Ecological site group R015XY003CAESG
Loamy Bottom

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Key Characteristics

- located on basin floors
- loamy texture

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 typically found on alluvial flats, basin floors, valley floors, floodplains, and stream terraces. Slopes typically range from 0 to 9% and elevations vary from sea level to 3000 ft.

Climate

The average annual precipitation in this area is typically 11 to 39 inches (280 to 1000 millimeters) . Some areas can get as low as 6 inches (150 millimeters), while the areas at higher elevations can reach up to 88 inches (2235 millimeters) on average. Snowfall is common in the northern half of the part north of San Francisco and rare elsewhere. Precipitation is evenly distributed throughout fall, winter, and spring but is very low in summer. Coastal areas receive some moisture from fog in summer. Most of the rainfall occurs as low- or moderate-intensity, Pacific frontal storms during the period October to May. The average annual temperature is 52 to 65 degrees F (11 to 18 degrees C), decreasing from south to north. The freeze-free period averages 275 days and ranges from 180 to 365 days, decreasing in length with elevation and from south to north.

Soil features

Soils in this ESG are extremely varied from fine-loamy to sandy loams, poorly drained to well drained, and a water table near the surface for part or more of the year. These soils are very fertile and moist soils for agriculture and thus extensive acres have been converted to croplands and vineyards.

The soils that represent this ESG include:

Alviso, a fine, mixed, superactive, nonacid, isomesic Typic Fluvaquents
Botello, a fine-loamy, mixed, superactive, thermic Pachic Argixerolls
Elder, a coarse-loamy, mixed, superactive, thermic Cumulic Haploxerolls

Vegetation dynamics

This ESG covers the areas of the valleys in MLRA 15 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 loamy bottoms were likely the loamy-textured depressions 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 during summer as they receded. 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 was lowered, 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 California Wildlife Habitat Relationship (CWHR) wet meadow classification, however with the introduction of non-native annual grasses and the impacts from fragmentation, continued de-watering, 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 development, 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 015X
Central California Coast Range

Stage

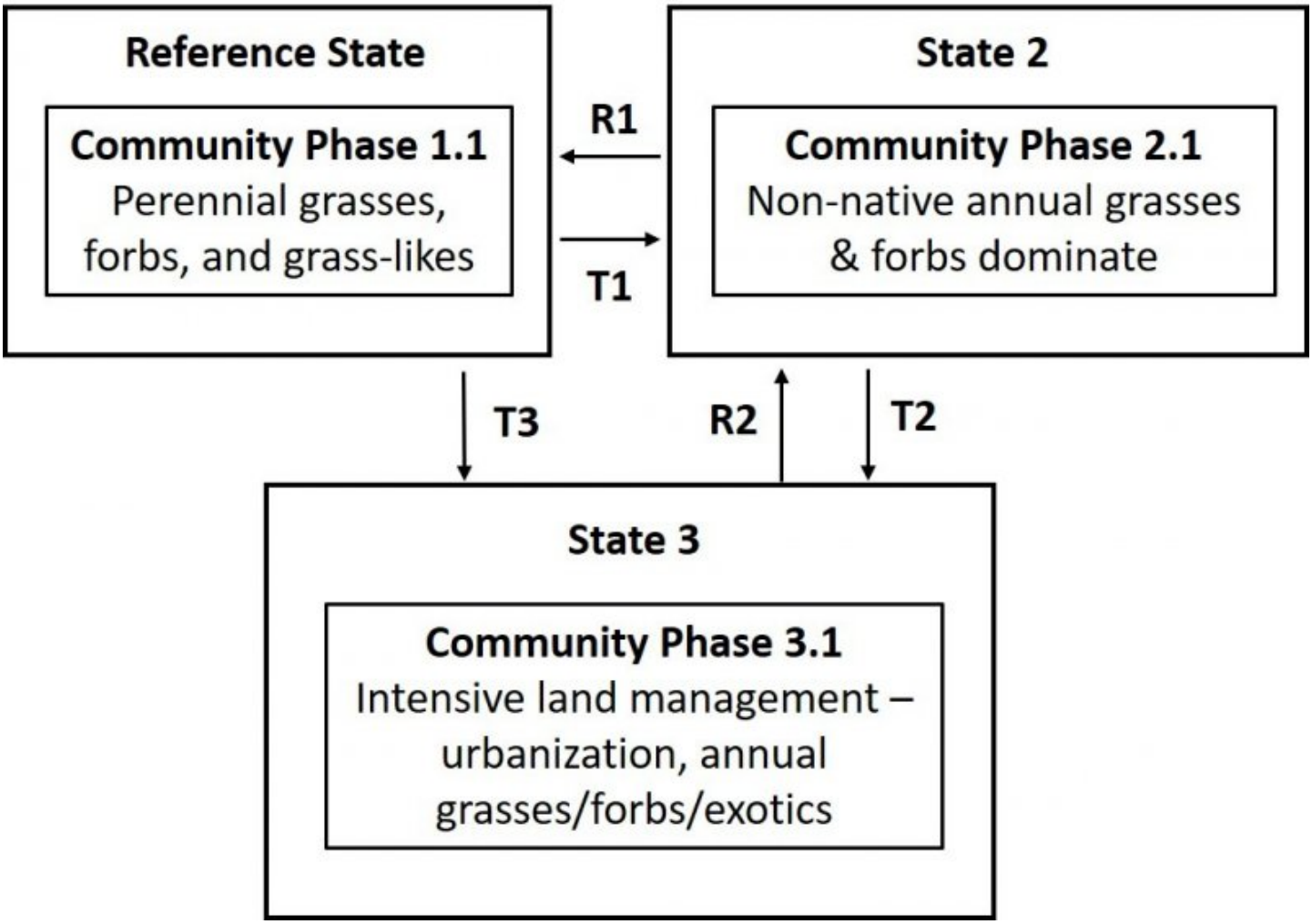
Provisional

Contributors

Kendra Moseley
Darren Pinnegar

State and transition model

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 native perennial grasses like *Nasella pulchra*, non-native annual grasses and forbs 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. 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 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 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.

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 entirely removes essential topsoil horizons, alters 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 ESG over a threshold and change the function and structure of this site in extensive ways.

Citations