2.0 URGENT ACTIONS 3

Army Natural Resource's staff (NRS) are currently working on Urgent Actions 3 (UA3), and transitioning those actions into Year 1 actions. This chapter summarizes the progress made by NRS on UA3 between September 1, 2003 and September 1, 2004.

Achatinella mustelina actions
The MIP snail subcommittee held a meeting on May 12, 2004, and decided that at this time building exclosures around wild populations was not practical. All of the known, large wild populations are in very steep, remote sites and spread out over many acres. The subcommittee also agreed to follow the most recent genetic information, which indicates there are 6 Ecologically Significant Units (ESUs) as opposed to the 8 ESUs originally proposed. Eight populations will be managed, one population from each of the 6 ESUs and two populations from the two large ESUs. Since the May 12th meeting, NRS has visited all of the ESUs to count snails and assess which locations within each ESU are the best for management.

Fences
This year, nine small-scale fences not designated in UA3 were completed around small *in situ* populations of *Delissea subcordata, Schiedea kaalae, Hesperomannia arbuscula, Alsinidendron obovatum* and *Cyanea grimesiana*, and one fence was built around an outplanting of *Phyllostegia kaalaensis*. Of the fifteen small fences designated in UA3, one was constructed, five were not built because the populations have disappeared, two were not built because there was no immediate ungulate threat in the area, and seven were not built because they are on State or private land and permits have not yet been secured (see UA3 table below for details).

Rare plant surveys
The Hawaii Natural Heritage Program (HINHP) finished the UA2 rare plant surveys in June 2004, and are currently working on the Urgent Action 3 surveys. Army NRS has requested that HINHP focus its UA3 survey efforts on populations that are declining, and HINHP is currently surveying to try to find new populations of *Phyllostegia kaalaensis* and *Hesperomannia arbuscula.*

Genetic storage collections
Off-island propagule collections for genetic storage included in UA3 requirements were not undertaken due to changes to the Makua Implementation Plan (MIP) discussed at the March 29, 2004 meeting. Of the 34 UA3 'genetic storage collection' populations on Oahu, 16 populations were collected from. Two of the 34 populations are now gone, and one population was negatively impacted by the July 2003 Makua fire, setting back collection efforts. Air-layers were attempted on three species that produce little viable fruit, *Flueggea neowawraea, Alectryon macrococcus,* and *Hesperomannia arbuscula.* Because UA3 was not fully funded, and NRS was not at full staff, NRS were unable to visit all of 'genetic storage collection' populations this year. The populations that were not collected from are listed in the UA3 table below.

Genetic storage testing
Genetic storage testing is necessary for most species because little is known about seed viability or storage potential in micropropagation or seed storage. Of the 27 plant species in the MIP,

seed storage testing has been conducted on 22 of them at Lyon Arboretum's seed storage facility. Most of the species require further testing. Details on genetic storage testing results are included in Chapter 5: Rare Plant Stabilization Status.

Management as a propagule source
Based on the April 29, 2004 Implementation Team (IT) meeting, 'manage as a propagule source' is no longer a management designation. Populations will be categorized as 'genetic storage collection' or 'manage for stability' for management beginning in Year 1. See Chapter 5 for details on the new management designations of each population unit.

Of the 10 populations included in this category in UA3, six received management this year, two are gone, and two have management changes. See UA3 table below for details.

Management for stability
Populations were designated as 'manage for stability' in UA3 based on threats and the number of individuals in the population. Many of these populations were just a few plants found in highly degraded habitats, and many of the populations had not been monitored for at least several years. Most of the populations were monitored this year, and it was found that fourteen of the 57 populations designated 'manage for stability' in UA3 are now gone. Of the 43 extant populations, 36 (84%) received some level of management other than just monitoring (fence construction, weeding, collections).

Threat control
Threat control actions included weeding around plants in high fire threat areas and maintaining exclosures as pig free. All threat control actions designated in UA3 were conducted this year.

