

18250

Hawai'i Dry Cliff

BpS Model/Description Version: Aug. 2020

Update: 6/5/2018

Modelers		Reviewers	
Jim Jacobi	jim_jacobi@usgs.gov		
Dawn Greenlee	Dawn_Greenlee@fws.gov		
Sam Gon III	sgon@tnc.org		

Vegetation Type

Shrubland

Map Zones

79

Geographic Range

This ecological system occurs on the larger Hawai'ian Islands on dry cliffs away from the direct influence of the shoreline.

Biophysical Site Description

This ecological system occurs on dry cliffs away from the direct influence of the shoreline (surf, wind and salt spray) on the larger islands extending up to montane and subalpine slopes on Maui and Hawai'i from 15-3,000m (50-9,835ft) elevation. This lowland to montane dry cliff ecological system occurs over a broad moisture range within the arid, very dry, and moderately dry zones (zones 1, 2, and 3) of the seven moisture zones developed for the Hawai'ian Islands by Price et al. (2007). Stands occur on the leeward sides of islands in the rain shadows. Annual rainfall is generally low 500-1,500 mm. Substrates include sandy loam soils derived from cinder, volcanic ash, and weathered basaltic lava with little soil development. Many sites are wind exposed.

Vegetation Description

Vegetation is variable but is generally sparse composed of an open shrub or herbaceous layer and restricted to ledges or less steep slopes. Common grass and fern species include *Heteropogon contortus*, *Dechampsia nubigena*, *Peperomia tetraphylla*, *Plectranthus parviflorus*, *Trisetum glomeratum*, and shrubs such as *Artemisia mauiensis*, *Chamaesyce celastroides*, and *Psydrax oderata* (Mueller-Dombois and Fosberg 1998). Stands are often weedy being invaded by several introduced species such as *Rhynchelytrum (melinis) repens*, *Lantana camara*, *Leucaena leucocephala*, *Acacia farnesiana*, and *Prosopis pallida*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
HECO10	<i>Heteropogon contortus</i>	Tanglehead
PETE8	<i>Peperomia tetraphylla</i>	Acorn peperomia
PLPA3	<i>Plectranthus parviflorus</i>	Little spurflower
TRGL3	<i>Trisetum glomeratum</i>	Pili uka
ARAU3	<i>Artemisia australis</i>	Oahu wormwood
CHCE	<i>Chamaesyce celastroides</i>	'ekoko
LEBI	<i>Lepidium bidentatum</i>	Kunana pepperwort

TEFI2	<i>Tetramolopium filiforme</i>	Ridgetop tetramolopium
-------	--------------------------------	------------------------

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

Disturbance Description

Landslides and fire are the primary disturbances that occur in this system. Mixed-severity fire burns infrequently because of pili grass presence, but does not really affect structure & composition.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement				
Moderate (Mixed)	533	100		
Low (Surface)				
All Fires	533	100		

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

Adjacency or Identification Concerns

Issues or Problems

Native Uncharacteristic Conditions

Comments

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	A	A	A	A	A	A	A	A	A	A
Shrub	0.5-1.0	B	B	B	B	B	B	B	B	B	B
Shrub	1.0-3.0	B	B	B	B	B	B	B	B	B	B
Shrub	>3.0	B	B	B	B	B	B	B	B	B	B
Tree	0-5	B	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	5-10	B	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	10-25	B	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	25-50	B	UN	UN	UN	UN	UN	UN	UN	UN	UN
Tree	>50	B	UN	UN	UN	UN	UN	UN	UN	UN	UN

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start	Years Since Last Disturbance
------------------	-----------------------	---------------------	-------------------------	-----------------------	------------------------------	------------------------------

					Age After Disturbance?	
Optional 1	Early1:ALL	Early1:ALL	0.002	500	No	0
Optional 1	Late1:OPN	Early1:ALL	0.001	1000	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.002	500	No	0

Optional Disturbances

Optional 1: Landslides

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.

Gon, S. M., III, and the Hawai'i Natural Heritage Program. 2006. Hawaiian Natural Community Classification. Database and summary descriptions of native natural communities of the Hawaiian Islands. Files archived at The Nature Conservancy of Hawai'i and The University of Hawai'i Center for Conservation Research and Training, 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.

Shaw, R. B., and J. M. Castillo. 1997. Plant communities of Pohakuloa Training Area, Hawaii. Center for Ecological Management of Military Lands. Department of Forest Sciences. Colorado State University. Fort Collins.

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.