Ecological site group R014XG906CA
Dry Loamy Bottom

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Key Characteristics

- located on basin floors
- loamy texture
- < 20" ppt

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 in the dry loamy alluvial soils in the valley basins, fans, and flood plains. Slopes range from 0 to 2% most typically.

Climate

The average annual precipitation in this area is 11 to 53 inches (272 to 1,353 millimeters). Typical averages for this ESG are 16 inches or less. The higher amounts of precipitation occur at the higher elevations in the area north of San Francisco. Most of the rainfall occurs as low- or moderate-intensity, Pacific frontal storms during winter. This area is very dry from midspring to midautumn. Snowfall is rare. The average annual temperature is 54 to 61 degrees F (12 to 16 degrees C). The freeze-free period averages 315 days and ranges from 265 to 365 days. It is longest near the coast, and it becomes shorter with elevation.

Soil features

The soils of this ESG are thermic, very deep or deep, somewhat poorly, poorly and well drained drained soils formed in nearly level basins from alluvium from various sources. Soil textures range from clay loams, silt loams to coarse loams. Future work to separate out the drainage classes and finer-textures and coarser textures would be beneficial for management and ecological processes, however much of this site is under cultivation making it more difficult to build ecological site concepts.

Some representative soils include:

Bayshore, a fine-loamy, mixed, superactive, thermic Typic Calciaquolls
Elder, a coarse-loamy, mixed, superactive, thermic Cumulic Haploxerolls
Mocho, a fine-loamy, mixed, superactive, thermic Fluventic Haploxerolls
Pacheco, fine-loamy, mixed, superactive, thermic Fluvaquentic Haploxerolls
Sorrento, a fine-loamy, mixed, superactive, thermic Calcic Haploxerolls

Vegetation dynamics

This ESG covers the areas of the valleys in MLRA 14 that were at one time part of a vast complex of marshes, tidal flats, estuaries, wetlands and wet meadows. The urbanized landscape in the valleys within this MLRA that exists today makes it difficult to imagine the natural landscape prior to human development.

These dry loamy bottoms were likely the mostly fine- loamy-textured depressional and deposition areas and isolated oxbows that were created from the network of freshwater and salt marshes, rivers and streams that ran through

these valleys as their seasonal and tidally influenced flood waters stretched across the floodplains and terraces in spring and deposited sediment as they receded during summer. Once the area began to be settled, many of these water dominated ecosystems were drained, leveed, cleared for crops and other agriculture, and urbanized.

As this landscape was de-watered and houses and agriculture took over, the water table for many of these habitats moved deeper and deeper, creating soils that would no longer offer the available soil moisture for many of the plants that had evolved with the hydrologic function of the natural system that no longer existed. These loamy basins may have remained wetter than many of the surrounding soils, due to their prolonged available water capacity and their depressional location on the landscape. The variable range in soil textures will dictate the species composition and production, with the finer soils holding more water that results in more native perennials and forbs and higher annual production overall. The coarser textures will dry out more rapidly through both drainage and evapotranspiration in the summer months making them less hospitable for many of the native perennial grasses and more dominated by annual grasses and forbs. Annual production will still be higher than the other ESGs in bottoms, due to the loamy textures which provide decent available water and slightly slower but still well drained soil conditions.

Historically, this site may have looked similar to the CWHR wet meadow classification, however with the introduction of non-native annual grasses and the impacts from fragmentation, continued de-watering, cultivation, and human alterations such as homes and roads, this site now reflects a lower producing, dry, annual grassland.

Currently, where this site is not under cultivation or urban developments, it is dominated by non-native annual grasses. These include wild oats, soft chess, ripgut brome, red brome, wild barley, and foxtail fescue. Common forbs include broadleaf filaree, redstem filaree, turkey mullein, true clovers, bur clover, popcorn flower, and many others. Perennial grasses, found in moist, lightly grazed, or relic prairie areas, include purple needlegrass and blue wildrye and areas of intermittent ponding will be have sedges and rushes. Species composition is also related to water availability with greater amounts of relic perennial grasses in areas of greater precipitation or soil moisture.

Information from:
John G. Kie
California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group

