

Ecological site group R019XG905CA

Riparian

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Key Characteristics

- located in 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 ESG is typically found in drainageways, washes, stream channels, and stream terraces. Slopes are varied and elevations vary significantly from sea level to over 7000 ft.

Climate

The average annual precipitation of this MLRA covers a diverse landscape of valleys and mountains and can range anywhere from 8 to 53 inches (215 to 1,354 millimeters), increasing with elevation. Most of the rainfall occurs as low- or moderate-intensity, Pacific frontal storms during winter. Rain can turn to snow at the higher elevations. A little snow may fall in winter, but it does not last. Summers are dry, but fog provides some moisture along the coast. The average annual temperature is 38 to 67 degrees F (3 to 19 degrees C). The freeze-free period averages 310 days in the valleys, 245 days in the mountains, and ranges from 125 to 365 days along the coast. It decreases in length with elevation. The longest freeze-free period occurs at the lower elevations along the western edge of the area.

Soil features

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.

Soils representative of this ESG include Soboba, Riverwash, Loamy alluvial land, Psamments, Fluvents, and Aqueuts.

Vegetation dynamics

Riparian areas represent the low-gradient areas within this MLRA that are heavily influenced by fluvial processes. This provisional ecological site concept 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 ecological site 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, often significantly influenced by ocean tides. The band of riparian vegetation may be broader or narrower depending on where in the MLRA it is found and the daily tidal

influences. These riparian sites in the valleys will generally be larger, low-velocity stream orders, such as Rosgen C/D or B channels with smaller, finer bedding sediments—whereas most, if not all, of the riparian stream orders in the mountains are typically more A or B channel types with larger bedding sediments.

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.

Coastal fog, wind, salt spray, and daily changes in tides are also major factors that define this ecological site from other riparian ecological sites in other MLRAs and LRUs. Windthrow and wind-breakage are common during winter storms and open the canopy creating more diversity in the understory.

The disturbances that drive this ESG 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.

Major Land Resource Area

MLRA 019X

Southern California Coastal Plains and Mountains

Subclasses

- R019XG905CA–Riparian
- R019XI118CA–Marine terraces 21-34" p.z.
- R019XI103CA–Riparian Areas 13-31" p.z.

Correlated Map Unit Components

23482294, 23477433, 23477592, 22665572, 23237142, 22665883, 22665799, 22666243, 22666023, 22666024, 22643219, 22668858, 22668776, 22588151, 22671551, 22670945, 22672934, 22673561, 22673560, 22673670

Stage

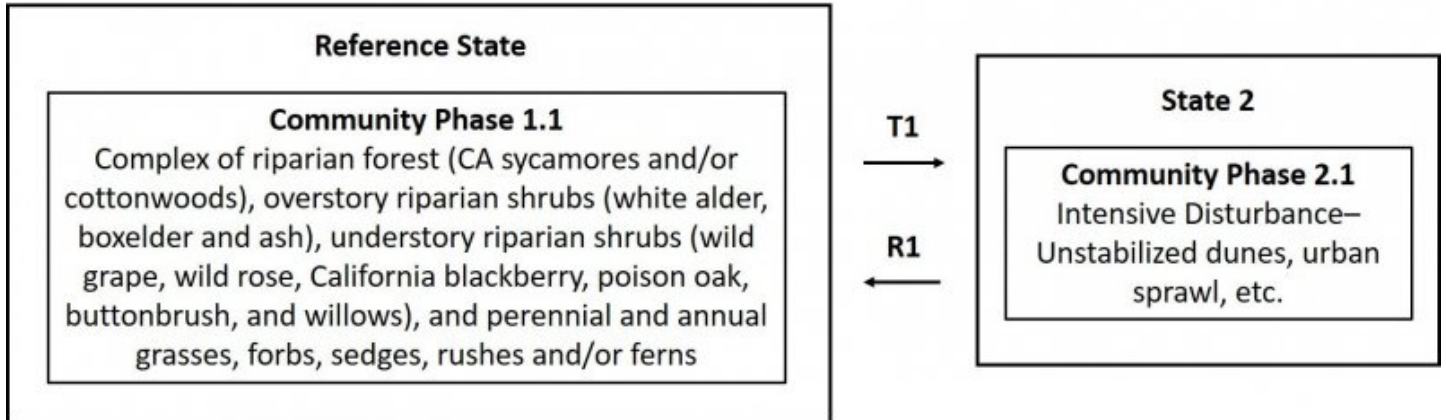
Provisional

Contributors

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State and transition model

R019XG905CA - Riparian



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 really 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.

