



## Laukahi: The Hawai'i Plant Conservation Network

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Priority	Research Topic	Genus/Species and comments
1	Taxonomy (phylogenetic relationships)	Cyanea, Clermontia, Delissea, Brighamia, Lobelia, Trematolobelia
1	Taxonomy (phylogenetic relationships)	Lobeliads. While my research is focused on using the Hawaiian lobeliads as a model system to study evolution and adaptive radiation. I will share any and all findings with those involved with conservation in any way that they say will be useful.
1	Taxonomy (phylogenetic relationships)	Clarification of the taxonomy for specific taxa will allow us to more accurately plan recovery of a particular species. Cloudy taxonomy can result in incorrect decision-making. <i>Cyrtandra</i> spp. (nature of hybrid swarms) <i>Cyanea platyphylla</i> , <i>Cyanea fernaldii</i> . Recently discovered or questionable spp.: <i>Cyanea</i> sp. nov. (Kauai), <i>Melicope</i> sp. nov. (East Maui), <i>Melicope</i> sp. nov. (West Maui), <i>Pneumatopteris</i> sp. nov. (Maui), <i>Portulaca villosa</i> subsp. nov. (Maui), <i>Pritchardia</i> sp. nov. (Oahu), <i>Tetramolopium</i> sp. nov. (Molokai, Maui), <i>Tetramolopium</i> sp. nov. (Molokai, Maui), <i>Tetramolopium</i> sp. var. nov. (Hawaii), <i>Melicope</i> sp. nov. (Kauai), <i>Stenogyne</i> sp. nov. (Maui), <i>Sesbania</i> sp. nov. (Molokai), <i>Lysimachia</i> sp. nov. (Pohakea, Kauai), <i>Myrsine</i> sp. nov. (Kauai)?, <i>Melicope</i> sp. nov. (aff. <i>barbigera</i> ), <i>Zanthoxylum dipetalum</i> var. nov. (Maui), <i>Eurya</i> sp. nov. (Kauai), <i>Lysimachia</i> sp. nov. (Wainiha, Kauai).
1		<i>Cyanea</i> spp. on Kauai. Many poorly defined or confusing relationships.
1		<i>Cyrtandra</i>
2	Taxonomy (phylogenetic relationships)	<i>Schiedea</i> : This is a basic research topic that I work on, but it is not necessarily what I think is the most important aspect in conservation/restoration biology. It is one important piece of information to consider in conservation/restoration biology.
2		<i>Hibiscus</i>
2		all native taxa
3	Taxonomy (phylogenetic relationships)	<i>Acacia</i>
3		<i>Cyanea</i> sp. nov., <i>Lobelia</i> sp. nov (Haupu)



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3	Taxonomy (phylogenetic relationships)	<p>Hybridization: - confirm putative hybridization between <i>Euphorbia depeana</i> and <i>E. multiformis</i> var. <i>microphylla</i>. - <i>Cyrtandra subumbellata</i> - with other <i>Cyrtandra</i> species, - <i>Melanthera kamolensis</i> - determine hybrid status of Alena pop (source 5-yr review), - <i>Peperomia subpetiolata</i> - Taxonomic issues (only hybrids available, Makawao FR) - no true indivs known, except those found by Joel Lau (source Maui Nui Task Force meeting - Oppenheimer)</p> <p>Taxon issues:- <i>Cyrtandra filipes</i> (sources Maui nui task force meeting - Oppenheimer &amp; Perlman), - <i>Eugenia koolauensis</i> - relationship between <i>Eugenia koolauensis</i> and <i>E. reinwardtiana</i>, -<i>Melicope mucronulata</i> - On East Maui, there may be taxonomic confusion with "lower elevation, less pubescent forms of <i>M. multiflora</i> (= <i>M. knudsenii</i>)" (source 5-yr; Maui RecPlan), -<i>Neraudia angulata</i> - research taxonomic validity of varieties (source 5-yr review), - <i>Phyllostegia mollis</i> - Examine the genetic differences between the Oahu &amp; Maui poplns. The Maui popln may be separated into its own species (source 5-yr; Oahu Rec Plan), - <i>Tetramolopium filiforme</i> - study the genetic &amp; morphological variation within TetFil. Examine tax. validity of the 2 currently recognized varieties (<i>T. f.</i> var <i>filiforme</i> &amp; <i>T. f.</i> var <i>polyphyllum</i>) (source 5-yr rev; Oahu Rec Plan), - <i>Viola chamissoniana</i> spp. <i>chamissoniana</i> - study <i>VioChaCha</i> &amp; <i>VioChaTra</i> w/ respect to their tax. relationship, potential for hybridization, morphological diff, diff in ecological requirements (source 5-yr rev; Oahu Rec Plan)</p> <p>Genetic variability: -<i>Melanthera fauriei</i> - assess genetic variability of extant pops (source 5-yr review), -<i>Lysimachia filifolia</i> - assess genetic variability w/in exant pops, especially diffs betw <i>LysFil</i> &amp; <i>LysRep</i>, &amp; whether they are both valid spp. (source 5-yr review)</p>
5	Taxonomy (phylogenetic relationships)	Flueggea



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5	Taxonomy (phylogenetic relationships)	<ul style="list-style-type: none"> <li>o Pritchardia taxonomy and hybridization issues</li> <li>o Taxonomy of Panicum fauriei var carteri</li> <li>o Sesbania tomentosa – genetics between tree and shrubs</li> <li>o Cyanea in Kipahulu, hybrid issues with C. copelandii and C. hamatiflora</li> <li>o Phyllostegia bracteata and P. brevidens, taxonomy</li> <li>o Clermontia oblongifolia var mauiensis – taxonomic issues</li> <li>o Diversity within and between Marsilea villosa populations</li> <li>o Confirm any true Peperomia subpetiolata remaining</li> <li>o Brighamia wild vs cultivated</li> <li>o Diellia Assess genetics of populations and level of hybridization</li> <li>o Plantago princeps - Assess genetics of all varieties, may be more than 4, or additional species</li> <li>o CleObIMau Determine whether this is a valid species or just a hybrid - if hybrid, no longer would require PEP attention</li> <li>o SteKan Genetic assessment to determine number of clones in wild and cultivation</li> <li>o Genetics and its link to demography               <ul style="list-style-type: none"> <li>• Ochrosia species- differences on Oahu and Molokai; some key out to O. haleakalae</li> <li>• Carex wahuensis ssp. herbstii – taxonomic problems</li> <li>• DNA work on Delissea rhytidosperra to determine differences with D. kauaiensis</li> </ul> </li> </ul> <p>Hybridization within Cyrtandra species - swamping rare species?</p> <p>This area was kind of a catch-all</p>
5		<p>Genetic testing for sorting out species would help us to manage populations. There are many collections that are not definitively identified and it would be helpful to understand what their relationships are. For example work on Lobeliads placed Clermontia peleana singuliflora not as a subspecies of peleana but a separate species, and Clermontia pyrularia turned out to be more closely aligned with Cyanea. Genera which could use some work are Cyanea, Clermontia, Cyrtandra, and Phyllostegia.</p>