeta rockii	end		High		x			
Asteraceae	Lipochaeta succulenta	end		High		x			
Asteraceae	Melanthera bryanii	end	SOC	High		x			
Asteraceae	Melanthera fauriei	end	E	High		x			
Asteraceae	Melanthera integrifolia	end		High	x		x		
Asteraceae	Melanthera kamolensis	end	E	High		x			
Asteraceae	Melanthera lavarum	end		High		x			
Asteraceae	Melanthera micrantha subsp. exigua	end	E	High		x			
Asteraceae	Melanthera micrantha subsp. micrantha	end	E	High		x			
Asteraceae	Melanthera perdita	end	SOC	High		x			
Asteraceae	Melanthera populifolia	end	SOC	High		x			
Asteraceae	Melanthera remyi	end	SOC	High		x			
Asteraceae	Melanthera subcordata	end		High		x			
Asteraceae	Melanthera tenuifolia	end	E	High	x				
Asteraceae	Melanthera tenuis	end	SOC	High		x			
Asteraceae	Melanthera venosa	end	E	High		x			
Asteraceae	Melanthera waimeaensis	end	E	High		x			
Asteraceae	Pseudognaphalium sandwicense var. hawaiiense	end		High		x			
Asteraceae	Pseudognaphalium sandwicense var. kilaueanum	end		High		x			

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Asteraceae	Pseudognaphalium sandwicense var. molokaiense	end	E	High	x		x		
Asteraceae	Pseudognaphalium sandwicense var. sandwicense	end		High	x		x		
Asteraceae	Remya kauaiensis	end	E	High	x		x		
Asteraceae	Remya mauiensis	end	E	High		x	x		Low viability
Asteraceae	Remya montgomeryi	end	E	High		x			Low viability
Asteraceae	Tetramolopium arenarium subsp. arenarium	end	E	High	x		x		
Asteraceae	Tetramolopium arenarium subsp. laxum	end	E	High		x			
Asteraceae	Tetramolopium capillare	end	E	High		x			
Asteraceae	Tetramolopium consanguineum subsp. consanguineum	end	SOC	High		x			
Asteraceae	Tetramolopium consanguineum subsp. leptophyllum	end	SOC	High	x		x		
Asteraceae	Tetramolopium conyzoides	end	SOC	High		x			
Asteraceae	Tetramolopium filiforme var. filiforme	end	E	High		x			
Asteraceae	Tetramolopium filiforme var. polyphyllum	end	E	High		x			
Asteraceae	Tetramolopium humile subsp. haleakalae	end		High		x			
Asteraceae	Tetramolopium humile subsp. humile	end		High	x				
Asteraceae	Tetramolopium lepidotum subsp. arbusculum	end	SOC	High		x			
Asteraceae	Tetramolopium lepidotum subsp. lepidotum	end	E	High	x		x		
Asteraceae	Tetramolopium remyi	end	E	High	x		x		
Asteraceae	Tetramolopium rockii var. calcisabulorum	end	T	High		x			
Asteraceae	Tetramolopium rockii var. rockii	end	T	High	x		x		
Asteraceae	Tetramolopium sylvae	ind	SOC	High		x			
Asteraceae	Tetramolopium tenerrimum	end	SOC	High		x			
Asteraceae	Wilkesia gymnoxiphium	end		High	x		x		
Asteraceae	Wilkesia hobdyi	end	E	High		x			
Begoniaceae	Hillebrandia sandwicensis	end	SOC	Medium	x		x		Freeze-sensitive
Boraginaceae	Cordia subcordata	ind		Unknown				x	
Boraginaceae	Heliotropium anomalum var. argenteum	end		Medium	x		x		
Boraginaceae	Heliotropium curassavicum	ind		Unknown				x	
Boraginaceae	Nama sandwicensis	end	SOC	Medium	x		x		May be freeze-sensitive
Brassicaceae	Lepidium arbuscula	end	E	Unknown					
Brassicaceae	Lepidium bidentatum var. o-waihiense	end	SOC	High	x		x		
Brassicaceae	Lepidium orbiculare	end	E	Unknown			x		
Brassicaceae	Lepidium remyi	end	SOC	Unknown					
Brassicaceae	Lepidium serra	end		Unknown			x		
Brassicaceae	Rorippa sarmentosa	ind		Unknown					
Campanulaceae	Brighamia insignis	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Brighamia rockii	end	E	High	x		x		Freeze-sensitive but good storage potential

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Campanulaceae	<i>Clermontia arborescens</i> subsp. <i>arborescens</i>	end	SOC	High		x			
Campanulaceae	<i>Clermontia arborescens</i> subsp. <i>waihia</i>	end		High		x			
Campanulaceae	<i>Clermontia arborescens</i> subsp. <i>waikoluensis</i>	end		High		x			
Campanulaceae	<i>Clermontia calophylla</i>	end	SOC	High		x			
Campanulaceae	<i>Clermontia clermontioides</i> subsp. <i>clermontioides</i>	end		High	x				Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia clermontioides</i> subsp. <i>rockiana</i>	end		High	x				Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia drepanomorpha</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia fauriei</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia grandiflora</i> subsp. <i>grandiflora</i>	end		High		x	x		
Campanulaceae	<i>Clermontia grandiflora</i> subsp. <i>maxima</i>	end	SOC	High		x	x		
Campanulaceae	<i>Clermontia grandiflora</i> subsp. <i>munroi</i>	end		High		x	x		
Campanulaceae	<i>Clermontia hawaiiensis</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia kakeana</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia kohalae</i>	end		High		x			
Campanulaceae	<i>Clermontia lindseyana</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia micrantha</i>	end		High		x			
Campanulaceae	<i>Clermontia montis-loa</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia multiflora</i>	end	SOC	High		x			
Campanulaceae	<i>Clermontia oblongifolia</i> subsp. <i>brevipes</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia oblongifolia</i> subsp. <i>mauiensis</i>	end	E	High		x			
Campanulaceae	<i>Clermontia oblongifolia</i> subsp. <i>oblongifolia</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia pallida</i>	end		High		x			
Campanulaceae	<i>Clermontia parviflora</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia peleana</i> subsp. <i>peleana</i>	end	E	High		x			
Campanulaceae	<i>Clermontia peleana</i> subsp. <i>singuliflora</i>	end	E	High		x			
Campanulaceae	<i>Clermontia persicifolia</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia pyrularia</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Clermontia samuelii</i> subsp. <i>hanaensis</i>	end	E	High		x	x		
Campanulaceae	<i>Clermontia samuelii</i> subsp. <i>samuelii</i>	end	E	High		x	x		
Campanulaceae	<i>Clermontia tuberculata</i>	end	SOC	High		x	x		

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Campanulaceae	<i>Clermontia waimeae</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea aculeatiflora</i>	end		High		x			
Campanulaceae	<i>Cyanea acuminata</i>	end	E	High		x			
Campanulaceae	<i>Cyanea angustifolia</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea arborea</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea asarifolia</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea asplenifolia</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea calycina</i>	end	E	High		x			
Campanulaceae	<i>Cyanea comata</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea copelandii</i> subsp. <i>copelandii</i>	end	E	High		x			
Campanulaceae	<i>Cyanea copelandii</i> subsp. <i>haleakalaensis</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea coriacea</i>	end		High		x			
Campanulaceae	<i>Cyanea crispa</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea cylindrocalyx</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea dolichopoda</i>	end	E	High		x			
Campanulaceae	<i>Cyanea dunbariae</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea duvalliorum</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea eleeleensis</i>	end		High		x			
Campanulaceae	<i>Cyanea elliptica</i>	end		High		x			
Campanulaceae	<i>Cyanea fernaldii</i>	end	SOC	High		x	x		
Campanulaceae	<i>Cyanea fissa</i>	end		High		x			
Campanulaceae	<i>Cyanea floribunda</i>	end		High		x	x		
Campanulaceae	<i>Cyanea giffardii</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea glabra</i>	end	E	High		x			
Campanulaceae	<i>Cyanea grimesiana</i> subsp. <i>grimesiana</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea grimesiana</i> subsp. <i>obatae</i>	end	E	High		x			
Campanulaceae	<i>Cyanea habenata</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea hamatiflora</i> subsp. <i>carlsonii</i>	end	E	High		x			
Campanulaceae	<i>Cyanea hamatiflora</i> subsp. <i>hamatiflora</i>	end	E	High		x			
Campanulaceae	<i>Cyanea hardyi</i>	end		High		x			
Campanulaceae	<i>Cyanea hirtella</i>	end		High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea horrida</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea humboldtiana</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea kahiliensis</i>	end	SOC	High		x			

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Campanulaceae	Cyanea kauaulaensis	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea kolekoleensis	end	E	High		x			
Campanulaceae	Cyanea konahuanuiensis	end		High		x	x		
Campanulaceae	Cyanea koolauensis	end	E	High		x	x		
Campanulaceae	Cyanea kuhihewa	end	E	High		x			
Campanulaceae	Cyanea kunthiana	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea lanceolata	end	E	High		x	x		
Campanulaceae	Cyanea leptostegia	end	SOC	High		x			
Campanulaceae	Cyanea linearifolia	end	SOC	High		x			
Campanulaceae	Cyanea lobata subsp. baldwinii	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea lobata subsp. lobata	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea longiflora	end	E	High	x				Freeze-sensitive but good storage potential
Campanulaceae	Cyanea longissima	end	SOC	High		x			
Campanulaceae	Cyanea macrostegia subsp. gibsonii	end	E	High		x	x		
Campanulaceae	Cyanea macrostegia subsp. macrostegia	end		High		x			
Campanulaceae	Cyanea magnicalyx	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea mannii	end	E	High		x			
Campanulaceae	Cyanea maritae	end	E	High		x	x		
Campanulaceae	Cyanea marksii	end	E	High		x	x		
Campanulaceae	Cyanea mauiensis	end	E	High		x			
Campanulaceae	Cyanea mceldowneyi	end	E	High		x	x		
Campanulaceae	Cyanea membranacea	end	SOC	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea minutiflora	end	SOC	High		x			
Campanulaceae	Cyanea munroi	end	E	High		x	x		
Campanulaceae	Cyanea obtusa	end	E	High		x			
Campanulaceae	Cyanea parvifolia	end	SOC	High		x			
Campanulaceae	Cyanea pilosa subsp. longipedunculata	end		High		x			
Campanulaceae	Cyanea pilosa subsp. pilosa	end		High		x			
Campanulaceae	Cyanea pinnatifida	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea platyphylla	end	E	High		x			
Campanulaceae	Cyanea pohaku	end	SOC	High		x			
Campanulaceae	Cyanea procera	end	E	High		x	x		
Campanulaceae	Cyanea profuga	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Cyanea pseudofauriei	end	SOC	High		x			

