

Ecological site R004BX102CA

Coastal scrub, hills, sandstone and mudstone, gravelly clay loam

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Associated sites

F004BX110CA	Sitka spruce-red alder/salmonberry/western swordfern, hills, sandstone and mudstone, clay loam Site F004BX110CA is often found in conjunction with this site.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Baccharis pilularis</i> (2) <i>Rubus ursinus</i>
Herbaceous	(1) <i>Heracleum lanatum</i>

Physiographic features

This ecological site is found along the coast throughout the survey area. It occurs on moist summits, shoulders, and back slopes of hills and debris slide areas, which vary from uniform to slightly convex. These areas exhibit inclines that are strongly sloping to steep.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Flow
Flooding frequency	None
Ponding frequency	None
Elevation	0 – 210 m
Slope	20 – 80 %

Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is humid, with cool, foggy summers and cool, moist winters. Coastal influence limits the diurnal range in temperatures. Summertime temperatures range from 60 to 70 degrees F. Mean annual precipitation ranges from 60 to 80 inches, and usually falls from October to May.

Table 3 Representative climatic features

Frost-free period (average)	330 days
Freeze-free period (average)	330 days
Precipitation total (average)	1,780 mm

Influencing water features

There are no influencing hydrological features on this site.

Soil features

These well-drained, very deep soils developed from colluvium and residuum derived from mudstone and sandstone. They are neutral to moderately acidic at 40 inches with a dominantly loamy subsurface and rock content ranging from gravelly to extremely gravelly.

This ecological site has been tentatively correlated to the following soils: Redwood National and State Parks

MU Component

596 Flintrock
596 Highprairie

Table 4. Representative soil features

Surface texture	(1) Clay loam (2) Very gravelly clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	150 cm

Surface fragment cover <=3"	0 – 60 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	5.08 – 17.78 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	5.6 – 6.5
Subsurface fragment volume <=3" (Depth not specified)	20 – 60 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

A complex mosaic of coastal prairie, scrub, and forest communities are found along the immediate coast, often with each plant community intergrading into the other*. Patterns of vegetation development within these communities are influenced by climate, topography, management history, and debris flow activity (Barbour and Major, 1977). The patchy nature of the coastal scrub and coastal prairies was undoubtedly created and perpetuated by the coastal Native American tribes (Keeley 2002). Many Native American tribes lived on the coastlines and manipulated the land to suit their needs for food and shelter. Periodic burning was one of the primary tools used to open up the prairies and limit the encroachment of scrublands and forests. Burning kept habitation areas open, enhanced wildlife habitats for hunting, and stimulated growth of numerous grasses and forbs that offered both subsistence and cultural significance (Sugihara and Reed, 1987).

By the 1800s, Europeans had settled into these areas and began domestic livestock grazing, primarily with sheep and cattle. At this time, active burning by Native Americans ceased. The coastal prairies were heavily grazed, likely reducing the reproductive capabilities and vigor of the native perennial grasses and forbs, which contributed to an overall decline in their population. Continuous grazing and the seed source introduction from plantings are believed to have caused a shift from native perennial grasses and forbs to one of non-native perennial and annual grasses and forbs.

Historically, the coastal prairies were thought to be dominated by native perennial grasses and forbs (Holland and Kiel, 1995). Northern coastal prairies are currently a mixture of both native and introduced perennial grasses including: fescues (*Festuca* spp.), sweet

vernalgrass (*Anthoxanthum odoratum*), orchardgrass (*Dactylis glomerata*), Idaho fescue (*Festuca idahoensis*), California oatgrass (*Danthonia californica*) and blue wildrye (*Elymus glaucus*).

Northern coastal prairies are subject to invasion of brush species such as coyotebrush (*Baccharis pilularis*), Himalayan blackberry (*Rubus discolor*) and California blackberry (*Rubus ursinus*) (Heady, 1977). Coyotebrush is known to actively invade eroding areas (Steinburg, 2002) and may increase in grasslands if there is an absence of fire or grazing (Kirkpatrick and Hutchinson, 1980). Most species of blackberry reproduce both via seed and sprouting. Their growth is quite rapid, which allows the plants to spread vigorously throughout the area (Termenstien, 1989).

Scrub species are well adapted to the unstable, steep, and sometimes shallow soils and harsh coastal conditions commonly found at this site. Their longevity and reproductive success ensures their continued domination of the rocky, convex, and exposed cliff slopes of the coastline. Studies are lacking on the influences of soil and parent material on plant community composition and structure in the coastal scrub (Holland and Keil, 1995).

In some areas, natural disturbance of the coastal scrub community may allow the scrub to be perpetuated indefinitely (Barbour and Major, 1977). More severe, human-caused disturbances may lead to scrub invasion of coastal prairie. Some evidence suggests that the coastal scrub community is in a seral stage of progression from grassland to forest (de Becker, Holland and Keil, 1995). Within 50 years, transition to forest may occur in areas where soil and moisture conditions are suitable (Barbour and Major, 1977).

*Due to the level of soil mapping within Redwood National Park (Order III), coastal scrub and prairie are described together in this ecological site description. It is recognized that there likely are other discrete plant communities found within this general ecological site description.

State and transition model

Figure 5. Coyotebrush coastal scrub model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 6.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Perennial grasslands provide a habitat for many species of birds and animals. A variety of snakes may be found, including the common garter snake and the western terrestrial garter snake. Moles, gophers, mice and voles all find habitat in the coastal grasslands. Birds that utilize the prairies for foraging include: owl, sparrow, turkey vulture, and red-tailed hawk. Mammals foraging throughout the prairies include bat, skunk, coyote, rabbit, Roosevelt elk and black-tailed deer. Little is known concerning the use of coastal scrub by wildlife (de

Becker, 1988). Due to the intricate mosaic of the two plant communities, it is thought that many of the same species that utilize coastal prairies may also be found in coastal scrub.

Hydrological functions

These soils have a moderately slow infiltration rate when thoroughly wet. They are very deep, well-drained and have a moderately fine texture. These soils have a moderate rate of water transmission. Hydrologic Group: Flintrock--D Highprairie--C

Recreational uses

Recreational uses may be limited by steep slopes, the amount of rock fragment, and soil permeability rates.

Wood products

There are no wood products associated with this ecological site.

Other products

Traditional plants utilized for basket weaving are occasionally gathered from these areas.

Inventory data references

The ecological site is associated with the following sites: Range data #06-07-RP, High Prairie

Other references

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Steinberg, Peter D. 2002. *Baccharis pilularis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2006, November 16].

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Tirmenstein, D. 1989. *Rubus parviflorus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2006, August 17].

Tirmenstein, D. 1989. *Rubus discolor*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2006, November 20].

Contributors

Judy Welles

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
