11310
California Northern Coastal Grassland

BpS Model/Description Version: Aug. 2020

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None	None	None	None

Vegetation Type
Herbaceous

Map Zones
2, 3, 4

Geographic Range
From at least Coastal British Columbia south along the coast to San Luis Obispo County (Herst Ranch, Morro Bay) in narrow strips along the immediate coast. Some evidence suggests that this type ranged as far south as Los Angeles County, but these coastal grasslands were more likely part of the California Central Valley and Southern Coastal Grassland.

Biophysical Site Description
Coastal terraces, hills, and bluffs with relatively well-developed loamy soil immediately adjacent to the coast or occasionally farther inland where wind gaps exist in the coastal hills precluding the development of woodland or forest. In some cases, these grasslands develop on serpentine soils (e.g., Ring Mountain, Marin Co.) where chemical composition is unfavorable for woody species. Sites are also maintained in grassland by complex grazing and Native American use history. This includes likelihood of native grazers, such as elk, maintaining grasslands. Elevation range from sea level to 1,500ft. Native grasslands >1,500ft tend to have more warm summer non-coastal species and should probably be assigned to the California Central Valley and Southern Coastal Grassland.

Vegetation Description
Dominated by a complex of native perennial grasses and sedges. The species appear to vary depending on management and hydrology. Moister areas contain *Calamagrostis nutkaensis*, *Danthonia californica*, *Deschampsia cespitosa*, *Festuca rubra*, *F. idsahoensis* var. *roemeri*, and/or *Hordeum brachyantherum*. Although often overlooked, these areas also have important components in the *Juncaceae* and *Cyperaceae*, including *Carex tumulicola* (coast sedge), *C. obnupta*, *J. effusus*, *J. patens*, and *Juncus phaeocephalus* (brown-headed rush). Drier areas contain *Bromus carinatus*, *Elymus glaucus*, *Koeleria macrantha*, and/or *Nassella pulchra*. Many native herbs are also present, including *Sanicula arctopodoides*, *Iris douglasii*, *Trifolium variegatum*, *T. barbigerum*, *T. microdon*, *T. depauperatum*, and other clovers, *Perideridia gairdneri*, *Dichondra donelliana*, *Brodiaea elegans*, *Calandrinia ciliata*, *Camissonia ovata*, etc. Map zone (MZ) 04 was the only MZ to list *Delphinium californicum* as a Biophysical Setting (BpS) Dominant and Indicator Species.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
CANU	*Calamagrostis nutkaensis*	Pacific reedgrass
DACA3	*Danthonia californica*	California oatgrass
DECA	*Delphinium californicum*	larkspur
FERU	*Fendlera rupicola*	Cliff fendlerbush
FEID	*Festuca idahoensis*	Idaho fescue
HOBR2	*Hordeum brachyantherum*	Meadow barley
SAAR	*Sabatia arenicola*	Sand rose gentian

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

Disturbance Description

This type and the northern California coastal scrub are often treated as an interrelated dynamic matrix because of the presumed relationship in seral state between grassland and scrub in central and northern coastal California. Fire was likely rare in pre-human California. At that time, coastal grasslands were likely maintained by soil conditions and weather conditions, including strong on-shore marine winds coupled with coastal terrace landforms, which developed relatively deep loamy soils conducive to grassland. Grasslands were also likely, at least locally, to be maintained by native ungulate grazers from the Pleistocene to the time of Native American occupation. More recently, Native American burning and clearing maintained many grasslands away from the immediate coast and away from coastal wind gaps in the coastal hills. Fire frequency in pre-European coastal grassland was relatively high near Native American villages to maintain bulb and other valuable plants. The fire regime depicted here is conceptual and derived from a melding of Native American and natural pre-European regimes.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	2	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	2	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

Most stands are <100ac except perhaps on large points and promontories such as Pt. Reyes, Pt. Arena, etc., where combinations of terrace development with strong marine winds conspire to make ideal conditions. Large coastal grasslands exist in central California, but many of these are more correctly assigned to BpS 1129 or degraded annual non-native grassland.

Adjacency or Identification Concerns

In the south, this grassland interfingers with other grassland (BpS 1129) and also with coastal scrubs 1092 and 1128. In the north, this type interfingers with forests and woodlands (BpS 1014, 1015).

Issues or Problems

Uncertain of the relative role of Native American burning and natural disturbance by grazing, browsing, suppression of woody colonization by maritime winds, climate, and soil texture factors. Coastal scrub (both northern and southern) have been cleared extensively to make way

for non-native grasslands in the last 150yrs. It is unclear how much of this non-native grassland would have been northern California coastal grassland versus central valley and south coastal grassland, but we are assuming that the north coastal grassland was more restricted originally.

Native Uncharacteristic Conditions
In the drier transitions to the California Central Valley and Southern Coastal Grassland, from Santa Cruz county south, there are often many annual herbs such as *Hemizonia*, *Holocarpha*, etc., which blend the distinction between the northern California coastal grassland and the California Central Valley and Southern Coastal Grassland.

Comments
MZs 02, 03, and 04 were combined during 2015 BpS Review.

For LANDFIRE National, Foster built the VDDT model with input from Mark Stromberg.

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	B	B	B	B	B
Herb	0.5-1.0	A	A	B	B	B	B	B	B	B	B
Herb	>1.0	A	A	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	C	C	C	C	UN	UN	UN	UN	UN
Tree	5-10	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	10-25	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	25-50	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	>50	C	C	C	C	C	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 51 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
DACA3	Danthonia californica	California oatgrass	Upper
DECA	Delphinium californicum	California larkspur	Upper

FERU	Fendlera rupicola	Cliff fendlerbush	Upper

Description
Early post-fire seral with resprouts of perennial grasses and annual forbs.

The species listed in the indicator species boxes are not good indicators since the species composition of this type varies extensively from north to south along the coast and from coast to inland along a temperature and moisture gradient.

Maximum Tree Size Class
None

Class B 41 Mid Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
DECA	Delphinium californicum	California larkspur	Upper
DACA3	Danthonia californica	California oatgrass	Upper
FERU	Fendlera rupicola	Cliff fendlerbush	Upper
IRDO	Iris douglasiana	Douglas iris	Upper

Description
Mature stands of bunchgrasses with smaller interstices of native annual and perennial forbs.

Maximum Tree Size Class
None

Class C 8 Late Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
BAPI	Baccharis pilularis	Coyotebrush	Upper
RUUR	Rubus ursinus	California blackberry	Middle
DACA3	Danthonia californica	California oatgrass	None

Description
Mature stands with invading shrubs from the north coastal scrub, including *Baccharis pilularis*, *Rubus ursinus*, *Lupinus arboreus*, etc. Shrub cover is usually <10% but clearly evident.

Maximum Tree Size Class
None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:CLS	1
Mid1:CLS	2	Mid1:CLS	999
Late1:OPN	6	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
Native Grazing	Early1:ALL	Early1:ALL	0.1	10	Yes	0
Replacement Fire	Early1:ALL	Early1:ALL	0.5	2	Yes	0
Alternative Succession	Mid1:CLS	Late1:OPN	1	1	Yes	5
Native Grazing	Mid1:CLS	Early1:ALL	0.03	33	Yes	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.4	3	Yes	0
Native Grazing	Late1:OPN	Early1:ALL	0.02	50	Yes	0
Replacement Fire	Late1:OPN	Early1:ALL	0.4	3	Yes	0

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