

## Ecological site R010XA014ID Steep South Slope 16-22 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.

### 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](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624)

### Ecological site concept

- Site occurs on uplands
- Slopes greater than 45% on southerly aspects
- Deep soils
- Occurs in 16-22 inch PZ

### Associated sites

|             |  |
|-------------|--|
| R010XA004ID | <b>Loamy 12-16 PZ ARTRV/FEID-PSSPS</b><br>Adjacent low slope areas               |
| R010XA008ID | <b>North Slope Loamy 16-22 PZ</b><br>Adjacent north slopes                       |
| R010XA021ID | <b>South Slope Fractured 12-16 PZ</b><br>Adjacent shallow soils on south aspects |

### Similar sites

|             |   |
|-------------|---|
| R010XA021ID | <b>South Slope Fractured 12-16 PZ</b><br>Soils less than 20   |
| R010XA004ID | <b>Loamy 12-16 PZ ARTRV/FEID-PSSPS</b><br>Slopes less than 30%, occurring in the 12-16 inch precip zone |
| R010XA015ID | <b>South Slope Loamy 16-22 PZ</b><br>Slopes less than 45%   |

**Table 1. Dominant plant species**

|            |  |
|------------|--|
| Tree       | Not specified  |
| Shrub      | (1) <i>Artemisia tridentata</i> var. <i>vaseyana</i> |
| Herbaceous | (1) <i>Pseudoroegneria spicata</i>                   |

## Physiographic features

This site occurs on south and west facing very steep slopes over 45 percent. The elevations range from 5000 to 6300 feet (1520 to 1920 meters).

**Table 2. Representative physiographic features**

|                    |                          |
|--------------------|--------------------------|
| Landforms          | (1) Mountains > Mountain |
| Flooding frequency | None                     |
| Ponding frequency  | None                     |
| Elevation          | 5,000–6,300 ft           |
| Slope              | 45–90%                   |
| Water table depth  | 60 in                    |
| 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)   | 60-85 days  |
| Freeze-free period (characteristic range)  | 80-105 days |
| Precipitation total (characteristic range) | 16-22 in    |
| Frost-free period (average)                | 70 days     |

|                               |         |
|-------------------------------|---------|
| Freeze-free period (average)  | 98 days |
| Precipitation total (average) | 18 in   |

