

Ecological site R026XF068CA

Wet Ashy Basin

Last updated: 4/10/2024
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General information

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.

MLRA notes

Major Land Resource Area (MLRA): 026X–Carson Basin and Mountains

The area lies within western Nevada and eastern California, with about 69 percent being within Nevada, and 31 percent being within California. Almost all this area is in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. Isolated north-south trending mountain ranges are separated by aggraded desert plains. The mountains are uplifted fault blocks with steep side slopes. Most of the valleys are drained by three major rivers flowing east across this MLRA. A narrow strip along the western border of the area is in the Sierra Nevada Section of the Cascade-Sierra Mountains Province of the Pacific Mountain System. The Sierra Nevada Mountains are primarily a large fault block that has been uplifted with a dominant tilt to the west. This structure leaves an impressive wall of mountains directly west of this area. This helps create a rain shadow affect to MLRA 26. Parts of this eastern face, but mostly just the foothills, mark the western boundary of this area. Elevations range from about 3,806 feet (1,160 meters) on the west shore of Pyramid Lake to 11,653 feet (3,552 meters) on the summit of Mount Patterson in the Sweetwater Mountains.

Valley areas are dominantly composed of Quaternary alluvial deposits with Quaternary playa or alluvial flat deposits often occupying the lowest valley bottoms in the internally drained valleys, and river deposited alluvium being dominant in externally drained valleys. Hills and mountains are dominantly Tertiary andesitic flows, breccias, ash flow tuffs, rhyolite tuffs or granodioritic rocks. Quaternary basalt flows are present in lesser amounts, and Jurassic and Triassic limestone and shale, and Precambrian limestone and dolomite are also present in very limited amounts. Also of limited extent are glacial till deposits along the east flank of the Sierra Nevada Mountains, the result of alpine glaciation.

The average annual precipitation in this area is 5 to 36 inches (125 to 915 millimeters), increasing with elevation. Most of the rainfall occurs as high-intensity, convective storms in spring and autumn. Precipitation is mostly snow in winter. Summers are dry. The average annual temperature is 37 to 54 degrees F (3 to 12 degrees C). The freeze-free period averages 115 days and ranges from 40 to 195 days, decreasing in length with elevation.

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are well drained, are clayey or loamy and commonly skeletal, and are very shallow to moderately deep.

This area supports shrub-grass vegetation characterized by big sagebrush. Low sagebrush and Lahontan sagebrush occur on some soils. Antelope bitterbrush, squirreltail, desert needlegrass, Thurber needlegrass, and Indian ricegrass are important associated plants. Green ephedra, Sandberg bluegrass, Anderson peachbrush, and several forb species also are common. Juniper-pinyon woodland is typical on mountain slopes. Jeffrey pine, lodgepole pine, white fir, and manzanita grow on the highest mountain slopes. Shadscale is the typical plant in the drier parts of the area. Sedges, rushes, and moisture-loving grasses grow on the wettest parts of the wet flood plains and terraces. Basin wildrye, alkali sacaton, saltgrass, buffaloberry, black greasewood, and rubber rabbitbrush grow on the drier sites that have a high concentration of salts.

Some of the major wildlife species in this area are mule deer, coyote, beaver, muskrat, jackrabbit, cottontail, raptors, pheasant, chukar, blue grouse, mountain quail, and mourning dove. The species of fish in the area include trout and catfish. The Lahontan cutthroat trout in the Truckee River is a threatened and endangered species.

LRU notes

The Bodie Hills LRU straddles the California-Nevada state boundary, just north of Mono Lake. The area is underlain by late Miocene age volcanic fields with upper Miocene and Pliocene sedimentary deposits over top. The youngest faults in the area are north and north-east striking. Extensive zones of hydrothermally altered rocks and large mineral deposits, including gold and silver rich veins, formed during hydrothermally active periods of the Miocene (John et al. 2015). A primary distinguishing factor between the Bodie Hills and other hills in MLRA 26 is the dominance of volcanic parent material. Elevations range from 2170 to 2650 meters and slopes typically range from 5 to 35 percent. FFD range from 75-105.