Major Land Resource Area

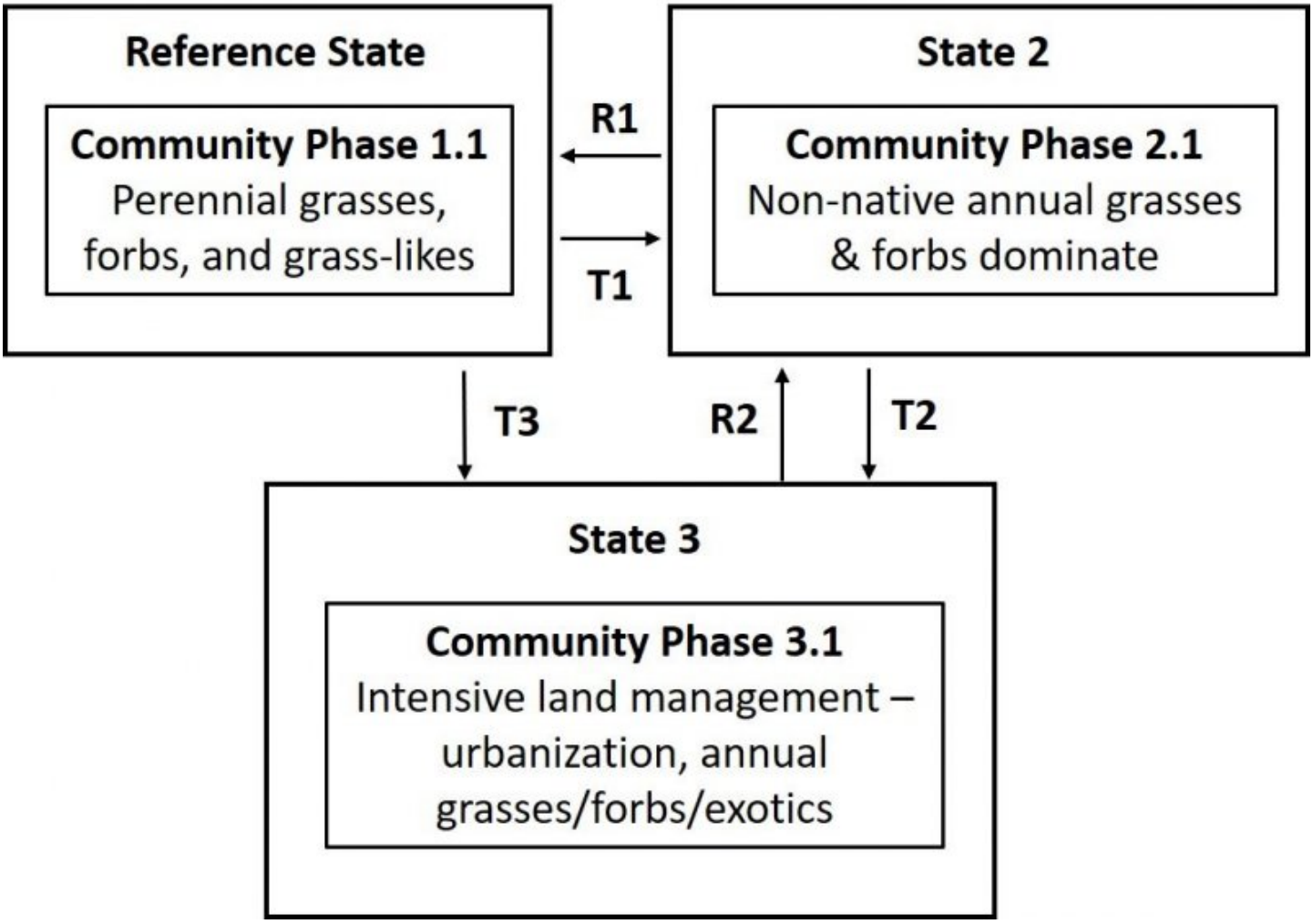
MLRA 014X
Central California Coastal Valleys

Stage

Provisional

State and transition model

Dry Loamy Bottom



Reference State

This ESG represents the closed-basin and moderately well drained grass and grass-like dominated wet meadows. The single most important characteristic of a wet meadow is its hydrology. Seasonality and reliability of yearly water inflows and outflows largely determine the vegetational stability of wet meadows. Therefore, wet meadow habitats exist indefinitely unless the hydrologic regimes are altered. Wet meadows occur where water is at or near the surface most of the growing season, following spring runoff. Hydrologically, they occupy lotic and sunken concave sites. This ESG gets its main input flow (other than precipitation) from upstream sources; at least early in the growing season, water flows across them at depths of 10 to 20 cm (4-8 in). Downstream runoff is the principal output flow. They are in topographic basins but have a slight slope, which permits drainage of surface water. Percolation is slower due to the saturated or moderately permeable nature of underlying materials. Sunken concave sites also receive water input from upstream sources, but evapotranspiration is the main output flow. Percolation is moderate, due to the finer loamy textured soils, and the sunken concave sites may dry to considerable depth by fall.

Reference State Community Phase

Community 1.1 This reference community phase is dominated by a mixture of perennial grasses and forbs and some grass-likes that vary depending on what the water source is and where the site is located across the landscape.

State 2 Community Phase

Community 2.1 This community represents the mix of mainly non-native annual invaders and some native perennial grasses like *Nasella pulchra* that are able to withstand the drying out periods that occur during the warm summer months. There may be some *Juncus spp.* and *Distichlis spicata* intermixed, depending on the soil type and location on the landscape that allows for longer water inundation and greater saline conditions.

State 3 Community Phase

Community 3.1 - This community phase represents all the varied land uses that significantly alter this ecological site, in MLRA 14 this will primarily be urban lands and cultivation. 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.

Transitions

T1 This transition is caused by de-watering due to urbanization, leeves, channelized rivers, and irrigation needs that allowed for the invasion of non-native annual plants and saltgrass.

R1 This restoration pathway occurs when significant time and money inputs are focused on addressing the hydrologic functions that existed historically in order to return the water table that once supported perennial grasses and grass-likes.

T2 This transition is caused by significant human alterations that remove essential topsoil horizons, alter hydrologic functions, and/or add significant inputs (such as fertilizers) that change soil chemistry and soil properties for the purposes of 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.

R2 This restoration pathway occurs only when significant time and money inputs are focused on returning ecological function and hydrology.

T3 This transition is caused by significant human alterations that remove essential topsoil horizons, alter hydrologic functions, and/or add significant inputs (such as fertilizers) that change soil chemistry and soil properties for the purposes of 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