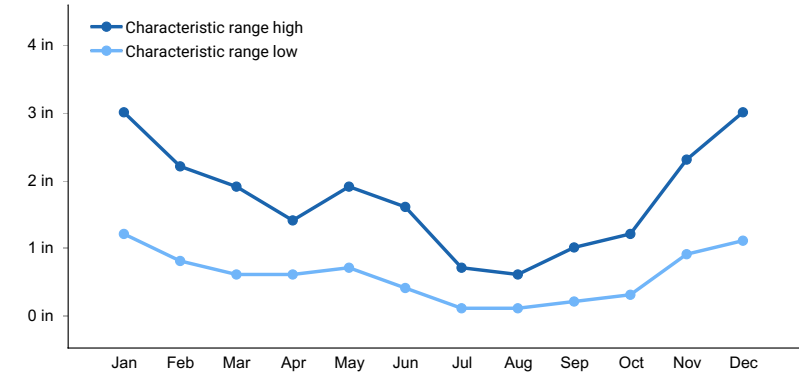


Figure 1. Monthly precipitation range

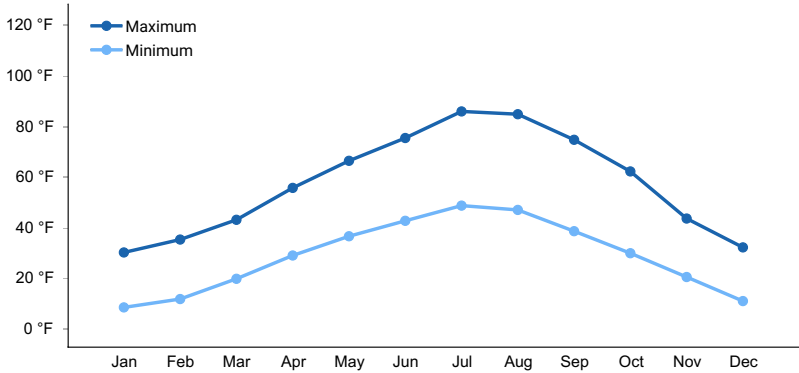


Figure 2. Monthly average minimum and maximum temperature

### 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 on this site are coarse textured loams derived. The steep slopes and coarse texture causes the soils to be somewhat unstable. The available water holding capacity (AWC) is moderate. The soils of this site are generally deep, and formed in colluvium from monzonite and rhyolite. They are well drained, and have moderate permeability. The available water holding capacity (AWC) is low. Runoff is high. Water erosion hazard is severe and very severe when the vegetation cover is depleted. The surface texture is are coarse textured loams. These soils are characterized by a xeric moisture regime. Soil temperature regime is cryic.

Table 4. Representative soil features

|                      |                         |
|----------------------|-------------------------|
| Parent material      | (1) Colluvium–monzonite |
| Surface texture      | (1) Loam                |
| Family particle size | (1) Loamy               |
| Drainage class       | Well drained            |
| Permeability class   | Moderate                |
| Soil depth           | 40–60 in                |

|   |         |
|---|---------|
| Surface fragment cover <=3"                 | 0–5%    |
| Surface fragment cover >3"                  | 0–25%   |
| Available water capacity<br>(0-40in)        | 4.4 in  |
| Soil reaction (1:1 water)<br>(0-40in)       | 6.6–7.8 |
| Subsurface fragment volume <=3"<br>(4-60in) | 0–20%   |
| Subsurface fragment volume >3"<br>(4-60in)  | 0–20%   |

## Ecological dynamics

The dominant visual aspect of this site is mountain big sagebrush with bluebunch wheatgrass in the understory. Composition by weight is approximately 35 percent grass, 15 percent forbs, and 50 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 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:

The steep slopes severely restrict livestock movement and use. Big game animals use the site in the spring, summer, and fall. The site can be winter range for big game in moderate winters. Other wildlife may include upland birds and predators. The site offers opportunities for hunting and other recreational activities.

Due to the rainfall, elevation and steep topography on this site, it is susceptible to degradation from erosion. Accelerated erosion can be caused by improper grazing management. Infiltration is good where the community is in mid to late seral status. The site has moderate to high runoff potential. Runoff, when it does occur can be erosive on steeper slopes 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 other shrubs 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 to 50 years), mountain big sagebrush and antelope bitterbrush are reduced significantly. Rabbitbrush and other resprouting shrubs 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. These species may be replaced by cheatgrass, bulbous bluegrass, and a variety of annual and perennial forbs including noxious and invasive plants. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Due to the steep slopes, livestock are severely limited for movement and access. If livestock are forced to use the

site, 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 cheatgrass increases and becomes co-dominant with other annuals, fires become more frequent. Severe erosion can occur on the site as it deteriorates. Forced livestock grazing of this site will normally result in adjacent sites with moderate slopes being severely impacted.

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 very important as a 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 can have very negative impacts on wildlife.

#### Weather influences:

Above normal precipitation in March, April, and May 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.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. 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. Many of the 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 spring, summer, and fall and in moderate winters. 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. Severe erosion can occur. 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

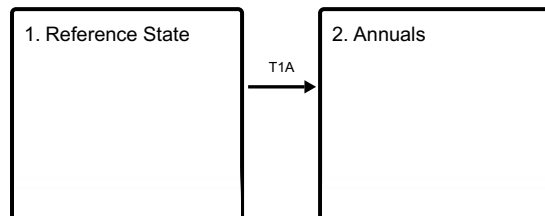
to a lesser degree. The long term effect is a transition to a different state.

#### Practice Limitations:

Mechanical seeding and brush control are not feasible due to the steep slopes of this site. Implementation of facilitating practices and vegetative management has moderate to severe limitations due to steep slopes.

