

Ecological site group R021XG912CA

Wet Shallow Loamy

Last updated: 08/26/2024
Accessed: 05/10/2025

Key Characteristics

- Upland sites
- > 30" ppt
- < 20" depth

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 on mountains with 2 to 30 percent slopes. Elevations typically are 5,600 to 8,300 feet (1,700 to 2,500 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.

This ESG is found primarily in an area of MLRA 21 that receives 30 to 50 inches (760 to 1,270 millimeters) of mean annual precipitation, most of which comes as snow. The mean annual temperature is 38 to 44 degrees F (3 to 12 degrees C), and the frost-free period is only 30 to 60 days.

Soil features

The dominant soils for this ESG are very shallow to shallow, well drained, and formed in volcanic ash and colluvium over residuum derived from andesite, tuff-breccia, or glassy tuff.

Representative soils include the Fingerridge and Skidbrackle series, both of which are ashy-skeletal, glassy, frigid Lithic Argixerolls.

Vegetation dynamics

This habitat is generally dominated by broad-leaved, evergreen shrubs ranging in height from about 4 to 19 inches (0.1 to 0.5 meters). Average shrub cover is typically 15 percent, but sometimes crowns touch. There may be deciduous shrubs and small trees sparsely scattered within this type. Grasses and forbs are typically sparse, providing 5 to 15 percent ground cover.

Low sagebrush often grows in association with yellow rabbitbrush, antelope bitterbrush, or big sagebrush. Western juniper may be sparsely scattered in stands dominated by low sagebrush, and Utah juniper and singleleaf pinyon are sometimes scattered in stands dominated by black sagebrush. Common grass species include Sandberg bluegrass, bluebunch wheatgrass, bottlebrush squirreltail, Thurber's needlegrass, and Idaho fescue. A rich variety

of forbs is usually present. The abundance and distribution of associated plants are highly influenced by soils and precipitation.

This type commonly forms ecotones with the Sagebrush, Pinyon-Juniper, and Juniper habitats in northeastern California. Indeed, it may be difficult to determine the correct classification of some sites. "On the Modoc Plateau, *Artemisia arbuscula* communities are common as openings within the coniferous forest". They may thus be found adjacent to Mixed Conifer, Jeffrey Pine, or Ponderosa Pine forests. Climatic changes result in periodic shifting of these ecotones, a relationship that is further complicated by invasion of coniferous woodlands into sagebrush habitats in response to fire suppression and grazing by domestic livestock.

Low sagebrush occurs in areas with cold, harsh winters and hot, dry summers. Precipitation generally ranges from 20 to 46 centimeters (8 to 18 inches), falling mostly as snow from December through March. Mean summer maximum temperatures range from 28 to 35 degrees C (83 to 95 degrees F); mean winter minimum range from -13 to -3 degrees C (8 to 27 degrees F). Stands of low sagebrush are "usually found on shallow soils with impaired drainage in the transition zone between the wetter bottom and open timber on the mountainsides." The type also occurs on terraces with hardpan or heavy clay soils. In mosaics formed with bitterbrush, low sagebrush occurs on harsher sites with shallow, well-drained soils, and bitterbrush occupies areas with deeper soils. The clay-rich soils yield much of their snowmelt as runoff, making them very important watershed areas. Perched water tables in spring, which result in poor aeration in the rooting zone of low sagebrush, may be significant in the ecology of the LSG habitat.