Trigger Action Description	Trigger Action	Taxon	Status
Achatinella mustelina collections/ management actions			
Collect for captive propagation, Achatinella mustelina. Collect from any additional unique ESUs (3).	collect for captive propagation	Achmus	All known and potential Achatinella mustelina sites were surveyed in UA2, and genetic sampling was conducted on snails at all new sites. No new ESUs were found. Therefore, no new collections took place.
Collect for genetic analysis, Achatinella mustelina, 2 populations	collect for genetic analysis	Achmus	No new populations are known. Analysis done on all known populations in UA2.
Genetic analysis for 3 populations, Achatinella mustelina. Includes sampling and genetic testing.	genetic analysis	Achmus	All new populations were sampled in UA2, and no additional populations are known. Therefore no sampling took place.
Survey for manageable populations at new ESUs (3 populations).	surveys	Achmus	There are no new ESUs where surveys could take place.
Construct exclosure, Achatinella mustelina, 2 sites to be identified during UA3.	construct exclosure	Achmus	Based on discussion at the May 12, 2004 snail meeting, exclosures will not be built in the near future. Ungulate fences will be erected at all managed sites and rats controlled.
Manage for stability, Achatinella mustelina. 3 identified populations from UA2 (Kahanahaiki to Pahole, Ohikilolo, Schofield West Range [Haleauau]).	manage for stability	Achmus	The exclosures at Pahole and Kahanahaiki were visited and maintained regularly. Mark-recapture counts were done in June/July 2004. Rat traps and baits were checked and restocked monthly. The West Range ESU (ESU C) was monitored in June 2004, and potential sites were scoped for an ungulate exclosure in either Haleauau or Manuwai.
Manage for stability, Achatinella mustelina, 2 sites from the 8 surveyed sites in UA2. Select sites based on landownership and threats.	manage for stability	Achmus	Based on discussion at the May 12, 2004 snail meeting, exclosures will not be built in the near future until the design can be refined. Ungulate fences will be erected at all managed sites and rats controlled. Sites for ungulate exclosures were scoped in East Makaleha and Puu Hapapa in summer 2004.
Small fence construction			
Small-scale fencing, Alsinidendron obovatum, Keawapilau.	Fence	Alsobo	Wild plants are dead. This area is also inside the State's proposed Kapuna fence.
Small-scale fencing, Alsinidendron obovatum, West Makaleha	Fence	Alsobo	Fence was scoped December 10, 2003. This fence will not be built because the population is not immediately threatened by ungulates. A fence was built around the recently discovered North West Makaleha population where ungulates are a threat.
Small-scale fencing, Cyanea longiflora, Makaha and Waianae Kai.	Fence	Cyalon	Fence scoped November 2003. The fence will be built once a departmental permit is received from the State of Hawaii. The permit is currently in process.
Small-scale fencing, Delissea subcordata, Huliwai.	Fence	Delsub	The area was was surveyed in July 2003 as part of UA2. The plants are gone, therefore no fence will be constructed.
Small-scale fencing, Hesperomannia arbuscula, Waianae Kai.	Fence	Hesarb	A small fence was scoped in spring 2004, and the Genetic Safety Net biologist will build a fence in the near future.
Small-scale fencing, Hesperomannia arbuscula, Makaha.	Fence	Hesarb	A fence was scoped in August 2003. The fence will be constructed once a departmental permit is received from the State of Hawaii. The permit is currently in process.

Trigger Action Description	Trigger Action	Taxon	Status
Small-scale fencing, Hibiscus brackenridgei subsp. mokuleianus, Kaimuhole and Palikea Gulch	Fence	Hibbramok	Plants at three sites. One site was visited in September 2003 and the other sites were visited in April 2004. Fence options will be reconsidered when the Dole MOU is finalized.
Small-scale fencing, Hibiscus brackenridgei subsp. mokuleianus, Kaumoku Nui.	Fence	Hibbramok	Fence options will be reconsidered based on upcoming surveys.
Small-scale fencing, Hibiscus brackenridgei subsp. mokuleianus, Kihakapu.	Fence	Hibbramok	Fence options will be reconsidered based on upcoming surveys.
Small-scale fencing, Neraudia angulata var. angulata, Waianae Kai Mauka.	Fence	Nerang	Small fence scoped on November 12, 2003. Proposed 240 m fence at one location (around 9 plants). Two other potential locations were scoped on November 24, 2003. A larger fence to encompass both sites was scoped in January 2004. A permit application will be submitted to the State for fence construction this year.
Small-scale fencing, Neraudia angulata var. angulata, Waianae Kai Makai.	Fence	Nerang	Fences scoped October 29, 2003. The more mauka location (WAI-B) had 45 mature, 35 juveniles, and 10-30 seedlings. Population seemed stable. One cutting was made, but it was not successful. The more makai location (WAI-D) had lots of goat sign, and only one plant, on a cliff.
Small-scale fencing, Phyllostegia kaalaensis, Palikea Gulch.	Fence	Phykaa	The plants are gone, but there is stock from these plants, which will be used for a Makaha reintroduction.
Small-scale fencing, Phyllostegia kaalaensis, Waianae Kai	Fence	Phykaa	Plants dead. No fence. NRS have stock from this plant.
Small-scale fencing, Plantago princeps var. princeps, Waiawa (Koolaus).	Fence	Plapripri	JL surveyed site 10/22/2003. Not a lot of pig activity in the area, so JL thinks no fence is needed.
Small-scale fencing, Schidea kaalae, South Branch of South Ekahanui.	Fence	Schkaa	Fenced scoped in February 2004. Fence constructed in May 2004.
Rare plant surveys			
Survey for historical populations in E. Makaleha, Makaha (valley bottom) and Pualii, Cenchrus agrimonioides	surveys	Cenagragr	Cenchrus surveys have been conducted.
Resurvey for Ekahanui population, and other potential habitat, Chamaesyce herbstii	surveys	Chaher	The Nature Conservancy has conducted annual surveys in this area and no new plants have been found. Joel Lau has also spent numerous days surveying in South Ekahanui.
Survey for additional individuals along Kamaileunu Ridge, Dubautia herbstobatae	surveys	Dubher	Joel Lau surveyed this location recently and the plants are gone.
Survey for populations of Neraudia angulata (all varieties) prior to initiating in situ management. Reevaluate reintroduction sources if no new populations found.	surveys	Nerang	Waianae Kai Mauka and Makai surveyed in November and December 2003.
Survey for Phyllostegia kaalaensis in the TNC preserve at Honouliuli.	surveys	Phykaa	Surveys scheduled for fall 2004.