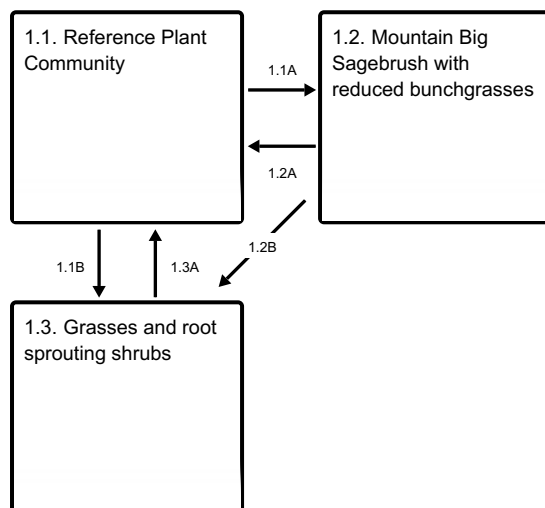
## State and transition model

### Ecosystem states



**T1A** - frequent fire, improper grazing management

### State 1 submodel, plant communities



**1.1A** - improper grazing management and no fire

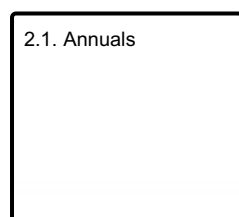
**1.1B** - fire

**1.2A** - prescribed grazing

**1.2B** - fire

**1.3A** - no fire and prescribed grazing

### State 2 submodel, plant communities



## State 1 Reference State

### Dominant plant species

- mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*), shrub
- mountain snowberry (*Symphoricarpos oreophilus*), shrub

- Idaho fescue (*Festuca idahoensis*), grass

Community 1.1  
Reference Plant Community

This plant community has mountain big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Mountain snowberry, Nevada bluegrass, basin wildrye, lupine, and arrowleaf balsamroot are sub-dominant species. Antelope bitterbrush and other shrubs are present in small amounts. A variety of other forbs is present in the understory. Natural fire frequency is 20 to 50 years.

**Resilience management.** The Reference Plant Community Phase is Phase 1.1. This plant community is dominated by bluebunch wheatgrass and mountain big sagebrush. Subdominant species include Nevada bluegrass, basin wildrye, phlox, lupine, arrowleaf balsamroot, and mountain snowberry. Antelope bitterbrush occurs in the stand in small amounts along with a variety of other shrubs. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”. Total annual production is 1250 pounds per acre (1400 kilograms per hectare) in a normal year. Production in a favorable year is 1400 pounds per acre (1568 kilograms per hectare). Production in an unfavorable year is 1000 pounds per acre (1120 kilograms per hectare). Structurally, tall shrubs are dominant followed by cool season deep rooted perennial bunchgrasses being more dominant than perennial forbs while shallow rooted bunchgrasses are subdominant.

Table 5. Annual production by plant type

| Plant Type      | Low<br>(Lb/Acre) | Representative Value<br>(Lb/Acre) | High<br>(Lb/Acre) |
|-----------------|------------------|-----------------------------------|-------------------|
| Shrub/Vine      | 500              | 630                               | 700               |
| Grass/Grasslike | 350              | 435                               | 490               |
| Forb            | 150              | 185                               | 210               |
| Total           | 1000             | 1250                              | 1400              |

