

# Ecological site R010XB071OR

## JD Shrubby Mountain North

### 12-16 PZ

Last updated: 4/10/2025  
Accessed: 09/01/2026

#### 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

|             |                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| R010XB028OR | <b>JD Shrubby Mountain 12-16 PZ</b><br><br>Non-aspect site with fewer shrubs                                                     |
| R010XB046OR | <b>JD Shrubby Mountain South 12-16 PZ</b><br><br>South aspect, lower production, dominated by bluebunch wheatgrass, fewer shrubs |

#### Similar sites

|             |                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| R010XC066OR | <b>SR Mountain North 12-16 PZ</b><br><br>More grass production, fewer shrubs, dominated by mountain big sagebrush with antelope bitterbrush a subdominate |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 1. Dominant plant species

|            |                                                                                       |
|------------|---------------------------------------------------------------------------------------|
| Tree       | Not specified                                                                         |
| Shrub      | (1) <i>Purshia tridentata</i><br>(2) <i>Artemisia tridentata</i> var. <i>vaseyana</i> |
| Herbaceous | (1) <i>Festuca idahoensis</i>                                                         |

#### Physiographic features

This site occurs on north aspects of terraces, tablelands, and mountain plateaus. Slopes range from 12 to 50 percent. Elevations range from 4500 to 6000 feet.

Table 2. Representative physiographic features

|           |                                |
|-----------|--------------------------------|
| Landforms | (1) Mountain slope<br>(2) Hill |
|-----------|--------------------------------|

|                    |                 |
|--------------------|-----------------|
| Flooding frequency | None            |
| Ponding frequency  | None            |
| Elevation          | 1,370 – 1,830 m |
| Slope              | 10 – 50 %       |
| Aspect             | N               |

### Climatic features

The annual precipitation ranges from 12 to 16 inches, most of which occurs in the form of snow during the months of November through March. Localized, occasionally severe, convectional storms occur during the summer. The soil temperature regime is frigid to near frigid with a mean annual air temperature of about 45 degrees F. Temperature extremes range from 90 to -30 degrees F. The frost-free period ranges from 30 to 70 days. The optimum period for plant growth is from April through July.

Table 3 Representative climatic features

|                               |         |
|-------------------------------|---------|
| Frost-free period (average)   | 70 days |
| Freeze-free period (average)  | 40 days |
| Precipitation total (average) | 410 mm  |

### Influencing water features

#### Soil features

The soils of this site are typically moderately deep and well-drained. Depth can range from shallow to deep. Typically the surface layer is a loam to shaly loam about 7 inches thick. The subsoil is a very shaly loam to a very gravelly clay loam about 28 inches thick. Depth to shale or highly fractured bedrock may range from 20 to over 40 inches. Permeability is slow to moderate. The available water holding capacity is about 3 to 6.5 inches for the profile. The potential for erosion is moderate to severe.

Table 4. Representative soil features

|                      |                                                     |
|----------------------|-----------------------------------------------------|
| Surface texture      | (1) Very stony loam<br>(2) Channery<br>(3) Gravelly |
| Family particle size | (1) Clayey                                          |
| Drainage class       | Well drained                                        |

|                                                         |                 |
|---------------------------------------------------------|-----------------|
| Permeability class                                      | Moderate        |
| Soil depth                                              | 50 – 150 cm     |
| Surface fragment cover <=3"                             | 20 %            |
| Surface fragment cover >3"                              | 0 – 30 %        |
| Available water capacity<br>(0-101.6cm)                 | 7.37 – 17.02 cm |
| Calcium carbonate equivalent<br>(0-101.6cm)             | Not specified   |
| Electrical conductivity<br>(0-101.6cm)                  | Not specified   |
| Sodium adsorption ratio<br>(0-101.6cm)                  | Not specified   |
| Soil reaction (1:1 water)<br>(0-101.6cm)                | 6.1 – 7.8       |
| Subsurface fragment volume >3"<br>(Depth not specified) | 20 – 40 %       |

### Ecological dynamics

Range in Characteristics:

Mountain snowberry increases on steeper slopes. Idaho fescue is the dominant grass while bluebunch wheatgrass increases on east and westerly slopes. Production is highest on steep due north and colluvial toe slopes.

Response to disturbance:

If the condition of the site deteriorates as a result of overgrazing, Idaho fescue decreases while mountain big sagebrush, snowberry, bluebunch wheatgrass and bluegrasses increase. Idaho fescue is the preferred species during spring and summer. With further deterioration, bluebunch wheatgrass and antelope bitterbrush decrease, annuals invade and bare soil interspaces increase.

