

Ecological site R025XY016ID SHALLOW CALCAREOUS LOAM 10-16

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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): 025X—Owyhee High Plateau

MLRA Notes 25—Owyhee High Plateau

This area is in Nevada (56 percent), Idaho (30 percent), Oregon (12 percent), and Utah (2 percent). It makes up about 27,443 square miles. MLRA 25 is characteristically cooler and wetter than the neighboring MLRAs of the Great Basin. The western boundary is marked by a gradual transition to the lower and warmer basins of MLRA 24. The boundary to the south-southeast, with MLRA 28B, is marked by gradual changes in geology marked by an increased dominance of singleleaf pinyon and Utah juniper and a reduced presence of Idaho fescue. The boundary to the north, with MLRA 11, is a rapid transition from the lava plateau topography to the lower elevation Snake River Plain.

Physiography:

All of this area lies within the Intermontane Plateaus. The southern half is in the Great Basin section of the Basin and Range province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River.

The northern half of the area lies within the Columbia Plateaus province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Most of the northern half is in the Payette section, but the northeast corner is in the Snake River Plain section. Deep, narrow canyons draining into the Snake River have been incised into this broad basalt plain. Elevation ranges from 3,000 to 7,550 feet on rolling plateaus and in gently sloping basins. It is more than 9,840 feet on some steep mountains. The Humboldt River crosses the southern half of this area

Geology:

The dominant rock types in this MLRA are volcanic. They include andesite, basalt, tuff, and rhyolite. In the north and west parts of the area, Cretaceous granitic rocks are exposed among Miocene volcanic rocks in mountains. A Mesozoic igneous and metamorphic rock complex dominates the south and east parts of the area. Upper and Lower Paleozoic calcareous sediments, including oceanic deposits, are exposed with limited extent in the mountains. Alluvial fan and basin fill sediments occur in the valleys.

Climate:

The average annual precipitation in most of this area is typically 11 to 22 inches. It increases to as much as 49 inches at the higher elevations. Rainfall occurs in spring and sporadically in summer. Precipitation occurs mainly as snow in winter. The precipitation is distributed fairly evenly throughout fall, winter, and spring. The amount of precipitation is lowest from midsummer to early autumn. The average annual temperature is 33 to 51 degrees F. The freeze-free period averages 130 days and ranges from 65 to 190 days, decreasing in length with elevation. It is typically less than 70 days in the mountains.

Water:

The supply of water from precipitation and streamflow is small and unreliable, except along the Owyhee, Bruneau, and Humboldt Rivers. Streamflow depends largely on accumulated snow in the mountains. Surface water from mountain runoff is generally of excellent quality and suitable for all uses. The basin fill sediments in the narrow alluvial valleys between the mountain ranges provide some ground water for irrigation. The alluvial deposits along the large streams have the most ground water. Based on measurements of water quality in similar deposits in

adjacent areas, the basin fill deposits probably contain moderately hard water. The water is suitable for almost all uses. The carbonate rocks in this area are considered aquifers, but they are little used. Springs are common along the edges of the limestone outcrops.

Soils:

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid temperature regime and an aridic, aridic bordering on xeric, or xeric moisture regime. Soils with aquic moisture regimes are limited to drainage or spring areas, where moisture originates or runs on and through. These soils are of a very limited extent throughout the MLRA. They generally are well drained, clayey or loamy, and shallow or moderately deep. Most of the soils formed in mixed parent material. Volcanic ash and loess mantle the landscape. Surface soil textures are loam and silt loam with ashy texture modifiers in some areas. Argillic horizons occur on the more stable landforms. They are exposed nearer the soil surface on convex landforms, where ash and loess deposits are more likely to erode. Soils that formed in carbonatic parent material in areas that receive less than 12 inches of precipitation are characterized by calcic horizons throughout the profile, while soils in areas that receive more than 12 inches of precipitation do not have calcic horizons in the upper part of the profile. Soils that formed on stable landforms at the lower elevations are dominated by ochric horizons. Soils that formed at the middle and upper elevations are characterized by mollic epipedons. Soils in drainage areas at all elevations that receive moisture running on or through them are characterized by thicker mollic epipedons.

