Ecological site group F004BL100CA
Poorly drained, very acidic marine terraces

Last updated: 03/07/2025
Accessed: 05/10/2025

Key Characteristics

- Elevated coastal plains
- Dissected coastal plateaus with high acidity – LRU L
- Sea spray has a dominant influence on the soils and vegetation
- Soils with an E horizon present and strongly acidic (pH <5)
- Wet layer depth <6”

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.

Physiography

This ESG is found on wave cut marine terraces from the Fort Bragg area south of Salt Point State Park that have restrictive horizons which perch water and have a very low pH.

LRU K contains the dissected coastal plateau feature that is very acidic and is home to the pygmy forest. Quaternary and Tertiary sandstones and mudstones form the terraces, and some areas are deeply dissected, forming ravines that expose Cretaceous sedimentary rocks.

Climate

The average annual precipitation in this MLRA is 23 to 98 inches (585 to 2,490 millimeters), increasing with elevation inland. Most of the rainfall occurs as low-intensity, Pacific frontal storms. Precipitation is evenly distributed throughout fall, winter, and spring, but summers are dry. Snowfall is rare along the coast, but snow accumulates at the higher elevations directly inland. Fog is a significant variable that defines this MLRA from other similar MLRAs. Summer fog frequency values of greater than 35% are strongly correlated to the extent of coast redwood distribution, which is a primary indicator species in this MLRA. Nightime fog is approximately twice as common as daytime fog and seasonally, it reaches its peak frequency in early August, with the greatest occurrence of fog from June through September (Johnstone and Dawson 2010). The average annual temperature is 49 to 59 degrees F (10 to 15 degrees C). The freeze-free period averages 300 days and ranges from 230 to 365 days, decreasing inland as elevation increases.

The Fort Bragg/Fort Ross Terraces form an elevated coastal plain that has less relief (200-800 feet) than the adjacent low elevation mountains of LRU K. Monthly and annual temperature variations are minimal and summer fog is common.

Soil features

Representative soils are Blacklock and Aborigine, and the effective rooting depth is limited by the hardpan at a depth of 12 to 20 inches. The soil is saturated for long periods following episodes of heavy rain from December through April. The saturated zone starts at the surface and extends to the top of the hardpan.

Vegetation dynamics

This provisional ecological site group concept attempts to describe the basic understanding of the pygmy cypress terraces of LRU L. This concept is primarily supported through literature and available information from the

Mendocino County Survey. This provisional ecological site concept covers the specific marine terraces that are very acidic and have a water table between 12-20 inches and are generally very poorly or poorly drained. They are within close proximity to the coast and at the lower elevations that spend longer periods within the summer coastal fog. This site is similar to F004BL101CA, however the shallow depth to water table and extreme acidity are both significant enough to impact vegetation composition and limit vegetation production. It is also commonly associated with F004BL101CA and F004BL102CA. Future work will need to be done to better understand the soil and site characteristics that drive the vegetation expression for this provisional ecological site concept.

This ESG is associated with the CA MVC classification, Hesperocyparis pygmaea Alliance - Mendocino cypress woodland. This ESG also classifies is a wetland type, defined in the National Wetlands Inventory (NWI) maps as PSS4/FO4B (Palustrine Scrub-shrub, Needle-Leaved Evergreen, Forested and Seasonally Saturated).

Abiotic Factors

The pygmy forest is a unique area within LRU L found on wave cut marine terraces that have restrictive horizons which perch water and are very low in pH. Hesperocyparis pygmaea (pygmy cypress) and *Pinus contorta* ssp. bolanderi (Bolander pine) dominate the shallowest and most acidic soils within these wave cut terraces and are found associated with small sphagnum bogs and open waters which for the time being are associated with this site concept.

The site is found at elevations below 1,000 feet between the ocean and the first main north-south ridge, where frequent heavy summer fog is intercepted by a tree canopy, a significant amount of moisture is added to the soil. Soils have water available for plant growth most or all of the year, and average soil temperatures at a depth of 20 inches vary by less than 5 degrees C between summer and winter.

Primary Disturbances

The primary disturbance to this ecological site is urbanization and human developments that either de-water the site or completely obliterate it.

References and Citations -

Barbour, M., Keeler-Wolf, T., & Schoenherr, A. A. (Eds.). 2007. Terrestrial vegetation of California. Univ of California Press.