Trigger Action Description	Trigger Action	Taxon	Status
Survey at Puu Kanehoa, Sanicula mariversa	surveys	Sanmar	Surveys were conducted in this area in 2002.
Survey for additional populations (includes Koolau sites), Schiedea kaalae	surveys	Schkaa	While working with the GSN biologist, Joel Lau discovered a new population in Kahana in March 2004.
Genetic storage collection			
Alectryon macrococcus, Kapuna. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Alemacmac	No collections have been made.
Alectryon macrococcus, Pahole. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Alemacmac	No collections have been made.
Alectryon macrococcus, Makua. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Alemacmac	Fruit has been collected and plants were reintroduced into Kahanahaiki using stock from this site. Air-layers set up on trees in January 2004, but none of them took.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Cenchrus agrimonioides - Makaha and Waianae Kai.	genetic storage-living collection	Cenagragr	Seeds and cuttings were collected from this population in July 2002 and June 2003.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Chamaesyce celastroides, East Kahanahaiki.	genetic storage-living collection	Chacelkae	Plants burned in the July 2003 fire, and 3 of the tagged plants died. Plants were monitored in July 2004, and inflorescences bagged for seed collection.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Central and East Makaleha	genetic storage-living collection	Fluneo	Two cuttings collected from these trees in February 2004 are in the Army greenhouse.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Mohiakea	genetic storage-living collection	Fluneo	Tree is dead. NRS do not have stock from this tree.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Kauhiuhi	genetic storage-living collection	Fluneo	Air-layers set up on trees in January 2004, and are currently growing in the Army greenhouse.

Trigger Action Description	Trigger Action	Taxon	Status
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Mikilua	genetic storage-living collection	Fluneo	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Nanakuli (south branch	genetic storage-living collection	Fluneo	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea -Halona.	genetic storage-living collection	Fluneo	DP and Julie Rivers from the Navy air-layered the trees in December 2003. Air-layers are currently growing in the Army greenhouse.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Flueggea neowawrea- North Kaluaa	genetic storage-living collection	Fluneo	This plant is dead.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Hedyotis degeneri, Kahanahaiki	genetic storage-living collection	Heddeg	Mature fruit were collected for storage in January 2004.
Hedyotis degeneri, East branch of East Makaleha. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Heddeg	Got representation (cutttings and seeds) from plants in the West Central Makaleha populations (LEH-A and LEH-B) in November 2003, July 2004, and August 2004. Seeds went to storage at Lyon Arboretum and cuttings are being grown at the Army nursery.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Hedyotis parvula, Ohikilolo Mauka	genetic storage-living collection	Hedpar	Seeds collected for storage in 2002 and 2003. Plants were monitored in 2004.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Lipochaeta tenuifolia - Ohikilolo Makai.	genetic storage-living collection	Lipten	Plants from cuttings in the greenhouse, to be used for seed production for storage testing and seed storage.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Neraudia angulata - Puu Kaua.	genetic storage-living collection	Nerang	No collections have been made.

