10960

California Maritime Chaparral

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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| None | None | 1 anonymous reviewer | None |

Vegetation Type

Shrubland

Map Zone

4

Geographic Range

This Biophysical Setting (BpS) occurs from Mendocino County in the north, then patchily south to San Diego County and on the islands in the Santa Barbara Channel. This system occurs only in the coastal fog zone.

Biophysical Site Description

This type only occurs in the fog zone, usually <1,000ft (300m) elevation. Rainfall is rather variable due to the large latitudinal range. Well-drained sandy soils with low nutrient levels tend to be the norm, usually within just a few kilometers (km) of the ocean.

Vegetation Description

Maritime chaparral is composed of woody, sclerophyllous shrubs that generally vary from 3-15ft in height. Shrub cover is usually dense and continuous. Typical chaparral structure may thin out in sandy soils and dunes. *Ceanothus* and *Arctostaphylos* genera are the dominant indicator genera, with many locally endemic species within patches of this type. *Adenostoma* could be present in many of these patches, and it becomes more common further south in the range, along with *Quercus agrifolia* or, in San Diego County, *Q. dumosa*. In the north of this BpS's range, *Arctostaphylos sensitiva*, *Ceanothus gloriosus*, and/or *C. thyrsiflorus* could be present. In the central-south end of the range, *A. tomentosa* (*crustacea*), *C. griseus*, and/or *C. verrucosus* may be present. Within the latitudinal range, there may be patches of endemics such as *A. andersonii* and its relatives or *A. montereyensis* and relatives. Also, in the south and central parts of its range, this BpS often occurs near *Q. agrifolia* or *Q. dumosa* and closed or semi-closed cone species (*Pinus torreyana*, *P. radiata*, *P. muricata*, *Cupressus spp*.), while in the northern sections, it may be associated with redwoods and Douglas-fir may invade. The following species are minor components of maritime chaparral. In central and southern California xeric, high-insolation aspects typically support species such as chamise, redshank, obligate-seeding manzanitas, chaparral yucca, redberry, sugar bush, and *Ceanothus* spp. In more mesic, low-solar insolation settings, common dominants are scrub oak, toyon, poison oak, coffeeberry, and *Prunus* spp. Scrub oak readily sprouts after fire. The resprouting manzanita *Arctostaphylos glandulosa*, shrub interior live oak, birchleaf mountain mahogany, and canyon live oak are common associates in some sites.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| ARCTO3 | *Arctostaphylos* | Manzanita |
| CEANO | *Ceanothus* | Ceanothus |
| ADFA | *Adenostoma fasciculatum* | Chamise |

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

Disturbance Description

Chaparral burns in high-intensity, stand-replacing crown fires that burn large acreages in a single event. Mean fire return intervals in maritime chaparral are variable and longer than intervals of other chaparral types, in part because lightning is uncommon close to the coast. Fire intervals can exceed 100yrs, and the specimens can grow to large size. Season of burning plays a large part in species composition. Occasionally, frost causes mortality and increases fuel buildup.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 125 | 100 | 90 | 150 |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 125 | 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

This type occurs in patches of 100s-1,000s of acres between patches of coastal scrub or forested stands. Flammability of species suggests that the whole patch could burn if ignited, but the cool moist environment could limit fire spread. This type would generally only burn under the most severe fire weather conditions, however.

Adjacency or Identification Concerns

Closed-cone conifer stands and coastal scrub may occur nearby, in addition to mixed evergreen forest.

Issues or Problems

There are some post-fire issues. Some species have poor recovery (despite a large seed bank) after prescribed fire (Odion 2000; Odion and Tyler 2002). The current primary threat to this type is land development. Fire suppression has not had a substantial impact, except where Douglas-fir has been able to invade. Invasive species can be an issue in sandy soils.

An anonymous reviewer stated that this type represents a mixture of many vegetation types and that the only factor holding them together is that they are near the coast and had low levels of lightning ignitions and high levels of Indian ignitions. The compositional differences in these communities from coast to the interior are less than those from north to south within this vegetation type. While it may be appropriate to divide chaparral along a gradient from the coast to the interior as is being done here, it is highly inconsistent with the way sage scrub is treated where within a single vegetation type we are dealing with versions that are coastal as well as interior. This topic should be reevaluated as to how best to consistently subdivide these communities.

Native Uncharacteristic Conditions

Comments

This version modified for map zone (MZ) 4 from MZ03 and is probably still accurate for MZ03. Two classes in Tom Parker's (parker@sfsu.edu) MZ03 model were combined into one in this version (they could not be clearly separated for remote sensing interpretation). It may be useful to have two separate models (one for MZ03, one for MZ04) if overstory tree canopy is likely to become higher north of San Francisco Bay.

MZ03 modelers felt that their model could be used for both MZ03 and MZ04.

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

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 7 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ARCTO3 | Arctostaphylos | Manzanita | Upper |
| PHACE | Phacelia | Phacelia | Low-Mid |
| CRYPT | Cryptantha | Cryptantha | Lower |
| EMMEN | Emmenanthe | Whisperingbells | Lower |

Description

Resprouting shrubs and shrub seedlings characterize this class, in addition to fire annuals, perennial geophytes, and short-lived perennials.

*Maximum Tree Size Class*  
None

Class B 46 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ARCTO3 | Arctostaphylos | Manzanita | Upper |
| CEANO | Ceanothus | Ceanothus | Upper |
| ADFA | Adenostoma fasciculatum | Chamise | Upper |
| XYBI | Xylococcus bicolor | Mission manzanita | Upper |

Description

This condition is recognized by the presence of sprouting shrubs and shrubs growing from seedlings. Herbs are reduced to the openings now.

The stands are 10s-100s yrs of age. *Ceanothus* can die off after a number of years due to smaller stature. In the far south (San Diego County), shrubs tend to be in the short end of the height range and of unique species (e.g., *Cneridium dumosum*, *Xylococcus* bicolor).

*Maximum Tree Size Class*  
None

Class C 47 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ARCTO3 | Arctostaphylos | Manzanita | Middle |
| ADFA | Adenostoma fasciculatum | Chamise | Middle |
| QUAG | Quercus agrifolia | California live oak | Upper |
| PSME | Pseudotsuga menziesii | Douglas-fir | Upper |

Description

Shrubs are large, with herbs in the openings. Shrub cover is the dominant lifeform, and canopy closure of the shrubs would be between 51-70% and 3m height. Oaks (QUAG) or pines (PINUS) can occasionally overtop the shrubs, especially in the south, but usually they are leaning due to salt spray. North of San Francisco Bay, Douglas-fir (PSME) is a more likely associate.

*Maximum Tree Size Class*  
Medium 9-21" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 9 |
| Mid1:CLS | 10 | Late1:OPN | 99 |
| Late1:OPN | 100 | 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** |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.004 | 250 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.0067 | 149 | Yes | 0 |

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