Ecological site group F015XY001CAESG
Riparian

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Key Characteristics

- located on riparian areas

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

The watershed geomorphology and physical processes form the basis for understanding the spatial extent of the riparian forests, which includes the valley shape, hillslope processes, fluvial processes, soil processes, and hydrologic processes.
This site is found on floodplains, valley bottoms, and alluvial terraces on variable slopes.

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 typically very deep, well drained soils formed in material weathered from graywacke, shale, siltstone, sandstone or formed in alluvium from mixed rock sources.
The most typical soils represented include:
Flaskan, a fine-loamy, mixed, superactive, thermic Typic Argixerolls
Yorktree, a fine, mixed, superactive, mesic Ultic Argixerolls

Vegetation dynamics

This ESG is found on flood plains and will reflect vegetation dynamics driven mainly by fluvial processes and hydrologic dynamics. Riparian vegetation is most common on these flood plains represent the low-gradient areas within this LRU that are heavily influenced by fluvial processes. This ESG is composed of a variety of different riverine expressions/ecological sites and will require more detailed field investigations in order to refine the site concepts and likely develop several new sites that are correlated to similar geologic structure and processes, hydrologic regimes, and vegetation characteristics. This concept captures variety of typical riparian vegetation expressions and ranges from mostly herbs and shrubs to shrubs and trees that are found in riverine systems that are primarily larger rivers at the end of the watershed and broad open valleys. The band of riparian vegetation may be broader or narrower depending on where in the MLRA it is found.

Abiotic Factors/Primary Disturbance

Riparian forests are a complex interaction of many various physical and biologic factors, including function of valley

morphology, physical processes, vegetative legacies, and life history strategies. The watershed geomorphology and physical processes form the basis for understanding the spatial extent of the riparian forests, which includes the valley shape, hillslope processes, fluvial processes, soil processes, and hydrologic processes. Soil development within alluvial environments is highly variable. Frequent erosional and depositional disturbances from flooding create a complex mosaic of soil conditions in the active floodplain that fundamentally influences vegetation colonization and establishment. Well-drained soil or recently deposited mineral alluvium may be found adjacent to very poorly drained organic soils in abandoned high-flow channels. This variability in soil conditions is a major factor in maintaining the high plant diversity typical of riparian ecological sites.
The disturbances that drive this ecological site concept are dependent on the type, frequency, predictability, extent, magnitude, and timing of the disturbance. The fluvial processes that are dominant in this riparian ecological site concept include stream power, basal shear stress, channel migration, and sediment deposition. The characteristic vegetation pattern of these low-gradient valleys is maintained by fluvial disturbances and geomorphology. The amount of force exerted on the channel bed and vegetation growing in the active channel and floodplain during a flood is a product of fluid density, gravitational acceleration, flow depth, and water surface slope.
Sourced from:
BARBOUR, M., KEELER-WOLF, T., & SCHOENHERR, A. (Eds.). (2007). Terrestrial Vegetation of California, 3rd Edition. University of California Press. Retrieved November 10, 2020, from http://www.jstor.org/stable/10.1525/j.ctt1pnqfd.

Major Land Resource Area

MLRA 015X
Central California Coast Range

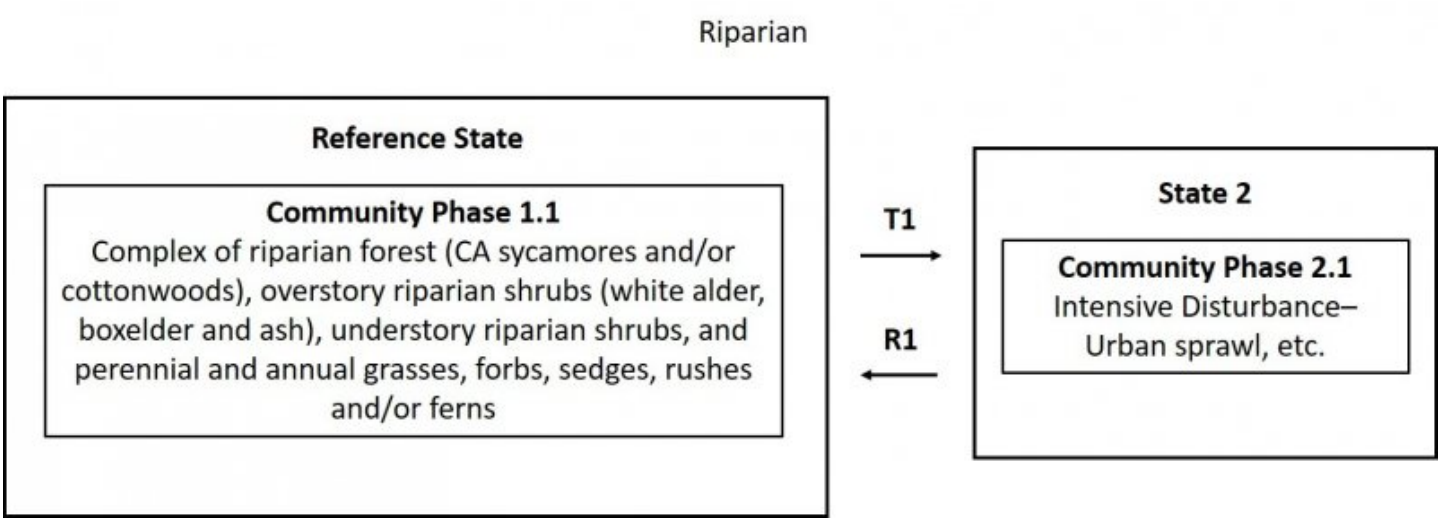
Stage

Provisional

Contributors

Kendra Moseley
Darren Pinnegar

State and transition model



Reference State (State 1) – The reference state for this site is dominated by an array of riparian species adapted to the seasonal fluctuations of inundation from daily tide waters (when adjacent to the ocean), yearly flooding events from winter rains/snow, surface runoff and groundwater into the valley bottoms, and the warm, dry summer climate that enhances evapotranspiration rates. There are a variety of different riparian ecological sites that have been included in this ESG and should be further investigated to refine the concepts at an individual ecological site scale. At this very general scale, this reference state only captures the generalities related to the functional groups that are 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. 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 Phase 1.1 – This community phase represents the riverwash portions, herbaceous portions, shrub-dominated portions and riparian forest portions of the fluvially-influenced areas within this ESG. There may be locally distinct and endemic species only found in certain areas of these riparian communities, but they are not recognized at this scale.

Transition 1 (T1) – This transition is caused by significant human alterations that remove essential topsoil horizons, alter hydrologic functions such as flooding regimes, flooding influence and water velocities, 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.

Restoration Pathway 1 (R1) – Restoration will depend on the type of valley, stream and source waters of the riparian area as well as the possibility of returning the natural hydrologic functions of the stream being restored. This pathway is time and money intensive and is likely not possible in many riparian areas within the valleys of this MLRA.

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 ascertain 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 Phase 2.1 – 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.

Citations