Fine fuel reduction from improper grazing and fire suppression has led to an increase in the historical fire return interval on many western rangelands. A reduction in fire frequency on these sites leads to an increase in juniper cover, a decrease in sagebrush cover followed by a decrease in herbaceous cover and understory diversity. As juniper encroaches sagebrush declines with a subsequent decrease in forbs, bluebunch wheatgrass and needlegrass. Idaho fescue becomes the primary herbaceous species occurring under the canopy of the juniper trees. Sandberg's bluegrass increases in the plant community on lower elevation north slopes while bare ground increases in the

interspaces between trees. Bitterbrush is more resistant to juniper encroachment than sagebrush and maintains its presence in the community, however vigor and fitness (seed production) may be thwarted. The potential for soil erosion increases as the juniper woodland matures and the understory plant community cover declines. The combined effect of overgrazing and juniper invasion increases the rate of decline in ecological function and the probability of crossing a threshold is high.

Treatment Response

North facing aspects respond positively to juniper removal if soil erosion is not significant. Seeding may be necessary if there are less than 1-2 bunchgrass plants per meter square in the understory. Sagebrush and forbs may also need to be seeded if adult plants are no longer present in the understory.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

| Group           | Common Name                          | Symbol | Scientific Name                         | Annual Production () | Foliar Cover (%) |
|-----------------|--------------------------------------|--------|-----------------------------------------|----------------------|------------------|
| Grass/Grasslike |                                      |        |                                         |                      |                  |
| 1               | Perennial, deep-rooted, dominant     |        |                                         | 538-650              |                  |
|                 | Idaho fescue                         | FEID   | <a href="#">Festuca idahoensis</a>      | 538-650              | –                |
| 2               | Perennial, deep-rooted, sub-dominant |        |                                         | 126-251              |                  |
|                 | bluebunch wheatgrass                 | PSSP6  | <a href="#">Pseudoroegneria spicata</a> | 90-179               | –                |
|                 | needlegrass                          | ACHNA  | <a href="#">Achnatherum</a>             | 18-36                | –                |
|                 | basin wildrye                        | LECI4  | <a href="#">Leymus cinereus</a>         | 18-36                | –                |
| 5               | Other perennial grasses              |        |                                         | 18-90                |                  |
|                 | Sandberg bluegrass                   | POSE   | <a href="#">Poa secunda</a>             | 0-54                 | –                |
|                 | mountain brome                       | BRMA4  | <a href="#">Bromus marginatus</a>       | 0-18                 | –                |
|                 | squirreltail                         | ELEL5  | <a href="#">Elymus elymoides</a>        | 0-18                 | –                |
|                 | prairie Junegrass                    | KOMA   | <a href="#">Koeleria macrantha</a>      | 0-18                 | –                |
| Forb            |                                      |        |                                         |                      |                  |
| 7               | Perennial, dominant                  |        |                                         | 54-108               |                  |
|                 | milkvetch                            | ASTRA  | <a href="#">Astragalus</a>              | 18-36                | –                |
|                 | buckwheat                            | ERIOG  | <a href="#">Eriogonum</a>               | 18-36                | –                |
|                 | lupine                               | LUPIN  | <a href="#">Lupinus</a>                 | 18-36                | –                |
| 9               | Other perennial forbs, all           |        |                                         | 18-90                |                  |
|                 | common yarrow                        | ACMI2  | <a href="#">Achillea millefolium</a>    | 0-18                 | –                |
|                 | agoseris                             | AGOSE  | <a href="#">Agoseris</a>                | 0-18                 | –                |
|                 | onion                                | ALLIU  | <a href="#">Allium</a>                  | 0-18                 | –                |
|                 | Indian paintbrush                    | CASTI2 | <a href="#">Castilleja</a>              | 0-18                 | –                |
|                 | tapertip hawksbeard                  | CRAC2  | <a href="#">Crepis acuminata</a>        | 0-18                 | –                |
|                 | larkspur                             | DELPH  | <a href="#">Delphinium</a>              | 0-18                 | –                |
|                 | fleabane                             | ERIGE2 | <a href="#">Erigeron</a>                | 0-18                 | –                |
|                 | waterleaf                            | HYDRO4 | <a href="#">Hydrophyllum</a>            | 0-18                 | –                |
|                 | western stoneseed                    | LIRU4  | <a href="#">Lithospermum ruderales</a>  | 0-18                 | –                |
|                 | woodland-star                        | LITHO2 | <a href="#">Lithophragma</a>            | 0-18                 | –                |
|                 | desertparsley                        | LOMAT  | <a href="#">Lomatium</a>                | 0-18                 | –                |
|                 | bluebells                            | MERTE  | <a href="#">Mertensia</a>               | 0-18                 | –                |
|                 | Brown's peony                        | PABR   | <a href="#">Paeonia brownii</a>         | 0-18                 | –                |
|                 | beardtongue                          | PENST  | <a href="#">Penstemon</a>               | 0-18                 | –                |

