Ecological site group R004BA203CA
Riparian

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Key Characteristics

- Hydrologic processes dominate the landscape – LRU A
- Riverine

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

Riparian areas represent the low-gradient areas within this LRU 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.

LRU A is primarily influenced by hydrological processes and contains beaches, dunes, rivers, and marine terraces below 400 feet elevation. Wet forests, lakes, estuarine marshes, and tea-colored (tannic) streams are characteristic features of this LRU. Marshes and wetlands have been widely altered and/or drained with many converted to agriculture and urban developments.

Climate

The average annual precipitation in this MLRA is 23 to 98 inches (585 to 2,490 millimeters), increasing with elevation inland. Most of the rainfall occurs as low-intensity, Pacific frontal storms. Precipitation is evenly distributed throughout fall, winter, and spring, but summers are dry. Snowfall is rare along the coast, but snow accumulates at the higher elevations directly inland. Fog is a significant variable that defines this MLRA from other similar MLRAs. Summer fog frequency values of greater than 35% are strongly correlated to the extent of coast redwood distribution, which is a primary indicator species in this MLRA. Nightime fog is approximately twice as common as daytime fog and seasonally, it reaches its peak frequency in early August, with the greatest occurrence of fog from June through September (Johnstone and Dawson 2010). The average annual temperature is 49 to 59 degrees F (10 to 15 degrees C). The freeze-free period averages 300 days and ranges from 230 to 365 days, decreasing inland as elevation increases.

Soil features

Soils for this ESG will be extremely varied, but will belong primarily in the Typic, isomesic, udifluvent families as well as typic, isomesic Endoaquolls. Some representative soils in this ESG are Grizzlybluff and Jollygiant.

Vegetation dynamics

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 LRU it is found and the daily tidal influences. These riparian sites differ from those in the adjacent LRU I, by generally being larger, low-velocity stream orders, such as Rosgen C or B channels with smaller, finer bedding sediments—whereas most, if not all, of the riparian stream orders in

LRU I 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. 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.

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 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.

Major Land Resource Area

MLRA 004B
Coastal Redwood Belt

Stage

Provisional

Contributors

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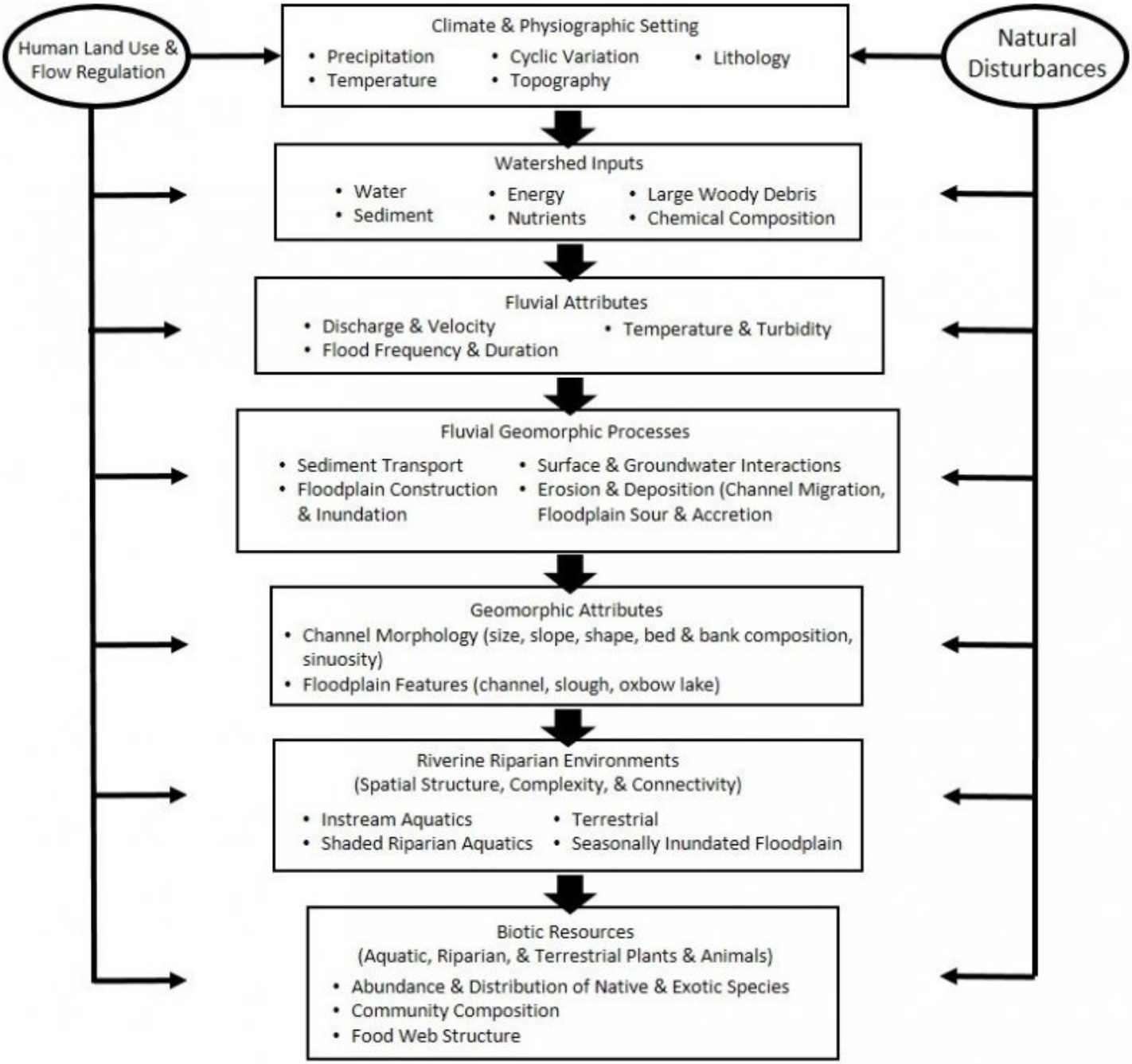
State and transition model