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Campanulaceae	<i>Cyanea purpurellifolia</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea pycnocarpa</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea quercifolia</i>	end	SOC	High		x			
Campanulaceae	<i>Cyanea recta</i>	end	T	High		x			
Campanulaceae	<i>Cyanea remyi</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea rivularis</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea salicina</i>	end	T	High		x			
Campanulaceae	<i>Cyanea scabra</i>	end		High		x			
Campanulaceae	<i>Cyanea sessilifolia</i>	end	E	High		x			
Campanulaceae	<i>Cyanea shipmanii</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea solanacea</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea solenocalyx</i>	end	SOC	High		x	x		
Campanulaceae	<i>Cyanea spathulata</i>	end		High		x			
Campanulaceae	<i>Cyanea st.-johnii</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea stictophylla</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea superba</i> subsp. <i>regina</i>	end	E	High		x			
Campanulaceae	<i>Cyanea superba</i> subsp. <i>superba</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea tritomantha</i>	end	E	High		x	x		
Campanulaceae	<i>Cyanea truncata</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Cyanea undulata</i>	end	E	High		x			
Campanulaceae	<i>Delissea argutidentata</i>	end	E	High		x			
Campanulaceae	<i>Delissea fallax</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea fauriei</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea kauaiensis</i>	end	E	High		x	x		
Campanulaceae	<i>Delissea laciniata</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea lanaiensis</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea lauliiana</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea niihauensis</i>	end	E	High		x			
Campanulaceae	<i>Delissea parviflora</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea rhytidosperma</i>	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	<i>Delissea sinuata</i>	end	SOC	High		x			
Campanulaceae	<i>Delissea subcordata</i> subsp. <i>obtusifolia</i>	end	E	High		x			
Campanulaceae	<i>Delissea subcordata</i> subsp. <i>subcordata</i>	end	E	High		x			
Campanulaceae	<i>Delissea takeuchii</i>	end	E	High		x			
Campanulaceae	<i>Delissea undulata</i>	end		High		x			
Campanulaceae	<i>Delissea waianaensis</i>	end	E	High	x		x		Freeze-sensitive but good storage potential

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Campanulaceae	Lobelia dunbariae subsp. dunbariae	end	SOC	High		x			
Campanulaceae	Lobelia dunbariae subsp. paniculata	end	SOC	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Lobelia gaudichaudii	end	SOC	High		x			
Campanulaceae	Lobelia gloria-montis subsp. gloria-montis	end		High		x			
Campanulaceae	Lobelia gloria-montis subsp. longibracteata	end		High		x			
Campanulaceae	Lobelia grayana	end		High	x		x		Possibly orthodox
Campanulaceae	Lobelia hillebrandii	end		High		x			
Campanulaceae	Lobelia hypoleuca	end	SOC	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Lobelia kauaensis			High		x			
Campanulaceae	Lobelia koolauensis	end	E	High	x				Freeze-sensitive but good storage potential
Campanulaceae	Lobelia monostachya	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Lobelia niihauensis	end	E	High	x		x		Possibly orthodox
Campanulaceae	Lobelia oahuensis	end	E	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Lobelia remyi	end	SOC	High		x			
Campanulaceae	Lobelia villosa	end	SOC	High		x			
Campanulaceae	Lobelia wahiawa	end		High		x			
Campanulaceae	Lobelia yuccoides	end	SOC	High	x		x		Freeze-sensitive but good storage potential
Campanulaceae	Trematolobelia auriculata	end		High		x		x	
Campanulaceae	Trematolobelia grandifolia	end	SOC	High	x		x		
Campanulaceae	Trematolobelia kaalae	end		High	x		x		
Campanulaceae	Trematolobelia kauaiensis	end		High		x	x		
Campanulaceae	Trematolobelia macrostachys	end		High		x	x		
Campanulaceae	Trematolobelia rockii	end		High		x		x	
Campanulaceae	Trematolobelia singularis	end	E	High	x		x		
Campanulaceae	Trematolobelia wimmeri	end		High		x		x	
Capparaceae	Capparis sandwichiana	end	SOC	Medium	x		x		Freeze-sensitive
Caryophyllaceae	Schiedea adamantis	end	E	High	x		x		
Caryophyllaceae	Schiedea amplexicaulis	end	SOC	High		x			
Caryophyllaceae	Schiedea apokremnos	end	E	High		x			
Caryophyllaceae	Schiedea attenuata	end	E	High		x			
Caryophyllaceae	Schiedea diffusa subsp. diffusa	end	E	High	x		x		
Caryophyllaceae	Schiedea diffusa subsp. macraei	end	E	High	x		x		
Caryophyllaceae	Schiedea globosa	end	SOC	High	x		x		
Caryophyllaceae	Schiedea haleakalensis	end	E	High		x			
Caryophyllaceae	Schiedea hawaiiensis	end	E	High		x			

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Caryophyllaceae	Schiedea helleri	end	E	High		x	x		
Caryophyllaceae	Schiedea hookeri	end	E	High		x			
Caryophyllaceae	Schiedea implexa	end	SOC	High		x			
Caryophyllaceae	Schiedea jacobii	end	E	High		x	x		
Caryophyllaceae	Schiedea kaalae	end	E	High	x				
Caryophyllaceae	Schiedea kauaiensis	end	E	High		x			
Caryophyllaceae	Schiedea kealiae	end	E	High		x	x		
Caryophyllaceae	Schiedea laui	end	E	High		x	x		
Caryophyllaceae	Schiedea ligustrina	end	SOC	High		x			
Caryophyllaceae	Schiedea lychnoides	end	E	High		x	x		
Caryophyllaceae	Schiedea lydgatei	end	E	High		x			
Caryophyllaceae	Schiedea mannii	end	SOC	High		x			
Caryophyllaceae	Schiedea membranacea	end	E	High		x	x		
Caryophyllaceae	Schiedea menziesii	end	SOC	High		x			
Caryophyllaceae	Schiedea nuttallii	end	E	High	x				
Caryophyllaceae	Schiedea obovata	end	E	High	x				
Caryophyllaceae	Schiedea pentandra	end	SOC	High		x			
Caryophyllaceae	Schiedea perlmanii	end	E	High		x			
Caryophyllaceae	Schiedea pubescens	end	E	High		x			
Caryophyllaceae	Schiedea salicaria	end	E	High		x	x		
Caryophyllaceae	Schiedea sarmentosa	end	E	High		x			
Caryophyllaceae	Schiedea spergulina	end	E	High		x			
Caryophyllaceae	Schiedea stellarioides	end	E	High		x	x		
Caryophyllaceae	Schiedea trinervis	end	E	High	x		x		
Caryophyllaceae	Schiedea verticillata	end	E	High		x			
Caryophyllaceae	Schiedea viscosa	end	E	High		x	x		
Caryophyllaceae	Silene alexandri	end	E	High	x		x		
Caryophyllaceae	Silene cryptopetala	end	SOC	High		x			
Caryophyllaceae	Silene degeneri	end	SOC	High		x			
Caryophyllaceae	Silene hawaiiensis	end	T	High		x			
Caryophyllaceae	Silene lanceolata	end	E	High	x		x		
Caryophyllaceae	Silene perlmanii	end	E	High	x		x		
Caryophyllaceae	Silene struthioloides	end		High		x			
Convolvulaceae	Bonamia menziesii	end	E	Medium	x		x		Freeze-sensitive
Convolvulaceae	Cressa truxillensis	ind		Unknown				x	
Convolvulaceae	Cuscuta sandwichiana	end		Medium			x		Preliminary results desiccation-tolerant
Convolvulaceae	Ipomoea imperati	ind		Unknown					
Convolvulaceae	Ipomoea indica	ind		Unknown			x		
Convolvulaceae	Ipomoea littoralis	ind?		Unknown					
Convolvulaceae	Ipomoea pes-caprae subsp. brasiliensis	ind		Unknown			x		
Convolvulaceae	Ipomoea tuboides	end		Unknown			x		
Convolvulaceae	Jacquemontia sandwicensis	end		High	x		x		

