18200

Hawai'i Lowland Mesic Grassland

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Herbaceous

Map Zones

79

Geographic Range

This ecological system occurs on Kaua'i, O'ahu, Moloka'i and Maui islands of Hawai'i. Lihau, Launiupoko.

Biophysical Site Description

Lowland Mesic grasslands can be found on most of the islands from 300-2,000m (1,000-6,500ft). This lowland ecological system occurs over a broad moisture range within the moderately dry and seasonally mesic zones (zones 3 and 4) of the seven moisture zones developed for the Hawai'ian Islands by Price et al. (2007). Annual rainfall is 150-1,000mm (6-40in) which falls mostly from November to March. Soils are generally shallow. On the younger islands it can occur on young pāhoehoe that is beginning to form a thin mantel of soil.

Vegetation Description

These communities are floristically poor, dominated by *Eragrostis variablis*, on moderate to steep slopes of Kaua'i, O'ahu, Moloka'i, and Maui. These grasslands form a near continuous dense ground cover, ~1.2m (1.5 feet) tall, that may extend down slope to coastal dry slopes. Associated species include *Metrosideros tremuloides*, *Bidens* spp., *Dodonaea viscosa*, and *Gouania hillebrandii*. Most examples of this system have been invaded by alien species. Lowland Mesic Grasslands grade into mesic shrublands and Forests where *Metrosideros polymorpha* is frequently a dominant species.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| ERVA | *Eragrostis variabilis* | Kawelu |
| METR5 | *Metrosideros tremuloides* | Lehua 'ahihi |
| DOVI | *Dodonaea viscosa* | Florida hopbush |
| GOHI2 | *Gouania hillebrandii* | Hairyfruit chewstick |
| MEPO5 | *Metrosideros polymorpha* | 'ohi'a lehua |
| BIDEN | *Bidens* | Beggarticks |

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

Disturbance Description

The primary disturbance factors in this system are landslides and surface fires.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement |  |  |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 60 | 100 |  |  |
| All Fires | 60 | 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

Lowland Mesic Grasslands grade into mesic shrublands and Forests where *Metrosideros polymorpha* is frequently a dominant species.

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 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| 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 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 17 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ERVA | Eragrostis variabilis | Kawelu | Lower |

Description

Grassy recovery post land slide, little to no shrubs.

*Maximum Tree Size Class*  
None

Class B 83 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ERVA | Eragrostis variabilis | Kawelu | Mid-Upper |

Description

Grass dominated; little to no shrubs.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 50 |
| Mid1:OPN | 51 | Mid1: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 | 0.004 | 250 | No | 0 |
| Optional 1 | Mid1:OPN | Early1:ALL | 0.004 | 250 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.02 | 50 | No | 0 |

Optional Disturbances

Optional 1: Land Slides

References

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