Ecological site group R015XY004CAESG
Clayey Terrace

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Key Characteristics

- located on terraces
- clayey 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 bluffs, dissected terraces, stream terraces, and escarpments. Slopes are extremely varied ranging from 2 to 75 percent. Elevations typically range from 0 to 500 feet.

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 all vertic soils with high amounts of smectitic clays that shrink-swell and create surface cracks.

The soils that represent this ESG include:

Altamont, a Fine, smectitic, thermic Aridic Haploxererts
Ayar, a fine, smectitic, thermic Typic Haploxererts
Diablo, a fine, smectitic, thermic Aridic Haploxererts

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 clayey terraces were likely interrelated to the fine-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 clayey basins may have remained wetter than many of the surrounding soils, due to their high water-holding capacity and their valley bottom and terrace locations on the landscape. The clays of this ESG are high shrink-swell clays that dry out in the summer when the water table recedes and develop cracks and low soil pores spaces making them less hospitable for many of the native perennial grasses that existed within the drier surrounding grasslands.

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.

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

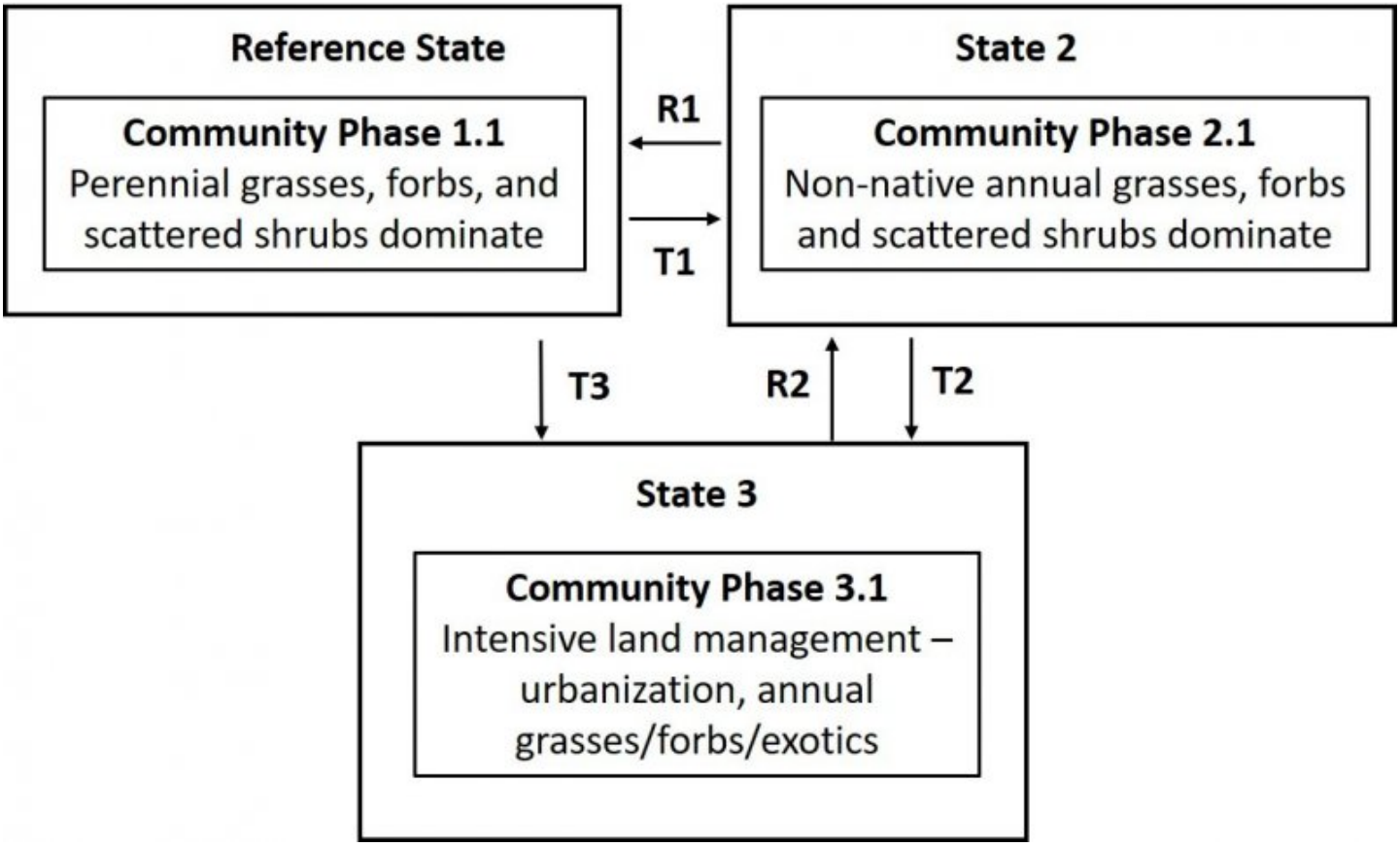
Provisional

Contributors

Kendra Moseley
Darren Pinnegar

State and transition model

Clayey Terrace



Reference State

This ESG represents the clayey terrace soils that were dominated by native perennial grasslands. The single most important characteristic of these clayey terraces is that smectitic clay shrink-swell cracks that dry out leaving little for plants as the precipitation dries out in summer. Seasonality and reliability of precipitation will largely determine the vegetational stability and expression.

Reference State Community Phase

Community 1.1 This reference community phase is dominated by a mixture of perennial grasses and forbs and some shrubs 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, 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 scattered shrubs and trees, depending on the soil type and location on the landscape that allows for greater soil moisture during summer temperatures.

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 alterations to soil moisture availability and a disturbance that impacts the vegetation. Typical disturbances would be fires and prolonged droughts and wildlife grazing. After settlement occurred disturbances included livestock grazing, urbanization and fragmentation, associated sites being leeved, and channelized for irrigation needs that allowed for the invasion of non-native annual plants that are able to take advantage of a stressed habitat and/or times of consecutive drought that may stress the native species making them vulnerable to a threshold crossing event that shifts feedbacks in support of the non-native annuals.

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 functions and processes.

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