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

State 1
Reference State

Figure . Typical riparian site within LRU A

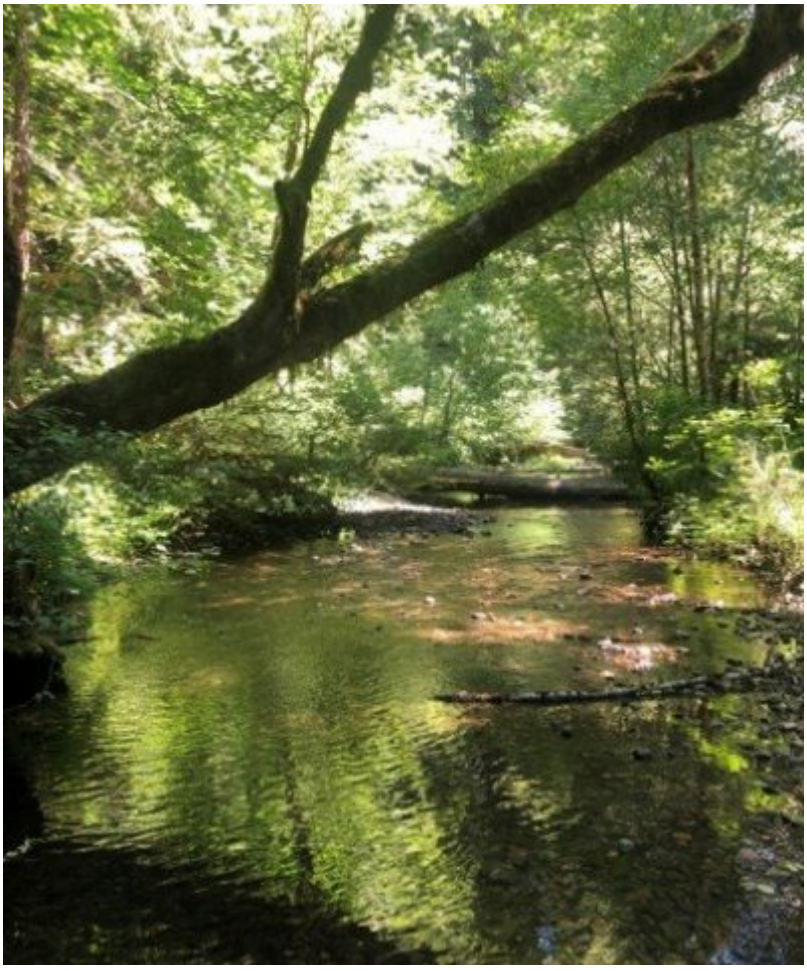


Figure 1. Typical riparian site within LRU A

The riparian areas of the Northern Coast in general are not as floristically diverse as the riparian areas found across much of the rest of the state. The cool climate, low-gradient streams of LRU A create a fairly consistent variety of adapted species along a sometimes narrow and sometimes broad band directly adjacent to the streams. The reference state for this site is essentially only dominated by a limited genera of species adapted to the seasonal fluctuations of inundation from daily tide waters, surface runoff and groundwater into the valley bottoms, and the cool, foggy climate that limits evapotranspiration rates. There are likely a variety of different riparian ecological sites that have been included in this provisional ecological site concept 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.

Dominant plant species

- red alder (*Alnus rubra*), tree

Community 1.1
Reference Community

This community phase represents the riverwash portions, herbaceous portions, shrub-dominated portions and riparian forest portions of the fluvially-influenced areas within this ecological site concept. Species that are most dominant include *Alnus rubra* (red alder), Populus spp. (cottonwoods), Salix spp. (willows), Myrica californica (California wax myrtle), Sambucus spp. (elderberry), Rubus spp. (berries), Ribes spp. (currents), and an array of grasses, forbs, and grass-likes. 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 of provisional ecological site concept development.

Dominant plant species

- red alder (*Alnus rubra*), tree
- cottonwood (*Populus*), tree
- willow (*Salix*), tree
- willow (*Salix*), shrub
- California wax myrtle (*Morella californica*), shrub
- salmonberry (*Rubus spectabilis*), shrub

State 2
Intensive disturbance

This state represents the intensive land uses that have significantly altered this ecological site due to primarily to logging, urban developments, agriculture and recreational activities. 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 better manage of these areas or potentially attempt restoration of these areas where possible.

Community 2.1

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 even representative ecological dynamics.

Transition T1
State 1 to 2

This transition is caused by significant human alterations that force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Restoration pathway R1
State 2 to 1

this restoration pathway occurs only when significant time and money inputs that would require constant maintenance and weed management and should be focused on areas that have not been permanently altered by urban developments. This restoration pathway may be less likely, since most of these very altered landscapes will be more hospitable to invasive species and difficult to recreate hydrologic function requiring specific growing conditions that may not be replicable due to the alterations to the site that had occurred.

Citations

. 2021 (Date accessed). USDA PLANTS Database. http://plants.usda.gov.

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. 1998. USNVC [United States National Vegetation Classification]. 2019. United States National Vegetation Classification Database, V2.03. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC.. USNVC: http://usnvc.org/.

Barbour, M.G., T. Keeler-Wolf, and A.A. Schoenherr. 2007. Terrestrial vegetation of California.