Biological Resources:

This MLRA supports shrub-grass vegetation. Lower elevations are characterized by Wyoming big sagebrush associated with bluebunch wheatgrass, western wheatgrass, and Thurber's needlegrass. Other important plants include bluegrass, squirreltail, penstemon, phlox, milkvetch, lupine, Indian paintbrush, aster, and rabbitbrush. Black sagebrush occurs but is less extensive. Singleleaf pinyon and Utah juniper occur in limited areas. With increasing elevation and precipitation, vast areas characterized by mountain big sagebrush or low sagebrush/early sagebrush in association with Idaho fescue, bluebunch wheatgrass, needlegrasses, and bluegrass become common. Snowberry, curl-leaf mountain mahogany, ceanothus, and juniper also occur. Mountains at the highest elevations support whitebark pine, Douglas-fir, limber pine, Engelmann spruce, subalpine fir, aspen, and curl-leaf mountain mahogany.

Major wildlife species include mule deer, bighorn sheep, pronghorn, mountain lion, coyote, bobcat, badger, river otter, mink, weasel, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, prairie falcon, kestrel, great horned owl, short-eared owl, long-eared owl, burrowing owl, pheasant, sage grouse, chukar, gray partridge, and California quail. Reptiles and amphibians include western racer, gopher snake, western rattlesnake, side-blotched lizard, western toad, and spotted frog. Fish species include bull, red band, and rainbow trout.

Classification relationships

Artemisia nova/ Agropyron spicatum HT in "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

This site is on undulating to very steep slopes with gradients of 4 to 75 percent on all aspects. Slope gradients are mostly 15 to 50 percent. Elevations are 5,500 to 8,500 feet (1,676 to 2,591 meters). These sites are associated with uplands, terrace escarpments, low hills and mountain side slopes.

The soils supporting this site are shallow to moderately deep, well drained, with moderate to slow permeability above bedrock or a duripan. Runoff is medium to very high. The erosion hazard is slight to very severe by water, and moderate by wind. The available water holding capacity (AWC) is very low to low. Soils are typically 10 to 40 inches (25 to 101cm) deep to either bedrock or a duripan. The surface texture is silt loam or loam. These soils normally have from 30 to over 50 percent gravel and cobbles by volume distributed throughout the profile.

The plant community is dominated by black sagebrush, bluebunch wheatgrass and Thurber's needlegrass. Spiny hopsage, Nevada bluegrass and Indian ricegrass are other important species found on this site.

Associated sites

| | |
|-------------|---------------|
| R025XY001ID | ASPEN THICKET |
|-------------|---------------|

| | |
|-------------|--------------------------------|
| R025XY006ID | SOUTH SLOPE STONY 10-13 |
| R025XY048ID | SHALLOW CLAYPAN 11-13 |

Similar sites

| | |
|-------------|--------------------------------------|
| R025XY044ID | VERY SHALLOW STONY LOAM 10-14 |
| R025XY040ID | VERY SHALLOW STONY 8-12 |

Table 1. Dominant plant species

| | |
|------------|---|
| Tree | Not specified |
| Shrub | (1) <i>Artemisia nova</i> |
| Herbaceous | (1) <i>Pseudoroegneria spicata subsp. spicata</i> |

Physiographic features

This site is on undulating to very steep slopes with gradients of 4 to 75 percent on all aspects. Slope gradients are typically 15 to 50 percent. Elevations are 5,500 to 8,500 feet (1,676 to 2,591 meters). These sites are associated with uplands, terrace escarpments, low hills and mountain side slopes.

Table 2. Representative physiographic features

| | |
|--------------------|--|
| Landforms | (1) Terrace (2) Hillslope (3) Mountain slope |
| Runoff class | High to very high |
| Flooding frequency | None |
| Ponding frequency | None |
| Elevation | 1,676–2,591 m |
| Slope | 4–75% |
| Water table depth | 152 cm |
| Aspect | W, NW, N, NE, E, SE, S, SW |

Climatic features

MLRA 25 summers are hot, especially at lower elevations, and winters are cold and snowy. Precipitation is usually lighter at lower elevations throughout the year. At higher elevations precipitation is much greater, and snow accumulates to a considerable depth. The average total precipitation of the MLRA is 14.39 inches (36.5cm) (based on 6 long term climate stations located throughout the MLRA).

The mean annual temperature is 45.9 degrees F. The average high is 59.7 degrees F., and the average low temperature is 32.1 degrees F. The prevailing wind is from the west. Average wind speed is greatest, at about 10 miles per hour, in March.

The Mean Annual Precipitation for the site is estimated to typically be between 9 and 12 inches (23 to 30 cm).

The frost-free period ranges from 79 to 103 days and the freeze free period ranges from 114 to 140 days.

*The above data is averaged from the Western Regional Climate Center and NASIS.

