

Ecological site R021XY218OR SHRUBBY LOAM 16-20 PZ

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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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on low hills, benches, dissected high terraces and fans of large valleys and basins. Slopes typically range from 1 to 25%. Elevations range from 4500 to 5200 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Plateau
Elevation	1,463–1,554 m
Slope	2–15%
Water table depth	152 cm
Aspect	Aspect is not a significant factor

Climatic features

Hot dry summers and cold wet (rain or snow) winters characterize this site. This site receives between 16-20 inches of precipitation annually. It occurs mainly between the months of November and June as both rain and snow. The soil temperature regime is typically frigid. the average annual air temperature is 43-46 degrees F with extreme temperatures ranging from 85 to -30 degrees F. The frost free period is 40 to 70 days. The optimum period for plant growth is from late April through July.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	90 days
Precipitation total (average)	508 mm

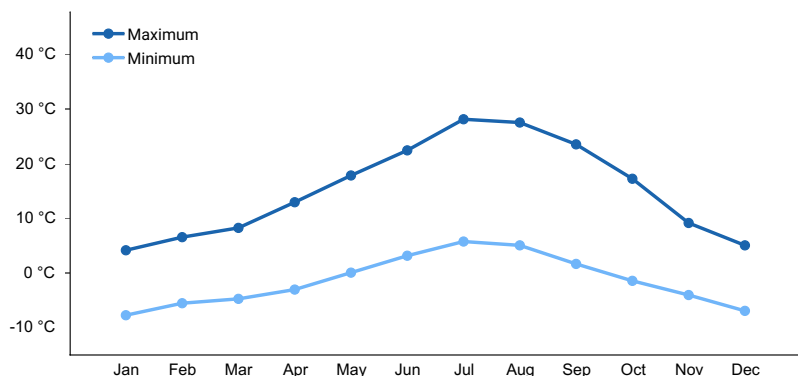


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils of this site range from moderate to deep (40+ inches), they are well drained and have loamy surface textures and clayey subsoils. They are sometimes stony or gravelly on the surface and throughout the profile. Parent materials are generally tuff, basalt or diatomite (sediments) and may contain a small amount of ash. Permeability is slow. The potential for water erosion is low to moderate, depending on slope.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Stony loam
Family particle size	(1) Clayey
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderately slow to moderately rapid
Soil depth	114–152 cm
Available water capacity (0-101.6cm)	0 cm
Calcium carbonate equivalent (0-101.6cm)	2%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.3–7.4

