Laukahi: The Hawai‘i Plant Conservation Network

Priority	Research Topic	Genus/Species and comments
1	Population Size (surveys)	Many species are presumed extinct-or are down to very low numbers of individuals- but suitable habitat still exists. These areas need to be surveyed before they are totally obliterated by ungulates, weeds, rats, slugs, fire, or erosion. Cyanea spp., Delissea undulata, Tetramolopium capilare, Tetramolopium remyi, Deparia kaalaana, Phyllostegia spp., Stenogyne viridis, Argyroxiphium virescens, Diellia leucostegioidea, Gouania vitifolia (Maui), Mezoneuron kavaiensis (Maui), Isodendrion pyrifolia (Maui)
1		all endangered taxa
1		Alectryon macrococcus var. macrococcus, Bonamia menziesii (Makaleha), Cyanea sp. nov., Cryptocarya mannii, Hesperomannia lydgatei, Isodendrion longifolium, Lobelia sp. nov (Haupu), Myrsine linearifolia, Polyscias bisattenuata, Pteralyxia kauaiensis, Wilkesia hobdyi

1	Population Size (surveys)	Info gathered in 2010 from Recovery plans, 5-year reviews, and Maui nui task force held in 2010. Some information may have already been collected or completed. I didn't have time to check the references. Abutilon sandwicense - around Puu Pane in Waianae Mtns (source Oahu RecPlan [RP]), Acaena exigua - complete search of former habitat (Maui RP), Bonamia menziesii - need to resurvey outside exclosure at Puu o Kali, 1 in exclosure, Canavalia molokaiensis - unknown numbers since fire, need to resurvey all historic locations on Molokai (Maui Nui Task Force meeting - Bakutis), Cenchrus agrimonioides var. laysanensis - Historical locations (no individuals currently known in the wild), Clermontia lindseyana - look similar to CleKak, could be more, need survey Kahikinui - state side, Wailaulau drainage (Maui Nui Task Force - Oppenheimer), Clermontia oblongifolia ssp. mauiensis - Search for East Maui individuals (Huelo to eastern Kaupo at 750-1,110 meters elevation) (Maui RP), Cyanea lobata - Search its former habitat; start in but not limited to, Waikapu Valley, where the species was last seen in 1992; upper Kauaula Valley (western West Maui), Cyanea mceldowneyi - Determine status of Honomanu popln and manage appropriately, Cyanea pinnatifida - Appropriate habitat in historical locations Cyanea profuga - needs survey further east of Kumueli (Maui Nui Task Force - Bakutis & Perlman), Cyanea superba var. regina - Appropriate habitat in historical locations (last seen in 1932), Cyanea truncata - Appropriate habitat in historical locations (no extant wild individuals known), Cyrtandra crenata - Appropriate habitat in historical locations (no extant wild individuals known), Cyrtandra filipes - needs resurvey of Kapuna gulch, Molokai & Kauaula, Maui (Maui nui task force meeting - Oppenheimer & Perlman), Cyrtandra limahuliensis - Detailed surveys to assess the current status of the species, Cyrtandra lydgatei - needs resurvey of Lanaihale & Kauula, north fork (Maui nui task force meeting - Perlman & Oppenheimer), Cyrtandra polyantha - Appropriate habitat in historical locations (Hahaione Valley should also be revisited to determine if the popln still exists, Kadua degeneri var. coprosmifolia - In areas where it is found, Hibiscus waimae spp. hannerae - resurvey Hanakapiai for an accurate count of indivs, Huperzia mannii - At 900-1,525 meters elevation in the Manawainui area, between Kaupo Gap & Kipahulu Valley of HALE, Kokia kauiensis - survey Koaie & Kawaiiki area for

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1	Population Size (surveys)	additional indivs, Melanthera fauriei - Historic locations for current status Cyperus pennatiformis ssp. pennatiformis - Historical locations on Kauai, Oahu and Maui (not observed for several years), Melicope balloui - Northwest Haleakala, where it was first discovered (middle elevation forests), Melicope linearifolia - Survey to determine current status of species Melicope mucronulata - Determine whether three known individuals on Molokai are still there, Melicope ovalis - windward Haleakala, in area where it was first found (mountains above Hana), Panicum niihauense - Historical locations on Niihau and Kauai, Phyllostegia parviflora var. glabriuscula - Historical locations on the island of Hawaii (not observed for several yrs), Portulaca molokiniensis - needs survey, no large plants seen in last 2 yrs on Molokini.