Information directly copied from:
California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group
By Jared Verner

Major Land Resource Area

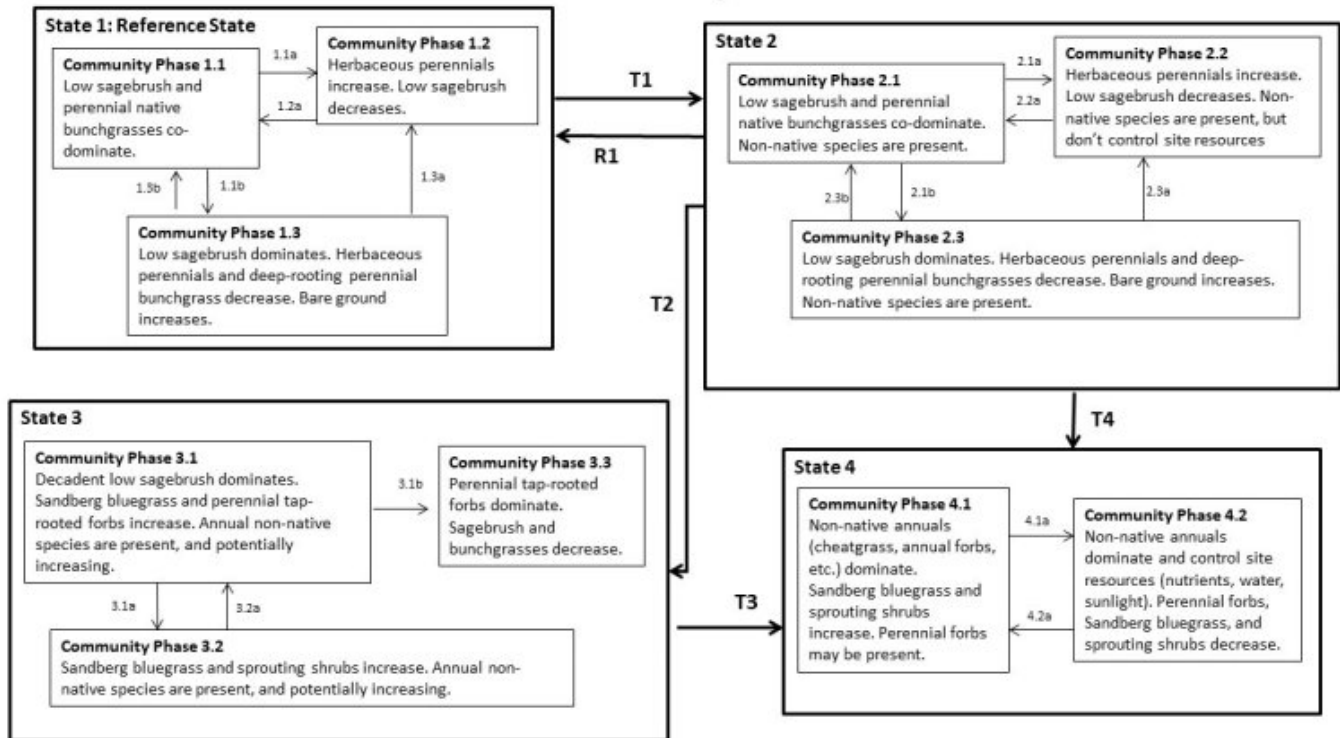
MLRA 021X
Klamath and Shasta Valleys and Basins

Stage

Provisional

State and transition model

Wet Shallow Loamy



State 1: The reference state represents the natural range of variability in pre-European settlement conditions. Natural disturbances impacting this site include wildfire, weather fluctuations, diseases, and insects.

Community Phase 1.1: Site is co-dominated by low sagebrush and native perennial bunchgrasses and forbs.

Community Pathway 1.1a: Low-intensity wildfire reduces cover of low sagebrush. Low sagebrush cover is patchy. Cover and abundance of herbaceous vegetation increases. Sagebrush moth (*Aroga* spp.) infestation may also reduce cover of low sagebrush and provide nutrient, water, and sunlight resources to deep-rooted perennial plants. Nutrient availability, infiltration, and species composition will differ depending on how the low sagebrush canopy was removed.

Community Pathway 1.1b: This pathway occurs over time by natural regeneration and in the absence of disturbance.

Community Phase 1.2: Site is characteristic of a post-fire plant community. Perennial native bunchgrasses, forbs, and native annuals increase. They occupy site resources and dominate ecological processes.

Community Pathway 1.2a: This pathway occurs over time by natural regeneration and in the absence of disturbance, given the presence of a low sagebrush seed source.