Table 3. Representative climatic features

| | |
|--|-------------|
| Frost-free period (characteristic range) | 79-103 days |
|--|-------------|

| | |
|--|--------------|
| Freeze-free period (characteristic range) | 114-140 days |
| Precipitation total (characteristic range) | 229-305 mm |
| Frost-free period (actual range) | 50-120 days |
| Freeze-free period (actual range) | 60-140 days |
| Precipitation total (actual range) | 203-381 mm |
| Frost-free period (average) | 90 days |
| Freeze-free period (average) | 136 days |
| Precipitation total (average) | 279 mm |

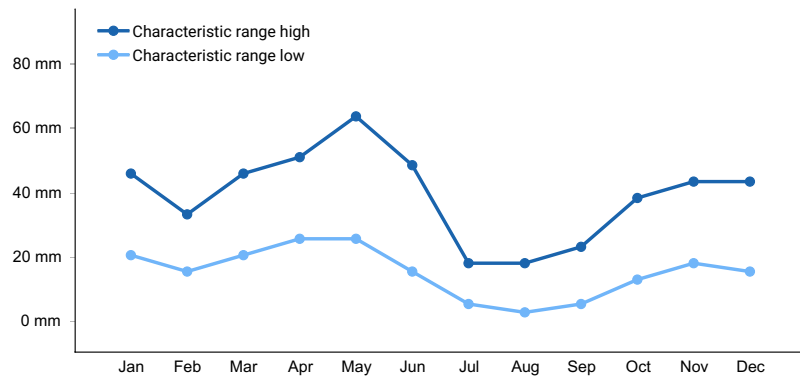


Figure 1. Monthly precipitation range

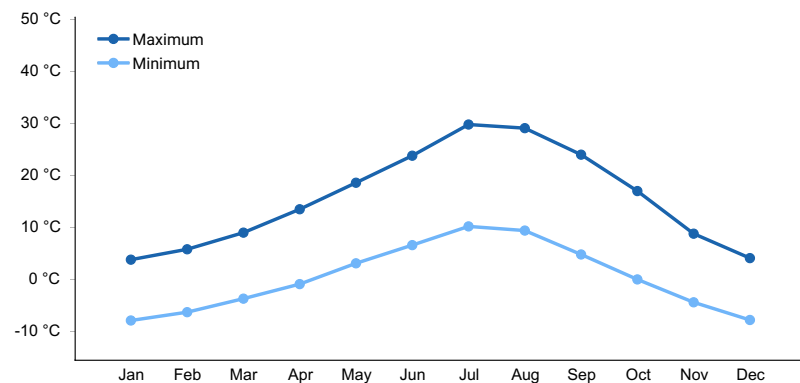


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils supporting this site are shallow to moderately deep, well drained, with moderate to slow permeability above bedrock or a duripan. Runoff is medium to very high. The erosion hazard is slight to very severe by water, and moderate by wind. The available water holding capacity (AWC) is very low to low.

These soils are usually 10 to 40 inches (25 to 102cm) deep to either bedrock or a duripan. These soils normally have from 30 to over 50 percent gravel and cobbles by volume distributed throughout the profile.

The surface texture is silt loam or loam. Some soils have a moderately fine to fine textured subsoil within 10 inches (25 cm) of the surface. The subsoil is typically moderately well to well developed with clay ranging from approximately 10 to 43 percent.

The reaction of many soils is moderately to strongly alkaline. These soils usually have high amounts of gravels, cobbles, or stones on the surface that occupy plant growing space. This helps to reduce evaporation and conserve soil moisture. Rock fragments on the surface provide a stabilizing effect on surface erosion conditions. These soils are characterized by a torric soil moisture regime that borders on xeric. Soil temperature regime is either mesic or frigid.

Soil series correlated with this site are: Elhina, Gunnel, Harroun, Nibbs and Sonlet.

Table 4. Representative soil features

| | |
|--|--|
| Parent material | (1) Alluvium–welded tuff (2) Colluvium (3) Residuum |
| Surface texture | (1) Gravelly sandy loam (2) Stony loam (3) Very gravelly |
| Family particle size | (1) Loamy-skeletal (2) Fine |
| Drainage class | Well drained |
| Permeability class | Slow to moderate |
| Depth to restrictive layer | 25–102 cm |
| Soil depth | 25–102 cm |
| Surface fragment cover <=3" | 9–39% |
| Surface fragment cover >3" | 0–11% |
| Available water capacity (0-101.6cm) | 2.79–13.21 cm |
| Calcium carbonate equivalent (0-101.6cm) | 0–15% |
| Electrical conductivity (0-101.6cm) | 0–2 mmhos/cm |
| Sodium adsorption ratio (0-101.6cm) | 0–5 |
| Soil reaction (1:1 water) (0-101.6cm) | 6.6–9 |
| Subsurface fragment volume <=3" (Depth not specified) | 11–23% |
| Subsurface fragment volume >3" (Depth not specified) | 8–75% |