Trigger Action Description	Trigger Action	Taxon	Status
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Neraudia angulata - Halona	genetic storage-living collection	Nerang	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Nototrichium humile - Makua (east rim)	genetic storage-living collection	Nothum	NRS have surveyed the area and this plant has not been found.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Nototrichium humile - Nanakuli.	genetic storage-living collection	Nothum	No colllections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Nototrichium humile - Kolekole (east side)	genetic storage-living collection	Nothum	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Nototrichium humile - Puu Kaua	genetic storage-living collection	Nothum	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Nototrichium humile - Kealia	genetic storage-living collection	Nothum	No collections have been made.
Nototrichium humile - Keawapilau. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Nothum	Cuttings collected in January 2004, and all plants are in storage as living collections at the Army greenhouse.
Plantago princeps princeps - Pahole. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Plapripri	Plants were monitored in June 2004 but no collections were made.
Plantago princeps princeps - Ohikilolo. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Plapripri	Plants visited May 2004 and seeds and cuttings collected for storage.

Trigger Action Description	Trigger Action	Taxon	Status
Plantago princeps princeps - North Branch of North Palawai. Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ).	genetic storage-living collection	Plapripri	JL visited this site in October 2003. No collections were made. Joel Lau found the old Steve Perlman location in December 2003. Most of the plants appeared to be dead, but seeds were collected from the old stalk of one plant.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Pritchardia kaalae, Waianae Kai	genetic storage-living collection	Prikaa	Fruits collected in 2002, young plants are growing in the nursery.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Pritchardia kaalae, Makaha.	genetic storage-living collection	Prikaa	No collections have been made.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Sanicula mariversa - Keaau	genetic storage-living collection	Sanmar	Seeds were collected in June 2003 and June 2004 and sent to Lyon Arboretum for storage.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Schiedea kaalae - Maakua.	genetic storage-living collection	Schkaa	Plants were visited November 24, 2003 and cuttings were collected and are growing in Lyon Arboretum's greenhouse.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Schiedea kaalae - Makaua	genetic storage-living collection	Schkaa	Genetic safety net taxon, Susan Ching has taken cuttings, and plants are growing at Lyon Arboretum.
Collect seeds or cuttings from each individual, to establish representation in living collection (ex situ or inter situ), Tetramolopium filiforme - Puhawai (Puu Kumakalii)	genetic storage-living collection	Tetfil	Cuttings are growing in the greenhouse. Plants are used for seed production for storage.
Collect seeds or cuttings from each individuals to establish representation in living collection (ex situ or inter situ), Viola chamissoniana - Puu Hapapa	genetic storage-living collection	Viochacha	Plants monitored and seeds/cuttings collected in 2002. Cuttings now growing in the greenhouse. It is difficult to acquire seeds from this species. NRS will investigate in vitro storage as an alternative to seed storage.
Genetic storage testing			
Implement seed storage testing, Alectryon macrococcus.	storage testing	Alemacmac	Seeds are very large and would need to be sent to NSSL for testing. Seed collection is difficult because trees are difficult to access and generally don't produce many viable fruits. Seeds were collected in Makaha this year for testing.
Alvin would like to do additional seed storage testing for Cenchrus agrimonioides.	storage testing	Cenagragr	Seeds were collected in October 2000 and May 2004 and taken to Lyon for storage testing.

Trigger Action Description	Trigger Action	Taxon	Status
Implement genetic storage testing, Chamaesyce celastroides kaenana	storage testing	Chacelkae	Some testing has been done. Seeds were collected in November 2001 for storage testing. Immature fruits were bagged in August 2004 for seed collection.
Implement genetic storage testing, Chamaesyce herbstii	storage testing	Chaher	Seeds dehise at maturity, and are very difficult to collect. Seeds were collected in January 2001 for storage testing, and more collection will be attempted this year.
Implement genetic storage testing, Cyanea grimesiana obatae	storage testing	Cyagrioba	Initial germination testing has been conducted using seed collected in December 2000.
Implement genetic storage testing, Cyanea longiflora	storage testing	Cyalon	No storage testing has been done. There are currently many seeds in storage.
Implement genetic storage testing, Cyanea superba superba	storage testing	Cyasupsup	Extensive storage testing has been done. Seeds store well for up to two years. There are currently thousands of seeds in storage.
Implement genetic storage testing, Cyrtandra dentata	storage testing	Cyrden	Seeds were taken to Lyon Arboretum for storage testing in October 2003, March 2004, and July 2004. Seeds store well for at least six months.
Implement genetic storage testing, Dubautia herbstobatae	storage testing	Dubher	Seeds were taken to Lyon Arboretum for storage testing in 1999.
Implement genetic storage testing, Flueggea neowawraea	storage testing	Fluneo	Few trees produce viable fruit, so collecting enough seed for testing is very difficult. Approximately 25 same-aged mature seeds are needed for storage testing. Seeds were collected in 2002 for storage testing.
Collect for and investigate in vitro storage, Hesperomannia arbuscula	storage testing	Hesarb	Seeds were collected in July 2004 and taken to the micropropagation laboratory.
Implement genetic storage testing, Hesperomannia arbuscula	storage testing	Hesarb	Seeds have low viability, so all seeds received have been used for immediate germination testing.
Take approximately 200 seeds of Hibbra to Alvin for seed storage testing	storage testing	Hibbramok	Plants are very prolific seed producers. Germination requires seed scarification. Seeds were taken to Lyon Arboretum for testing in April 2000, and spring 2004.
Implement genetic storage testing if germination technique testing is successful, Lipochaeta tenuifolia	storage testing	Lipten	Seeds were collected for storage testing in 2000, 2001 and 2004. Initial germination rates were low. Plants are currently being grown for seed production for germination testing.
Implement genetic storage testing, Neraudia angulata	storage testing	Nerang	Seeds were collected for storage testing in 2003 and 2004.
Collect Nototrichium humile seeds, up to 800 same-aged mature, to send to AY who will forward them to the Baskins for testing.	storage testing	Nothum	More germination and storage testing needs to be done. Preliminary tests yielded only 1% germination from seeds collected in 2000.
Implement seed storage testing, Phyllostegia kaalaensis	storage testing	Phykaa	Preliminary germination trials were not successful. Plants are currently being grown for seed production for storage testing.
Need to collect seeds for storage testing, Plantago princeps	storage testing	Plapripri	Seeds were collected for storage testing in 2000. More collections and more testing need to be done.
Implement genetic storage testing if current testing inconclusive, Sanicula mariversa.	storage testing	Sanmar	Germination tests have been conducted, but seeds don't germinate well. More tests on seed dormancy need to be done.

