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Hawai'i Wet Cliff and Ridge Crest Shrubland

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Modelers		Reviewers	
Darren Johnson	darren_johnson@tnc.org		
Sam Gon III	sgon@tnc.org		
Jim Jacobi	jim_jacobi@usgs.gov		

Vegetation Type

Shrubland

Map Zones

79

Geographic Range

This system occurs between 200-900m (650-2,950ft) elevation on Kaua'i, O'ahu, Moloka'i, Lana'i, Maui, and Hawai'i.

Biophysical Site Description

This system occupies crests of steep ridges and cliff faces throughout the main Hawai'ian Islands. These environments are characterized by regularly windy and usually foggy and wet conditions. Soils are generally thin over soft, highly weathered rock and thin mucky clays.

Vegetation Description

Vegetation is windswept and variable, ranging from dense dwarf shrublands, to dominant sedges with few scattered shrubs, to sparse rock with very little plant life. Dwarf-shrubs are 1-3m in height, are clothed with masses of epiphytic cryptogams, and have a diverse array of native shrubs, vines, herbs and ferns. Woody plants become so stunted in some sites that sedges and ferns form a continuous canopy with them. Dominant species vary according to island and abiotic factors but may include wind-stunted *Metrosideros*, *Cibotium*, *Melicope*, *Myrsine*, and *Vaccinium*. Other species include *Asplenium* spp., *Astelia menziesiana*, *Bidens* spp., *Broussaisia arguta*, *Cyrtandra* spp., *Diplopterygium pinnatum*, *Dicranopteris linearis*, *Dubautia* spp., *Eurya sandwicensis*, *Freycinetia arborea*, *Hedyotis terminalis*, *Lycopodiella cernua*, *Lobelia* spp., *Machaerina angustifolia*, *Peperomia* spp., *Phyllostegia* spp., *Scaevola* spp., *Sadleria pallida*, *Sadleria squarosa*, *Tetraplasandra* spp., *Trematolobelia* spp., and several rare endemic species.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
MEPO5	<i>Metrosideros polymorpha</i>	'ohi'a lehua
BRAR6	<i>Broussaisia arguta</i>	Kanawao
GUPE	<i>Gunnera petaloidea</i>	Haha
DIPI3	<i>Diplopterygium pinnatum</i>	Scrambling fern
DILI	<i>Dicranopteris linearis</i>	Old world forkedfern
VARE	<i>Vaccinium reticulatum</i>	Ohelo 'ai
FRAR	<i>Freycinetia arborea</i>	'ie'ie

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Landslides occur occasionally in this system, uncovering bare mineral soils, which are colonized by pioneer species such as *Metrosideros*, *Dicranopteris*, and other ruderal natives.

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement				
Moderate (Mixed)				
Low (Surface)				
All Fires				

Scale Description

Issues or Problems

Native Uncharacteristic Conditions

Additional modelers include: Wayne Ching (wayne.f.ching@hawaii.gov); Andrew Beavers (Andrew.Beavers@ColoState.EDU); Richard Nezelek (rnezelek@pdc.org); Glenn Shishido (Glenn.N.Shishido@hawaii.gov); Ron Cannarella (Ronald.J.Cannarella@hawaii.gov); Dawn Greenlee (Dawn.Greenlee@fws.gov); and Keith Schulz (keith_schulz@naturereserve.org)

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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
MEPO5	<i>Metrosideros polymorpha</i>	'ohi'a lehua	Upper
DILI	<i>Dicranopteris linearis</i>	Old world forkedfern	Upper
VARE	<i>Vaccinium reticulatum</i>	Ohelo 'ai	Upper
CIGL	<i>Cibotium glaucum</i>	Hapu'u	Upper

Description

The climax mix of dense ferns, shrubs, and wind-stunted trees includes dwarf-shrubs 1-3m in height, clothed with masses of epiphytic cryptogams and a diverse array of native shrubs, vines, herbs, and ferns. Dominant species vary according to island and abiotic factors but may include wind-stunted *Metrosideros*, *Cibotium*, *Melicope*, *Myrsine*, and *Vaccinium*. Other species include *Asplenium* spp., *Astelia menziesiana*, *Bidens* spp., *Broussaisia arguta*, *Cyrtandra* spp., *Diplopterygium pinnatum*, *Dicranopteris linearis*, *Dubautia* spp., *Eurya sandwicensis*, *Freycinetia arborea*, *Gunnera* sp., *Hedyotis terminalis*, *Lobelia* spp., *Lycopodiella cernua*, *Trematolobelia* spp., *Machaerina angustifolia*, *Myrsine* spp., *Peperomia* spp., *Phyllostegia* spp., *Scaevola* spp., *Sadleria pallida*, *Styphelia tameiameia*, *Tetraplasandra* spp., *Trematolobelia* spp., and several rare endemic species.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:OPN	0	Mid1:CLS	10
Mid1:CLS	11	Late1:CLS	30
Late1:CLS	31	Late1:CLS	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Optional 1	Early1:OPN	Early1:OPN	0.004	250	No	0
Optional 1	Mid1:CLS	Early1:OPN	0.004	250	Yes	0
Optional 1	Late1:CLS	Early1:OPN	0.01	100	Yes	0

Optional Disturbances

Optional 1: landslide

References

Gagne, W.C., and L.W. Cuddihy. 1990. Vegetation. Pages 45-114 in: W.L. Wagner, D.R. Herbst, and S.H. Sohmer, editors. Manual of the Flowering Plants of Hawaii. 2 Volumes. University of Hawaii Press, Honolulu.

Mueller-Dombois, D., and F. R. Fosberg. 1998. Vegetation of the tropical Pacific islands. Springer-Verlag, New York. 733 pp.

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.0. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: September 3, 2008).

Price, J.P., S.M. Gon III, J.D. Jacobi, and D. Matsuwaki. 2007. Mapping plant species ranges in the Hawaiian Islands: Developing a methodology and associated GIS layers. Hawai'i Cooperative Studies Unit. Technical Report HCSU-008. Pacific Aquaculture and Coastal Resources Center (PACRC), University of Hawai'i, Hilo. 58 pp., includes 16 figures and 6 tables.

Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the flowering plants of Hawaii. Revised edition. Volumes 1 and 2. University of Hawaii Press and Bishop Museum Press, Honolulu. 1919 pp.

Western Ecology Working Group of NatureServe. No date. International Ecological Classification Standard: International Vegetation Classification. Terrestrial Vegetation. NatureServe, Boulder, CO.