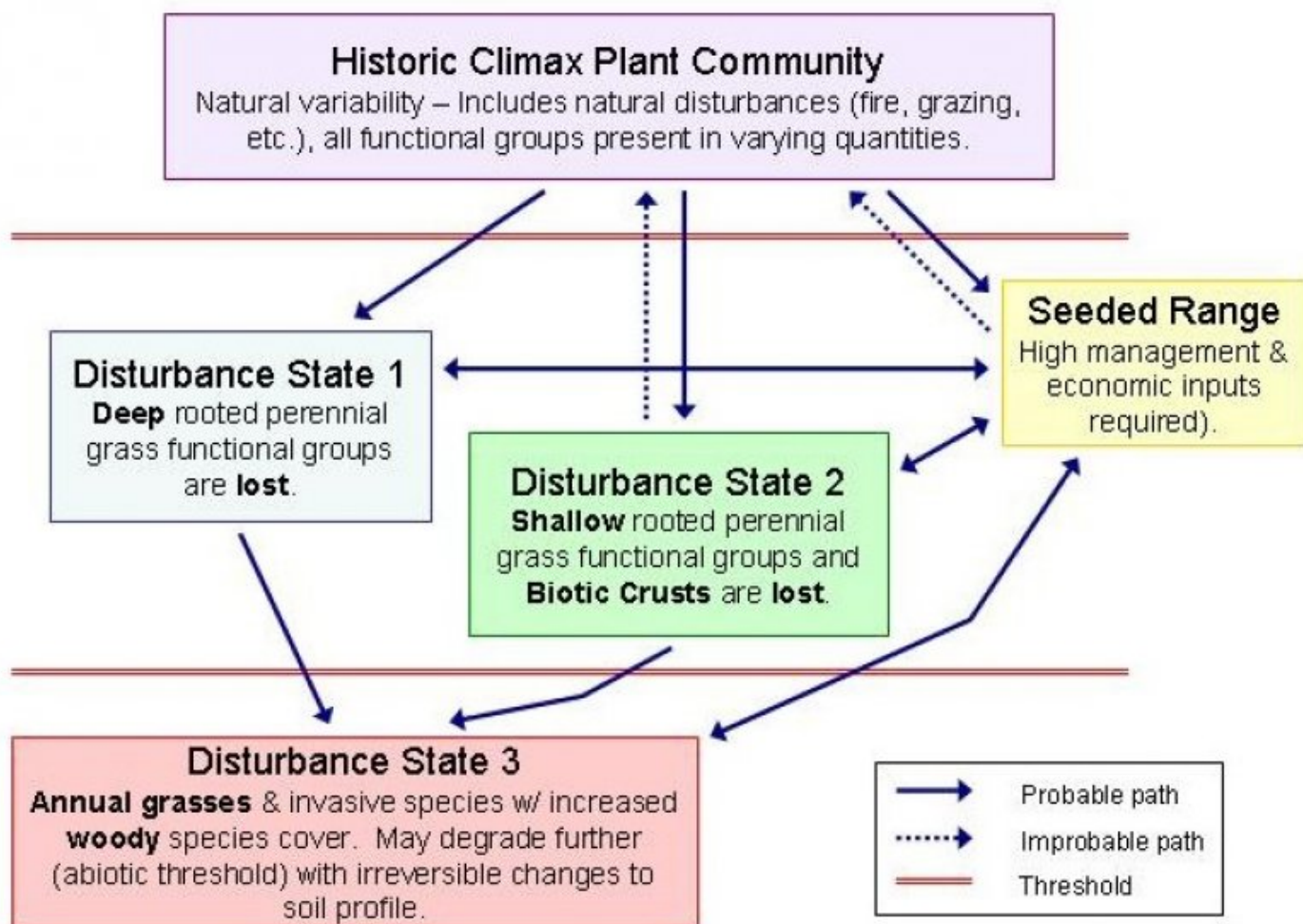
Ecological dynamics

The potential plant community is dominated by mountain big sagebrush and antelope bitterbrush. Idaho fescue dominates the understory, but bluebunch wheatgrass is sometimes common. The interpretative plant community for this site is the Historic Climax Plant Community.

Bluebunch wheatgrass is more abundant in the driest climatic areas and more droughty positions. Bitterbrush is more common sandy inclusions. Idaho fescue is more abundant in moist locations, and an occasional ponderosa pine or juniper is present when this site is near tree covered areas. Locations with very high surface stones/boulders have lower production and less plant cover. Some basin big sagbrush naturally occurs on the site in warmer areas. Big sagebrush and bitterbrush are easily damaged or killed by high intensity fires and are slow to return after burning. Sustained heavy grazing pressure by livestock or poor grazing management may reduce wheatgrass, fescue, needlegrass and bitterbrush, depending on season of use and growing conditions. Rabbitbrush and cheatgrass invade after fires and ground disturbance along with annual fescue, mustard and other weeds. Western

juniper may increase with fire exclusion.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1

HCPC, FEID/PUTR2-ARTRV

Community 1.1

HCPC, FEID/PUTR2-ARTRV

HCPC: Dominated by antelope bitterbrush, mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and bluegrasses.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	743	1086	1428
Shrub/Vine	262	408	554
Forb	44	110	175
Tree	29	52	73
Total	1078	1656	2230