Community Phase 1.3: The site is characterized by increased cover of decadent low sagebrush. Understory herbaceous perennials decrease. Site resources such as nutrients, light, and moisture are controlled by low sagebrush.

Community Pathway 1.3a: Wildfire removes low sagebrush canopy.

T1: An invasive seed source and/or disturbance such as fire, improper grazing, insects, diseases, or pathogens triggers a threshold-crossing event to an alternative state.

R1: A combination of management strategies that reduce pressures toward low sagebrush and native perennial grasses and forbs are unlikely on all but the coolest and highest soil moisture sites. Management strategies include use of fires, herbicides, mechanical treatments, and grazing management strategies that fit site-specific conditions. This restoration pathway is time, labor, and money intensive once the invasive annuals rule the ecological functions and processes on the site.

State 2: This state represents the current potential. Once introduced, cheatgrass and other non-natives cannot be removed from the system. Non-native annuals have the potential to significantly reduce ecological resistance to, and resilience following disturbance.

Community Phase 2.1: This site is co-dominated by low sagebrush and perennial bunchgrasses. Non-natives are present.

Community Pathway 2.1a: Low-intensity wildfire reduces cover of low sagebrush. Low sagebrush cover is patchy.

Community Pathway 2.1b: This community pathway occurs over time by natural regeneration in the absence of disturbance.

Community Phase 2.2: The site is characteristic of a post-fire plant community. Low sagebrush cover is reduced or patchy. Herbaceous vegetation increases. Non-natives are present and may be increasing but do not control site resources.

Community Pathway 2.2a: This community pathway occurs over time by natural regeneration in the absence of disturbance.

Community Phase 2.3: Site is characterized by increased cover of decadent low sagebrush. Understory herbaceous perennial species decrease. Site resources such as nutrients, light, and moisture are controlled by low sagebrush. Non-natives are present and may increase. Bare ground areas increase. This community phase is at risk of crossing an ecological threshold.

T2: Drought, inappropriate grazing management.

T3: Repeated high-intensity wildfires.

State 3: This state is characterized by the loss of deep-rooted perennial bunchgrasses. Site resources are controlled by decadent low sagebrush, shallow-rooted perennials, and perennial forbs.

Community Phase 3.1: Site is characterized by a stand of decadent low sagebrush. Regeneration is severely impaired. Understory is sparse and bare ground increases, resulting in increased runoff and soil erosion.

Community Pathway 3.1a: Wildfire removed low sagebrush canopy.

Community Pathway 3.1b: Inappropriate management causes soil erosion, which degrades surface soil horizons. Shrubs and grasses experience long-term defoliation.

Community Phase 3.2: Low sagebrush canopy decreases. Herbaceous vegetation increases. Site may be dominated by a mix of Sandberg bluegrass and sprouting shrubs or tap-rooted perennial forbs, depending on the disturbance that removed the low sagebrush.

Community Pathway 3.2a: This pathway occurs over time by natural regeneration in the absence of disturbance. Considerable time (at least 30 years) will pass before low sagebrush becomes decadent.

Community Phase 3.3: Site is dominated by an almost pure stand of perennial tap-rooted forbs. Low sagebrush and bunchgrasses decrease or are absent. Non-natives may be present but are not increasing.

T4: High-intensity wildfire(s).

State 4: The annual state is characterized by the dominance of annual non-natives. The disturbance return interval is too narrow for the regeneration of low sagebrush and other native species.

Community Phase 4.1: Site is characterized by recovery of sprouting shrubs. Herbaceous vegetation is dominated by non-natives. Annuals control site resources including nutrient cycling, moisture infiltration, and sunlight.

Community Pathway 4.1a: Fire

Community Phase 4.2: Site is characterized by a near monoculture of non-native annuals. Site is highly susceptible to wildfire and increased soil erosion.

Community Pathway 4.2a: Absence of fire, recovery of sprouting shrubs, and short-lived perennial grasses

Citations