Ecological dynamics

The plant community is dominated by black sagebrush, bluebunch wheatgrass and Thurber’s needlegrass. Spiny hopsage, Nevada bluegrass and Indian ricegrass are other important species found on this site. Some Idaho fescue is found on areas of the site that have a more favorable water balance. Potential vegetative composition is about 40-60% grasses, 10-20% forbs and 30-40% shrubs.

The Historic Climax Plant Community (HCPC), the Reference State (State 1), 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. The Reference Plant Community Phase is Phase 1.1. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”.

During the last few thousand years, this site has evolved in an arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, sage grouse, lagomorphs and small rodents. Fire has historically occurred on this site every 80 to 100 years. Fire occurs only in years with above normal precipitation. Total annual production is 500 pounds per acre (560 Kg/ha) in a normal year. Production in a favorable year is 700 pounds per acre (784 Kg/ha). Production in an unfavorable year is 300 pounds per acre (340 Kg/ha). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by medium height shrubs being more dominant than perennial

forbs while shallow rooted bunchgrasses are subdominant.

FUNCTION:

This site is well suited for big game use in the spring, fall and winter. It is best suited for livestock use in the spring, fall and early winter, and recreational use in the summer and fall.

Due to the surface stones on this site, it is fairly resistant to disturbances that can potentially degrade the site. For the same reasons, runoff is moderately low and rock fragments on the surface provide a stabilizing affect on the surface erosion conditions.

Impacts on the Plant Community:

Influence of fire:

This site historically had a very low fire frequency, approximately every 80-100 years. Most of the shrubs evolved in the absence of fire; therefore, they can be severely damaged when burned. Thurber's needlegrass is also susceptible to mortality after fire. Cheatgrass can be a troublesome invader at lower elevations on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency.

Influence of improper grazing management:

Black sagebrush, winterfat and spiny hopsage can all be impacted by improper grazing management. Relatively low levels of utilization by cattle and sheep are needed to maintain the shrub component.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass and/or medusahead increase due to improper grazing management and become co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration and intensity of grazing can maintain the integrity of the plant community.

Weather influences:

Extended periods of drought significantly impact this site due to the low available water holding capacity (AWC) and shallow soil. Extended drought reduces vigor of the perennial grasses and palatable shrubs. Extreme drought may cause plant mortality. Prolonged drought can lead to reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

Influence of noxious and invasive plants:

Annual and perennial weeds compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass can be an invasive plant on this site especially after fire. Once it becomes established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Relatively low numbers of wildlife use this site with little impact. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall and early winter. Sage grouse use the site for strutting grounds. Sage grouse may also use the site during the winter. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff on slopes greater than 10 percent occur when black sagebrush is

removed with frequent fires, particularly following the fire event. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase 1.1 to 1.2. Develops with fire (approximately every 80-100 years). Fire only occurs in above normal precipitation (favorable) years.

Phase 1.1 to 1.3. Develops under improper grazing management and no fire.

Phase 1.3 to 1.1. Develops under a good prescribed grazing management program and no fire.

Phase 1.2 to 1.1. Develops from prescribed grazing and no fire.

State 1 to State 2. Develops from Phase B with frequent fire or from Phase 1.3 with improper grazing management and fire. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