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	Dominant deep rooted perennial grasses			510–729	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	510–729	–
2	Sub-dominant deep rooted perennial grasses			58–131	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	29–73	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	15–29	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	15–29	–
4	Sub-dominant shallow rooted perennial grasses			73–146	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	73–146	–
5	Other perennial grasses			18–73	
	western needlegrass	ACOC3	<i>Achnatherum occidentale</i>	0–6	–
	Ross' sedge	CARO5	<i>Carex rossii</i>	0–6	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0–6	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–6	–
Forb					
7	Dominant perennial forbs			29–58	
	milkvetch	ASTRA	<i>Astragalus</i>	15–29	–
	lupine	LUPIN	<i>Lupinus</i>	15–29	–
9	Other perennial forbs			15–117	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–6	–
	agosaris	AGOSE	<i>Agoseris</i>	0–6	–
	sandwort	ARENA	<i>Arenaria</i>	0–6	–
	balsamroot	BALSA	<i>Balsamorhiza</i>	0–6	–
	mariposa lily	CALOC	<i>Calochortus</i>	0–6	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–6	–
	pincushion	CHAEN	<i>Chaenactis</i>	0–6	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0–6	–
	Trinity buckwheat	ERAL6	<i>Eriogonum alpinum</i>	0–6	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–6	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–6	–
	western stoneseed	LIRU4	<i>Lithospermum ruderale</i>	0–6	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–6	–
	phacelia	PHACE	<i>Phacelia</i>	0–6	–
	spreading phlox	PHDI3	<i>Phlox diffusa</i>	0–6	–
	Oregon checkerbloom	SIOR	<i>Sidalcea oregana</i>	0–6	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–6	–
Shrub/Vine					
11	Dominant evergreen shrubs			73–219	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	73–219	–

13	Dominant deciduous (or 1/2 shrubs) shrubs			146–219	
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	146–219	–
15	Other shrubs			44–117	
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	0–6	–
	curl-leaf mountain mahogany	CELE3	<i>Cercocarpus ledifolius</i>	0–6	–
	Klamath plum	PRSU2	<i>Prunus subcordata</i>	0–6	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	0–6	–
	desert gooseberry	RIVE	<i>Ribes velutinum</i>	0–6	–
	rose	ROSA5	<i>Rosa</i>	0–6	–
	snowberry	SYMPH	<i>Symphoricarpos</i>	0–6	–
Tree					
16	Dominant evergreen trees			29–73	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	15–44	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	15–29	–

Animal community

Livestock Grazing- This site is suited to use under a planned grazing system by cattle in the late spring, summer or fall. Care should be taken to avoid use until soils are sufficiently dry and stable to reduce the impacts of trampling and root reserves have been established. Excessive early use or season long use are the primary factors in the deterioration of this site.

Wildlife- This site provides nesting and feeding cover to a variety of wildlife species. It is particularly important in fall and winter for deer which feed heavily on the bitterbrush. Use should be managed in such a manner as to maintain or improve conditions for wildlife populations. This site is seasonally utilized by native ungulates (mule deer, elk, and antelope). Other animals that use this site are quail, coyotes, bobcats, and rabbits.

Wood products

This site has limited potential for fence posts and firewood.

Contributors

BLM ESI Team

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)	Jeff Repp
Contact for lead author	Oregon NRCS State Rangeland Management Specialist
Date	08/22/2012
Approved by	Bob Gillaspay
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None, slight to moderate sheet & rill erosion hazard

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 1-5%

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight wind erosion hazard

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

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Significantly resistant to erosion: aggregate stability = 4-6

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
Moderately deep to deep, well drained and somewhat excessively drained loams and ashy silt loams: Low OM (1-2%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Relatively high vegetative cover (60-80%) and moderate slopes (0-25%) effectively limit rainfall impact and overland flow; infiltration is moderately slow to moderately rapid

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

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: Idaho fescue > Antelope bitterbrush > Mountain big sagebrush > Sandberg bluegrass > other grasses > other shrubs > forbs > trees

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Normal decadence and mortality expected
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14. **Average percent litter cover (%) and depth (in):**
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 1500, Normal: 1300, Unfavorable: 1000 lbs/acre/year at high RSI (HCPC)
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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:** Perennial brush species will increase with deterioration of plant community. Western Juniper readily increases on the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.
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17. **Perennial plant reproductive capability:** all species should be capable of reproducing annually
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