

Ecological site R022AZ045CA GRAVELLY LOAMY SLOPE 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

R022AY011NV	MOUNTAIN RIDGE 30+ P.Z.
R022AY021NV	SOUTH SLOPE 30+ P.Z.
R022AY031NV	LOAMY SLOPE 30+ P.Z.

Table 1. Dominant plant species

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

Physiographic features

This site occurs on sideslopes of mountains and moraines on mostly northerly aspects. Slopes range from 8 to 50 percent. Elevations are 8000 to 11,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope (2) Moraine
Elevation	2,438–3,505 m
Slope	8–50%
Aspect	N, NE, NW

Climatic features

The climate is subhumid with cold, moist winters and cool, dry summers. Average annual precipitation is from 16 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

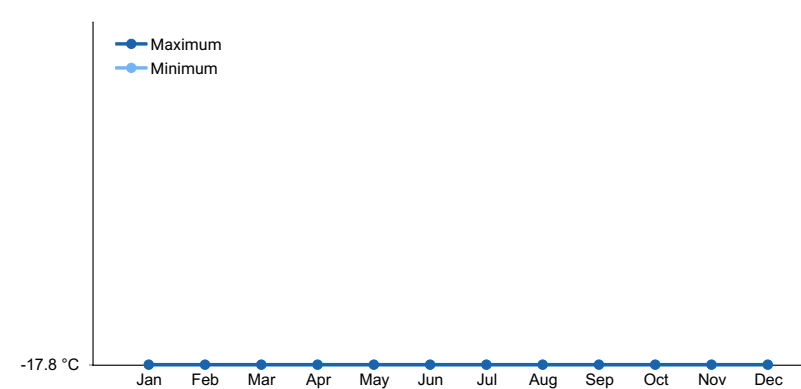


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very deep and well drained. They are formed in colluvium from granitic or volcanic rocks. The soils have a mollic epipedon and an argillic horizon. They have moderately rapid to moderate permeability and medium to high surface runoff. The soils are usually moist during late fall, winter, and spring, and dry from July through early October. The moisture regime is xeric bordering on aridic and the temperature regime is cryic.

The soil series associated with this site include: Delhew and Dab

- CA729 Toiyabe National Forest Area, California
- 471;Sumeadow association;Dab
- 560;Dunderberg-Conwayridge association;Vitrandid Haplocryolls
- 561;Dunderberg association;Vitrandid Haplocryolls
- 660;Delhew-Grandridge-Bakscratch association;Delhew
- 680;Rolldown-Mountpatterson-Rubble land complex, 4 to 30 percent slopes;Dab
- 700;Coldtree-Rubble land complex, 30 to 75 percent slopes;Dab

790;Dab association;Dab
791;Dab-Longday-Thiefridge association;Dab
792;Dab-Aspocket-Hawkridge association;Dab

NV773 Douglas County Area, Nevada
660;Delhew-Grandridge-Bakscratch association;Delhew
1000;Dab-Longday-Thiefridge association;Dab

Table 4. Representative soil features

Surface texture	(1) Extremely gravelly sandy loam (2) Ashy sandy loam (3) Very gravelly coarse sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	183 cm
Surface fragment cover <=3"	55–74%
Surface fragment cover >3"	2–4%
Available water capacity (0-101.6cm)	8.13–9.65 cm
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)	18–41%
Subsurface fragment volume >3" (Depth not specified)	2–25%

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

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

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 70% grasses, 10% forbs, and 20% shrubs. Approximate ground cover(basal and crown) is 35 to 50 percent

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	420	588	925
Shrub/Vine	112	157	247
Forb	28	39	62
Total	560	784	1234

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			235–549	
	western needlegrass	ACOCO	<i>Achnatherum occidentale ssp. occidentale</i>	118–275	–
	spike fescue	LEKI2	<i>Leucopoa kingii</i>	118–275	–
2	Secondary Perennnial Grasses			152–344	
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	4–24	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	4–24	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	4–24	–
	big squirreltail	ELMU3	<i>Elymus multisetus</i>	4–24	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	4–24	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	4–24	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	4–24	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	4–24	–
Forb					
4	Perennial Forbs			16–63	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	4–16	–
	buckwheat	ERIOG	<i>Eriogonum</i>	4–16	–
	phlox	PHLOX	<i>Phlox</i>	4–16	–
	mule-ears	WYAM	<i>Wyethia amplexicaulis</i>	4–16	–
Shrub/Vine					
5	Evergreen			118–235	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	78–157	–
	roundleaf snowberry	SYRO	<i>Symphoricarpos rotundifolius</i>	392–78	–
6	Secondary Shrubs			16–63	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	4–16	–
	slender buckwheat	ERMI4	<i>Eriogonum microthecum</i>	4–16	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	4–16	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	4–16	–
	currant	RIBES	<i>Ribes</i>	4–16	–

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.

Wildlife Interpretations:

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

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.

Type locality

Location 1: Mono County, CA	
Latitude	38° 31' 37"
Longitude	119° 19' 12"
General legal description	Toiyabe National Forest

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

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:**