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1	Population Size (surveys)	Solanum nelsonii, Sesbania tomentosum, Portulaca sclerocarpa, Bidens hillebrandiana and other coastal plants. Need more collections and surveys of populations as well as more protection of coastal sites. More emphasis on coastal restoration.
1	Population Size (surveys)	238 PEPP species all need more surveys to locate more
2		Cyanea, Clermontia, Delissea, Brighamia, Lobelia, Trematolobelia
2		All potentially extinct species (i.e. taxon not seen for over 20 years, habitat remains, some hope of discovery remains). PEPP EXTINCT: Argyroxiphium virescens (Maui), Euphorbia remyi var. hanaleiensis (Kauai), Cyanea dolichopoda (Kauai), Cyanea eleeleensis (Kauai), Cyanea kolekoleensis (Kauai), Cyanea kuhihewa (Kauai), Cyperus neokunthianus (Maui), Dubautia kenwoodii (Kauai), Hibiscadelphus woodii (Kauai)., Lobelia dunbariae subsp. dunbariae (Molokai), Melanthera populifolia (Lanai), Melicope quadrangularis (Kauai), Melicope wailauensis (Molokai), Peperomia degeneri (Molokai), Phyllostegia knudsenii (Kauai), Scaevola hobdyi (Maui), Tetramolopium capillare (Maui), Cyanea copelandii subsp. copelandii (Hawaii), Cyanea pycnocarpa (Hawaii), Eragrostis fosbergii (Oahu), Kadua degeneri subsp. coprosmifolia (Oahu), Trematolobelia rockii (Molokai). It would be important to discovery any new founders of species thought to be extinct in the wild: Cyanea grimesiana subsp. grimesiana (Oahu), Cyanea pinnatifida (Oahu), Delissea rhytidosperma (Kauai), Delissea argutidentata (Hawaii), Hibiscadelphus giffardianus (Hawaii), Hibiscadelphus hualalaiensis (Hawaii), Kokia cookei (Molokai), Phyllostegia kaalaensis (Oahu), Phyllostegia parviflora var. lydgatei (Oahu), Schiedea jacobii (Maui), Stenogyne bifida (Molokai), Stenogyne kaalae subsp. sherffii (Oahu), Cyanea superba subsp. superba (Oahu), Silene perlmanii (Oahu), Kadua haupuensis (Kauai). Determining the population sizes is a task that PEPP takes on and has historically been considered by higher education as a management topic ... but if there were other parties conducting surveys as well, we would have a much better idea of the total number of plants within a given species. This will better inform conservation actions.

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2	Population Size (surveys)	Understanding current population size is what is needed with long-term trends in populations in order to make management decisions and to prioritize species. We now potentially have a tool (LiDAR) to detect all individuals of some rare species and this should be done so we know where they are and how many of them are left.: Argyroxiphium kauense, Asplenium peruvianum var. insulare, Bonamia menzisii, Chrysodracon hawaiiensis, Colubrina oppositifolia, Delissea undulata, Haplostachys haplostachya, Hibiscadelphus hualalaiensis, Hibiscus brackenridgei ssp. brackenridgei, Kokia drynarioides, Mezoneuron kavaiense, Neraudia ovata, Nothocestrum breviflorum, Portulaca sclerocarpa, Silene lanceolata, Solanum incompletum, Stenogyne augustifolia, Zanthoxylum dipetalum var. tomentosum, Zanthoxylum hawaiiensis
2		Too many to list
2		For our species the discovery of a single new founder can drastically increase the known population size and available pool of genetic material available for restoration efforts. As we are finding, many areas of our island are very poorly surveyed. Most, or all of our species would benefit from more survey time and access to new, poorly surveyed sites.
3	Population Size (surveys)	It is difficult to manage what you don't monitor but for many organizations we just don't have the capacity to monitor rare plant populations regularly. Understanding when species are doing well or when they are crashing and why is very important to craft strategic management plans.
3		Botanical survey usually results in identifying new populations of listed species. Additional surveys in suitable habitat can help to prioritize which species to work with, some plants may not be as rare as we think they are as additional populations may be out there.
3		Flueggea neowawraea : we still are turning up new locations and more potential habitat can be surveyed. Have had a hard time getting permission from a certain landowner to visit a known tree, thus this tree is unrepresented in collections.
4	Population Size (surveys)	abutilon

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4	Population Size (surveys)	What is the tipping point: what causes, if it is possible to determine, what is that point at which a species starts to decline in an unrecoverable slide downhill (i.e. species that are nearly gone form the wild like gardenia, but do 'ok' in cultivation but are not forming the associations they need. How do we re-create places where they might thrive again in the face of wholesale destruction of lowland and dry land habitats in particular, with the rise of threat by alteration due to changing fire regimes and increased alien species introductions further complicating the matter.
4		Rare plant management is often based on assumptions of numbers of populations and individuals, and work is based on these numbers. Surveys are needed to confirm that these taxa are in fact as rare as is thought, since there are many areas that have not been explored by botanists.
4		N/A, all species
4		In regard to Clepelpel, which is only found in Hilo Forest Reserve, founder discoveries is in need. With 5 founders known, exploration is needed to augment the gene pool! However, access to parts of this vast reserve is difficult and access by helicopter seems the most viable. This is also the same case with Adeper, which is historically known from the Kahaualea NAR, Wao Kele o Puna, and HAVO east rift. This area is alive with active lava flows and therefore access by helicopter is the most viable option to explore the mosaic of kipuka.Clepelpel, Adeper, Cyaspp., All species!
4		Knowing the population size and trend is the basis and rationale for all work on rare and threatened species.
5	Population Size (surveys)	Cyanea maritas, Cyanea copelandii ssp. haleakalae, Phyllostegia brevidens, Phyllostegia bracteata, Sanicula sandwicensis, Hillebrandia sandwicensis, Sicyos cucumerinus