

Ecological site R022AZ039CA STONY SOUTH SLOPE 16-30 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

F022AY103NV	POTR5/SYMPH/BRMA4
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R022AY017NV	SEMI-WET MEADOW
R022AY024NV	MAHOGANY SAVANNA

Table 1. Dominant plant species

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

Physiographic features

This site occurs on mountain sideslopes of southerly aspect. Slopes range from 30 to 75 percent, but slope gradients of 30 to 50 percent are most typical. Elevations are 8500 to over 9000.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	2,591–3,048 m
Slope	30–75%
Aspect	SE, S, SW

Climatic features

The climate on this site is subhumid-continental, characterized by 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)	762 mm

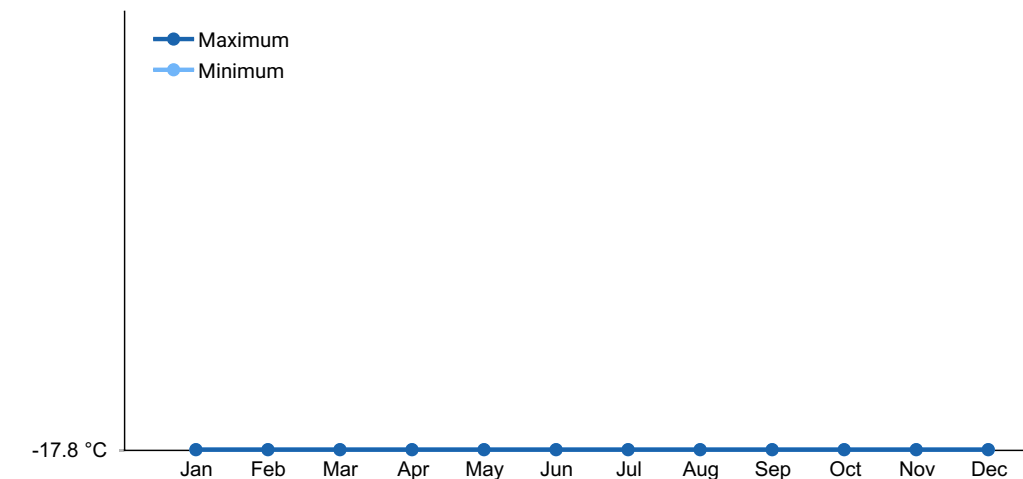


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are typically very deep and well drained that formed from colluvium and residuum derived from volcanic rocks. The soils are usually moist in the moisture control section during late fall, winter, and spring, and dry from July through early October. The soils have a mollic epipedon and an argillic horizon. Runoff is high and permeability is moderate. The moisture regime is xeric bordering on aridic and the temperature regime is cryic. Soils correlated to this ecological site include Dab.

CA729 Toiyabe National Forest Area, California
 790;Dab association;Dab
 791;Dab-Longday-Thiefridge association;Dab
 792;Dab-Aspocket-Hawkridge association;Dab

NV773 Douglas County Area, Nevada
 1000;Dab-Longday-Thiefridge association;Dab

Table 4. Representative soil features

Parent material	(1) Colluvium–volcanic breccia
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Surface texture	(1) Extremely gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	183 cm
Surface fragment cover <=3"	55–65%
Surface fragment cover >3"	2–6%
Available water capacity (0-101.6cm)	8.38–8.64 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	40–60%
Subsurface fragment volume >3" (Depth not specified)	15–20%

Ecological dynamics

As ecological condition declines, big sagebrush, currant and rabbitbrush will increase as spike fescue and western needlegrass decrease. Following wildfire snowberry, currant, rabbitbrush and basin wildrye dramatically increase. Species most likely to invade this site are cheatgrass, mustards and other annual forbs. Singleleaf pinyon and Utah juniper will invade this site where it occurs adjacent to these woodlands.

Fire Ecology:

Presettlement fire return intervals in mountain big sagebrush communities varied from 15 to 25 years. Mountain big sagebrush is highly susceptible to injury from fire. It is often top-killed by fire and will not resprout. Antelope bitterbrush is considered a weak sprouter and is often killed by summer or fall fires. Antelope bitterbrush in some areas may sprout after light-severity spring fires. High fuel consumptions increase antelope bitterbrush mortality and therefore favors seedling establishment. The rhizomatous, dense growth of spike fescue may lessen the impact of fire on this species. Spike fescue persists following fire via on-site surviving rhizomes, and can colonize an area through off-site seed sources. Western needlegrass is moderately damaged by fire. The recovery time is between 3 and

5 years.