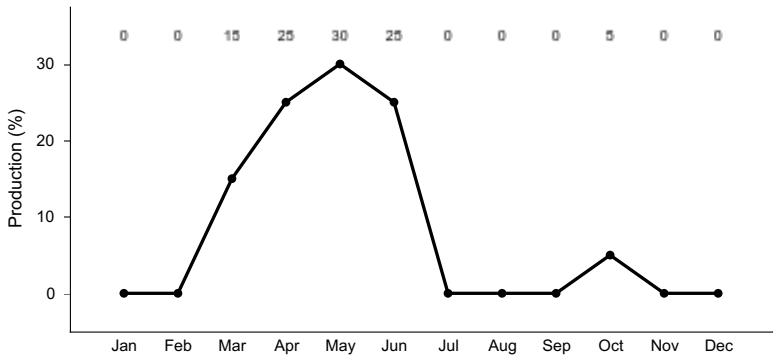


Figure 4. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

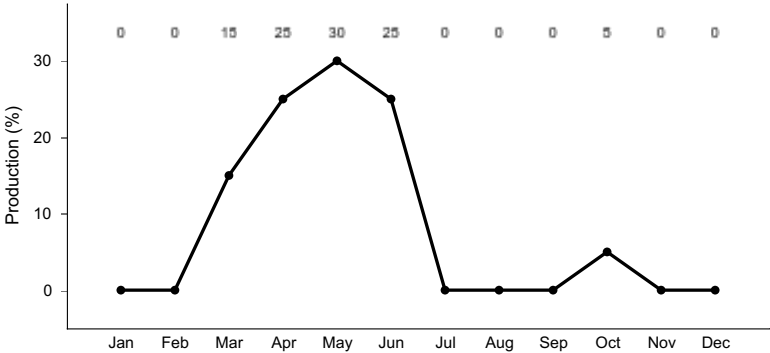
Community 1.2  
Mountain Big Sagebrush with reduced bunchgrasses

This plant community is dominated by mountain big sagebrush with reduced amounts of bluebunch wheatgrass. Mountain brome, slender wheatgrass, arrowleaf balsamroot, mountain snowberry, and Woods’ rose have increased. There is a reduced amount of Nevada bluegrass. All deep-rooted bunchgrasses are typically in low vigor. Antelope bitterbrush has decreased and is hedged. Some cheatgrass and bulbous bluegrass have invaded the site. This state has developed due to improper grazing management and no fire.

Table 6. Ground cover

|                               |    |
|-------------------------------|----|
| Tree foliar cover             | 0% |
| Shrub/vine/liana foliar cover | 0% |
| Grass/grasslike foliar cover  | 0% |

|                                   |        |
|-----------------------------------|--------|
| Forb foliar cover                 | 0%     |
| Non-vascular plants               | 0%     |
| Biological crusts                 | 0%     |
| Litter                            | 45-60% |
| Surface fragments >0.25" and <=3" | 0%     |
| Surface fragments >3"             | 0%     |
| Bedrock                           | 0%     |
| Water                             | 0%     |
| Bare ground                       | 0%     |



**Figure 5. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .**

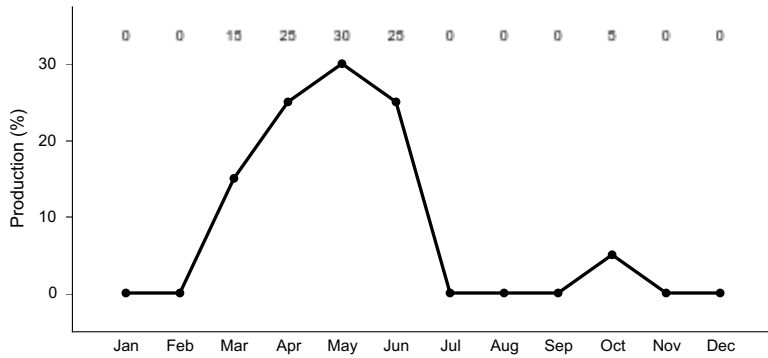
### Community 1.3 Grasses and root sprouting shrubs

This plant community is dominated by bluebunch wheatgrass. Mountain brome, basin wildrye and slender wheatgrass have increased. Forbs remain about in the same proportion as Phase A. Only small amounts mountain big sagebrush and antelope bitterbrush occur in the plant community due to wildfire. Rabbitbrush and mountain snowberry are present and may have increased along with other root-sprouting shrubs. Some cheatgrass and bulbous bluegrass may have invaded the site. This plant community is the result of wildfire.