Trigger Action Description	Trigger Action	Taxon	Status
Implement genetic storage testing, Schiedea kaalae	storage testing	Schkaa	Some storage testing has been done, but more is needed. Many seeds were collected in 2004 for storage and testing.
Implement genetic storage testing, Schiedea nuttallii	storage testing	Schnut	Many seeds have been collected for storage. Initial germination tests have been done but no storage testing.
Implement genetic storage testing, Viola chamissoniana	storage testing	Viochacha	Seed collection is difficult because plants produce few seeds and are found in remote areas on steep cliffs. Initial seed storage trials have been conducted. NRS will attempt to store tissue in micropropagation.
Management as a propagule source			
Manage as a propagule source, Alectryon macrococcus var. macrococcus, Kahanahaiki.	manage as a propagule source	Alemacmac	This population is in a fence, and weeding is conducted in the area.
Manage as a propagule source, Cyanea grimesiana ssp. obatae, South Kaluaa.	manage as a propagule source	Cyagrioba	A small fence was scoped around the remaining plant in April 2004 and constructed in May 2004.
Manage as a propagule source, Delissea subcordata, Kaawa.	manage as a propagule source	Delsub	Joel Lau surveyed the area in summer 2003 and this population is gone.
Manage as a propagule source, Delissea subcordata, South Mohiakea.	manage as a propagule source	Delsub	Plants in a small fence. Seeds in storage at Lyon Arboretum. Plants monitored in June 2004.
Manage as a propagule source, Delissea subcordata, Palawai.	manage as a propagule source	Delsub	Small fence scoped January 15, 2004, and fence constructed January 22, 2004. Plants monitored April 2004. Fruit collected for storage in July 2004.
Manage as a propagule source, Flueggea neowawraea, Makaha and Waianae Kai.	manage as a propagule source	Fluneo	All six plants were visited and monitored in November 2003. Air-layers were set up on two of the trees, and collected in July 2004.
Manage as a propagule source, Hibiscus brackenridgei subsp. mokuleianus, Kihakapu.	manage as a propagule source	Hibbramok	Joel Lau surveyed the area in April 2004. Many new plants were found, but no collections will be made until it is determined where the 'manage for stability' site will be.
Manage as a propagule source, Schiedea kaalae, Huliwai.	manage as a propagule source	Schkaa	Plants are gone. Joel Lau couldn't find this population and believes it is extirpated. One plant was removed from the wild and is growing in the greenhouse. Seeds are being collected from the greenhouse plant for storage and reintroduction into Kahanahaiki.
Manage as a propagule source, Schiedea kaalae, North Palawai.	manage as a propagule source	Schkaa	Plants are in a fence. Seeds collected for storage in April 2004.
Manage for stability, Viola chamissoniana ssp. chamissoniana, Halona.	manage as a propagule source	Viochacha	More plants were discovered at this site, so it is no longer 'manage for stability' in urgent actions.
Management for stability			
Alsobo, new population in W. Makaleha	manage for stability (baseline)	Alsobo	A small fence was constructed in February 2004. Seeds were collected for storage and greenhouse stock in March 2004. Population is now 21 mature, 12 immature.
Manage for stability, Alsinidendron obovatum, West Makaleha	manage for stability (baseline)	Alsobo	Seeds are in storage at Lyon Arboretum. Seeds will be pulled out of storage and grown in the greenhouse for outplanting in 2005. Plants were monitored and seeds were collected in April 2004.