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Cucurbitaceae	Sicyos albus	end	E	High		x			
Cucurbitaceae	Sicyos anunu	end		High		x			
Cucurbitaceae	Sicyos cucumerinus	end	SOC	High		x			
Cucurbitaceae	Sicyos erostratus	end		High		x			
Cucurbitaceae	Sicyos herbstii	end		High		x			
Cucurbitaceae	Sicyos hillebrandii	end	SOC	High		x	x		
Cucurbitaceae	Sicyos hispidus	end		High		x			
Cucurbitaceae	Sicyos lanceoloideus	end	E	High	x		x		
Cucurbitaceae	Sicyos lasiocephalus	end		High		x			
Cucurbitaceae	Sicyos macrophyllus	end	E	High		x			
Cucurbitaceae	Sicyos maximowiczii	end		High		x			
Cucurbitaceae	Sicyos pachycarpus	end		High	x		x		
Cucurbitaceae	Sicyos semitonsus	end	SOC	High		x			
Cucurbitaceae	Sicyos waimanaloensis	end	SOC	High	x		x		
Cyperaceae	Bolboschoenus maritimus subsp. paludosus	ind		Unknown				x	
Cyperaceae	Carex alligata	end		High	x		x		
Cyperaceae	Carex echinata	ind		Unknown				x	
Cyperaceae	Carex kauaiensis	end		Unknown				x	
Cyperaceae	Carex macloviana subsp. subfusca	ind		High	x		x		
Cyperaceae	Carex meyenii	ind		Medium	x		x		Freeze-sensitive
Cyperaceae	Carex montis-eeka	end		Unknown				x	
Cyperaceae	Carex nealae	end		Unknown				x	
Cyperaceae	Carex wahuensis subsp. herbstii	end	SOC	Medium		x			
Cyperaceae	Carex wahuensis subsp. rubiginosa	end		Medium		x			
Cyperaceae	Carex wahuensis subsp. wahuensis	end		Medium	x		x		Freeze-sensitive
Cyperaceae	Cladium jamaicense	ind		Unknown				x	
Cyperaceae	Cyperus cyperinus	ind		Unknown				x	
Cyperaceae	Cyperus fauriei	end	E	Unknown					
Cyperaceae	Cyperus hillebrandii var. decipiens	end		Medium		x		x	Freeze-sensitive
Cyperaceae	Cyperus hillebrandii var. hillebrandii	end		Medium	x		x		Freeze-sensitive
Cyperaceae	Cyperus hypochlorus var. brevior	end		Unknown				x	
Cyperaceae	Cyperus hypochlorus var. hypochlorus	end		Unknown				x	
Cyperaceae	Cyperus javanicus	ind		High	x		x		
Cyperaceae	Cyperus laevigatus	ind		Unknown				x	
Cyperaceae	Cyperus neokunthianus	end	E	Unknown					
Cyperaceae	Cyperus odoratus	ind	SOC	Unknown					
Cyperaceae	Cyperus pennatiformis var. bryanii	end	E	High	x		x		
Cyperaceae	Cyperus pennatiformis var. pennatiformis	end	E	High	x		x		
Cyperaceae	Cyperus phleoides var. hawaiiensis	end		Unknown			x		
Cyperaceae	Cyperus phleoides var. phleoides	end		Unknown				x	
Cyperaceae	Cyperus polystachyos	ind		Unknown				x	
Cyperaceae	Cyperus rockii	end	SOC	Unknown					
Cyperaceae	Cyperus sandwicensis	end		Unknown			x		

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Cyperaceae	<i>Cyperus trachysanthos</i>	end	E	High	x		x		
Cyperaceae	<i>Eleocharis calva</i>	ind?		Unknown					
Cyperaceae	<i>Eleocharis obtusa</i>	ind		Unknown				x	
Cyperaceae	<i>Fimbristylis cymosa</i> subsp. <i>spathacea</i>	ind		High	x		x		
Cyperaceae	<i>Fimbristylis cymosa</i> subsp. <i>umbellato-capitata</i>	ind		High	x		x		
Cyperaceae	<i>Fimbristylis dichotoma</i>	ind		Unknown				x	
Cyperaceae	<i>Fimbristylis hawaiiensis</i>	end	SOC	Unknown					
Cyperaceae	<i>Gahnia aspera</i> subsp. <i>globosa</i>	end		Unknown				x	
Cyperaceae	<i>Gahnia beecheyi</i>	end		High	x		x		
Cyperaceae	<i>Gahnia vitiensis</i> subsp. <i>kauaiensis</i>	end		Unknown				x	
Cyperaceae	<i>Machaerina angustifolia</i>	ind		Medium	x		x		Freeze-sensitive
Cyperaceae	<i>Machaerina mariscoides</i> subsp. <i>meyenii</i>	end		Unknown				x	
Cyperaceae	<i>Morelotia gahniiformis</i>	end		High	x				
Cyperaceae	<i>Oreobolus furcatus</i>	end		Unknown				x	
Cyperaceae	<i>Rhynchospora chinensis</i> subsp. <i>spiciformis</i>	ind		Unknown				x	
Cyperaceae	<i>Rhynchospora rugosa</i> subsp. <i>lavarum</i>	ind		Unknown				x	
Cyperaceae	<i>Rhynchospora sclerioides</i>	ind		Unknown				x	
Cyperaceae	<i>Schoenoplectiella juncooides</i>	ind		High	x		x		
Cyperaceae	<i>Schoenoplectus tabernaemontani</i>	ind		Unknown				x	
Cyperaceae	<i>Scleria testacea</i>	ind		Unknown				x	
Cyperaceae	<i>Uncinia brevicaulis</i>	ind		Unknown				x	
Cyperaceae	<i>Uncinia uncinata</i>	ind		Unknown				x	
Dipentodontaceae	<i>Perrottetia sandwicensis</i>	end		Medium	x			x	Freeze-sensitive
Droseraceae	<i>Drosera anglica</i>	ind		Medium	x		x		
Ebenaceae	<i>Diospyros hillebrandii</i>	end		Low		x			
Ebenaceae	<i>Diospyros sandwicensis</i>	end		Low	x				Recalcitrant
Elaeocarpaceae	<i>Elaeocarpus bifidus</i>	end		Unknown				x	Low viability
Ericaceae	<i>Leptecophylla tameiameia</i>	ind		High	x		x		
Ericaceae	<i>Vaccinium calycinum</i>	end		High	x		x		
Ericaceae	<i>Vaccinium dentatum</i>	end		High	x		x		
Ericaceae	<i>Vaccinium reticulatum</i>	end		High	x		x		
Euphorbiaceae	<i>Claoxylon sandwicense</i>	end		Unknown				x	
Euphorbiaceae	<i>Euphorbia arnottiana</i>	end	SOC	High		x			
Euphorbiaceae	<i>Euphorbia atrococca</i>	end		High		x			
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>amplectens</i>	end		High		x	x		
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>celastroides</i>	end		High		x		x	
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>hanapepensis</i>	end		High		x			
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>kaenana</i>	end	E	High	x				
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>laehiensis</i>	end	SOC	High		x			
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>lorifolia</i>	end	SOC	High		x			
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>stokesii</i>	end		High		x			
Euphorbiaceae	<i>Euphorbia celastroides</i> var. <i>tomentella</i>	end	SOC	High		x			
Euphorbiaceae	<i>Euphorbia clusiifolia</i>	end		High		x		x	

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Euphorbiaceae	Euphorbia degeneri	end		High		x		x	
Euphorbiaceae	Euphorbia deppeana	end	E	High		x			
Euphorbiaceae	Euphorbia eleanoriae	end	E	High		x			
Euphorbiaceae	Euphorbia haeleeleana	end	E	High	x				
Euphorbiaceae	Euphorbia halemanui	end	E	High		x			
Euphorbiaceae	Euphorbia herbstii	end	E	High	x				
Euphorbiaceae	Euphorbia kuwaleana	end	E	High		x			
Euphorbiaceae	Euphorbia multiformis var. microphylla	end		High		x			
Euphorbiaceae	Euphorbia multiformis var. multiformis	end		High		x		x	
Euphorbiaceae	Euphorbia olowaluana	end	SOC	High		x			
Euphorbiaceae	Euphorbia remyi var. hanaleiensis	end	SOC	High		x			
Euphorbiaceae	Euphorbia remyi var. kauaiensis	end	E	High		x			
Euphorbiaceae	Euphorbia remyi var. remyi	end	E	High		x			
Euphorbiaceae	Euphorbia rockii	end	E	High		x			
Euphorbiaceae	Euphorbia skottsbergii var. skottsbergii	end	E	High	x		x		
Euphorbiaceae	Euphorbia skottsbergii var. vaccinioides	end	SOC	High		x			
Euphorbiaceae	Euphorbia sparsiflora	end	SOC	High		x			
Fabaceae	Acacia koa	end		High	x		x		
Fabaceae	Acacia koaia	end		High	x		x		
Fabaceae	Caesalpinia bonduc	ind		High		x			Family behavior likely
Fabaceae	Canavalia galeata	end		High	x		x		
Fabaceae	Canavalia hawaiiensis	end		High	x		x		
Fabaceae	Canavalia kauaiensis	end	E	High		x			Family behavior likely
Fabaceae	Canavalia molokaiensis	end	E	High		x			Family behavior likely
Fabaceae	Canavalia napaliensis	end	E	High		x			Family behavior likely
Fabaceae	Canavalia pubescens	end	E	High		x			Family behavior likely
Fabaceae	Entada phaseoloides	ind?		High		x			Family behavior likely
Fabaceae	Erythrina sandwicensis	end	SOC	High	x		x		
Fabaceae	Kanaloa kahoolawensis	end	E	High		x			Family behavior likely
Fabaceae	Mezoneuron kavaiense	end	E	High	x		x		
Fabaceae	Mucuna gigantea subsp. gigantea	ind		High		x			Family behavior likely
Fabaceae	Mucuna sloanei var. persericea	end	E	High	x		x		
Fabaceae	Mucuna sloanei var. sloanei	ind		High	x				
Fabaceae	Senna gaudichaudii	ind		High	x		x		
Fabaceae	Sesbania tomentosa	end	E	High	x		x		
Fabaceae	Sophora chrysophylla	end		High	x		x		
Fabaceae	Strongylodon ruber	end	SOC	High		x			Family behavior likely
Fabaceae	Vicia menziesii	end	E	High		x			Family behavior likely
Fabaceae	Vigna adenantha	ind	SOC	High		x			Family behavior likely
Fabaceae	Vigna marina	ind		High	x		x		
Fabaceae	Vigna o-wahuensis	end	E	High	x		x		
Gentianaceae	Schenkia sebaeoides	end	E	High	x		x		
Geraniaceae	Geranium arboreum	end	E	Unknown					