**Table 7. Ground cover**

|                                   |        |
|-----------------------------------|--------|
| Tree foliar cover                 | 0%     |
| Shrub/vine/liana foliar cover     | 0%     |
| Grass/grasslike foliar cover      | 0%     |
| Forb foliar cover                 | 0%     |
| Non-vascular plants               | 0%     |
| Biological crusts                 | 0%     |
| Litter                            | 45-60% |
| Surface fragments >0.25" and <=3" | 0%     |
| Surface fragments >3"             | 0%     |
| Bedrock                           | 0%     |
| Water                             | 0%     |
| Bare ground                       | 0%     |





**Figure 6. Plant community growth curve (percent production by month).**  
ID0305, ARTRV SOUTH .

### **Pathway 1.1A** **Community 1.1 to 1.2**

Phase 1.1 to 1.2. Develops with improper grazing management and no fire.

### **Pathway 1.1B** **Community 1.1 to 1.3**

Phase 1.1 to 1.3. Develops with fire.

### **Pathway 1.2A** **Community 1.2 to 1.1**

Phase 1.2 to 1.1. Develops with prescribed grazing.

### **Pathway 1.2B** **Community 1.2 to 1.3**

Phase 1.2 to 1.3. Develops with fire.

### **Pathway 1.3A** **Community 1.3 to 1.1**

Phase 1.3 to 1.1. Develops with no fire and prescribed grazing.

## **State 2** **Annuals**

**Resilience management.** State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is economically impractical to return this state to State 1 with accelerated practices.

### **Dominant plant species**

- yellow rabbitbrush (*Chrysothamnus viscidiflorus*), shrub
- bulbous bluegrass (*Poa bulbosa*), grass
- cheatgrass (*Bromus tectorum*), grass

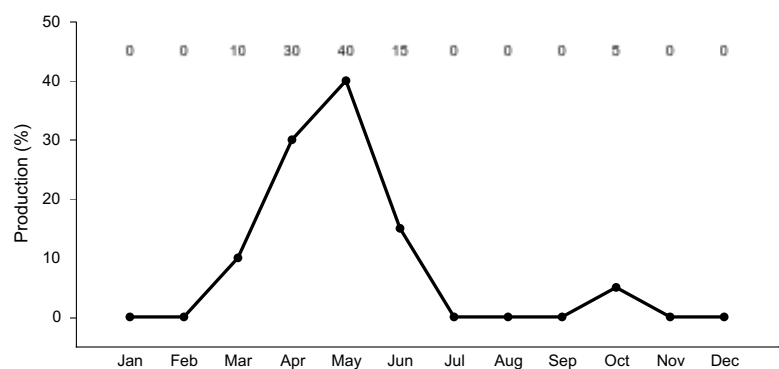
## **Community 2.1** **Annuals**

This plant community is dominated by bulbous bluegrass, cheatgrass and other annuals. Root sprouting shrubs such as rabbitbrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred.

This state has developed due to frequent fires and improper grazing management from phase B, State 1 or with frequent fires and/or improper grazing management from phase 1.3, State 1. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices.

**Table 8. Ground cover**

|                                   |        |
|-----------------------------------|--------|
| Tree foliar cover                 | 0%     |
| Shrub/vine/liana foliar cover     | 0%     |
| Grass/grasslike foliar cover      | 0%     |
| Forb foliar cover                 | 0%     |
| Non-vascular plants               | 0%     |
| Biological crusts                 | 0%     |
| Litter                            | 45-60% |
| Surface fragments >0.25" and <=3" | 0%     |
| Surface fragments >3"             | 0%     |
| Bedrock                           | 0%     |
| Water                             | 0%     |
| Bare ground                       | 0%     |



**Figure 7. Plant community growth curve (percent production by month). ID0302, ARTRV Early Seral.**

## Transition T1A State 1 to 2

State 1, Phase 1.2 to State 2. Develops with frequent fire and improper grazing management. State 1, Phase 1.3 to State 2. Develops through frequent fire and/or continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices.