Ecological site concept

The Wet Ashy Basin site occurs on nearly level, enclosed, lake plains and inter-mountain and inter-plateau basins. The soils are typically very deep, poorly drained soils that formed in lacustrine sediments derived from volcanic rocks, with additions of volcanic ash. The dominant plant is tansyleaf evening primrose (*Camissonia tanacetifolia*).

Associated sites

R026XF062CA	Ashy Mountain Basin
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Similar sites

R026XY037NV	CLAY BASIN
R026XF065CA	Ashy Sodic Basin A stable plant community; running water recedes yearly
R026XY036NV	WET CLAY BASIN povertyweed is the dominant forb

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Camissonia tanacetifolia</i>

Physiographic features

The Wet Ashy Basin site occurs on nearly level, enclosed, lake plains and inter-mountain and inter-plateau basins. Slopes range from 0 to 2 percent. Elevations are 8,200 to 8,400 feet.

Table 2. Representative physiographic features

Landforms	(1) Lakebed
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Ponding frequency	Occasional
Elevation	2,499–2,560 m
Slope	0–2%

Climatic features

The climate on this site is subhumid-continental, characterized by cold, moist winters, and cool dry summers. Average annual precipitation is 14 to 16 inches. Mean annual air temperature is 42 to 44 degrees F. The average

growing season is about 30 to 60 days.

Table 3. Representative climatic features

Frost-free period (characteristic range)	
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	356-406 mm
Frost-free period (average)	60 days
Freeze-free period (average)	
Precipitation total (average)	406 mm

Influencing water features

There are perennial streams, springs and seeps associated with this site.

Soil features

The soils are typically very deep, poorly drained soils that formed in lacustrine sediments derived from volcanic rocks, with additions of volcanic ash. Calcium carbonates are at a depth of 10 to 20 inches. In some years the soils maybe ponded for most of the growing season.

Soils correlated to this ecological site include Vertic Epiaquepts.

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits–volcanic rock (2) Eolian deposits (3) Volcanic ash
Surface texture	(1) Ashy silty clay
Family particle size	(1) Fine
Drainage class	Poorly drained
Permeability class	Very slow
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (Depth not specified)	14.99–17.02 cm
Calcium carbonate equivalent (Depth not specified)	0%
Clay content (Depth not specified)	45–48%
Electrical conductivity (Depth not specified)	0–4 mmhos/cm
Sodium adsorption ratio (Depth not specified)	0–5
Soil reaction (1:1 water) (Depth not specified)	7.4–9
Subsurface fragment volume <=3" (Depth not specified)	0%

Subsurface fragment volume >3" (Depth not specified)	0%
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Ecological dynamics

This is not a stable plant community. The site may be completely water covered during the growing season, or it can be a very productive site, dominated by annual forbs in drier years.

Determinations of range condition are not appropriate for this site.

Fire Ecology:

Baltic rush is fire tolerant when dormant and top-killed by fire during the growing season. It establishes after fire through seed and/or lateral spread by rhizomes.

Mat muhly communities are only slightly affected by fire. They are at the highest susceptibility is during late spring and early summer. It takes 5 to 10 years for it to recover to pre fire frequency.

Fire:

Mat muhly is top killed by fire. Fire does not harm mat muhly to any great extent because the rhizome buds are insulated by the soil. There is a greater than 65% chance that at least 50% of the plants in a population will survive a fire.

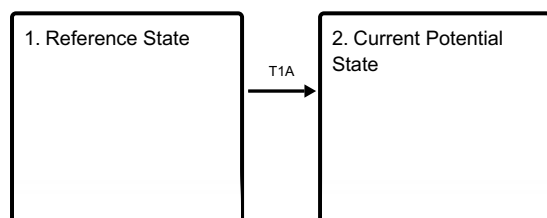
Silver sagebrush steppes experience stand-replacement fires. Fire frequencies are uncertain: fire histories for silver sagebrush communities are sparse to altogether lacking. Since plant productivity and community structure vary across the species' wide geographical distribution, historic fire intervals were probably similarly varied.

