

Ecological site R022AZ055CA MOUNTAIN SHOULDERS 20-30 P.Z.

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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): 022A–Sierra Nevada and Tehachapi Mountains

This ESD was developed using older policy requirements which have been improved with the intent of improving ESD products overall. Users should approach these materials with some caution as the content herein, while likely useful for some purposes, was developed within parameters now recognized as needing varying levels of improvement. As always, a site-specific investigation is highly recommended when site-specific management alternatives are to be developed and/or management decisions are to be made.

Each ESD is an interpretation of the ecological relationships between biotic and abiotic aspects of the landscape. Users of this document should be aware of the limitations of this tool to the extent that specific local conditions may not be entirely captured within the ESD. In particular, management decisions should be supported by site-specific inventories, assessments and planning processes based on the best available information including and extending beyond the ESD.

An ESD is not a permanent determination of ecological dynamics. Rather, each ESD is an evolving body of work intrinsically tied to the soil surveys and data associated with soil map unit components of correlated soil-ecological site relationships. As new information becomes available, updates may be made or may be underway at any given time. Minor updates may be made without announcement when such changes do not modify the ecological site concept, the soils correlated or the state-and-transition model.

Associated sites

F022AY126NV	Pinus albicaulis-Pinus flexilis/Poa-Carex
R022AY011NV	MOUNTAIN RIDGE 30+ P.Z.
R022AY024NV	MAHOGANY SAVANNA
R022AY032NV	ALPINE RIDGE

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> ssp. <i>vaseyana</i>
Herbaceous	(1) <i>Leucopoa kingii</i> (2) <i>Achnatherum occidentale</i>

Physiographic features

This site occurs on mountain summits and shoulders having a smooth to slightly concave shape. Slopes range from 15 to 50 percent. Elevations are 8000 to 10,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain (2) Mountain slope
Elevation	8,000–10,500 ft
Slope	15–50%

Climatic features

The climate is sub-humid with cold, moist winters, and cool, dry summers. Average annual precipitation is 16 inches to 30 inches. Mean annual air temperature is 36 to 43 degrees F. The average growing season is about 30 to 70 days. Climate data used to support this section were derived from PRISM and is not specifically tied to any dominant climate station.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	0 days
Precipitation total (average)	30 in

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very deep, well drained soils that formed in colluvium and residuum from volcanic rocks. The soils are skeletal, have a mollic epipedon, and an argillic horizon. The soils are usually moist in the moisture control section during late fall, winter, and spring, and are dry from July through early October. Soils have high runoff and high permeability. Available water capacity is low. Soil series associated with this site include: Dab

CA729 Toiyabe National Forest Area, California
513;Rubble land-Holdon-Rock outcrop complex, 30 to 100 percent slopes;Dab
791;Dab-Longday-Thief ridge association;Dab;Pachic Argicryolls
792;Dab-Aspocket-Hawkridge association;Dab

NV773 Douglas County Area, Nevada
1000;Dab-Longday-Thief ridge association;Dab;Pachic Argicryolls

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	72 in
Surface fragment cover <=3"	74%
Surface fragment cover >3"	2%
Available water capacity (0-40in)	3.4 in

Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–7.3

Ecological dynamics

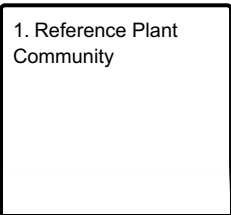
As ecological condition declines, big sagebrush, snowberry and other woody plants increase in prevalence as Letterman's needlegrass, mountain brome and other perennial grasses and forbs decline in the understory.

Fire Ecology:
The fire return interval for mountain big sagebrush communities ranges from 15 to 40 years. Mountain big sagebrush is highly susceptible to injury from fire. Plants are readily killed in all seasons, even by light severity fires. Mountain big sagebrush plants are top-killed by fire and will not resprout. Regeneration of mountain big sagebrush is from on-site or off-site seed. Depending on circumstances of the environment and seed source, mountain big sagebrush seeds may sprout profusely the spring after burning, or very sparsely.

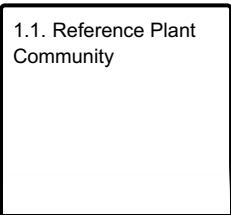
Mountain brome is top-killed by fire. Mountain brome appears to recover from fire within a few years.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is characterized by an open canopy of soft-woody shrubs and a dense understory of perennial grasses. The plant community is dominated by western needlegrass, mountain brome and mountain big sagebrush. Potential vegetative composition is about 30% shrubs, 50% grasses and grass-like plants, and 10% forbs. Approximate ground cover(basal and crown) is 20 to 35 percent.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	280	420	560
Shrub/Vine	80	120	160
Forb	40	60	80
Total	400	600	800

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			306–504	
	spike fescue	LEKI2	<i>Leucopoa kingii</i>	210–270	–
	western needlegrass	ACOCO	<i>Achnatherum occidentale ssp. occidentale</i>	60–90	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	12–48	–
	purple oniongrass	MESP	<i>Melica spectabilis</i>	12–48	–
	bluegrass	POA	<i>Poa</i>	12–48	–
2	Secondary Perennial Grasses/Grasslikes			30–60	
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	3–18	–
	sedge	CAREX	<i>Carex</i>	3–18	–
	big squirreltail	ELMU3	<i>Elymus multisetus</i>	3–18	–
Forb					
3	Perennial Forbs			36–90	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	12–30	–
	lupine	LUPIN	<i>Lupinus</i>	12–30	–
	phlox	PHLOX	<i>Phlox</i>	3–12	–
	buckwheat	ERIOG	<i>Eriogonum</i>	3–12	–
	rockcress	ARABI2	<i>Arabis</i>	3–12	–
Shrub/Vine					
4	Primary Shrubs			90–120	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	90–120	–
5	Secondary Shrubs			12–48	
	slender buckwheat	ERMI4	<i>Eriogonum microthecum</i>	3–12	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	3–12	–
	mountain snowberry	SYOR2	<i>Symphoricarpos oreophilus</i>	3–12	–

Animal community

Livestock Interpretations:

Mountain big sagebrush is eaten by domestic sheep and cattle, but has long been considered to be of low palatability to domestic livestock, a competitor with more desirable species, and a physical impediment to grazing.

Mountain brome is palatable to all classes of livestock throughout the growing season. Plants become fibrous at

maturity but livestock readily graze the ripe seed heads. Domestic sheep have shown rapid weight gain on ranges with an abundance of ripe Mountain brome seed heads.

Wildlife Interpretations:

Mountain big sagebrush is highly preferred and nutritious winter forage for mule deer.

Mountain brome provides high-quality forage and is sometimes planted as a pasture grass. Various small animals including rodents and geese graze Mountain brome foliage, and the seeds furnish food for many bird and rodent species.

Other information

Mountain big sagebrush is easily propagated from seed under greenhouse, nursery, and common garden conditions and has been successfully seeded directly into field sites. Mountain big sagebrush has also been successfully planted in field sites using nursery-grown bareroot and containerized stock.

Mountain brome is useful for revegetating disturbed sites due to rapid establishment and good soil stabilizing capability. It has proved effective for stabilizing watersheds.

Type locality

Location 1: Mono County, CA	
Township/Range/Section	T8N R22E S33
Latitude	38° 29' 19"
Longitude	119° 34' 3"
General legal description	Toiyabe National Forest in Corral Valley, about two miles south of Rodriguez Flat

Contributors

ALM/GKB

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)	
Contact for lead author	
Date	
Approved by	
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):**

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):**

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:**

17. **Perennial plant reproductive capability:**
