

Ecological site R010XA015ID

South Slope Loamy

16-22 PZ

Last updated: 4/01/2025

Accessed: 09/16/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east with higher elevations reaching 9250 feet on the northern fringe of the MLRA. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. Higher elevations on the northern fringe of this MLRA receive upwards of 41 inches in precipitation. These areas are the foothills and lower mountain side slopes as the MLRA transitions into MLRA 43C. These factors support plant communities with trees and shrub-grass associations with considerable acreage of sagebrush grassland. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing. For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Classification relationships

Artemisia vaseyana/ *Festuca idahoensis* ht. Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

Ecological site concept

• Site occurs on uplands • Slopes greater than 30% on southerly aspects • Occurs in 16-22 inch PZ • Slopes less than 45%

Associated sites

R010XA001ID	Clayey 12-16 PZ ARARL/FEID Adjacent low slope areas with clayey soils
R010XA021ID	South Slope Fractured 12-16 PZ Adjacent shallow soils

Similar sites

R010XA021ID	South Slope Fractured 12-16 PZ Shallow soils, <20
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R010XA014ID	Steep South Slope 16-22 PZ Slopes greater than 45%
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> var. <i>vaseyana</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> (2) <i>Festuca idahoensis</i>

Physiographic features

This site occurs on rolling to steep slopes on south and west facing aspects. The site often occurs near the top of the slope. Slopes range from 5 to 45 percent. Elevations range from 7500 to 8600 feet (2250 to 2600 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	2,290 – 2,620 m
Slope	10 – 50 %
Water table depth	200 cm
Aspect	W, S, SW

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. However, the northern fringe receives upwards of 41 inches of precipitation. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a

low in July and August, then increases rapidly in the autumn. Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 60 to 85 days. The freeze-free period is a bit longer: 80 to 105 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 3 Representative climatic features

Frost-free period (characteristic range)	60-90 days
Freeze-free period (characteristic range)	80-110 days
Precipitation total (characteristic range)	310-460 mm
Frost-free period (average)	70 days
Freeze-free period (average)	100 days
Precipitation total (average)	460 mm

Influencing water features

This site is not influenced by adjacent streams or run on.

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils of this site are generally deep, and formed in volcanic, metasedimentary and colluvium from quartzitic sandstone. They are well drained with moderate permeability. The available water holding capacity (AWC) is low. Runoff is high. The erosion hazard is severe to very severe by water. Erosion hazard by wind is moderate when the vegetative cover is depleted. The surface texture is generally gravelly loam. The subsoils are loams, clay loams, sandy loams or fine sandy loams which have 10 to 70 percent coarse fragments. These soils are characterized by a xeric moisture regime. Soil temperature regime is cryic.

Table 4. Representative soil features

Parent material	(1) Colluvium – sandstone
Surface texture	(1) Gravelly loam
Family particle size	(1) Loamy-skeletal
Drainage class	Well drained
Permeability class	Moderate
Soil depth	100 – 150 cm
Surface fragment cover <=3"	10 – 30 %

Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	6.1 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 7.3
Subsurface fragment volume <=3" (10.2-152.4cm)	10 – 50 %
Subsurface fragment volume >3" (10.2-152.4cm)	10 – 30 %

Ecological dynamics

The dominant visual aspect of this site is mountain big sagebrush with an understory of Idaho fescue and bluebunch wheatgrass. Composition by weight is approximately 35 percent grass, 30 percent forbs and 35 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Rocky Mountain elk, and lagomorphs.

Fire has historically occurred on the site at intervals of 20 to 50 years.

The Reference State (State 1), historically referred to as the Historic Climax Plant Community (HCPC), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases.

FUNCTION:

This site is suited for big game and livestock use in the summer and fall. It is also well suited for recreation use in the summer and fall.

Due to the rainfall, elevation and moderate slopes on this site, it is susceptible to degradation from erosion. Infiltration is good where the community is in mid to late seral status. The site has low runoff potential. Runoff, when it does occur can be erosive particularly during

high intensity convection storms. Snow accumulates on the site due to high elevation and presence of tall shrubs.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, mountain big sagebrush and antelope bitterbrush can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, mountain big sagebrush can displace most of the primary understory species.

When fires become more frequent than historic levels (20-50 years), mountain big sagebrush and antelope bitterbrush are reduced significantly. Rabbitbrush can increase slightly. With continued short fire frequency, mountain big sagebrush and antelope bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass and Idaho fescue. These species may be replaced by bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass may invade the site at lower elevations. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, an increase in mountain big sagebrush and noxious and invasive plants will occur.