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Geraniaceae	Geranium cuneatum subsp. cuneatum	end		Unknown				x	
Geraniaceae	Geranium cuneatum subsp. hololeucum	end		Unknown				x	
Geraniaceae	Geranium cuneatum subsp. hypoleucum	end		Unknown				x	
Geraniaceae	Geranium cuneatum subsp. tridens	end		Unknown				x	
Geraniaceae	Geranium hanaense	end	E	Unknown					
Geraniaceae	Geranium hillebrandii	end	E	Unknown					
Geraniaceae	Geranium kauaiense	end		Unknown				x	
Geraniaceae	Geranium multiflorum	end	E	Unknown					
Gesneriaceae	Cyrtandra biserrata	end	SOC	Unknown					
Gesneriaceae	Cyrtandra calpidicarpa	end		Unknown				x	
Gesneriaceae	Cyrtandra confertiflora	end		Unknown				x	
Gesneriaceae	Cyrtandra cordifolia	end		Medium	x		x		Freeze-sensitive
Gesneriaceae	Cyrtandra crenata	end	E	Unknown					
Gesneriaceae	Cyrtandra cyaneoides	end	E	Unknown					
Gesneriaceae	Cyrtandra dentata	end	E	High	x		x		
Gesneriaceae	Cyrtandra ferripilosa	end	E	Unknown			x		
Gesneriaceae	Cyrtandra filipes	end	E	Unknown			x		
Gesneriaceae	Cyrtandra garnotiana	end		Unknown				x	
Gesneriaceae	Cyrtandra giffardii	end	E	Unknown					
Gesneriaceae	Cyrtandra gracilis	end	E	Unknown			x		
Gesneriaceae	Cyrtandra grandiflora	end		Medium	x		x		Freeze-sensitive
Gesneriaceae	Cyrtandra grayana	end		Unknown				x	
Gesneriaceae	Cyrtandra grayi	end		Unknown				x	
Gesneriaceae	Cyrtandra halawensis	end	SOC	Unknown					
Gesneriaceae	Cyrtandra hashimotoi	end		Unknown				x	
Gesneriaceae	Cyrtandra hawaiiensis	end		Medium	x		x		Freeze-sensitive
Gesneriaceae	Cyrtandra heinrichii	end	SOC	Unknown					
Gesneriaceae	Cyrtandra hematos	end	E	Unknown			x		
Gesneriaceae	Cyrtandra kalihii	end	SOC	Unknown					
Gesneriaceae	Cyrtandra kamooolaensis	end	SOC	Unknown					
Gesneriaceae	Cyrtandra kauaiensis	end		Unknown				x	
Gesneriaceae	Cyrtandra kaulantha	end	E	Unknown			x		
Gesneriaceae	Cyrtandra kealiae subsp. kealiae	end	T	Unknown					
Gesneriaceae	Cyrtandra kealiae subsp. urceolata	end	SOC	Unknown					
Gesneriaceae	Cyrtandra kohalae	end	SOC	Unknown					
Gesneriaceae	Cyrtandra laxiflora	end		Unknown				x	
Gesneriaceae	Cyrtandra lessoniana	end		High	x		x		
Gesneriaceae	Cyrtandra longifolia	end		Unknown				x	
Gesneriaceae	Cyrtandra lydgatei	end	SOC	Unknown			x		
Gesneriaceae	Cyrtandra lysiosepala	end		Unknown				x	
Gesneriaceae	Cyrtandra macraei	end		Unknown				x	
Gesneriaceae	Cyrtandra macrocalyx	end	SOC	Unknown					
Gesneriaceae	Cyrtandra menziesii	end	SOC	Unknown					

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Gesneriaceae	Cyrtandra munroi	end	E	Unknown					
Gesneriaceae	Cyrtandra nanawaleensis	end	E	Unknown					
Gesneriaceae	Cyrtandra oenobarba	end	E	Unknown					
Gesneriaceae	Cyrtandra olona	end	SOC	Unknown					
Gesneriaceae	Cyrtandra oxybapha	end	E	Unknown			x		
Gesneriaceae	Cyrtandra paliku	end	E	Unknown			x		
Gesneriaceae	Cyrtandra paludosa var. microcarpa	end		Unknown				x	
Gesneriaceae	Cyrtandra paludosa var. paludosa	end		Unknown			x		
Gesneriaceae	Cyrtandra pickeringii	end	SOC	Unknown					
Gesneriaceae	Cyrtandra platyphylla	end		Unknown				x	
Gesneriaceae	Cyrtandra polyantha	end	E	Unknown			x		
Gesneriaceae	Cyrtandra procera	end		Unknown				x	
Gesneriaceae	Cyrtandra propinqua	end		Unknown				x	
Gesneriaceae	Cyrtandra pruinosa	end	SOC	Unknown					
Gesneriaceae	Cyrtandra rivularis	end	SOC	Unknown			x		
Gesneriaceae	Cyrtandra sandwicensis	end	SOC	Unknown			x		
Gesneriaceae	Cyrtandra sessilis	end	E	Medium	x		x		Freeze-sensitive
Gesneriaceae	Cyrtandra spathulata	end		Unknown				x	
Gesneriaceae	Cyrtandra subumbellata	end	E	Unknown					
Gesneriaceae	Cyrtandra tintinnabula	end	E	Unknown			x		
Gesneriaceae	Cyrtandra viridiflora	end	E	Unknown			x		
Gesneriaceae	Cyrtandra wagneri	end	E	Unknown			x		
Gesneriaceae	Cyrtandra waianaensis	end		Unknown				x	
Gesneriaceae	Cyrtandra wainihaensis	end	SOC	Unknown					
Gesneriaceae	Cyrtandra waiolani	end	E	Unknown					
Gesneriaceae	Cyrtandra wawrae	end		Unknown				x	
Goodeniaceae	Scaevola chamissoniana	end		Medium	x		x		May be freeze-sensitive
Goodeniaceae	Scaevola coriacea	end	E	Unknown					
Goodeniaceae	Scaevola gaudichaudiana	end		High	x		x		
Goodeniaceae	Scaevola gaudichaudii	end		Unknown			x		
Goodeniaceae	Scaevola glabra	end		Unknown				x	
Goodeniaceae	Scaevola hobdyi	end	SOC	Unknown					
Goodeniaceae	Scaevola kilaueae	end	SOC	Unknown					
Goodeniaceae	Scaevola mollis	end		Unknown			x		
Goodeniaceae	Scaevola procera	end		Medium	x		x		Freeze-sensitive
Goodeniaceae	Scaevola taccada	ind		High	x		x		
Gunneraceae	Gunnera kauaiensis	end		Low		x			
Gunneraceae	Gunnera petaloidea	end		Low	x		x		Short-lived
Hydrangeaceae	Broussaisia arguta	end		Low	x		x		Short-lived
Hydrocharitaceae	Halophila decipiens			Unknown				x	
Hydrocharitaceae	Halophila hawaiiiana	end		Unknown				x	
Iridaceae	Sisyrinchium acre	end	SOC	High	x		x		
Joinvilleaceae	Joinvillea ascendens subsp. ascendens	end	E	Medium	x		x		Freeze-sensitive

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Juncaceae	Luzula hawaiiensis var. glabrata	end		High		x			
Juncaceae	Luzula hawaiiensis var. hawaiiensis	end		High	x		x		
Juncaceae	Luzula hawaiiensis var. oahuensis	end		High		x			
Lamiaceae	Haplostachys bryanii	end	SOC	Unknown				x	
Lamiaceae	Haplostachys haplostachya	end	E	Unknown					Low viability
Lamiaceae	Haplostachys linearifolia	end	SOC	Unknown				x	
Lamiaceae	Haplostachys munroi	end	SOC	Unknown				x	
Lamiaceae	Haplostachys truncata	end	SOC	Unknown				x	
Lamiaceae	Lepechinia hastata	ind?		Unknown				x	
Lamiaceae	Phyllostegia ambigua	end	SOC	High		x			
Lamiaceae	Phyllostegia bracteata	end	E	High		x	x		
Lamiaceae	Phyllostegia brevidens	end	E	High		x			
Lamiaceae	Phyllostegia electra	end		High		x			
Lamiaceae	Phyllostegia floribunda	end	E	High	x				
Lamiaceae	Phyllostegia glabra var. glabra	end		High		x	x		
Lamiaceae	Phyllostegia glabra var. lanaiensis	end	E	High		x			
Lamiaceae	Phyllostegia grandiflora	end		High	x		x		
Lamiaceae	Phyllostegia haliakalae	end	E	High		x			
Lamiaceae	Phyllostegia helleri	end	E	High		x			
Lamiaceae	Phyllostegia hillebrandii	end	SOC	High		x			
Lamiaceae	Phyllostegia hirsuta	end	E	High		x			
Lamiaceae	Phyllostegia hispida	end	E	High		x	x		
Lamiaceae	Phyllostegia kaalaensis	end	E	High		x			
Lamiaceae	Phyllostegia kahiliensis	end	SOC	High		x			
Lamiaceae	Phyllostegia knudsenii	end	E	High		x			
Lamiaceae	Phyllostegia lantanoides	end		High		x			
Lamiaceae	Phyllostegia macrophylla	end	SOC	High		x	x		
Lamiaceae	Phyllostegia mannii	end	E	High		x			
Lamiaceae	Phyllostegia micrantha	end	SOC	High		x			
Lamiaceae	Phyllostegia mollis	end	E	High	x		x		
Lamiaceae	Phyllostegia parviflora var. glabriuscula	end	E	High		x			
Lamiaceae	Phyllostegia parviflora var. lydgatei	end	E	High		x			
Lamiaceae	Phyllostegia parviflora var. parviflora	end	E	High		x			
Lamiaceae	Phyllostegia pilosa	end	E	High		x	x		
Lamiaceae	Phyllostegia racemosa	end	E	High		x	x		
Lamiaceae	Phyllostegia renovans	end	E	High		x	x		
Lamiaceae	Phyllostegia rockii	end	SOC	High		x			
Lamiaceae	Phyllostegia stachyoides	end	E	High	x		x		
Lamiaceae	Phyllostegia variabilis	end	SOC	High		x			
Lamiaceae	Phyllostegia velutina	end	E	High	x		x		
Lamiaceae	Phyllostegia vestita	end		High		x			
Lamiaceae	Phyllostegia waimeae	end	E	High		x	x		
Lamiaceae	Phyllostegia warshaueri	end	E	High		x			