Fire:

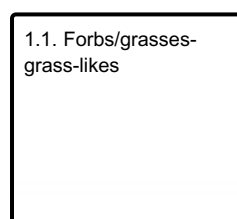
Surface fires top kills silver sagebrush. Silver sagebrush has a strong sprouting response after top kill fire. Because perennating buds on rhizomes and roots are protected by soil, silver sagebrush ordinarily survives even severe surface fires. Fall burning is harder on silver sagebrush than spring burning.

State and transition model

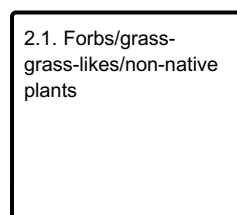
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1 Reference State

The Reference State does not describe a stable community. The site has a variable water table that influences the plant community year to year.

Community 1.1 Forbs/grasses-grass-likes

The plant community is dominated by tansyleaf suncup. Potential vegetative composition is about 10 percent grasses and grass-like plants, 85 percent forbs, and up to 5 percent shrubs. Approximate ground cover (basal and crown) is 0 to 50 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Forb	–	476	762
Grass/Grasslike	–	56	90
Shrub/Vine	–	28	45
Total	–	560	897

State 2 Current Potential State

The Current Potential State is similar to the Reference state, except the Current Potential State plant community has non-native species established.

Community 2.1 Forbs/grass-grass-likes/non-native plants

Community 2.1 is similar to 1.1 and is influenced by water fluctuations from year to year. The difference with 2.1 is the presence of non-native species in the plant community.

Transition T1A State 1 to 2

Establishment of non-native species.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses/Grasslikes			54–135	
	pale spikerush	ELMA5	<i>Eleocharis macrostachya</i>	18–45	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	18–45	–
2	Secondary Perennial Grasses/Grasslikes			0–45	
	Douglas' sedge	CADO2	<i>Carex douglasii</i>	3–7	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	3–7	–
	annual rabbitsfoot grass	POMO5	<i>Polypogon monspeliensis</i>	3–7	–
Forb					
3	Perennial Forbs			673–762	
	tansyleaf evening primrose	CATA2	<i>Camissonia tanacetifolia</i>	673–717	–
Shrub/Vine					
4	Secondary Shrubs			0–45	
	silver sagebrush	ARCA13	<i>Artemisia cana</i>	3–6	–

Animal community

Livestock Interpretations:

Young mat muhly is readily eaten by livestock. Plants become less palatable as they mature. Mat muhly plants usually grow in scattered patches, so they are seldom sufficiently abundant to be of major importance to livestock. In the northern part of its range, mat muhly is rated as good to very good forage for cattle and horses and fairly good for domestic sheep. Baltic rush is described as a fair to good forage species for cattle. On average, Baltic rush palatability is considered medium to moderately low. Baltic rush is considered palatable early in the growing season when plants are young and tender, but as stems mature and toughen palatability declines.

Wildlife Interpretations:

The palatability of mat muhly for wildlife species has been rated as fair to poor.

Baltic rush also provides food for several wildlife species and waterfowl. Baltic rush is an important cover species for a variety of small birds, upland game birds, birds of prey, and waterfowl.

Other products

The stems of Baltic rush were historically used by Native Americans as a foundation for coiled basketry.

Other information

Baltic rush's production of deep and fibrous roots originating from a mass of coarse and creeping rhizomes makes it a valuable species for stabilizing streambanks and protecting against soil erosion. Tribes of the Great Basin used silver sagebrush branches as a fuelbed for roasting pinyon pinecones. Many tribes use the branches in ceremonial rites.

Type locality

Location 1: Mono County, CA	
Latitude	38° 16' 4"
Longitude	118° 58' 49"
General legal description	Bodie Hills, approximately 1.5 miles south of Beauty Peak

Other references

Fire Effect Information System (Online; <http://www.fs.fed.us/database/feis/>).

USDA-NRCS Plant Database (Online; <http://plants.usda.gov/>).

Contributors

A. Mushrush

Approval

Kendra Moseley, 4/10/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
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Contact for lead author	
Date	05/19/2024
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
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14. **Average percent litter cover (%) and depth (in):**
-

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**
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17. **Perennial plant reproductive capability:**
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