18270

Hawai'i Wet-Mesic Coastal Strand

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Shrubland

Map Zones

79

Geographic Range

This ecological system occurs along the coastline and the zone immediately back of it on the windward sides of the larger Hawai'ian Islands except Kaho'olawe and Lanai. Stands are restricted to seasonally mesic to wet shoreline and the zone immediately back of it.

Biophysical Site Description

Stands are restricted to seasonally mesic to wet shoreline and the zone immediately back of it. These are dry rocky, cobbly and talus shorelines, on the smaller islands and the leeward side of the larger islands that receive <1,200mm precipitation a year. Substrates are variable and include a mix of sand, cobble and/or bedrock. Elevation is generally below 30m. Annual precipitation ranges from more than 3,500mm to 1,200mm on seasonally mesic sites. Topography ranges from flat rocky beaches, dry alluvium, to talus and eroding weathered basalt slopes.

Vegetation Description

This habitat is driven by its proximity to the sea, with wind and salt spray and loose broken rocky and often unstable unconsolidated substrates. The vegetation is sparse to patchy. Native species that may be locally dominant include *Scaevola sericea*, *Myroporum sandwicense,* and others. Lower rocky shores above the waves but still within the reach of the spray may have a depressed scrub of *Scaevola taccada* and locally *Santalum elliptium,* with *Sesuvium portulacastrum* and *Fimbristylis cymosa* forming patches and tufts in bare areas. On slopes of tuff or disintegrating lava, *Jaquemontia ovalifolia*, *Sida fallax*, *Boerhavia acutifolia*, *B. repens,* and *Fimbristylis cymosa* are common.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| SCSE6 | *Scaevola sericea* | Beach naupaka |
| PESA6 | *Peucedanum sandwicense* | Makou |
| LIIN4 | *Lipochaeta integrifolia* | Kure atoll nehe |
| SPVI3 | *Sporobolus virginicus* | Seashore dropseed |
| MYSA | *Myoporum sandwicense* | Naio |
| SEPO2 | *Sesuvium portulacastrum* | Shoreline seapurslane |
| JAOV2 | *Jacquemontia ovalifolia* | Oval-leaf clustervine |
| LISU7 | *Lipochaeta succulenta* | Seaside nehe |

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

Disturbance Description

Primary disturbances include landslides, wind, salt spray, storm surge (major disturbance), salt to soils. Storm surges can scour soil off to bare lava/rock (box A), or can partially remove/kill vegetation and leave the bit of soil, and hence have more rapid recovery of the vegetation (box B).

Fire Frequency

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

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

This system forms a narrow linear zone along the coast; likely not able to be mapped for LANDFIRE.

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 | B | B | B | B | B | B | B | B | B | B |
| Herb | >1.0 | B | B | B | B | B | B | B | B | B | B |
| Shrub | 0-0.5 | C | C | C | C | C | C | C | C | C | C |
| Shrub | 0.5-1.0 | C | C | C | C | C | C | C | C | C | C |
| Shrub | 1.0-3.0 | C | C | C | C | C | C | C | C | C | C |
| Shrub | >3.0 | C | C | C | C | C | C | C | C | C | C |
| Tree | 0-5 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | C | 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 broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 5 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SCSE6 | Scaevola sericea | Beach naupaka | Upper |
| IPPE | Ipomoea pes-caprae | Bayhops | Upper |
| FIDI | Fimbristylis dichotoma | Forked fimbry | Upper |

Description

Post lava flow hitting the coast, veg is barren/sparse early successional.

*Maximum Tree Size Class*  
None

Class B 15 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CAMO15 | Canavalia molokaiensis | Molokai jackbean | Upper |
| LISU7 | Lipochaeta succulenta | Seaside nehe | Upper |
| LYMA4 | Lysimachia mauritiana | Spoonleaf yellow loosestrife | Upper |

Description

Post lava flow hitting the coast, veg is barren/sparse early successional.

*Maximum Tree Size Class*  
None

Class C 80 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PESA6 | Peucedanum sandwicense | Makou | Upper |
| BIMO | Bidens molokaiensis | Molokai beggarticks | Upper |
| ISBY | Ischaemum byrone | Hilo murainagrass | Lower |
| FIDI | Fimbristylis dichotoma | Forked fimbry | Upper |

Description

On all substrates sand, cobble, rock, etc. Vegetation is more developed but still open shrubby/herbaceous.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 10 |
| Mid1:OPN | 11 | Late1:OPN | 20 |
| Late1:OPN | 21 | Late1:OPN | 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:ALL | Early1:ALL | 0.001 | 1000 | No | 0 |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.05 | 20 | No | 0 |
| Optional 1 | Mid1:OPN | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Optional 2 | Mid1:OPN | Mid1:OPN | 0.004 | 250 | No | 0 |
| Wind or Weather or Stress | Mid1:OPN | Mid1:OPN | 0.01 | 100 | No | 0 |
| Optional 1 | Late1:OPN | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Optional 2 | Late1:OPN | Mid1:OPN | 0.004 | 250 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Mid1:OPN | 0.01 | 100 | Yes | 0 |

Optional Disturbances

Optional 1: Lava Flows

Optional 2: Landslides

References

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