

## Ecological site R010XC069OR SR Mountain North 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.

### Associated sites

R010XC040OR	<b>SR Very Shallow 16-20 PZ</b> SR Very Shallow 16-20 PZ - Very shallow to bedrock, lower production, dominated by stiff sagebrush and Sandberg bluegrass
R010XC049OR	<b>SR Shrubby Mountain South 16-20 PZ</b> SR Shrubby Mountain South 16-20 PZ - South aspect, lower production, dominated by a diversity of shrubs and bluebunch wheatgrass
R010XC055OR	<b>SR Mountain Shallow South 16-20 PZ</b> SR Shrubby Mountain Shallow South 16-20 PZ - South aspects, lower production, dominated by a diversity of shrubs and bluebunch wheatgrass.
R010XC066OR	<b>SR Mountain North 12-16 PZ</b> SR Mountain North 12-16 PZ - Lower production, greater diversity of shrubs
R010XC070OR	<b>SR Mountain 16-20 PZ</b> SR Mountain 16-20 PZ - Flatter slope, lower production, different composition - less Idaho fescue

### Similar sites

R010XC066OR	<b>SR Mountain North 12-16 PZ</b> SR Mountain North 12-16 PZ - Lower production, greater diversity of shrubs
R010XC070OR	<b>SR Mountain 16-20 PZ</b> SR Mountain 16-20 PZ - Flatter slope, lower production, different composition - less Idaho fescue

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. vaseyana</i>
Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Eriogonum</i>

### Physiographic features

This site occurs on north aspects of mountain ridges and plateaus adjacent to forestland. Slopes typically range from 12 to 70%. Elevations typically range from 6,000 to 7,500 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Ridge (2) Plateau
Elevation	1,829–2,286 m

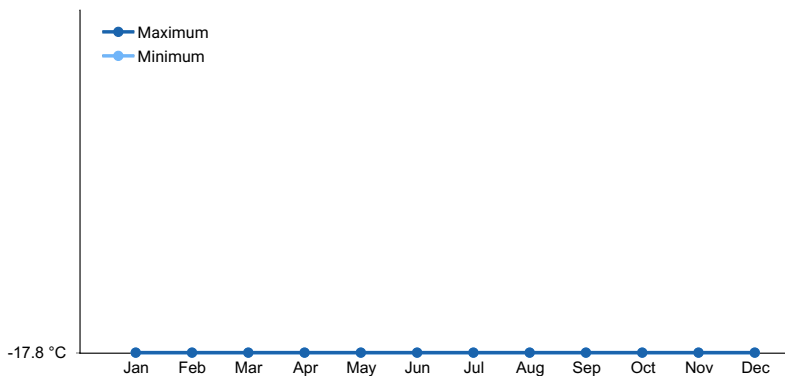
Slope	12–70%
Aspect	N

## Climatic features

The annual precipitation ranges from 16 to 20 inches plus, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is frigid with a mean air temperature of 42 degrees F. Temperature extremes range from 80 to -30 degrees F. The frost free period ranges is less than 30 days. The optimum growth period for plant growth is late May through July.

**Table 3. Representative climatic features**

Frost-free period (average)	30 days
Freeze-free period (average)	0 days
Precipitation total (average)	508 mm



**Figure 1. Monthly average minimum and maximum temperature**

## Influencing water features

### Soil features

The soils of this site are typically moderately deep to deep and well drained. Typically, the surface layer is a silt loam about 8 inches thick. The subsoil is a silt loam to stony clay loam 20 to 40 inches thick. Depth to bedrock or an indurated pan ranges from 20 to 60 inches. Permeability is moderate. The available water holding capacity (AWC) is about 6 to 10 inches for the profile. The erosion potential is moderate to severe.

**Table 4. Representative soil features**

Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	51–152 cm
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0–10%
Available water capacity (0-101.6cm)	15.24–25.4 cm

Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0

## Ecological dynamics

The potential native plant community is strongly dominated by Idaho fescue. Mountain big sagebrush and shrubby buckwheat (parsnip flower buckwheat) occur sporadically. A variety of other forbs and grass/grass-like plants, prairie junegrass, sedges and Sandberg bluegrass are present. Vegetative composition of the community is approximately 85 percent grasses, 10 percent forbs and 5 percent shrubs. Approximate ground cover is 80 to 90 percent (basal and crown).

### Range in Characteristics:

Idaho fescue is strongly dominant. Bluebunch wheatgrass increases on slight south and west exposures. Sedges increase in moist areas. Shrubs increase in shallower areas and over fractured substratums. Production increases on deeper soils and at the upper end of the precipitation zone.

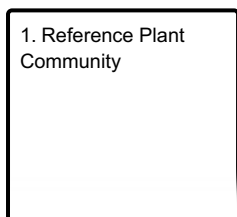
### Response to Disturbance - States:

If the condition of the site deteriorates as a result of overgrazing, Idaho fescue decreases. Mountain big sagebrush, mountain brome, Sandberg bluegrass and forbs increase. Juniper slowly invades from rock out-crop areas. With continued overgrazing big sagebrush dominates the overstory. Mountain brome, Sandberg bluegrass and forbs dominate the understory. Annual invasion is limited unless ground disturbance occurs. With fire and heavy use or ground disturbance, unpalatable forbs, annuals and Sandberg-bulbous bluegrass continues to invade or increase. In moist areas Kentucky and Canada bluegrass invades. Bare ground rapidly increases and excessive erosion contributes to downstream sedimentation.