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Lamiaceae	Phyllostegia wawrana	end	E	High		x	x		
Lamiaceae	Plectranthus parviflorus	ind		High	x		x		
Lamiaceae	Stenogyne angustifolia	end	E	Unknown					
Lamiaceae	Stenogyne bifida	end	E	Unknown					
Lamiaceae	Stenogyne calaminthoides	end		Unknown				x	
Lamiaceae	Stenogyne calycosa	end	SOC	Unknown					
Lamiaceae	Stenogyne campanulata	end	E	Unknown					
Lamiaceae	Stenogyne cinerea	end	SOC	Unknown					
Lamiaceae	Stenogyne cranwelliae	end	E	Unknown					
Lamiaceae	Stenogyne haliakalae	end	SOC	Unknown					
Lamiaceae	Stenogyne kaalae subsp. kaalae	end		Unknown				x	
Lamiaceae	Stenogyne kaalae subsp. sherffii	end	E	Unknown			x		
Lamiaceae	Stenogyne kamehamehae	end		Unknown				x	
Lamiaceae	Stenogyne kanehoana	end	E	Unknown					
Lamiaceae	Stenogyne kauaulaensis	end	E	Unknown					
Lamiaceae	Stenogyne kealiae	end	E	Unknown					
Lamiaceae	Stenogyne macrantha	end	SOC	Unknown					
Lamiaceae	Stenogyne microphylla	end		Unknown				x	
Lamiaceae	Stenogyne oxygona	end	SOC	Unknown					
Lamiaceae	Stenogyne purpurea	end		Unknown				x	
Lamiaceae	Stenogyne rotundifolia	end		Unknown				x	
Lamiaceae	Stenogyne rugosa	end		Unknown				x	
Lamiaceae	Stenogyne scrophularioides	end		Unknown				x	
Lamiaceae	Stenogyne sessilis	end		Unknown				x	
Lamiaceae	Stenogyne viridis	end	SOC	Unknown					
Lamiaceae	Vitex rotundifolia	ind		Medium	x		x		Freeze-sensitive
Lauraceae	Cassytha filiformis	ind		Unknown				x	
Lauraceae	Cryptocarya mannii	end	SOC	Low		x			Recalcitrant
Lauraceae	Cryptocarya oahuensis	end		Low	x				Recalcitrant
Loganiaceae	Labordia cyrtandrae	end	E	Medium	x		x		Freeze-sensitive
Loganiaceae	Labordia degeneri	end		Medium		x			
Loganiaceae	Labordia fagraeoidea	end		Medium		x			
Loganiaceae	Labordia hedyosmifolia	end		Medium		x			
Loganiaceae	Labordia helleri	end	E	Medium		x			
Loganiaceae	Labordia hirtella	end		Medium		x			
Loganiaceae	Labordia hosakana	end	SOC	Medium		x			
Loganiaceae	Labordia kaalae	end	SOC	Medium	x				Freeze-sensitive
Loganiaceae	Labordia lorenciana	end	E	Medium		x	x		
Loganiaceae	Labordia lydgatei	end	E	Medium		x			
Loganiaceae	Labordia pumila	end	E	Medium		x			
Loganiaceae	Labordia sessilis	end		Medium		x			
Loganiaceae	Labordia tinifolia var. lanaiensis	end	E	Medium		x	x		
Loganiaceae	Labordia tinifolia var. tinifolia	end		Medium	x		x		Freeze-sensitive

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Loganiaceae	Labordia tinifolia var. wahiawaensis	end	E	Medium		x			
Loganiaceae	Labordia triflora	end	E	Medium		x	x		
Loganiaceae	Labordia venosa	end		Medium		x			
Loganiaceae	Labordia waialealae	end		Medium		x			
Loganiaceae	Labordia waiolani	end		Medium		x			
Malvaceae	Abutilon eremitopetalum	end	E	High	x		x		
Malvaceae	Abutilon incanum	ind?		High		x	x		
Malvaceae	Abutilon menziesii	end	E	High	x		x		
Malvaceae	Abutilon sandwicense	end	E	High	x				
Malvaceae	Gossypium tomentosum	end	SOC	High	x		x		
Malvaceae	Hibiscadelphus bombycinus	end	SOC	High		x			
Malvaceae	Hibiscadelphus crucibracteatus	end	SOC	High		x			
Malvaceae	Hibiscadelphus distans	end	E	High	x		x		
Malvaceae	Hibiscadelphus giffardianus	end	E	High		x			
Malvaceae	Hibiscadelphus hualalaiensis	end	E	High	x				
Malvaceae	Hibiscadelphus stellatus	end		High		x	x		
Malvaceae	Hibiscadelphus wilderianus	end	SOC	High		x			
Malvaceae	Hibiscadelphus woodii	end	E	High		x			
Malvaceae	Hibiscus arnottianus subsp. arnottianus	end		High		x			
Malvaceae	Hibiscus arnottianus subsp. immaculatus	end	E	High		x	x		
Malvaceae	Hibiscus arnottianus subsp. punaluuensis	end		High		x			
Malvaceae	Hibiscus brackenridgei subsp. brackenridgei	end	E	High	x		x		
Malvaceae	Hibiscus brackenridgei subsp. mokuleianus	end	E	High		x			
Malvaceae	Hibiscus brackenridgei subsp. molokaianus	end	E	High		x			
Malvaceae	Hibiscus clayi	end	E	High		x			
Malvaceae	Hibiscus furcellatus	ind		High	x		x		
Malvaceae	Hibiscus kokio subsp. kokio	end	SOC	High		x			
Malvaceae	Hibiscus kokio subsp. saintjohnianus	end	SOC	High		x			
Malvaceae	Hibiscus tiliaceus	ind?		High		x			
Malvaceae	Hibiscus waimeae subsp. hannerae	end	E	High		x			
Malvaceae	Hibiscus waimeae subsp. waimeae	end		High		x	x		
Malvaceae	Kokia cookei	end	E	High		x			
Malvaceae	Kokia drynarioides	end	E	High	x		x		
Malvaceae	Kokia kauaiensis	end	E	High		x	x		
Malvaceae	Kokia lanceolata	end	SOC	High		x			
Malvaceae	Sida fallax	ind		High	x		x		
Malvaceae	Thespesia populnea	ind?		High	x		x		
Malvaceae	Waltheria indica	ind?		Unknown				x	
Marsileaceae	Marsilea villosa	end	E	Medium	x		x		
Menispermaceae	Cocculus orbiculatus	ind		Unknown				x	
Moraceae	Streblus pendulinus	ind		Unknown				x	
Myrtaceae	Eugenia koolauensis	end	E	Low	x				Recalcitrant
Myrtaceae	Eugenia reinwardtiana	ind		Low		x			Recalcitrant

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Myrtaceae	<i>Metrosideros macropus</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>dieteri</i>	end		High		x			
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>glaberrima</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>incana</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	end		High	x				
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>newellii</i>	end		High	x				
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>polymorpha</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>pseudorugosa</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros polymorpha</i> var. <i>pumila</i>	end		High		x	x		
Myrtaceae	<i>Metrosideros rugosa</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros tremuloides</i>	end		High	x		x		
Myrtaceae	<i>Metrosideros waialealae</i> var. <i>fauriei</i>	end		High		x			
Myrtaceae	<i>Metrosideros waialealae</i> var. <i>waialealae</i>	end		High		x			
Myrtaceae	<i>Syzygium sandwicense</i>	end		Low	x				Recalcitrant
Nyctaginaceae	<i>Boerhavia acutifolia</i>	ind		Unknown				x	
Nyctaginaceae	<i>Boerhavia herbstii</i>	end		Unknown				x	
Nyctaginaceae	<i>Boerhavia repens</i>	ind		Unknown				x	
Nyctaginaceae	<i>Pisonia brunoniana</i>	ind		Low	x				Recalcitrant
Nyctaginaceae	<i>Pisonia grandis</i>	ind		Low		x		x	Recalcitrant
Nyctaginaceae	<i>Pisonia sandwicensis</i>	end		Low		x		x	Recalcitrant
Nyctaginaceae	<i>Pisonia umbellifera</i>	ind		Low		x		x	Recalcitrant
Nyctaginaceae	<i>Pisonia wagneriana</i>	end	SOC	Low		x			Recalcitrant
Oleaceae	<i>Nestegis sandwicensis</i>	end		Low	x				Short-lived
Onagraceae	<i>Ludwigia octovalvis</i>	ind?		Unknown					
Orchidaceae	<i>Anoectochilus sandwicensis</i>	end	SOC	Unknown				x	
Orchidaceae	<i>Liparis hawaiiensis</i>	end	SOC	Medium	x		x		Preliminary results - at least medium term storage refrigerated
Orchidaceae	<i>Platanthera holochila</i>	end	E	Unknown			x		
Oxalidaceae	<i>Oxalis corniculata</i>	ind?		Unknown					
Pandanaceae	<i>Freycinetia arborea</i>	ind		Low	x				Short-lived
Pandanaceae	<i>Pandanus tectorius</i>	ind?		Unknown					
Papaveraceae	<i>Argemone glauca</i> var. <i>decipiens</i>	end		High	x		x		
Papaveraceae	<i>Argemone glauca</i> var. <i>glauca</i>	end		High	x		x		
Pentaphylacaceae	<i>Eurya sandwicensis</i>	end	SOC	Unknown			x		
Phyllanthaceae	<i>Antidesma platyphyllum</i> var. <i>hillebrandii</i>	end		Low		x			Short-lived
Phyllanthaceae	<i>Antidesma platyphyllum</i> var. <i>platyphyllum</i>	end		Low	x				Short-lived
Phyllanthaceae	<i>Antidesma pulvinatum</i>	end		Unknown				x	
Phyllanthaceae	<i>Flueggea neowawraea</i>	end	E	Unknown			x		
Phyllanthaceae	<i>Phyllanthus distichus</i>	end		Unknown				x	
Phytolaccaceae	<i>Phytolacca sandwicensis</i>	end		High	x		x		
Piperaceae	<i>Peperomia alternifolia</i>	end		High		x			
Piperaceae	<i>Peperomia blanda</i> var. <i>floribunda</i>	ind		High	x		x		