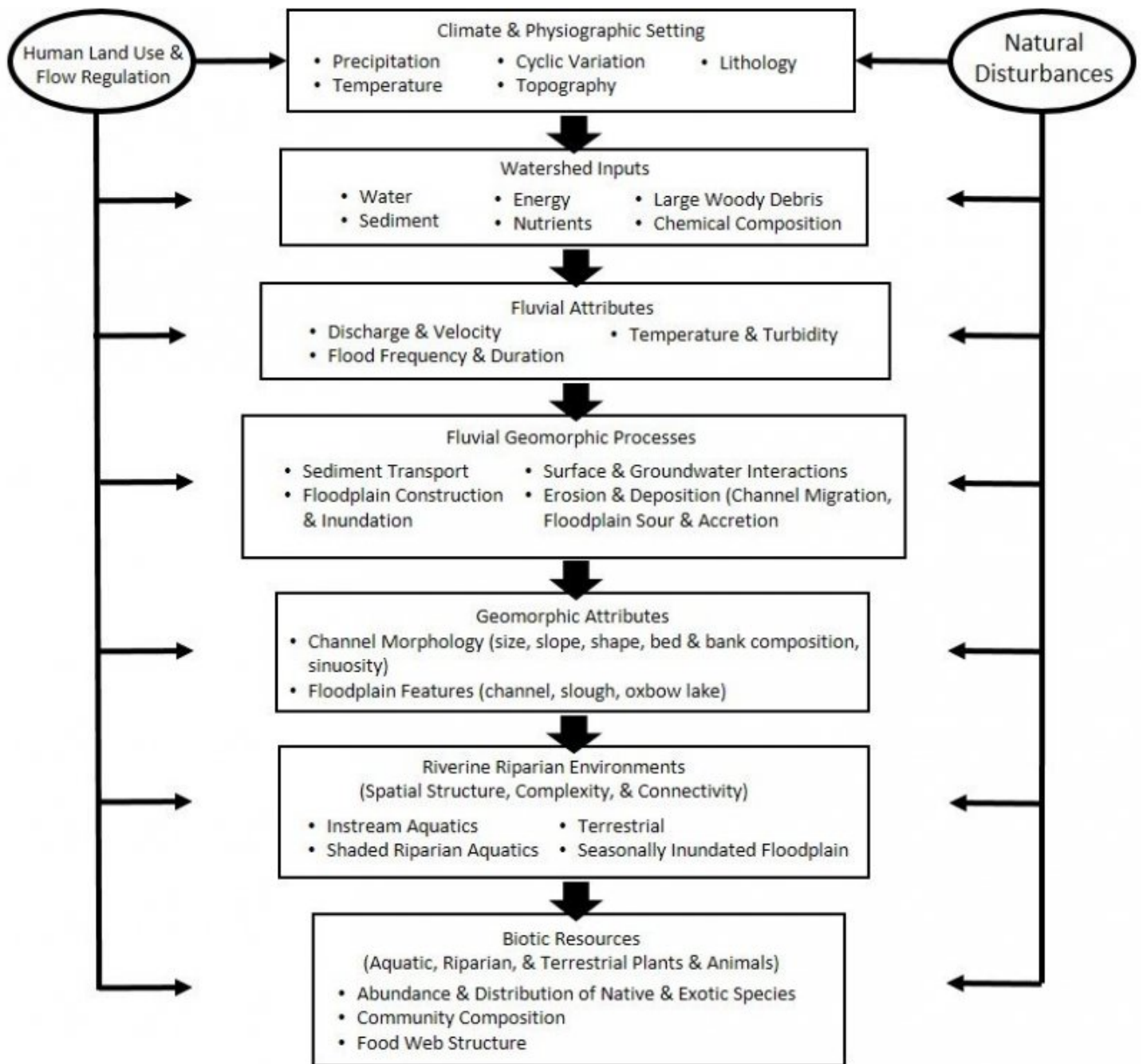
Community Phase 1.1 – This community phase represents the riverwash portions, herbaceous portions, shrub-dominated portions and riparian forest portions of the fluvially-influenced areas within this ESG. There may be locally distinct and endemic species only found in certain areas of these riparian communities, 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 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 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.



Conceptual physical and biological framework of alluvial river systems. Adapted from Barbour et al 2007.

Citations