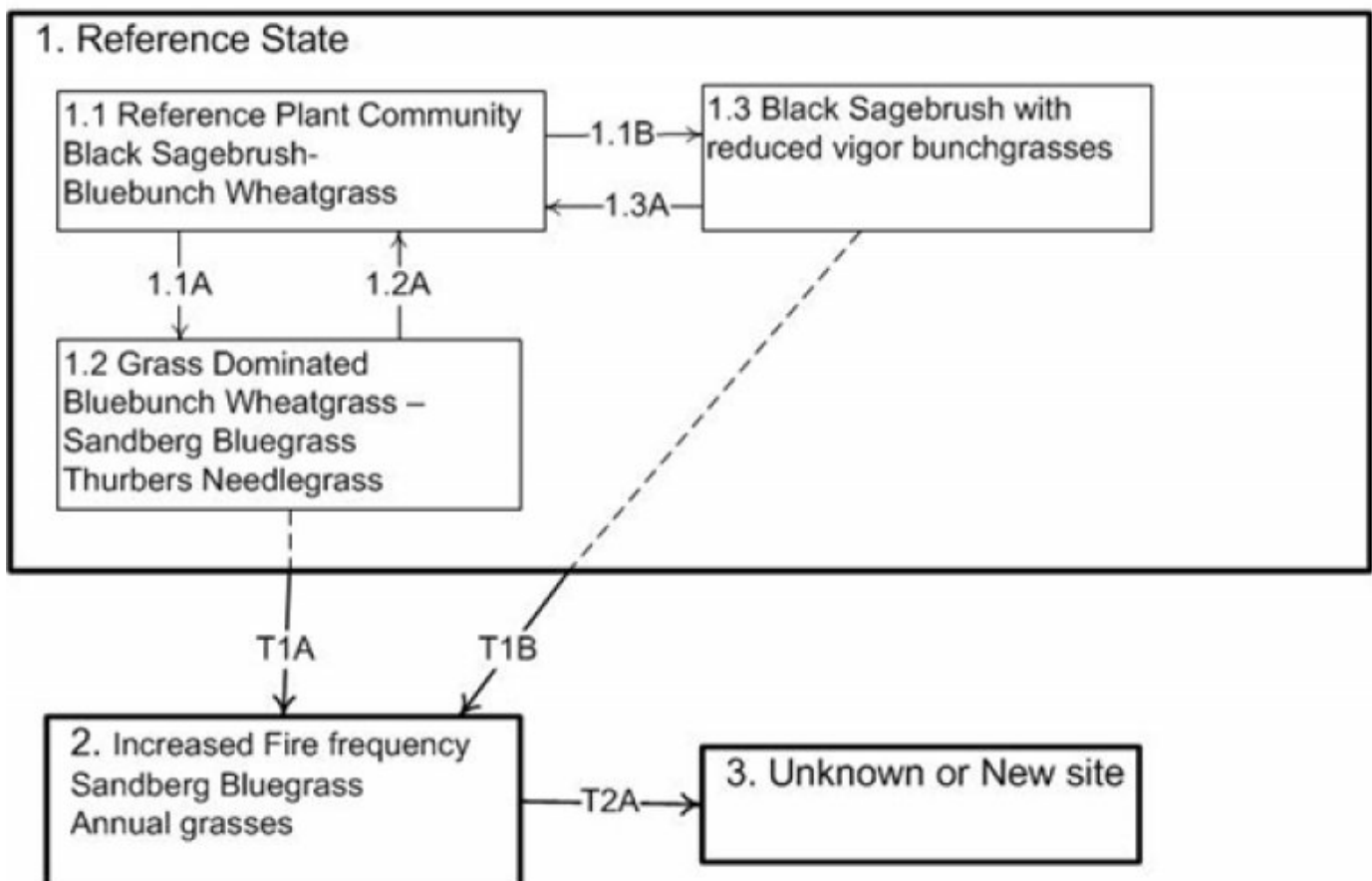
State 2 to Unknown Site. The site has deteriorated further and soil loss has occurred resulting in a loss of site potential. This has resulted from improper grazing management and frequent fires. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Practice Limitations:

Due to the shallow soils and low available water holding capacity (AWC) of the soils, severe limitations exist for range seeding on this site. Severe limitations exist for brush management with ground moving equipment due to stoniness. Low potential production must be considered if planning brush management.

State and transition model

R025XY016ID – Shallow Calcareous Loam 10-16 ARNO4/PSSP6



**State 1
Reference State**

**Community 1.1
Reference Plant Community**

This plant community is dominated by bluebunch wheatgrass and black sagebrush. Thurber’s needlegrass is sub-dominant. Small amounts of Indian ricegrass, bottlebrush squirreltail and Nevada bluegrass may be present. A large variety of forbs are present but each represents a small amount in the community. Other shrubs such as twisted leaf rabbitbrush and spiny hopsage can be present in small amounts. The natural fire frequency is about 80-100 years.