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Piperaceae	Peperomia cookiana	end		High		x			
Piperaceae	Peperomia degeneri	end	SOC	High		x			
Piperaceae	Peperomia eekana	end		High		x			
Piperaceae	Peperomia ellipticibacca	end		High		x			
Piperaceae	Peperomia expallescens	end		High		x			
Piperaceae	Peperomia globulanthera	end		High		x			
Piperaceae	Peperomia hesperomannii	end		High		x			
Piperaceae	Peperomia hirtipetiola	end		High		x			
Piperaceae	Peperomia hypoleuca	end		High		x			
Piperaceae	Peperomia kipahuluensis	end		High		x			
Piperaceae	Peperomia kokeana	end		High		x			
Piperaceae	Peperomia latifolia	end		High	x		x		
Piperaceae	Peperomia ligustrina	end		High		x			
Piperaceae	Peperomia macraeana	end		High		x			
Piperaceae	Peperomia mauiensis	end		High		x			
Piperaceae	Peperomia membranacea	end		High	x		x		
Piperaceae	Peperomia oahuensis	end		High		x			
Piperaceae	Peperomia obovatilimba	end		High		x			
Piperaceae	Peperomia remyi	end		High		x			
Piperaceae	Peperomia rockii	end	SOC	High		x			
Piperaceae	Peperomia sandwicensis	end		High		x			
Piperaceae	Peperomia subpetiolata	end	E	High		x			
Piperaceae	Peperomia tetraphylla	ind		High	x		x		
Pittosporaceae	Pittosporum argentifolium	end	SOC	Medium		x			Freeze-sensitive
Pittosporaceae	Pittosporum confertiflorum	end		Medium	x			x	Freeze-sensitive
Pittosporaceae	Pittosporum flocculosum	end		Medium		x		x	Freeze-sensitive
Pittosporaceae	Pittosporum gayanum	end		Medium		x		x	Freeze-sensitive
Pittosporaceae	Pittosporum glabrum	end		Medium		x	x		Freeze-sensitive
Pittosporaceae	Pittosporum halophilum	end	E	Medium		x	x		Freeze-sensitive
Pittosporaceae	Pittosporum hawaiiense	end	E	Medium		x			Freeze-sensitive
Pittosporaceae	Pittosporum hosmeri	end		Medium	x		x		Freeze-sensitive
Pittosporaceae	Pittosporum kauaiense	end		Medium		x		x	Freeze-sensitive
Pittosporaceae	Pittosporum napaliense	end	E	Medium		x			Freeze-sensitive
Pittosporaceae	Pittosporum terminalioides	end		Medium		x		x	Freeze-sensitive
Plantaginaceae	Bacopa monnieri	ind		Unknown				x	
Plantaginaceae	Plantago hawaiiensis	end	E	High		x			
Plantaginaceae	Plantago pachyphylla	end		High		x			
Plantaginaceae	Plantago princeps var. anomala	end	E	High	x		x		
Plantaginaceae	Plantago princeps var. laxiflora	end	E	High	x				
Plantaginaceae	Plantago princeps var. longibracteata	end	E	High	x				
Plantaginaceae	Plantago princeps var. princeps	end	E	High	x		x		
Plumbaginaceae	Plumbago zeylanica	ind		Medium	x			x	Freeze-sensitive

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Poaceae	<i>Agrostis sandwicensis</i>	end		High		x			Family behavior likely
Poaceae	<i>Calamagrostis expansa</i>	end	E	High		x	x		Family behavior likely
Poaceae	<i>Calamagrostis hillebrandii</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Cenchrus agrimonioides</i> var. <i>agrimonioides</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Cenchrus agrimonioides</i> var. <i>laysanensis</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Chrysopogon aciculatus</i>	ind?		High		x			Family behavior likely
Poaceae	<i>Deschampsia nubigena</i>	end		High	x		x		
Poaceae	<i>Dichanthelium cynodon</i>	end		High		x			Family behavior likely
Poaceae	<i>Dichanthelium hillebrandianum</i>	end		High		x			Family behavior likely
Poaceae	<i>Dichanthelium isachnoides</i>	end		High		x			Family behavior likely
Poaceae	<i>Dichanthelium koolauense</i>	end	SOC	High		x			Family behavior likely
Poaceae	<i>Digitaria setigera</i>	ind		High		x			Family behavior likely
Poaceae	<i>Dissochondrus biflorus</i>	end	SOC	High	x		x		
Poaceae	<i>Eragrostis atropioides</i>	end		High	x		x		
Poaceae	<i>Eragrostis deflexa</i>	end	SOC	High	x		x		
Poaceae	<i>Eragrostis fosbergii</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Eragrostis grandis</i>	end		High	x		x		
Poaceae	<i>Eragrostis leptophylla</i>	end		High		x			Family behavior likely
Poaceae	<i>Eragrostis mauiensis</i>	end	SOC	High		x			Family behavior likely
Poaceae	<i>Eragrostis monticola</i>	end		High		x			Family behavior likely
Poaceae	<i>Eragrostis paupera</i>	ind		High		x			Family behavior likely
Poaceae	<i>Eragrostis variabilis</i>	end		High	x		x		
Poaceae	<i>Festuca aloha</i>	end	SOC	High	x				
Poaceae	<i>Festuca hawaiiensis</i>	end?	E	High		x			
Poaceae	<i>Festuca molokaiensis</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Heteropogon contortus</i>	ind?		High		x	x		Family behavior likely
Poaceae	<i>Isachne distichophylla</i>	end		High	x		x		
Poaceae	<i>Isachne pallens</i>	end		High		x			Family behavior likely
Poaceae	<i>Ischaemum byrone</i>	end	E	High		x	x		Family behavior likely
Poaceae	<i>Lachnagrostis filiformis</i>	ind		High		x			Family behavior likely
Poaceae	<i>Lepturus repens</i>	ind		High		x			Family behavior likely
Poaceae	<i>Panicum beecheyi</i>	end		High		x			Family behavior likely
Poaceae	<i>Panicum fauriei</i> var. <i>carteri</i>	end	E	High		x			Family behavior likely
Poaceae	<i>Panicum fauriei</i> var. <i>fauriei</i>	end		High		x			Family behavior likely
Poaceae	<i>Panicum fauriei</i> var. <i>latius</i>	end		High		x			Family behavior likely
Poaceae	<i>Panicum konaense</i>	end		High		x			Family behavior likely
Poaceae	<i>Panicum lineale</i>	end	SOC	High		x			Family behavior likely
Poaceae	<i>Panicum longivaginatam</i>	end	SOC	High		x			Family behavior likely
Poaceae	<i>Panicum nephelophilum</i>	end		High		x	x		Family behavior likely
Poaceae	<i>Panicum niihauense</i>	end	E	High	x		x		
Poaceae	<i>Panicum pellitum</i>	end		High		x			Family behavior likely
Poaceae	<i>Panicum ramosius</i>	end	SOC	High		x			Family behavior likely
Poaceae	<i>Panicum tenuifolium</i>	end		High	x		x		

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Poaceae	Panicum torridum	end		High		x	x		Family behavior likely
Poaceae	Panicum xerophilum	end		High		x			Family behavior likely
Poaceae	Poa mannii Munro ex	end	E	High		x			Family behavior likely
Poaceae	Poa sandvicensis	end	E	High		x			Family behavior likely
Poaceae	Poa siphonoglossa	end	E	High		x			Family behavior likely
Poaceae	Sporobolus virginicus	ind		High		x			Family behavior likely
Poaceae	Trisetum glomeratum	end		High		x			Family behavior likely
Poaceae	Trisetum inaequale	end		High		x			Family behavior likely
Polygonaceae	Rumex albescens	end		High	x		x		
Polygonaceae	Rumex giganteus	end		High	x				
Polygonaceae	Rumex skottsbergii	end		High		x	x		
Portulacaceae	Portulaca lutea	ind		High	x		x		
Portulacaceae	Portulaca molokiniensis	end	SOC	Unknown					
Portulacaceae	Portulaca sclerocarpa	end	E	Unknown					
Portulacaceae	Portulaca villosa	end	E	Unknown			x		
Potamogetonaceae	Potamogeton foliosus	ind?		Unknown					
Potamogetonaceae	Potamogeton nodosus	ind?		Unknown					
Primulaceae	Embelia pacifica	end		Unknown			x		
Primulaceae	Lysimachia daphnoides	end	E	Medium		x	x		Freeze-sensitive
Primulaceae	Lysimachia filifolia	end	E	Medium		x			Freeze-sensitive
Primulaceae	Lysimachia forbesii	end	SOC	Medium		x			Freeze-sensitive
Primulaceae	Lysimachia glutinosa	end		Medium		x			Freeze-sensitive
Primulaceae	Lysimachia hillebrandii	end		Medium	x		x		Freeze-sensitive
Primulaceae	Lysimachia iniki	end	E	Medium		x	x		Freeze-sensitive
Primulaceae	Lysimachia kalalauensis	end		Medium		x			Freeze-sensitive
Primulaceae	Lysimachia lydgatei	end	E	Medium		x	x		Freeze-sensitive
Primulaceae	Lysimachia mauritiana	ind		Medium	x		x		Freeze-sensitive
Primulaceae	Lysimachia maxima	end	E	Medium		x			Freeze-sensitive
Primulaceae	Lysimachia ovoidea	end		Medium		x			
Primulaceae	Lysimachia pendens	end	E	Medium		x			Freeze-sensitive
Primulaceae	Lysimachia remyi	end		Medium		x	x		Freeze-sensitive
Primulaceae	Lysimachia scopulensis	end	E	Medium		x			Freeze-sensitive
Primulaceae	Lysimachia venosa	end	E	Medium		x			Freeze-sensitive
Primulaceae	Myrsine alyxifolia	end		Unknown				x	
Primulaceae	Myrsine degeneri	end		Unknown				x	
Primulaceae	Myrsine denticulata	end		Unknown				x	
Primulaceae	Myrsine fernseei	end		Unknown				x	
Primulaceae	Myrsine fosbergii	end	E	Unknown					
Primulaceae	Myrsine helleri	end	SOC	Unknown					
Primulaceae	Myrsine juddii	end	E	Unknown					
Primulaceae	Myrsine kauaiensis	end		Unknown				x	
Primulaceae	Myrsine knudsenii	end	E	Unknown					
Primulaceae	Myrsine lanaiensis	end		Unknown				x	