Rittiman, Carl A. 1999. Soil Survey of Mendocino County, Western Part, California. The United States Department of Agriculture, Natural Resources Conservation Service
Cooperation: The Regents of the University of California.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, CA.

Major Land Resource Area

MLRA 004B
Coastal Redwood Belt

Stage

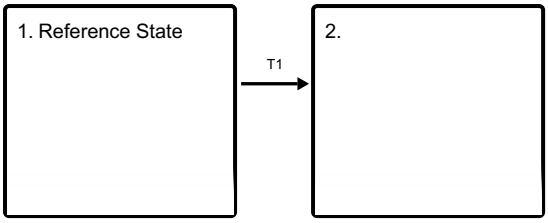
Provisional

Contributors

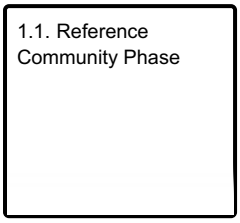
Kendra Moseley

State and transition model

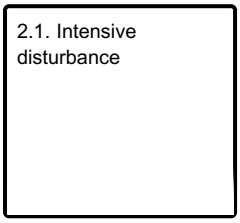
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Reference State

The dynamics described below are extremely general to the level that the site concept has been developed for provisional ecological site concept identification and further investigation purposes only. It is meant to give a general overview of the ecological dynamics of the system and should not be viewed as a model for a specific ecological site level management. It is supported by the current available literature that was reviewed for a general understanding of the system and basic understanding of the abiotic and biotic drivers. Further investigations and soil-site data collection and analysis should be conducted before specific land management can be applied at the ecological site specific scale. This STM only serves to explain the general ecology and dynamics. No alternative states were found during the literature review, however that does not mean they do not exist and more time should be spent determining whether or not this model captures all the dynamics of this system, especially once more is known about the soil-site characteristics of this LRU and ecological site concept. Reference State (State 1) – The reference state for this provisional ecological site concept is dominated by Hesperocyparis pygmaea (pygmy cypress) and *Pinus contorta* ssp. bolanderi (Bolander pine) with an understory dominated by Ledum or Rhododendron columbianum (Labrador tea) and a variety of endemic forbs, and mosses and lichens. Variation within this reference state relates primarily to the extent of acidity and degree of saturation. Sphagnum bogs are commonly associated with this ecological site concept and should be broken out as a separate ecological site at a future date, at this time it is included within this ecological site concept. At this very general scale, this reference state only really captures the generalities related to the dominant functional group that is most dominant and does not capture the more specific dynamics and patterns that would be found at the more detailed and refined ecological site scale that focuses on specific abiotic factors that drive some of these various complex plant expressions within this very unique site concept. More data and refinement is needed to capture the information needed in order to make specific land management decisions at the ecological site-component scale.

Community 1.1
Reference Community Phase

The reference community for this site is a mix of stunted and very stunted pygmy cypress and Bolander pines with a shrub and herb layer with R. macrophyllum, *Vaccinium ovatum* (CA huckleberry), *Arctostaphylos nummularia* (glossyleaf manzanita), and *Xerophyllum tenax* (beargrass) as the most typical understory. They grow in a low mat form, along with a variety of other shrubs and herbaceous species and sphagnum bog. The shallowest and most highly acidic soils support the most dwarfed individuals and there is a profusion of cane-like dwarfed individuals of both pygmy cypress and Bolander pine.

State 2

This state represents the intensive land uses that have significantly altered this ESG in a myriad of ways including removal of topsoil, fertilizer additions and other topsoil manipulations, hydrologic alterations that remove native soil fauna, among many other things and is typically due to urban developments, recreational activities, and intensive agriculture. More information about this state is needed to flesh out the various impacts these types of land uses/alterations have had on the ecological site in order to better understand how to manage these areas or potentially attempt restoration of these areas where possible.

Community 2.1
Intensive disturbance

This community phase represents all the varied land uses that significantly alter this ecological site group. This is an extremely varied community phase that includes all types of alterations that so significantly alter the ecological site that it is permanently changed and no longer has typical or even representative ecological dynamics. Land use models would be an appropriate option to develop these types of variations in altered landscapes. At this scale of grouping, specific drivers and triggers and expressions of communities is too varied and broad to be more specific. More data collection and field verification is necessary.

Transition T1
State 1 to 2

This transition is caused by significant human alterations that remove essential topsoil horizons, alter hydrologic functions, and/or add significant inputs that change soil chemistry and soil properties for housing developments, urban infrastructures or intensive cropping systems and force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Citations