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Hawai'i Lowland Mesic Shrubland

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Vegetation Type

Shrubland

Map Zones

79

Geographic Range

This system occurs on all of the main islands except Ni'ihau and Kaho'olawe.

Biophysical Site Description

Dry lowland shrublands occur mostly on the leeward side of all the main islands except Ni'ihau and Kaho'olawe, and are found between 10-1,000m in elevation. These shrublands are generally less than two meter in height. These shrublands occur on open gentle slopes to steep ridges of dissected slopes. Rainfall is 500-1,500mm, mostly restricted to the winter months, with summers hot and dry. Soils vary from silty loams to relatively unweathered pāhoehoe lava. This lowland ecological system occurs over a broad moisture range within the arid, very dry, moderately dry, and seasonally mesic zones (zones 1, 2, 3 and 4) of the seven moisture zones developed for the Hawai'ian Islands by Price et al. (2007).

Vegetation Description

Vegetation has an open to closed canopy, up to 3m (10ft) in height, with varying herbaceous undergrowth. Gagne and Cuddihy (1990) recognize five native communities: Ōhi'a (*Metrosideros polymorpha*) Shrubland, Pūkiawe/'A'ali'i (*Styphelia/Dodoneae*) Shrubland, 'Ūlei (*Osteomeles*) Shrubland, Nehe (*Lipochaeta*) Shrubland and Iliau (*Wilkesia*) Shrubland. Constituents include *Dicranopteris*, *Metrosideros*, *Dodoneae*, *Styphelia*, *Vaccinium*, *Osteomeles*, *Sphenomeris*, *Korthalsella*, *Cocculus*, *Chamaesyce* spp., *Scaevola gaudichaudiana*, *S. gaudichaudii*, *Cladonia* (lichen), *Pittosporum* spp., *Dianella*, *Carex*, *Gahnia*, *Luzula*, *Lobelia yuccoides*, *Sadleria*, *Wikstroemia*, and *Eragrostis variabilis*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
MEPO5	<i>Metrosideros polymorpha</i>	'ohi'a lehua
STTA	<i>Styphelia tameiameia</i>	Pukiawe
OSAN	<i>Osteomeles anthyllidifolia</i>	Hawai'i hawthorn
LIPOC2	<i>Lipochaeta</i>	Nehe
WIKST	<i>Wikstroemia</i>	False ohelo
SCGA2	<i>Scaevola gaudichaudiana</i>	Mountain naupaka
LOYU	<i>Lobelia yuccoides</i>	Panaunau

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

Disturbance Description

Fire from lava or other sources, but not frequent, due to mesic setting, except during drought periods. Not a zone often used by Hawaiians for pili grass production (too moist), nor used for agriculture.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement				
Moderate (Mixed)	51	100		
Low (Surface)				
All Fires	51	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

Occupies a large band below mesic forest and above lowland dry systems.

Adjacency or Identification Concerns

Adjacent to dry shrubland, lowland mesic forest.

Issues or Problems

Native Uncharacteristic Conditions

Trees when they occur seldom, if ever, exceed 25% canopy closure.

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	B	B	B	B	B	C	C	C
Shrub	0.5-1.0	A	A	B	B	B	B	B	C	C	C
Shrub	1.0-3.0	A	A	B	B	B	B	B	C	C	C
Shrub	>3.0	A	A	B	B	B	B	B	C	C	C
Tree	0-5	C	C	C	UN	UN	UN	UN	UN	UN	UN
Tree	5-10	C	C	C	UN	UN	UN	UN	UN	UN	UN
Tree	10-25	C	C	C	UN	UN	UN	UN	UN	UN	UN
Tree	25-50	C	C	C	UN	UN	UN	UN	UN	UN	UN
Tree	>50	C	C	C	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

Description

Indicator Species

Description

Maximum Tree Size Class

Indicator Species

Description

Maximum Tree Size Class

Class C	82	Late Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
MEPO5	<i>Metrosideros polymorpha</i>	'ohi'a lehua	Upper
STTA	<i>Styphelia tameiameia</i>	Pukiawe	Upper
DOVI	<i>Dodonaea viscosa</i>	Florida hopbush	Upper
OSAN	<i>Osteomeles anthyllidifolia</i>	Hawai'i hawthorn	Upper

Description

Closed shrubland with grasses and forbs not prominent, some scattered trees, especially on boundary with adjacent lowland forest types; grass cover typically <10%.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:OPN	0	Mid1:CLS	20
Mid1:CLS	21	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	0.001	1000	No	0
Optional 1	Mid1:CLS	Early1:OPN	0.001	1000	Yes	0
Mixed Fire	Mid1:CLS	Mid1:CLS	0.02	50	No	0
Optional 1	Late1:CLS	Early1:OPN	0.001	1000	Yes	0
Mixed Fire	Late1:CLS	Mid1:CLS	0.02	50	Yes	0

Optional Disturbances

Optional 1: Lava Flows

References

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