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Primulaceae	Myrsine lessertiana	end		High	x		x		
Primulaceae	Myrsine linearifolia	end	T	Unknown					
Primulaceae	Myrsine mezii	end	E	Unknown					
Primulaceae	Myrsine petiolata	end		Unknown				x	
Primulaceae	Myrsine pukooensis	end		Unknown				x	
Primulaceae	Myrsine punctata	end		Unknown				x	
Primulaceae	Myrsine sandwicensis	end		Unknown				x	
Primulaceae	Myrsine vaccinioides	end	E	Unknown					
Primulaceae	Myrsine wawraea	end		Unknown				x	
Ranunculaceae	Ranunculus hawaiiensis	end	E	Unknown			x		
Ranunculaceae	Ranunculus mauiensis	end	E	Unknown			x		
Rhamnaceae	Alphitonia ponderosa	end	SOC	Medium		x	x		
Rhamnaceae	Colubrina asiatica	ind		Medium		x			
Rhamnaceae	Colubrina oppositifolia	end	E	High	x		x		
Rhamnaceae	Gouania hillebrandii	end	E	Medium		x			
Rhamnaceae	Gouania meyenii	end	E	Medium		x	x		
Rhamnaceae	Gouania vitifolia	end	E	Medium		x	x		
Rosaceae	Acaena exigua	end	E	Unknown					
Rosaceae	Fragaria chiloensis subsp. sandwicensis	end	SOC	Unknown				x	
Rosaceae	Osteomeles anthyllidifolia	ind		High	x		x		
Rosaceae	Rubus hawaiiensis	end		Medium	x		x		Preliminary results desiccation-tolerant
Rosaceae	Rubus macraei	end	SOC	Unknown					
Rubiaceae	Bobea brevipes	end		Unknown				x	
Rubiaceae	Bobea elatior	end		Medium	x		x		Freeze-sensitive
Rubiaceae	Bobea sandwicensis	end	SOC	Unknown					
Rubiaceae	Bobea timonioides	end	SOC	Unknown					
Rubiaceae	Coprosma cordicarpa	end		Medium		x	x		Freeze-sensitive
Rubiaceae	Coprosma cymosa	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma elliptica	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma ernodeoides	end		Medium		x		x	Possibly orthodox?
Rubiaceae	Coprosma foliosa	end		Medium	x		x		Freeze-sensitive
Rubiaceae	Coprosma kauensis	end		Medium		x	x		Freeze-sensitive
Rubiaceae	Coprosma kawaikiniensis	end		Medium		x			
Rubiaceae	Coprosma longifolia	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma menziesii	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma montana	end		Medium	x				Freeze-sensitive
Rubiaceae	Coprosma ochracea	end		Medium		x	x		Freeze-sensitive
Rubiaceae	Coprosma pubens	end		Medium		x	x		Freeze-sensitive
Rubiaceae	Coprosma rhynchocarpa	end		Medium	x		x		Freeze-sensitive
Rubiaceae	Coprosma stephanocarpa	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma ternata	end		Medium		x			Freeze-sensitive
Rubiaceae	Coprosma waimeae	end		Medium		x			Freeze-sensitive

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Rubiaceae	<i>Gardenia brighamii</i>	end	E	Medium	x		x		Freeze-sensitive
Rubiaceae	<i>Gardenia mannii</i>	end	E	Medium		x			Freeze-sensitive
Rubiaceae	<i>Gardenia remyi</i>	end	E	Medium		x			Freeze-sensitive
Rubiaceae	<i>Gynochthodes trimera</i>	end	SOC	Unknown			x		
Rubiaceae	<i>Kadua acuminata</i>	end		Medium	x		x		May be freeze-sensitive
Rubiaceae	<i>Kadua affinis</i>	end		Medium	x		x		May be freeze-sensitive
Rubiaceae	<i>Kadua axillaris</i>	end		Unknown				x	
Rubiaceae	<i>Kadua centranthoides</i>	end		Medium	x		x		May be freeze-sensitive
Rubiaceae	<i>Kadua cookiana</i>	end	E	Unknown					
Rubiaceae	<i>Kadua cordata</i> subsp. <i>cordata</i>	end	E	Unknown					
Rubiaceae	<i>Kadua cordata</i> subsp. <i>remyi</i>	end	E	Unknown					
Rubiaceae	<i>Kadua cordata</i> subsp. <i>waimeae</i>	end		Unknown				x	
Rubiaceae	<i>Kadua coriacea</i>	end	E	Unknown				x	
Rubiaceae	<i>Kadua degeneri</i> subsp. <i>coprosmifolia</i>	end	E	High	x				
Rubiaceae	<i>Kadua degeneri</i> subsp. <i>degeneri</i>	end	E	High	x				
Rubiaceae	<i>Kadua elatior</i>	end		Unknown				x	
Rubiaceae	<i>Kadua fluviatilis</i>	end	E	Unknown					
Rubiaceae	<i>Kadua flynnii</i>	end	SOC	Unknown					
Rubiaceae	<i>Kadua foggiana</i>	end		Unknown				x	
Rubiaceae	<i>Kadua foliosa</i>	end	SOC	Unknown					
Rubiaceae	<i>Kadua formosa</i>	end	SOC	Unknown			x		
Rubiaceae	<i>Kadua fosbergii</i>	end		Unknown				x	
Rubiaceae	<i>Kadua haupuensis</i>	end	E	Unknown			x		
Rubiaceae	<i>Kadua knudsenii</i>	end		Unknown				x	
Rubiaceae	<i>Kadua laxiflora</i>	end	E	Unknown			x		
Rubiaceae	<i>Kadua littoralis</i>	end	SOC	High	x		x		
Rubiaceae	<i>Kadua parvula</i>	end	E	High	x		x		
Rubiaceae	<i>Kadua st.-johnii</i>	end	E	Unknown			x		
Rubiaceae	<i>Kadua tryblium</i>	end	SOC	Unknown					
Rubiaceae	<i>Nertera granadensis</i>	ind		Medium	x		x		Freeze-sensitive
Rubiaceae	<i>Psychotria fauriei</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria grandiflora</i>	end	E	Unknown					
Rubiaceae	<i>Psychotria greenwelliae</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hathewayi</i> var. <i>brevipetiolata</i>	end		Unknown			x		
Rubiaceae	<i>Psychotria hathewayi</i> var. <i>hathewayi</i>	end		Unknown			x		
Rubiaceae	<i>Psychotria hawaiiensis</i> var. <i>hawaiiensis</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hawaiiensis</i> var. <i>hillebrandii</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hawaiiensis</i> var. <i>scoriacea</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hexandra</i> subsp. <i>hexandra</i> var. <i>hexandra</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hexandra</i> subsp. <i>hexandra</i> var. <i>hirta</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hexandra</i> subsp. <i>hexandra</i> var. <i>kealiae</i>	end		Unknown				x	
Rubiaceae	<i>Psychotria hexandra</i> subsp. <i>oahuensis</i> var. <i>hosakana</i>	end		Unknown				x	

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Rubiaceae	Psychotria hexandra subsp. oahuensis var. oahuensis	end	E	Unknown					
Rubiaceae	Psychotria hexandra subsp. oahuensis var. rockii	end		Unknown				x	
Rubiaceae	Psychotria hobdyi	end	E	Unknown			x		
Rubiaceae	Psychotria kaduana	end		Medium	x		x		
Rubiaceae	Psychotria mariniana	end		Low	x		x		Short-lived
Rubiaceae	Psychotria mauiensis	end		Unknown				x	
Rubiaceae	Psychotria wawrae	end	SOC	Unknown					
Rubiaceae	Psydrax odorata	ind		Medium	x		x		Freeze-sensitive
Ruppiaceae	Ruppia maritima	ind		Unknown				x	
Rutaceae	Melicope adscendens	end	E	Unknown					
Rutaceae	Melicope anisata	end	E	Unknown					
Rutaceae	Melicope balloui	end		Unknown				x	
Rutaceae	Melicope barbigera	end		Unknown				x	
Rutaceae	Melicope christophersenii	end	E	Unknown					
Rutaceae	Melicope cinerea	end	SOC	Unknown					
Rutaceae	Melicope clusiifolia	end		Medium	x		x		Preliminary results desiccation-tolerant
Rutaceae	Melicope cruciata	end	SOC	Unknown					
Rutaceae	Melicope degeneri	end	E	Unknown					
Rutaceae	Melicope elliptica	end		Unknown				x	
Rutaceae	Melicope feddei	end		Unknown				x	
Rutaceae	Melicope haleakalae	end	SOC	Unknown					
Rutaceae	Melicope haupuensis	end	E	Unknown					
Rutaceae	Melicope hawaiiensis	end	SOC	Medium	x		x		Preliminary results desiccation-tolerant
Rutaceae	Melicope hiiakae	end	E	Unknown					
Rutaceae	Melicope hosakae	end		Unknown				x	
Rutaceae	Melicope kaalaensis	end		Unknown				x	
Rutaceae	Melicope kavaiensis	end		Unknown				x	
Rutaceae	Melicope knudsenii	end	E	Unknown					
Rutaceae	Melicope lydgatei	end	E	Unknown					
Rutaceae	Melicope macropus	end	SOC	Unknown					
Rutaceae	Melicope makahae	end	E	Unknown					
Rutaceae	Melicope molokaiensis	end		Unknown				x	Low viability
Rutaceae	Melicope mucronulata	end	E	Unknown			x		
Rutaceae	Melicope munroi	end	E	Unknown					
Rutaceae	Melicope nealae	end	SOC	Unknown					
Rutaceae	Melicope oahuensis	end		Unknown			x		
Rutaceae	Melicope obovata	end	SOC	Unknown					
Rutaceae	Melicope oppenheimeri	end		Unknown					
Rutaceae	Melicope orbicularis	end		Unknown				x	
Rutaceae	Melicope ovalis	end	E	Unknown					