Table 5. Annual production by plant type

| Plant Type | Low (Kg/Hectare) | Representative Value (Kg/Hectare) | High (Kg/Hectare) |
|-----------------|---------------------|--------------------------------------|----------------------|
| Grass/Grasslike | 202 | 336 | 471 |
| Shrub/Vine | 90 | 157 | 224 |
| Forb | 45 | 67 | 90 |
| Total | 337 | 560 | 785 |

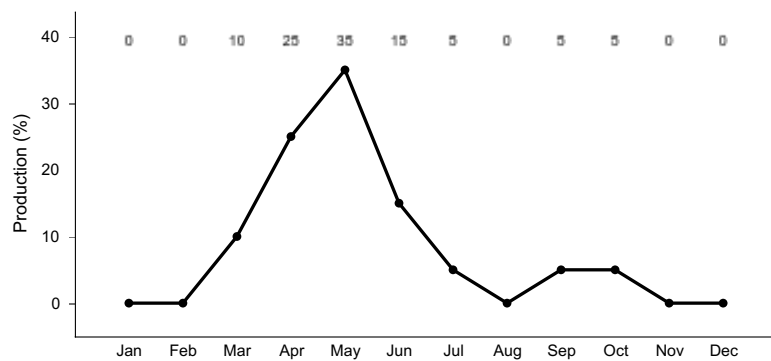


Figure 5. Plant community growth curve (percent production by month). ID0910, ARNO4/ACTH7/PSSPS.

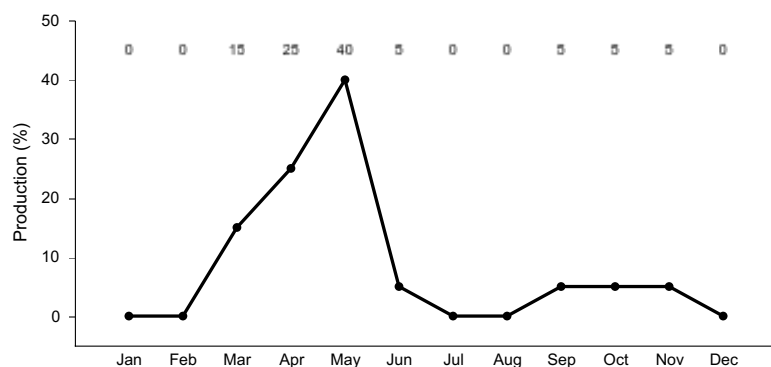


Figure 6. Plant community growth curve (percent production by month). ID0911, D25 POSE/BRTE/ANNUALS.

**Community 1.2
Grass Dominated - Post Fire**

This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Small amounts of Thurber’s needlegrass, bottlebrush squirreltail, Nevada bluegrass, a variety of forbs and downy twisted leaf rabbitbrush can be present. Some annual grasses have invaded. This phase has developed due to fire.

Community 1.3

Black Sagebrush with low Vigor Bunchgrasses

This plant community is dominated by black sagebrush with Sandberg bluegrass in the understory. Bluebunch wheatgrass and other deep-rooted perennial bunchgrasses are present but in reduced amounts and in low vigor. Some annual grasses have invaded. This phase has developed due to improper grazing management and no fire.

Pathway P1.1a Community 1.1 to 1.2

Develops with fire (approximately every 80-100 years). Fire only occurs in above normal precipitation (favorable) years.

Pathway P1.1b Community 1.1 to 1.3

Develops under improper grazing management and no fire.

Pathway P1.2a Community 1.2 to 1.1

Develops from prescribed grazing and no fire.

Pathway P1.3a Community 1.3 to 1.1

Develops under a good prescribed grazing management program and no fire.

State 2 Annual Dominated

Community 2.1 Increased Fire Frequency

This plant community is dominated by Sandberg bluegrass, cheatgrass, medusahead rye and a variety of forbs. Some perennial forbs are present. The community has developed due to continued improper grazing management and fire. Some soil loss has occurred. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

State 3 Unknown Site

Community 3.1 Unknown Site

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This community has developed due to continued improper grazing management and/or frequent fire. It is not economical to return this site to State 1 with accelerating practices.

Transition T1A State 1 to 2

Develops from Phase 1.2 with frequent fire or from Phase 1.3 with improper grazing management and fire. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Transition T2A

State 2 to 3

The site has deteriorated further and soil loss has occurred resulting in a loss of site potential. This has resulted from improper grazing management and frequent fires. This site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Additional community tables