|                   |                                |       |                                             |         |   |
|-------------------|--------------------------------|-------|---------------------------------------------|---------|---|
|                   | phlox                          | PHLOX | <i>Phlox</i>                                | 0-18    | – |
|                   | ragwort                        | SENEC | <i>Senecio</i>                              | 0-18    | – |
| <b>Shrub/Vine</b> |                                |       |                                             |         |   |
| 11                | <b>Deciduous, dominant</b>     |       |                                             | 269-359 |   |
|                   | antelope bitterbrush           | PUTR2 | <i>Purshia tridentata</i>                   | 269-359 | – |
| 12                | <b>Evergreen, subdominant</b>  |       |                                             | 54-143  |   |
|                   | mountain big sagebrush         | ARTRV | <i>Artemisia tridentata ssp. vaseyana</i>   | 54-143  | – |
| 14                | <b>Deciduous, sub-dominant</b> |       |                                             | 72-215  |   |
|                   | common snowberry               | SYAL  | <i>Symphoricarpos albus</i>                 | 18-90   | – |
|                   | wild crab apple                | PERA4 | <i>Peraphyllum ramosissimum</i>             | 18-54   | – |
|                   | wax currant                    | RICE  | <i>Ribes cereum</i>                         | 18-36   | – |
|                   | curl-leaf mountain mahogany    | CELE3 | <i>Cercocarpus ledifolius</i>               | 18-36   | – |
| 15                | <b>Other shrubs</b>            |       |                                             | 36-179  |   |
|                   | Saskatoon serviceberry         | AMAL2 | <i>Amelanchier alnifolia</i>                | 0-36    | – |
|                   | basin big sagebrush            | ARTRT | <i>Artemisia tridentata ssp. tridentata</i> | 0-36    | – |
|                   | rabbitbrush                    | CHRY9 | <i>Chrysothamnus</i>                        | 0-36    | – |
|                   | chokecherry                    | PRVI  | <i>Prunus virginiana</i>                    | 0-36    | – |
|                   | rose                           | ROSA5 | <i>Rosa</i>                                 | 0-36    | – |
| <b>Tree</b>       |                                |       |                                             |         |   |
| 16                | <b>Evergreen trees</b>         |       |                                             | 18-54   |   |
|                   | western juniper                | JUOC  | <i>Juniperus occidentalis</i>               | 0-36    | – |
|                   | ponderosa pine                 | PIPO  | <i>Pinus ponderosa</i>                      | 18-36   | – |

## Animal community

Livestock Grazing: This site is suited to use by cattle, sheep, and horses during the summer and fall under a planned grazing system. Use should be postponed until the soils are firm enough to avoid trampling damage and soil compaction. Native Wildlife Associated with the Reference Plant Community: Mule deer Elk Hawks Rodents Songbirds This site offers cover and food for mule deer, elk, rodents, and a variety of birds and their associated predators. Antelope bitterbrush provides valuable fall winter forage.

## Hydrological functions

The soils are in hydrologic groups B and C. The soils of this site have medium runoff potential.

## Wood products

This site is susceptible to increase in western juniper. Where this has occurred the site will yield firewood, fence posts, and specialty products.

## Other information

Increase in western juniper and the subsequent competition for moisture will lead to a reduction of soil cover and accelerated soil loss. Improving infiltration and permeability, and reducing runoff should be the immediate goal of juniper control.

## Contributors

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## Approval

Kirt Walstad, 4/10/2025

## 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 and Bruce Franssen                      |
| Contact for lead author                     | NRCS Oregon State Rangeland Management Specialist |
| Date                                        | 04/23/2003                                        |
| Approved by                                 |                                                   |
| Approval date                               |                                                   |
| Composition (Indicators 10 and 12) based on | Annual Production                                 |

## Indicators

1. Number and extent of rills: None to very few on steeper slopes

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2. Presence of water flow patterns: None to very few on steeper slopes

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3. Number and height of erosional pedestals or terracettes: None to very few on steeper slopes (terraces)

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4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):  
0-5%

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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

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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):  
Moderately resistant to erosion: aggregate stability = 3-5

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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Weak very fine to moderate medium granular structure, dry color value 4-5, 7-13 inches thick; moderate OM (2-8%)

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10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Significant ground cover (80-90%) and gentle to very steep slopes (12-60%) 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: Perennial, cool-season, deep-rooted, bunchgrasses

Sub-dominant: Deciduous shrubs

Other: Other shrubs > 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):  
1600 lbs/ac

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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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