Family	Taxon Name	Native Status	Federal Status	Storage Rank	Tested	Inferred	Test in Progress	Target for Research	Notes
Rutaceae	Melicope ovata	end		Unknown				x	
Rutaceae	Melicope pallida	end	E	Unknown					
Rutaceae	Melicope paniculata	end	E	Unknown					
Rutaceae	Melicope peduncularis	end		Unknown				x	
Rutaceae	Melicope pseudoanisata	end		Unknown				x	
Rutaceae	Melicope puberula	end	E	Unknown					
Rutaceae	Melicope quadrangularis	end	E	Unknown					
Rutaceae	Melicope radiata	end		Unknown				x	
Rutaceae	Melicope reflexa	end	E	Unknown					
Rutaceae	Melicope rotundifolia	end		Unknown				x	
Rutaceae	Melicope saint-johnii	end	E	Unknown					
Rutaceae	Melicope sandwicensis	end	SOC	Unknown					
Rutaceae	Melicope sessilis	end		Unknown				x	
Rutaceae	Melicope volcanica	end		Unknown			x		
Rutaceae	Melicope waialealae	end		Unknown				x	
Rutaceae	Melicope wailauensis	end	SOC	Unknown					
Rutaceae	Melicope wawraeana	end		Unknown				x	
Rutaceae	Melicope zahlbruckneri	end	E	Unknown					
Rutaceae	Platydesma cornuta var. cornuta	end	E	High	x		x		
Rutaceae	Platydesma cornuta var. decurrens	end	E	High		x			
Rutaceae	Platydesma remyi	end	E	Unknown					
Rutaceae	Platydesma rostrata	end	E	Unknown					
Rutaceae	Platydesma spathulata	end		Unknown			x		
Rutaceae	Zanthoxylum dipetalum var. dipetalum	end	SOC	Unknown				x	
Rutaceae	Zanthoxylum dipetalum var. tomentosum	end	E	Unknown					
Rutaceae	Zanthoxylum hawaiiense	end	E	Unknown			x		Low viability
Rutaceae	Zanthoxylum kauaense	end	SOC	Unknown				x	
Rutaceae	Zanthoxylum oahuense	end	E	Unknown					
Salicaceae	Xylosma crenatum	end	E	Low		x			
Salicaceae	Xylosma hawaiiense	end		Low	x			x	Recalcitrant or short-lived
Santalaceae	Exocarpos gaudichaudii	end	SOC	Unknown				x	
Santalaceae	Exocarpos luteolus	end	E	Unknown			x		
Santalaceae	Exocarpos menziesii	end	E	Unknown					
Santalaceae	Korthalsella complanata	ind		Unknown				x	
Santalaceae	Korthalsella cylindrica	end		Unknown				x	
Santalaceae	Korthalsella degeneri	end	E	Unknown					
Santalaceae	Korthalsella latissima	end		Unknown				x	
Santalaceae	Korthalsella platycaula	ind		Unknown				x	
Santalaceae	Korthalsella remyana	end		Unknown				x	
Santalaceae	Santalum ellipticum	end		Medium	x		x		Freeze-sensitive
Santalaceae	Santalum freycinetianum	end		Medium	x		x		Freeze-sensitive
Santalaceae	Santalum haleakalae var. haleakalae	end	SOC	Medium		x	x		Freeze-sensitive

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Santalaceae	<i>Santalum haleakalae</i> var. <i>lanaiense</i>	end	E	Medium		x	x		Freeze-sensitive
Santalaceae	<i>Santalum involutum</i>	end	E	Medium		x			Freeze-sensitive
Santalaceae	<i>Santalum paniculatum</i> var. <i>paniculatum</i>	end		Medium	x		x		Freeze-sensitive
Santalaceae	<i>Santalum paniculatum</i> var. <i>pilgeri</i>	end		Medium		x			Freeze-sensitive
Santalaceae	<i>Santalum pyrularium</i>	end		Medium		x			Freeze-sensitive
Sapindaceae	<i>Alectryon macrococcus</i> var. <i>auwahiensis</i>	end	E	Low	x				Recalcitrant
Sapindaceae	<i>Alectryon macrococcus</i> var. <i>macrococcus</i>	end	E	Low	x				Recalcitrant
Sapindaceae	<i>Dodonaea viscosa</i>	ind		High	x		x		
Sapindaceae	<i>Sapindus oahuensis</i>	end		Medium	x		x		
Sapindaceae	<i>Sapindus saponaria</i>	ind		High	x		x		
Sapotaceae	<i>Planchonella sandwicensis</i>	end		Low	x		x		Recalcitrant
Sapotaceae	<i>Sideroxylon polynesianum</i>	ind	SOC	Low	x		x		Recalcitrant or short-lived
Scrophulariaceae	<i>Myoporum sandwicense</i>	ind		Medium	x		x		Freeze-sensitive
Scrophulariaceae	<i>Myoporum stellatum</i>	end	SOC	Medium		x	x		Freeze-sensitive
Smilacaceae	<i>Smilax melastomifolia</i>	end		Unknown				x	
Solanaceae	<i>Lycium sandwicense</i>	ind		High	x		x		
Solanaceae	<i>Nothocestrum breviflorum</i>	end	E	Unknown					
Solanaceae	<i>Nothocestrum latifolium</i>	end	E	Unknown				x	
Solanaceae	<i>Nothocestrum peltatum</i>	end	E	Unknown					
Solanaceae	<i>Solanum americanum</i>	ind?		High	x		x		
Solanaceae	<i>Solanum incompletum</i>	end	E	High	x		x		
Solanaceae	<i>Solanum nelsonii</i>	end	E	High	x		x		
Solanaceae	<i>Solanum sandwicense</i>	end	E	High	x		x		
Thymelaeaceae	<i>Wikstroemia bicornuta</i>	end	SOC	Unknown					
Thymelaeaceae	<i>Wikstroemia forbesii</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia furcata</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia hanalei</i>	end	SOC	Unknown					
Thymelaeaceae	<i>Wikstroemia monticola</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia oahuensis</i> var. <i>oahuensis</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia oahuensis</i> var. <i>palustris</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia phillyreifolia</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia pulcherrima</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia sandwicensis</i>	end		Unknown				x	
Thymelaeaceae	<i>Wikstroemia skottsbergiana</i>	end	E	Unknown					
Thymelaeaceae	<i>Wikstroemia uva-ursi</i> var. <i>kauaiensis</i>	end		High		x			
Thymelaeaceae	<i>Wikstroemia uva-ursi</i> var. <i>uva-ursi</i>	end		High	x			x	
Thymelaeaceae	<i>Wikstroemia villosa</i>	end	E	Unknown					
Urticaceae	<i>Boehmeria grandis</i>	end		Medium	x		x		Freeze-sensitive
Urticaceae	<i>Hesperocnide sandwicensis</i>	end		Unknown				x	
Urticaceae	<i>Neraudia angulata</i> var. <i>angulata</i>	end	E	Medium	x				Freeze-sensitive
Urticaceae	<i>Neraudia angulata</i> var. <i>dentata</i>	end	E	Medium	x				Freeze-sensitive

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Urticaceae	Neraudia kauaiensis	end	SOC	Unknown					
Urticaceae	Neraudia melastomifolia	end		Unknown				x	
Urticaceae	Neraudia ovata	end	E	Medium	x		x		May be freeze-sensitive
Urticaceae	Neraudia sericea	end	E	Unknown					
Urticaceae	Pilea peploides	ind		Unknown				x	
Urticaceae	Pipturus albidus	end		Medium	x		x		Freeze-sensitive
Urticaceae	Pipturus forbesii	end		Unknown				x	
Urticaceae	Pipturus kauaiensis	end		Unknown				x	
Urticaceae	Pipturus ruber	end		Unknown				x	
Urticaceae	Touchardia latifolia	end		Medium	x		x		Freeze-sensitive
Urticaceae	Urera glabra	end		Medium	x		x		Freeze-sensitive
Urticaceae	Urera kaalae	end	E	Medium	x		x		Freeze-sensitive
Violaceae	Isodendrion hosakae	end	E	High		x			
Violaceae	Isodendrion laurifolium	end	E	High	x		x		
Violaceae	Isodendrion longifolium	end	T	High		x			
Violaceae	Isodendrion pyrifolium	end	E	High		x	x		
Violaceae	Viola chamissoniana subsp. chamissoniana	end	E	High	x				
Violaceae	Viola chamissoniana subsp. robusta	end		High	x				
Violaceae	Viola chamissoniana subsp. tracheliifolia	end		High	x		x		
Violaceae	Viola helenae	end	E	High		x			
Violaceae	Viola kuaensis var. hosakae	end		High		x			
Violaceae	Viola kuaensis var. kuaensis	end		High		x			
Violaceae	Viola kuaensis var. wahiawaensis	end	E	High		x			
Violaceae	Viola lanaiensis	end	E	High	x		x		
Violaceae	Viola maviensis	end		High		x			
Violaceae	Viola oahuensis	end	E	High		x			
Violaceae	Viola wailenalenae	end		High		x			
Xanthorrhoeaceae	Dianella sandwicensis	ind		Medium	x		x		Freeze-sensitive
Zygophyllaceae	Tribulus cistoides	ind		High	x		x		