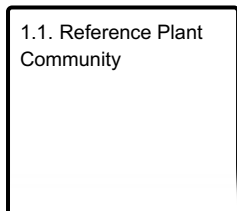
States: ARTRV/FORBS/BRMA4-POSE-Bare Ground; FORBS/POA complex -Annuals-Bare Ground

## State and transition model

### Ecosystem states



### State 1 submodel, plant communities



## State 1

### Reference Plant Community

### Community 1.1

### Reference Plant Community

The potential native plant community is strongly dominated by Idaho fescue. Mountain big sagebrush and shrubby buckwheat (parsnip flower buckwheat) occur sporadically. A variety of other forbs and grass/grass-like plants,

prairie junegrass, sedges and Sandberg bluegrass are present. Vegetative composition of the community is approximately 85 percent grasses, 10 percent forbs and 5 percent shrubs. Approximate ground cover is 80 to 90 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1334	1715	2096
Forb	157	202	247
Shrub/Vine	78	101	123
<b>Total</b>	<b>1569</b>	<b>2018</b>	<b>2466</b>

## Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, deep rooted perennial bunchgrass</b>			1614–1816	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	1614–1816	–
4	<b>Other perennial grasses</b>			12–109	
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	2–20	–
	sedge	CAREX	<i>Carex</i>	0–20	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	6–20	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–20	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	2–17	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	2–11	–
<b>Forb</b>					
7	<b>Dominant perennial forbs</b>			40–61	
	parsnipflower buckwheat	ERHE2	<i>Eriogonum heracleoides</i>	40–61	–
8	<b>Sub-dominant perennial forbs</b>			31–81	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	11–40	–
	lupine	LUPIN	<i>Lupinus</i>	20–40	–
9	<b>Other perennial forbs</b>			33–198	
	milkvetch	ASTRA	<i>Astragalus</i>	6–20	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	6–20	–
	ragwort	SENEC	<i>Senecio</i>	0–20	–
	desertparsley	LOMAT	<i>Lomatium</i>	6–17	–
	Scouler's woollyweed	HISC2	<i>Hieracium scouleri</i>	6–17	–
	waterleaf	HYDRO4	<i>Hydrophyllum</i>	0–17	–
	woodland-star	LITHO2	<i>Lithophragma</i>	2–11	–
	stoneseed	LITHO3	<i>Lithospermum</i>	0–11	–
	mariposa lily	CALOC	<i>Calochortus</i>	2–11	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	2–11	–
	fleabane	ERIGE2	<i>Erigeron</i>	2–11	–

	buckwheat	ERIOG	<i>Eriogonum</i>	2–11	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	2–11	–
	sagebrush buttercup	RAGL	<i>Ranunculus glaberrimus</i>	2–9	–
<b>Shrub/Vine</b>					
11	<b>Dominant evergreen shrub</b>			40–101	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	40–101	–
15	<b>Other shrubs</b>			6–61	
	wax currant	RICE	<i>Ribes cereum</i>	0–20	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	0–20	–
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	6–20	–
<b>Tree</b>					
16	<b>Evergreen sub-dominant trees</b>			0–40	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	17–34	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	17–34	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	0–20	–
	Douglas-fir	PSME	<i>Pseudotsuga menziesii</i>	0–20	–

## Animal community

Livestock grazing:

This site is suitable for livestock grazing use in the summer, and early fall under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed to Idaho fescue. Deferred grazing or rest is recommended at least once every three years.

Native Wildlife Associated with the Potential Climax Community:

This site is commonly used by mule deer, elk, rabbits, rodents, upland birds and various predators. It is a preferred site for upland bird nesting and rearing areas. Mule deer and elk make excellent use of the site for summer and fall forage. Nearby forested areas provide escape, hiding, and thermal cover.

## Hydrological functions

The soils of this site are typically in an upland topographic position. They have moderate high runoff potential and medium infiltration rates when the hydrologic cover is high. Under frozen ground conditions runoff potential is significantly increased. This occurs for extended periods when deep rooted perennial bunchgrass cover is negligible. Hydrologic cover is good when the Idaho fescue deep rooted bunchgrass component is >70 percent of potential.

## Other information

Juniper invasion from rock outcrops is a low risk on this site. The slow increases in western juniper and the subsequent competition for moisture will lead to a reduction of available forage. Overgrazing can easily reduce ground cover and accelerate soil loss. Juniper control measures include prescribed burning and/or cutting followed by rest to improve vigor, density and seed production of existing deep rooted perennial bunchgrasses. Consider seeding following control measures if an inadequate stand of bunchgrass is present.

When incised channels are present, rehabilitation will markedly improve production, reduce downstream sedimentation, and restore good hydrologic characteristics. On altered sites, the reintroduction of Idaho fescue and basin wildrye may be needed to fully restore the site potential.

## 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)	Jeff Repp, Bruce Frannsen
Contact for lead author	NRCS Oregon State Rangeland Management Specialist
Date	07/11/2007
Approved by	Bob Gillaspay
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

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

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

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3. **Number and height of erosional pedestals or terracettes:** None to very few (some frost heaving)

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-15%

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

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

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

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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
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Granular to platy to sub-angular blocky structure; Dry color value 4-5; 3-9" thickness; Low to moderate OM (1-4%)
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate to significant ground cover (60-70%) and gentle slopes (2-12%) effectively limit rainfall impact and overland flow
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None
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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: Deep rooted, perennial, cool-season bunchgrasses
- Sub-dominant: shrubs
- Other: other grasses > forbs
- Additional:
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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: 2000, Normal: 1500, 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 invades 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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