Table 6. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production (Kg/Hectare) | Foliar Cover (%) |
|------------------------|-----------------------|--------|------------------------------------|--------------------------------|------------------|
| Grass/Grasslike | | | | | |
| 1 | | | | 202–471 | |
| | bluebunch wheatgrass | PSSP6 | <i>Pseudoroegneria spicata</i> | 101–235 | – |
| | Thurber's needlegrass | ACTH7 | <i>Achnatherum thurberianum</i> | 34–78 | – |
| | Indian ricegrass | ACHY | <i>Achnatherum hymenoides</i> | 11–28 | – |
| | Sandberg bluegrass | POSE | <i>Poa secunda</i> | 0–17 | – |
| | Webber needlegrass | ACWE3 | <i>Achnatherum webberi</i> | 0–17 | – |
| | squirreltail | ELEL5 | <i>Elymus elymoides</i> | 0–17 | – |
| | Idaho fescue | FEID | <i>Festuca idahoensis</i> | 0–17 | – |
| Forb | | | | | |
| 2 | | | | 45–90 | |
| | tapertip hawksbeard | CRAC2 | <i>Crepis acuminata</i> | 11–28 | – |
| | buckwheat | ERIOG | <i>Eriogonum</i> | 0–11 | – |
| | lupine | LUPIN | <i>Lupinus</i> | 0–11 | – |
| | phlox | PHLOX | <i>Phlox</i> | 0–11 | – |
| | mock goldenweed | STENO7 | <i>Stenotus</i> | 0–11 | – |
| | aster | ASTER | <i>Aster</i> | 0–11 | – |
| | milkvetch | ASTRA | <i>Astragalus</i> | 0–11 | – |
| Shrub/Vine | | | | | |
| 3 | | | | 90–224 | |
| | black sagebrush | ARNO4 | <i>Artemisia nova</i> | 78–179 | – |
| | yellow rabbitbrush | CHVI8 | <i>Chrysothamnus viscidiflorus</i> | 0–11 | – |
| | spiny hopsage | GRSP | <i>Grayia spinosa</i> | 0–11 | – |
| | Utah juniper | JUOS | <i>Juniperus osteosperma</i> | 0–11 | – |
| | winterfat | KRLA2 | <i>Krascheninnikovia lanata</i> | 0–11 | – |
| | antelope bitterbrush | PUTR2 | <i>Purshia tridentata</i> | 0–11 | – |
| | little sagebrush | ARAR8 | <i>Artemisia arbuscula</i> | 0–11 | – |

Animal community

Animal Community – Wildlife Interpretations

The rangeland ecological site provides habitat for many native wildlife species. Large herbivore use of the reference plant community is dominated by mule deer and pronghorn antelope. Site can provide winter habitat for these large mammals. The rangeland habitat provides important seasonal habitat for resident and migratory animals including western toad, common sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, Greater sage-grouse, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sage-grouse, common sagebrush lizard and Merriam's shrew are area sensitive species that may be present on this site. In isolated areas encroachment of noxious and invasive plant species (cheatgrass and

medusahead) have replaced native plant species which provided critical feed, brood-rearing and nesting cover for a variety of native wildlife. Water is limited, being provided by seasonal runoff, artificial water catchments and spring sites.

State 1 Phase 1.1 – Black Sagebrush/ Bluebunch Wheatgrass/ Thurber's Needlegrass Plant Community (HCPC): This plant community provides a diversity of grasses, forbs and shrubs, used by native insect communities that assist in pollination. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, northern leopard frog and western toad. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available hydrology would preclude the use of these sites by amphibians. Birds that may be resident or migratory include mountain bluebird, vesper sparrow, grasshopper sparrow and lesser goldfinch. Leks, brood-rearing habitat, winter cover and winter food for sage-grouse is provided by this plant community. Black sagebrush and spiny hopsage are desirable browse for mule deer and pronghorn. The plant community provides spring, fall and winter food for mule deer and pronghorn. A diverse small mammal population including golden-mantled ground squirrels, Merriam's shrew, jackrabbits and deer mice utilizes this plant community.

State 1 Phase 1.2 – Bluebunch Wheatgrass/ Sandberg Bluegrass/ Twisted Leaf Green Rabbitbrush Plant Community: This phase has developed due to fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush or spiny hopsage provides less vertical structure for animals. Insect diversity would be reduced with the loss of sagebrush but a native forbs plant community similar to State 1 Phase 1.1 would still support select pollinators. Encroachment of rabbitbrush would add pollinator habitat in the fall. As rabbitbrush matures structural diversity (height) would replace the loss of sagebrush. Until rabbitbrush is established diversity and populations of reptiles would be limited. The dominance of herbaceous vegetation with no sagebrush canopy would eliminate use of this area by sage-grouse for winter cover and winter food. This plant community provides limited brood-rearing habitat for sage-grouse when site is adjacent to sagebrush cover. The dominant herbaceous vegetation improves habitat for grassland bird species (horned lark and western meadowlark). Winter habitat for large herbivores would be reduced or eliminated with the loss of black sagebrush and spiny hopsage. Small mammal diversity and populations may be reduced due to loss of cover and subsequent increase in success of hunting by predators. Large blocks of this plant community would fragment historic plant community and reduce the quality of habitat for shrub-steppe obligate animal species.