Trigger Action Description	Trigger Action	Taxon	Status
Manage for stability, Alsinidendron obovatum, Kahanahaiki	manage for stability (baseline)	Alsobo	Wild plants are dead. A reintroduction from wild stock is being maintained instead of managing wild plants. Seeds from the reintroduced plants are in storage.
Manage for stability, Alsinidendron obovatum, Keawapilau	manage for stability (baseline)	Alsobo	Wild plants are dead. Stock collected by Dr. Steve Weller is in storage and propagation.
Manage for stability, Alsinidendron obovatum, Pahole	manage for stability (baseline)	Alsobo	Wild plants are dead. A reintroduction from Pahole stock is being maintained. Some seeds from Pahole are in storage at Lyon Arboretum.
Manage for stability, Chamaesyce herbstii, South Branch of South Ekahanui	manage for stability (baseline)	Chaher	The plants at this site died. If new plants are found in this area, they will be managed.
Manage for stability, Cyanea grimesiana ssp. obatae, Pahole	manage for stability (baseline)	Cyagrioba	This population is in a fence. Talbert collected mature fruit in November 2003 for storage at Lyon Arboretum.
Manage for stability, Cyanea grimesiana ssp. obatae, West Makaleha	manage for stability (baseline)	Cyagrioba	This population is in a fence. Plants monitored in September 2003. Fruit was not collected this year.
Manage for stability, Cyanea grimesiana ssp. obatae, Palikea (South Palawai)	manage for stability (baseline)	Cyagrioba	The population is in a fence. Fruit were collected in 2002 and seeds are in storage at Lyon Arboretum.
Manage for stability, Cyanea grimesiana ssp. obatae, North Branch of South Ekahanui	manage for stability (baseline)	Cyagrioba	The plants at this site are dead. An outplanting of mixed Kaluaa and Ekahanui stock is being maintained in Ekahanui. Fruit will be collected this year from the outplanted individuals.
Manage for stability, Cyanea grimesiana ssp. obatae, Palikea Gulch	manage for stability (baseline)	Cyagrioba	This plant is still immature, so its identity has not been confirmed. It is in a small fence.
Manage for stability, Cyanea longiflora, West Makaleha	manage for stability (baseline)	Cyalon	Fruit collected for storage in July 2003.
Manage for stability, Cyanea longiflora, Makaha and Waianae Kai	manage for stability (baseline)	Cyalon	Fruit was collected in early August 2003, and taken to Lyon Arboretum for seed storage. Two plants from this population burned in late August 2003. A fence was scoped in September 2003 and will be constructed once a permit is obtained. The permit application is currently in process.
Manage for stability, Cyanea superba ssp. superba, Kahanahaiki	manage for stability (baseline)	Cyasupsup	Plants are dead. Outplantings using stock from this population are being maintained in Kahanahaiki.
Manage for stability, Delissea subcordata, Kahanahaiki	manage for stability (baseline)	Delsub	This plant is in a fence, and weeded around. Seeds from this plant are in storage at Lyon Arboretum. The population has been augmented with stock from Kapuna.
Manage for stability, Delissea subcordata, Ekahanui	manage for stability (baseline)	Delsub	Part of this population is in the large Ekahanui fence. Small fences were constructed around the other 4 plants in May 2004.
Manage for stability, Delissea subcordata, Kapuna and Keawapilau	manage for stability (baseline)	Delsub	Known Kapuna plants have all died. Joel Lau discovered a new plant in July 2004.
Manage for stability, Delissea subcordata, Pahole	manage for stability (baseline)	Delsub	This population is in a fence. Talbert monitored this population in June 2003 and collected seeds for storage.
Manage for stability, Delissea subcordata, Kaluaa	manage for stability (baseline)	Delsub	This population is in a fence. Plants were monitored in July 2004.

