

# Ecological site group R021XG915CA

## Wet Meadow

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### Key Characteristics

- Run-in site

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 on run on landform positions such as valley bottoms, relict lakebeds, depressions, and flats. Slopes are 0 to 2 percent. Elevations are 3,000 to 5,000 feet (900 to 1,500 meters).

### Climate

The average annual precipitation in this MLRA is typically 9 to 25 inches (241 to 635 millimeters). It is highest, up to 57 inches (1,450 millimeters), in small areas at high elevations on the western and southwestern edges of this MLRA. Other high precipitation zones are in the scattered mountain ranges throughout the rest of this area. Most of the rainfall occurs as low- or moderate-intensity Pacific frontal storms during the winter. At the higher elevations, rain generally turns to snow. Snow may fall at the lower elevations in winter but does not last. Summers are dry. The average annual temperature is 37 to 53 degrees F (3 to 12 degrees C). The frost-free period is 70 to 185 days and averages 130 days.

### Soil features

The soils in this ESG consist of very deep, very poorly drained soils that formed in stratified alluvium from ash and lacustrine deposits, or mixed alluvium. They have peat or mucky surface horizons and show evidence of a water table, gleying, and mottling. The soils are primarily fine-textured.

Representative soils include the Pastolla (fine-silty, mixed, superactive, mesic Cumulic Endoaquolls), Tulebasin (fine, mixed, superactive, mesic Aquandic Endoaquolls), and Mountmed series (fine, smectitic, frigid Fluvaquentic Vertic Andeaquolls).

### Vegetation dynamics

Wet Meadows at all elevations generally have a simple structure that consists of a layer of herbaceous plants. Shrub or tree layers are usually absent or very sparse; they may, however, be an important feature of the meadow edge. Within the herbaceous plant community, a microstructure is typically present. Some species reach heights of only a few centimeters while other may grow 3 feet (1 meter) or taller. Except where broken by boulders, canopy cover is dense (60 to 100 percent). At the substrate surface, distances between individual shoots may be as small as 1 to 2 millimeters (0.04 to 0.08 inches) or as much as 2 to 3 centimeters (0.8 to 1.2 inches) depending upon the species present.

Wet Meadows consist of a great variety of plant species; therefore, it is not possible to generalize species composition. Species may differ, but several genera are common to Wet Meadows throughout the State. The include, *Agrostis*, *Carex*, *Danthonia*, *Juncus*, *Salix*, and *Scirpus*. Important grass and grass-like species include thingrass, abruptbeak sedge, beaked sedge, Nebraska sedge, tufted hairgrass, needle spikerush, fewflowered spikerush, common spikerush, Baltic rush, Nevada rush, irisleaf rush, pullup muhly, and paniced bulrush. Important forbs include tundra aster, Sierra shootingstar, trailing St. Johnswort, hairy waterclover, primrose monkeyflower,

western cowbane, American bistort, cows clover, and small white violet. Willow and bilberry are the only shrubs found in abundance. Fewer species survive as surface water depth increases during spring runoff.

Differences in species composition between observations of Wet Meadow communities may therefore represent temporal fluctuations rather than successional trends. Perturbations that alter the Wet Meadow environment are usually necessary to set successional changes in motion. Overgrazed Wet Meadows have more forbs and fewer grasses and grass-like species that properly grazed or ungrazed (by livestock) meadows, and taller species are replaced by lower growing types. Channel erosion lowers the water table, causing successional to species of drier habitats.

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 establish where water is at or near the surface most of the growing season following spring runoff. Hydrologically, they establish on lotic, sunken concave, and hanging sites. Lotic sites are those with main input flow (other than precipitation) from upstream sources. At least early in the growing season, water flows across lotic sites at depths of 10 to 20 centimeters (4 to 8 inches). Downstream runoff is the principal output flow. Lotic sites are topographic basins that have slight slopes, which permits drainage of surface water. Percolation is negligible due to the saturated or slowly permeable nature of underlying materials. Sunken concave sites also receive water input from upstream sources, but evapotranspiration is the main output flow. Percolation is slowed by fine fuels, shallow bedrock, or both. However, in contrast to lotic and hanging sites, soil of sunken concave sites may dry to considerable depth by fall. Hanging sites are watered by hydrostatic flows as springs or seeps. They are typically on rather steep slopes, and downstream runoff is the main output flow. Surface flows, although constant, are usually no more than 1 centimeter (0.4 inches) deep.

Directly copied from the CWHR Database, describing Wet Meadows:  
California Wildlife Habitat Relationships System  
California Department of Fish and Game  
California Interagency Wildlife Task Group  
Raymond D. Ratliff