State 1 Phase 1.3- Black Sagebrush/ Sandberg Bluegrass Plant Community: This phase has developed due to improper grazing management and no fire. The animal community would be similar to State 1 Phase 1.1. The reduced vigor and canopy cover of forbs would lower the quality of habitat for pollinators. The reptile community includes common sagebrush lizard and western rattlesnake. The reduced diversity of insects and understory cover may reduce quality of food and cover for reptiles. The site would provide winter cover and winter food for sage-grouse. The quality of brood-rearing habitat for sage-grouse would be reduced as herbaceous understory is depleted. Mule deer and pronghorn would utilize the site in spring, fall and winter but the quality of habitat would be reduced due to poor herbaceous understory. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots may utilize this site.

State 2 – Sandberg Bluegrass/ Cheatgrass/ Medusahead Plant Community: This plant community is the result of continued improper grazing management and fire. The reduced forbs and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species identified in State 1 Phase 1.1 are not supported with food, water or cover. This plant community does not support life requisites for sage-grouse. 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. Hunting success by raptors may increase. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. Small mammal populations and diversity would be reduced due to poor quality cover and food and an increase in success of hunting by predators. Large blocks of this plant community would fragment historic plant community and reduce the quality of habitat for shrub-steppe obligate animal species.

Grazing Interpretations.

This site is best suited for livestock grazing in the spring, fall and early winter. Natural water supplies are usually limited or absent. Livestock water may have to be piped or hauled.

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 in this site are in hydrologic group B. They have moderately low run-off potential.

Recreational uses

Pronghorn antelope hunting is a possible use for this site.

Wood products

None.

Other products

None.

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, State Rangeland Management Specialist, NRCS, Idaho (retired)

Joe May, State Rangeland Management Specialist, NRCS, Idaho

Leah Juarros, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Assistant State Conservationist, NRCS, Idaho (retired)

Type locality

| | |
|-------------------------------|-----------------|
| Location 1: Cassia County, ID | |
| Township/Range/Section | T17 R15 S S25 E |
| Latitude | 42° 7' 9" |
| Longitude | 113° 33' 30" |

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

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.

Contributors

Dave Franzen And Jacy Gibbs

Approval

Kendra Moseley, 4/24/2024

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) | |
| Contact for lead author | USDA/NRCS 9173 W. Barnes Drive, Suite C Boise, ID 83709 208-378-5722 |
| Date | 07/02/2007 |
| Approved by | Kendra Moseley |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

Indicators

- 1. Number and extent of rills:** Rills rarely occur on this site due to the extremely cobbly to very stony surface soils.

- 2. Presence of water flow patterns:** Water-flow patterns rarely occur on this site. When they do occur, they are short and disrupted by cool season grasses, shrubs and surface stones. They are not extensive.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals and/or terracettes can occur on the site especially where flow patterns are present and on slopes greater than 20%. Do not mistake frost heave for pedestals.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Ranges from 20-40 percent.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind-scoured, blowouts, and/or deposition Areas are usually not present in the HCPC.
-
7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces typically moves up to three feet. Coarse litter generally does not move.
-
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 4-6 .
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface horizon is typically 2 to 7 inches thick. Structure typically includes weak to moderate thick platy, weak very fine to fine or strong fine granular. Soil organic matter (SOM) ranges from 1 to 2 percent.
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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, slow runoff and increase infiltration. Medium height shrubs accumulate some 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):** Compaction Layer is not present. Do not mistake an increase in clay content of the subsoil for a compaction layer.
-
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>> medium shrubs
- Sub-dominant: Perennial forbs>shallow-rooted bunchgrasses
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little mortality or decadence is expected on this site. Mortality of shallow-rooted grasses may occur due to extended periods of drought.
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14. **Average percent litter cover (%) and depth (in):** Additional data is needed but is expected to be low and at a shallow depth.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual Production is 500 pounds per acre (392 Kg/ha) in a year with normal precipitation and

temperatures. Perennial grasses produce 40-60 percent of the total production, forbs 10-20 percent and shrubs 30-40 percent.

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: Invasive Plants include cheatgrass and bulbous bluegrass at lower elevations. Medusahead may invade the site when surface soil has high clay content.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in normal and favorable years.
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