Trigger Action Description	Trigger Action	Taxon	Status
Manage for stability, Delissea subcordata, Palikea Gulch	manage for stability (baseline)	Delsub	The one plant at this site was monitored July 2003. The other site has not been monitored.
Manage for stability, Delissea subcordata, Huliwai. Includes 2 days botanist time.	manage for stability (baseline)	Delsub	Joel Lau surveyed this site in 2003, and the plants are gone.
Manage for stability, Dubautia herbstobatae, Waianae Kai	manage for stability (baseline)	Dubher	The area was resurveyed in June 2004 and plants were seen. The plants are inaccessible, hundreds of feet from the top and hundreds of feet from the bottom of a vertical cliff. Management or collection would be extremely difficult.
Manage for stability, Dubautia herbstobatae, Kamaileunu.	manage for stability (baseline)	Dubher	Population may be gone, but stock from the wild plant is growing in the Army greenhouse.
Manage for stability, Flueggea neowawraea, Kahanahaiki to Kapuna	manage for stability (baseline)	Fluneo	December 2003, plants were air-layered and insecticide was applied. Air-layers already conducted on one of the plants, cuttings are in the greenhouse. Air-layers were monitored in January 2004 and July 2004.
Manage for stability, Flueggea neowawraea, Mt. Kaala NAR	manage for stability (baseline)	Fluneo	Kaawa tree airlayered January 2004. Cuttings taken in June 2004.
Manage for stability, Flueggea neowawraea, North West Makaleha.	manage for stability (baseline)	Fluneo	Air-layers were set up on this plant in November 2003, but none of the air-layers formed roots.
Manage for stability, Flueggea neowawraea, Ohikilolo (Lower Makua)	manage for stability (baseline)	Fluneo	Air-layers set up on trees in January 2004, but they were attacked by twig borer and died.
Manage for stability, Flueggea neowawraea, West Makaleha	manage for stability (baseline)	Fluneo	Seeds were germinated in micropropagation and many plants are now growing at the Army nursery in Wahiawa. Joel Lau found a new plant at this site in November 2003, and cuttings were collected and air-layers were set up.
Manage for stability, Hesperomannia arbuscula, Kapuna	manage for stability (baseline)	Hesarb	Plants air-layered in April 2004. Area weeded in May 2004.
Manage for stability, Hesperomannia arbuscula, Makaha.	manage for stability (baseline)	Hesarb	Air-layering done by Greg Koob, but none were successful. A fence will be built around this population soon, the permit application is currently in process.
Manage for stability, Hesperomannia arbuscula, North Palawai	manage for stability (baseline)	Hesarb	Joel Lau surveyed area in September 2003 and found a new population. A fence was constructed around the new population in January 2004. The plants were air-layered and the area weeded in April 2004, and seeds were collected in July 2004.
Manage for stability, Hesperomannia arbuscula, Waianae Kai	manage for stability (baseline)	Hesarb	Air-layering done by Greg Koob, and one plant is now growing at the Pahole nursery. A fence will be built around this population by the State of Hawaii.
Manage for stability, Hesperomannia arbuscula, Kaaikukai	manage for stability (baseline)	Hesarb	Joel Lau visited this site in December 2003. The plants are gone.
Manage for stability, Hibiscus brackenridgei subsp. mokuleianus, Makua	manage for stability (baseline)	Hibbramok	Good representation of this population in storage. Plants were monitored in January 2004 and there has been recruitment since last year. Weeding is conducted around this population at least once per quarter.
Maintain Hibiscus brackenridgei subsp. mokuleianus reintroduction, Kaluakauila.	manage for stability	Hibbramok	Some of the plants burned in summer 2003. Outplanting was monitored in February 2004. More plants were outplanted in March 2004.