## Additional community tables

**Table 9. Community 1.1 plant community composition**

| Group                  | Common Name             | Symbol | Scientific Name                           | Annual Production (Lb/Acre) | Foliar Cover (%) |
|------------------------|-------------------------|--------|---|-----------------------------|------------------|
| <b>Grass/Grasslike</b> |                         |        |   |                             |                  |
| 1                      |                         |        |   | 350–490                     |                  |
|                        | bluebunch wheatgrass    | PSSP6  | <i>Pseudoroegneria spicata</i>            | 300–425                     | –                |
|                        | basin wildrye           | LECI4  | <i>Leymus cinereus</i>                    | 30–50                       | –                |
|                        | slender wheatgrass      | ELTR7  | <i>Elymus trachycaulus</i>                | 1–20                        | –                |
|                        | mountain brome          | BRMA4  | <i>Bromus marginatus</i>                  | 1–20                        | –                |
|                        | prairie Junegrass       | KOMA   | <i>Koeleria macrantha</i>                 | 1–20                        | –                |
|                        | sedge                   | CAREX  | <i>Carex</i>                              | 1–15                        | –                |
|                        | Idaho fescue            | FEID   | <i>Festuca idahoensis</i>                 | 1–15                        | –                |
|                        | oniongrass              | MEBU   | <i>Melica bulbosa</i>                     | 1–15                        | –                |
| <b>Forb</b>            |                         |        |   |                             |                  |
| 2                      |                         |        |   | 150–210                     |                  |
|                        | arrowleaf balsamroot    | BASA3  | <i>Balsamorhiza sagittata</i>             | 40–60                       | –                |
|                        | lupine                  | LUPIN  | <i>Lupinus</i>                            | 40–60                       | –                |
|                        | beardtongue             | PENST  | <i>Penstemon</i>                          | 1–30                        | –                |
|                        | phlox                   | PHLOX  | <i>Phlox</i>                              | 15–30                       | –                |
|                        | tapertip hawksbeard     | CRAC2  | <i>Crepis acuminata</i>                   | 15–30                       | –                |
|                        | parsnipflower buckwheat | ERHE2  | <i>Eriogonum heracleoides</i>             | 1–20                        | –                |
|                        | cinquefoil              | POTEN  | <i>Potentilla</i>                         | 1–20                        | –                |
|                        | white hawkweed          | HIAL2  | <i>Hieracium albiflorum</i>               | 1–20                        | –                |
|                        | pale agoseris           | AGGL   | <i>Agoseris glauca</i>                    | 1–15                        | –                |
|                        | fleabane                | ERIGE2 | <i>Erigeron</i>                           | 1–15                        | –                |
|                        | buckwheat               | ERIOG  | <i>Eriogonum</i>                          | 1–15                        | –                |
| <b>Shrub/Vine</b>      |                         |        |   |                             |                  |
| 3                      | <b>Shrubs</b>           |        |   | 500–700                     |                  |
|                        | mountain big sagebrush  | ARTRV  | <i>Artemisia tridentata ssp. vaseyana</i> | 300–425                     | –                |
|                        | mountain snowberry      | SYOR2  | <i>Symphoricarpos oreophilus</i>          | 60–100                      | –                |
|                        | antelope bitterbrush    | PUTR2  | <i>Purshia tridentata</i>                 | 1–20                        | –                |
|                        | yellow rabbitbrush      | CHVI8  | <i>Chrysothamnus viscidiflorus</i>        | 1–20                        | –                |
|                        | Saskatoon serviceberry  | AMAL2  | <i>Amelanchier alnifolia</i>              | 0–20                        | –                |
|                        | chokecherry             | PRVI   | <i>Prunus virginiana</i>                  | 0–15                        | –                |
|                        | snowbrush ceanothus     | CEVE   | <i>Ceanothus velutinus</i>                | 0–15                        | –                |
|                        | Woods' rose             | ROWO   | <i>Rosa woodsii</i>                       | 1–15                        | –                |