State and transition model

Ecosystem states

1. Reference State

State 1 submodel, plant communities

1.1. Reference Plant
Community

State 1 Reference State

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 spike fescue, western needlegrass, antelope bitterbrush and mountain big sagebrush. Potential vegetative composition is about 60% grasses, 10% forbs, and 30% shrubs. Approximate ground cover(basal and crown) is 40 to 60 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	605	807	942
Shrub/Vine	303	404	471
Forb	101	135	157
Total	1009	1346	1570

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			538–807	
	spike fescue	LEKI2	<i>Leucopoa kingii</i>	404–538	–
	western needlegrass	ACOCO	<i>Achnatherum occidentale</i> <i>ssp. occidentale</i>	135–269	–
2	Secondary Perennial Grasses			67–135	
	sedge	CAREX	<i>Carex</i>	7–40	–
	big squirreltail	ELMU3	<i>Elymus multisetus</i>	7–40	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	7–40	–
	melicgrass	MELIC	<i>Melica</i>	7–40	–
	Cusick's bluegrass	POCU3	<i>Poa cusickii</i>	7–40	–
	muttongrass	POFE	<i>Poa fendleriana</i>	7–40	–
Forb					
4	Perennial Forbs			67–202	
	rockcress	ARABI2	<i>Arabis</i>	7–40	–
	milkvetch	ASTRA	<i>Astragalus</i>	7–40	–
	northwestern Indian paintbrush	CAAN7	<i>Castilleja angustifolia</i>	7–40	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	7–40	–
	buckwheat	ERIOG	<i>Eriogonum</i>	7–40	–
	lupine	LUPIN	<i>Lupinus</i>	7–40	–
	mountain monardella	MOOD	<i>Monardella odoratissima</i>	7–40	–

	phlox	PHLOX	<i>Phlox</i>	7–40	–
	ragwort	SENEC	<i>Senecio</i>	7–40	–
	mule-ears	WYAM	<i>Wyethia amplexicaulis</i>	7–40	–
Shrub/Vine					
5	Primary Shrubs			202–471	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	135–269	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	67–202	–
6	Secondary Shrubs			27–108	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	13–27	–
	oceanspray	HODI	<i>Holodiscus discolor</i>	13–27	–
	currant	RIBES	<i>Ribes</i>	13–27	–
	roundleaf snowberry	SYRO	<i>Symphoricarpos rotundifolius</i>	13–27	–

Animal community

Livestock Interpretations:

This site has limited value for livestock grazing, due to the low forage production. Domestic livestock commonly graze spike fescue on spring range. Spike fescue is a highly nutritious, productive, and palatable grass. It is fairly palatable for cattle and domestic sheep in the spring; however, as spike fescue matures in summer it becomes unpalatable and is grazed sparingly. Western needlegrass has a spreading and deeply penetrating root system, which makes it resistant to trampling. Mountain big sagebrush is eaten by domestic livestock but has long been considered to be of low palatability, and a competitor to more desirable species. Antelope bitterbrush is important browse for livestock. Domestic livestock and mule deer may compete for antelope bitterbrush in late summer, fall, and/or winter. Cattle prefer antelope bitterbrush from mid-May through June and again in September and October.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

Wildlife Interpretations:

Spike fescue is frequently browsed by mule deer and elk. Spike fescue provides some cover for smaller mammals and birds. Western needlegrass provides valuable forage for many species of wildlife. Mountain big sagebrush is highly preferred and nutritious winter forage for mule deer and elk. Pronghorn antelope, mule deer, elk, and bighorn sheep

utilize antelope bitterbrush extensively. Mule deer use of antelope bitterbrush peaks in September, when antelope bitterbrush may compose 91 percent of the diet. Winter use is greatest during periods of deep snow. Antelope bitterbrush seed is a large part of the diets of rodents, especially deer mice and kangaroo rats.

Hydrological functions

Runoff is high and permeability is moderate.

Other products

Native Americans used big sagebrush leaves and branches for medicinal teas, and the leaves as a fumigant. Bark was woven into mats, bags and clothing.

Other information

Antelope bitterbrush has been used extensively in land reclamation. Antelope bitterbrush enhances succession by retaining soil and depositing organic material and in some habitats and with some ecotypes, by fixing nitrogen.

Type locality

Location 1: Mono County, CA	
Township/Range/Section	T6N R24E S7
Latitude	38° 22' 55"
Longitude	119° 22' 43"
General legal description	Humboldt-Toiyabe National Forest, north of Devils Gate.

Other references

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

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

Contributors

A. Mushrush

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:**
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17. **Perennial plant reproductive capability:**
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