Continued improper grazing management influences fire frequency by increasing fine fuels. As annuals increase, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in mountain big sagebrush. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn.

Due to the shrub species on this site, any brush management efforts should be carefully planned. Antelope bitterbrush is a very important browse species for wildlife and needs to be protected with any brush control practices applied. A reduction in shrubs without a suitable understory of perennial grasses can lead to an increase in fine fuels which will lead to a more frequent fire regime. Loss of shrub species on this site will have very negative impacts on wildlife.

Weather influences:

Above normal precipitation in April, May, and June can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

An early, hard freeze can occasionally kill some plants. Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Bitterbrush can be severely affected by the western tent caterpillar (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. Mormon cricket and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency. Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the mostly in the summer and fall. Their numbers are seldom high enough to adversely affect the plant community. Herbivory can be detrimental to bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current year's leader growth. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

Watershed:

Decreased infiltration and increased runoff occur with an increase in mountain big sagebrush. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state.

Practice Limitations:

Mechanical seeding is generally not feasible on slopes greater than 20 percent on this site. Mechanical brush control is difficult or not feasible on slopes greater than 20 percent. Brush management can occur with aerial chemical application or prescribed burning. Moderate limitations exist on this site for implementing vegetative management and facilitating practices.

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				336-549	
	Idaho fescue	FEID	Festuca idahoensis	168-280	–
	bluebunch wheatgrass	PSSP6	Pseudoroegneria spicata	168-280	–
	slender wheatgrass	ELTR7	Elymus trachycaulus	34-56	–
	mountain brome	BRMA4	Bromus marginatus	22-34	–
	western needlegrass	ACOC3	Achnatherum occidentale	1-22	–
	prairie Junegrass	KOMA	Koeleria macrantha	1-22	–
Forb					
2				280-471	
	arrowleaf balsamroot	BASA3	Balsamorhiza sagittata	73-118	–
	lupine	LUPIN	Lupinus	56-101	–
	tapertip hawksbeard	CRAC2	Crepis acuminata	45-78	–
	nettleleaf giant hyssop	AGUR	Agastache urticifolia	34-67	–
	phlox	PHLOX	Phlox	34-67	–
	erigenia	ERIGE	Erigenia	28-45	–
	agoseris	AGOSE	Agoseris	1-34	–
Shrub/Vine					
3				336-549	
	mountain big sagebrush	ARTRV	Artemisia tridentata ssp. vaseyana	213-359	–
	antelope bitterbrush	PUTR2	Purshia tridentata	34-67	–
	chokecherry	PRVI	Prunus virginiana	1-39	–
	yellow rabbitbrush	CHVI8	Chrysothamnus viscidiflorus	22-39	–
	parsnipflower buckwheat	ERHE2	Eriogonum heracleoides	1-22	–
	mountain snowberry	SYOR2	Symphoricarpos oreophilus	1-22	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Wildlife Interpretations. Animal Community – Wildlife Interpretations This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Wildlife will use these areas on a seasonal basis due to the high elevation, short growing season, and temperature regimes. Mule deer and elk are the large herbivores using these sites in the summer and fall seasons. The rangeland habitat provides seasonal habitat for resident and migratory animals including western toad, shrews, bats, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, prairie falcon. Sagebrush obligate avian species including Brewer's sparrow and sage thrasher utilize these sites on a limited basis due to the high elevation and associated cold temperatures throughout much of the year. Water features are sparse provided by seasonal streams, artificial water catchments and springs. State 1 Phase 1.1 – Mountain Big Sagebrush/ Idaho Fescue/ Bluebunch Wheatgrass/ Nevada Bluegrass/ Slender Wheatgrass/ Antelope Bitterbrush Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs and shrubs, used by native insect communities that assist in pollination. An extensive array of forbs is represented throughout the growing season leading to a diverse insect community. Many avian and mammal species utilize this habitat based on the availability of invertebrate prey species. The reptile and amphibian community is represented by leopard lizard, short horned lizard, western skink, western toad, boreal chorus frog and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude amphibian use on these sites. Native shrub-steppe obligate avian species utilizing the habitat include the Brewer's sparrow, sage sparrow and sage thrasher. The plant community provides seasonal food and cover for large mammals including mule deer and elk. Antelope bitterbrush, Idaho fescue and bluebunch wheatgrass are key forage species for these animals. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize this community. Pikas may utilize the site if adjacent to rocky open areas. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed. State 1 Phase 1.2- Mountain Big Sagebrush/ Mountain Brome/ Slender Wheatgrass Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy of sagebrush contributes to a sparse herbaceous understory. Antelope bitterbrush has decreased. Reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile and amphibian community is represented by leopard lizard, short horned lizard, western skink, western toad, boreal chorus frog and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude the use of amphibians on these sites. Fewer prey species and less understory cover results in less food, brood-rearing and nesting habitat. The reduction of understory vegetation and antelope bitterbrush limits seasonal habitat for mule deer and elk. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize these areas. Pikas may be present in areas with adjacent open rocky habitat. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed. State 1 Phase 1.3 – Bluebunch Wheatgrass/ Mountain Brome/ Slender Wheatgrass Plant Community Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush and antelope bitterbrush would provide less vertical structure for animals. Patches of root sprouting shrubs (snowberry and rabbitbrushes) may be present to provide limited vertical structure for wildlife. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. Reptiles including leopard lizard and short horned lizard would be limited or excluded due to the loss of sagebrush. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collected all available water would exclude the use of amphibians on these sites. The dominance of herbaceous vegetation with little sagebrush or antelope bitterbrush canopy cover would prevent use of these areas as nesting habitat by Brewer's sparrow, sage sparrow and sage thrasher. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Mule deer and elk use would be seasonal and offer little thermal cover and young of year cover with the loss of shrub cover. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. State 2 – Annuals Plant Community: This plant community is the result of continued improper grazing management and/or frequent fire. Invasive herbaceous plants and patches of root sprouting shrubs like rabbitbrushes and mountain snowberry can be present. The plant community does not support a diverse insect community. The reduced forb and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water or cover. This plant community does not support the habitat requirements for sage thrasher, Brewer's sparrow or sage sparrow. Diversity of grassland avian species is reduced due to poor cover and available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. The reduction of insect populations and diversity would reduce suitability of site for bats. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. Grazing Interpretations. This site is suited for livestock as summer and fall range. Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference.

