

Ecological site R022AZ052CA GRAVELLY SLOPE 16+ 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.
R022AY024NV	MAHOGANY SAVANNA
R022AY025NV	MAHOGANY THICKET
R022AY027NV	MOUNTAIN BASIN

Table 1. Dominant plant species

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

Physiographic features

This site occurs on mountain sideslopes on northerly aspects. Slopes range from 4 to 50 percent. Elevations are

7000 to 11,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	2,134–3,353 m
Slope	4–50%
Aspect	N, NE, NW

Climatic features

The climate is subhumid-continental with cold, moist winters and cool, dry summers. Average annual precipitation is 16 inches to over 40 inches. Mean annual air temperature is 36 to 42 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)	1,016 mm

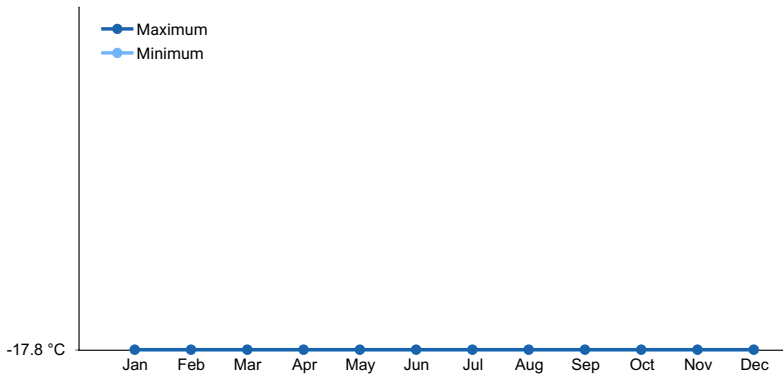


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are deep to very deep and well drained. They are formed in colluvium and residuum from granodiorite or andesite and tuff. Runoff is medium to high and permeability is moderately rapid to very slow. Available water holding capacity is very low to moderate. The soils have a mollic epipedon and an argillic horizon. The soils are moist during late fall, winter, and spring, and dry from July through early October. The soil series associated with this site include: Delhew, Jackflat, and Sweetmount.

- CA729 Toiyabe National Forest Area, California
- 234;Hawkinspeak-Thiefridge association;Sweetmount
- 531;Elaero association;Delhew
- 660;Delhew-Grandridge-Bakscratch association;Delhew
- 710;Bakscratch-Grandridge-McTom association;Delhew
- 740;Jackflat-Grandridge association;Jackflat
- 770;Sweetmount-Hawkinspeak-Hawkridge association;Sweetmount
- 780;Granhogany-Rock outcrop complex, 15 to 50 percent slopes;Delhew

790;Dab association;Sweetmount
800;Grandridge-Delhew association;Delhew;Jackflat

CA732 Inyo National Forest, Western Part, California
234ty;Hawkinspeak-Thiefrideg association;Sweetmount

NV773 Douglas County Area, Nevada
660;Delhew-Grandridge-Bakscrach association;Delhew
800;Grandridge-Delhew association;Delhew;Jackflat

Table 4. Representative soil features

Surface texture	(1) Very gravelly coarse sandy loam (2) Very gravelly loamy coarse sand (3) Very gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to well drained
Permeability class	Slow to rapid
Soil depth	25–152 cm
Surface fragment cover ≤3"	35–65%
Surface fragment cover >3"	4–14%
Available water capacity (0-101.6cm)	6.35–15.75 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)	32–41%
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 western needlegrass, 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.

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, and mountain big sagebrush. Potential vegetative composition is about 35% grasses, 5% forbs, and 60% 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)
Shrub/Vine	471	605	740
Grass/Grasslike	275	353	432
Forb	39	50	62
Total	785	1008	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			252–353	
	western needlegrass	ACOCO	<i>Achnatherum occidentale ssp. occidentale</i>	252–353	–
2	Secondary Perennial Grasses/Grasslikes			50–151	
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	6–30	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	6–30	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	6–30	–
	sedge	CAREX	<i>Carex</i>	6–30	–
	big squirreltail	ELMU3	<i>Elymus multisetus</i>	6–30	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	6–30	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	6–30	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	6–30	–
	spike fescue	LEKI2	<i>Leucopoa kingii</i>	6–30	–
	purple oniongrass	MESP	<i>Melica spectabilis</i>	6–30	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	11–22	–
Forb					
3	Perennial Forbs			20–81	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	6–20	–
	buckwheat	ERIOG	<i>Eriogonum</i>	6–20	–
	lupine	LUPIN	<i>Lupinus</i>	6–20	–
	phlox	PHLOX	<i>Phlox</i>	6–20	–
	ragwort	SENEC	<i>Senecio</i>	6–20	–
	vetch	VICIA	<i>Vicia</i>	6–20	–
Shrub/Vine					
4	Primary Shrubs			179–359	
	roundleaf snowberry	SYRO	<i>Symphoricarpos rotundifolius</i>	101–202	–
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	78–157	–
5	Secondary Shrubs			50–151	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–20	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	6–20	–
	currant	RIBES	<i>Ribes</i>	6–20	–
	mountain snowberry	SYOR2	<i>Symphoricarpos oreophilus</i>	6–20	–

Animal community

Livestock Interpretations:

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.

Wildlife Interpretations:

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

Sage-grouse: Sagebrush-grassland communities provide critical sage-grouse breeding and nesting habitats. Meadows surrounded by sagebrush may be used as feeding and strutting grounds. Sagebrush is a crucial component of their diet year-round, and sage-grouse select sagebrush almost exclusively for cover. Sage-grouse prefer mountain big sagebrush and Wyoming big sagebrush communities to basin big sagebrush communities.

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

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° 16' 20"
Longitude	119° 36' 40"
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

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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:**