## 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 use these areas on a seasonal basis due to the high elevation, short growing season, steepness of slope and temperature regimes. Mule deer and elk are the large herbivores using the site. The site provides seasonal habitat for resident and migratory animals including western toad, sagebrush lizard, shrews, bats, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sagebrush

obligate avian species including sage-grouse, Brewer's sparrow and sage thrasher utilize these sites on a limited basis due to the high elevation, steepness of slope and associated cold temperatures throughout much of the year. A change in the quality of the historic plant community over time can reduce the numbers and diversity of native wildlife species in the area. Encroachment of noxious and invasive plant species (cheatgrass and medusahead) in isolated areas can replace native plant species which provide, foraging areas, brood-rearing and nesting cover for a variety of native wildlife. The loss of herbaceous understory vegetation has a negative impact on ground nesting birds, while the loss of shrub cover negatively affects both ground and shrub nesting avians. Water features are sparse provided by seasonal streams, artificial water catchments and springs.

State 1 Phase 1.1 – Mountain Big Sagebrush/ Bluebunch Wheatgrass/ Mountain Snowberry/ Nevada Bluegrass 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, sagebrush lizard, western skink, western rattlesnake, 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 forage needs for large mammals including mule deer and elk. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize this community. 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/ Mountain Snowberry/ Woods Rose Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover 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 community is represented by leopard lizard, short horned lizard, sagebrush lizard and western skink. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for these resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. Fewer prey species and less understory cover results in less available food, brood-rearing and nesting habitat. Key shrub-steppe avian obligates include Brewer's sparrow, sage sparrow and sage thrasher. The reduction of understory plants, and antelope bitterbrush limits seasonal habitat for large mammals including mule deer, and elk. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize these areas. 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/ Basin Wildrye/ 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 or 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. The reptiles including, short horned lizard and sagebrush 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 collect all available water would exclude amphibian use on these sites. The dominance of herbaceous vegetation with little sagebrush canopy 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). Large mammal (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 – Bulbous Bluegrass/ Cheatgrass / 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 diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

#### Grazing Interpretations.

The steep slopes of this site severely restrict livestock movement and access. Forcing livestock to use this site can severely impact associated sites that have moderate slopes. If livestock are to use the site, grazing should occur in the late spring and fall.

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, photography and nature study. The steep slopes limit access for recreation.

### 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

Leah Juarros, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

### Type locality

|                               |              |
|-------------------------------|--------------|
| Location 1: Blaine County, ID |              |
| Township/Range/Section        | T2N R21E S5  |
| Location 2: Blaine County, ID |              |
| Township/Range/Section        | T3N R21E S16 |

## References

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## Other references

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USDA, Forest Service, Fire Effects Information Database. 2004. [www.fs.fed.us/database/feis](http://www.fs.fed.us/database/feis)

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## Contributors

Dave Franzen And Jacy Gibbs

## Approval

Kirt Walstad, 12/13/2023

## 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  | 03/28/2008   |
| Approved by                                 | Kirt Walstad   |
| 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.

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2. **Presence of water flow patterns:** water-flow patterns occur on this site. When they occur, they may be long, continuous and extensive. Tall shrubs and bunchgrass interrupt flows.

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

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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 35-50 percent.

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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:** usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

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7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 5 feet following a significant run-off event. Coarse litter generally does not move. Terracettes can trap fine litter.

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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):** values should range from 4 to 6 .

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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) needs to be determined. The A or A1 horizon is typically 3 inches thick. Surface soil color is very dark grayish brown moist.

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

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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):** not present.

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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: tall shrubs

Sub-dominant: Cool season deep-rooted perennial bunchgrasses

Other: perennial forbs

Additional: shallow rooted bunchgrasses

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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.
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14. **Average percent litter cover (%) and depth ( in):** additional litter cover data is needed but is expected to be 20-30 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 1250 pounds per acre (1400 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 35 percent of the total production, forbs 15 percent and shrubs 50 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, and diffuse and spotted knapweed. Cheatgrass can invade the site at the lower elevations.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
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