Trigger Action Description	Trigger Action	Taxon	Status
Manage for stability, Hibiscus brackenridgei subsp. mokuleianus, Haili to Kawaiu.	manage for stability (baseline)	Hibbramok	Joel Lau surveyed the Kealia and Kawaiu sites in April 2004, and cuttings were collected and are now growing in the Army greenhouse.
Manage for stability, Hibiscus brackenridgei subsp. mokuleianus, Kaimuhole and Palikea Gulch.	manage for stability (baseline)	Hibbramok	Joel Lau conducted surveys in the area in April 2004. A site for management still needs to be selected.
Manage for stability, Hibiscus brackenridgei subsp. mokuleianus, Kaumoku Nui.	manage for stability (baseline)	Hibbramok	Joel Lau conducted surveys in the area in April 2004. A site for management still needs to be selected.
Manage for stability, Neraudia angulata var. angulata, Waianae Kai Makai.	manage for stability (baseline)	Nerang	Site visited October 29, 2003. The more mauka location (WAI-B) had 45 mature, 35 juveniles, and 10-30 seedlings. Population seemed stable. One cutting was made. The more makai location had lots of goat sign, and only one plant, on a cliff. Fences were scoped at both locations.
Manage for stability, Neraudia angulata, Manuwai	manage for stability (baseline)	Nerang	Cuttings were collected from these plants in July 2003 and 2 were successful. The site was visited again in June 2004 and cuttings were collected from the two remaining plants.
Manage for stability, Neraudia angulata var. angulata, Waianae Kai Mauka.	manage for stability (baseline)	Nerang	Two populations are known from the area. One was visited in November 2003 and the other in Janauary 2004, and fences were scoped.
Manage for stability, Neraudia angulata var. dentata. Kapuna.	manage for stability (baseline)	Nerang	Plant monitored in January 2004, and weeding was done in the area.
Manage for stability, Phyllostegia kaalaensis, Kapuna.	manage for stability (baseline)	Phykaa	This population is gone.
Manage for stability, Phyllostegia kaalaensis, Keawapilau.	manage for stability (baseline)	Phykaa	This population is gone. A reintroduction was done using stock from this site. The reintroduction fence was built and plants outplanted into the fence in February 2004.
Manage for stability, Phyllostegia kaalaensis, Pahole.	manage for stability (baseline)	Phykaa	The area where the last known plants were seen was surveyed in March 2004. This population is gone. Cuttings are being grown at the Pahole greenhouse, and they will be used to reintroduce plants into the area.
Manage for stability, Phyllostegia kaalaensis, Palikea Gulch.	manage for stability (baseline)	Phykaa	This population is gone, but there is stock at the Army greenhouse.
Manage for stability, Phyllostegia kaalaensis, Waianae Kai.	manage for stability (baseline)	Phykaa	This population is gone, but there is stock at the Army greenhouse.
Manage for stability, Plantago princeps var. princeps, Waiawa.	manage for stability (baseline)	Plapripri	Joel Lau visited this site on October 22, 2003 and counted 16 mature and 17 immature plants and many seedlings. Seeds were collected from 12 plants for storage.
Manage for stability, Sanicular mariversa, Puu Kawiwi.	manage for stability (baseline)	Sanmar	Kawiwi genetic storage plants site visited June 2004, all plants immature so no collections were made. Kamaileunu 'manage for stability' site visited June 2004, seeds collected from 14 plants and sent to Lyon for storage. Fences were scoped at both sites.
Manage for stability, Schiedea kaalae, North Branch of South Ekahanui.	manage for stability (baseline)	Schkaa	Small fence scoped April 2004 and constructed May 2004. Seeds collected for storage in June 2004.
Manage for stability, Schiedea kaalae, South Branch of South Ekahanui.	manage for stability (baseline)	Schkaa	Plants in a small fence.

Trigger Action Description	Trigger Action	Taxon	Status
Manage for stability, Schiedea kaalae, Pahole.	manage for stability (baseline)	Schkaa	Talbert monitored the two remaining plants in spring 2004.
Manage for stability, Schiedea kaalae, North Kaluaa.	manage for stability (baseline)	Schkaa	This population is gone.
Manage new plant found in Mohiakea, Schiedea kaalae.	manage for stability	Schkaa	Seedlings from this plant are in the greenhouse. Small fence constructed around the plant April 2004.
Manage for stability, Schiedea nuttallii, Kahanahaiki.	manage for stability (baseline)	Schnut	Plants monitored March 2004, and cuttings were collected for the Army greenhouse. Seeds were collected for storage in 2002, 2003, and 2004.
Manage for stability, Schiedea nuttallii, Kapuna-Keawapilau Ridge.	manage for stability (baseline)	Schnut	Cuttings were taken in February 2004 and and July 2004 are growing in the Army nursery. Plants were monitored and weeding was conducted in the area in July 2004.
Manage for stability, Schiedea nuttallii, Pahole.	manage for stability (baseline)	Schnut	Weeded around this population March 2004. Plants monitored in July 2004.
Threat management			
Continue weed control around Chamaesyce celastroides var. kaenana, Kaena and Keawaula.	threat control	Chacelkae	Ongoing. Weed control around the Chamaesyce population is conducted monthly.
Continue weed control around Cyanea superba subsp. superba reintroduction, Pahole.	threat control	Cyasupsup	Weed control takes place each quarter.
Continue weed control around Hibiscus brackenridgei subsp. mokuleianus, Lower Ohikilolo.	threat control	Hibbramok	Weeding takes place at least once each quarter.
Control ungulates at Mt Kaala NAR to protect Lipochaeta tenuifolia.	threat control	Lipten	A hunt was conducted in June 2004 and September 2004.
Continue Panicum maximum control at Kaluakauila MU.	threat control	multiple	Grass was sprayed on November 24, 2003. Several attempts to control the grass were made in the spring of 2004 but wet weather prohibited the use of herbicides.
Maintain Kaluakauila exclosure as pig free.	threat control	multiple	Fence damaged by rock falls in early 2004, but the fence has been repaired and is pig free.