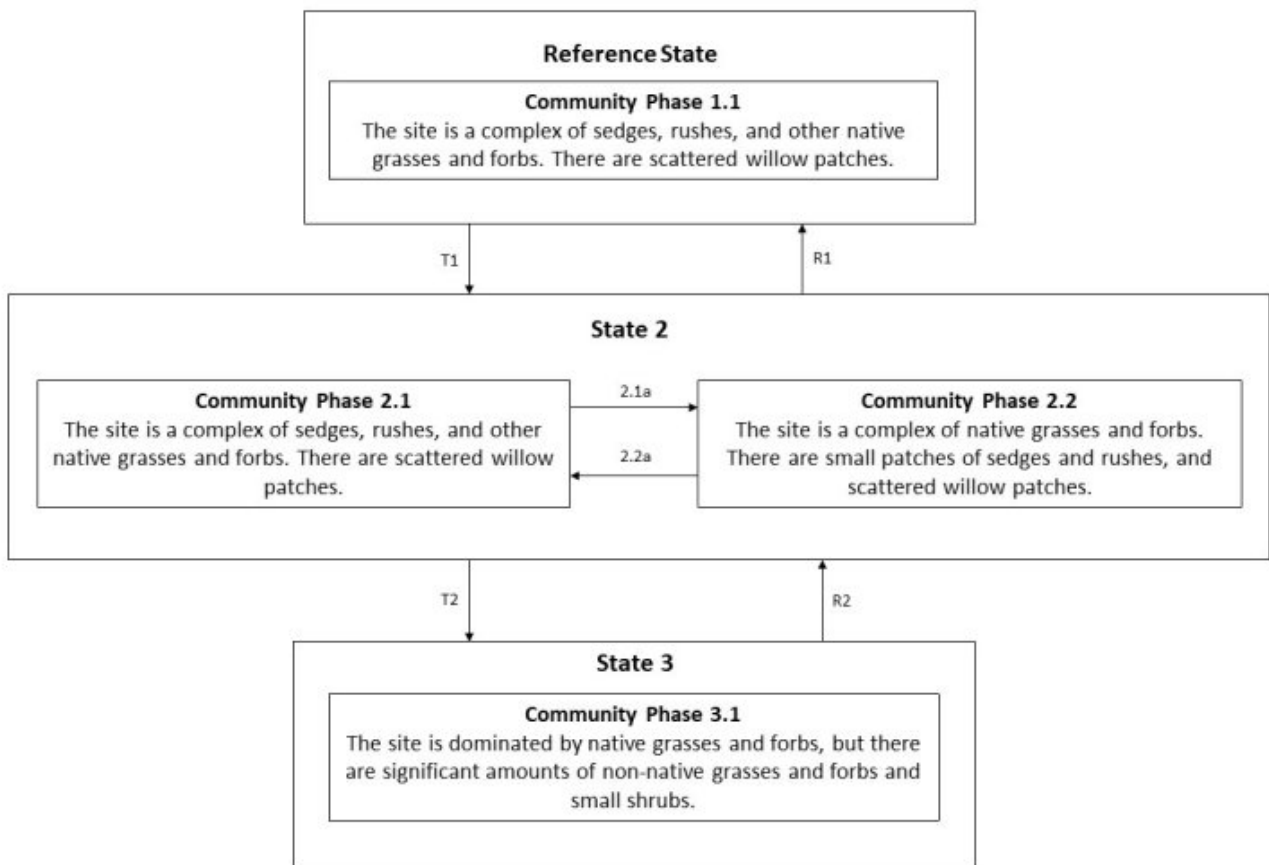
## **Major Land Resource Area**

MLRA 021X  
Klamath and Shasta Valleys and Basins

## **Stage**

Provisional

## **State and transition model**



## Reference State

Community Phase 1.1: This phase represents the plant communities within the reference state that are under natural conditions. The site has the hydrologic functions of a wet meadow complex. The patch sized of each group depend on water inundation frequency and duration. The wettest plant communities include mainly obligate wetland species such as sedges and rushes, and some forbs. Areas that are wet only parts of the year are a mix of obligate and facultative wetland species. Areas that are only saturated during minimal periods when snows melt are mainly dominated by facultative wetland and facultative upland native plant communities. This depends on the elevations across the meadows and the depths to water tables - from inundated year-round to fluctuating water tables over the year (at the surface in spring and down to 30 inches (76 centimeters) in draw-down periods).

T1: Climate changes (prolonged drought, decreased snowpack), alterations to site hydrology (construction of roads, trails, or ditches), or both create a drier site. Reduced spring runoff and lowered water tables reach a threshold that triggers a transition of the site to a drier alternative state (State 2).

State 2: This drier state has significantly less sensitive obligate wetland species, increased facultative upland plants, some hardy facultative wetland species that have deep, established root systems.

Community Phase 2.1: This phase represents a site with a complex of communities that is dominated more significantly by the wetter plant communities, with smaller patches of facultative upland species and scattered willows.

Community Phase 2.2: This phase represents a site with a complex of communities that is dominated more significantly by the drier plant communities that primarily consist of facultative upland and some upland species. There are smaller patches of the facultative wetland species and scattered willows.

Community Pathway 2.1a: This pathway occurs after several years of below average winter precipitation, lower snowpack, warmer than typical spring temperatures that melt the snowpack too rapidly, or any combination thereof.

Community Pathway 2.2a: This pathway occurs after several years of above average winter precipitation, deeper snowpack, and typical spring temperatures.

R1: Restoration will be successful if hydrologic processes are restored. This may not be feasible in cases where the site is impacted by long term climate changes. However, if roads, trails, ditches, canals, or dams are removed and the site is restored it may be possible to return the site to the reference state.

T2: Climate changes (prolonged drought, decreased snowpack) and/or alterations to site hydrology (construction of roads, trails, or ditches) create a drier site. Reduced spring runoff and lowered water tables reach a threshold that triggers a transition of the site to a drier alternative state (State 3).

State 3: The site resembles a dry meadow that is invaded by non-native annual species. This results in a continued loss of many of the obligate and facultative wetland species, which in turn increases the upland plants and some hardy facultative species that have deep, established root systems.

Community Phase 3.1: This phase represents a complex of communities that is dominated by drier plant communities, with a significant amount of non-native annual grasses and forbs.

R2: Restoration will be successful if hydrologic processes are restored. This may not be feasible in cases where the site is impacted by long term climate changes. However, if roads, trails, ditches, canals, or dams are removed and the site is restored it may be possible to return the site to the reference state.

## Citations