Hydrological functions

The soils on this site are in hydrologic group C. When ground cover is at or near potential, the erosion hazard is slight to moderate.

Recreational uses

The site has limited opportunities for hunting, hiking, horseback riding, photography, and nature study.

Wood products

None.

Other products

None.

Other information

Field Offices Mountain Home, ID Gooding, ID Shoshone, ID Rupert, ID Arco, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include: Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC Jim Cornwell, Range Management Specialist, IASCD Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho Kristen May, Resource Soil Scientist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Blaine County, ID	
Township/Range/Section	T3N R22E S17
General legal description	and on the south side of Bell Mountain, Blaine County, Idaho

References

. 2004. **Restoring Western Ranges and Wildlands**. General Technical Report RMRS-GTR-136 Vols 1-3. USDA Forest Service, Rocky Mountain Research Station.

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database/feis

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Contributors

Dave Franzen And Jacy Gibbs

Approval

Kirt Walstad, 4/01/2025

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.

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Date	04/20/2009
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** rills can occur on this site. If rills are present they are likely to occur immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

- 2. Presence of water flow patterns:** water-flow patterns occur on this site. When they occur, they are short and disrupted by cool season grasses and tall shrubs and are not extensive. Gravelly surface texture on some soils interrupt flows.

- 3. Number and height of erosional pedestals or terracettes:** Both occur on this site but are not extensive. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes occur uphill from tall shrub bases and large bunchgrasses.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** On sites in mid-seral status bare ground may range from 25-35 percent.

- 5. Number of gullies and erosion associated with gullies:** none.

6. Extent of wind scoured, blowouts and/or depositional areas: usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. Amount of litter movement (describe size and distance expected to travel): fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move. Gravels on some soil surfaces help reduce fine litter movement.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): values should range from 4 to 6.

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): structure ranges from weak fine granular to moderate fine granular. Soil organic matter (SOM) ranges from 2 to 5 percent. The A or A1 horizon is typically 8 inches thick. Surface soil color is 10YR very dark grayish brown moist. .

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Tall shrubs catch blowing snow in the interspaces.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): not present.

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: cool season deep-rooted perennial bunchgrasses nearly =

Sub-dominant: tall shrubs

Other: perennial forbs

Additional: shallow rooted bunchgrasses

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): mountain big sagebrush will become decadent in the absence of normal fire frequency and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.

14. Average percent litter cover (%) and depth (in): additional litter cover data is needed but is expected to be 15-20 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): is 1100 pounds per acre (1232 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 30-40 percent of the total production, forbs 25-30 percent and shrubs 30-40 percent.
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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: includes bulbous bluegrass, rush skeletonweed, musk and scotch thistle, diffuse and spotted knapweed, and leafy spurge.
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17. Perennial plant reproductive capability: all functional groups have the potential to reproduce in most years.
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