USDA Natural Resources
Conservation Service

Ecological site R012XY011ID
Alluvial Bottom 8-13 PZ ARTRT/ELLAL-LECI4

Last updated: 9/21/2020
Accessed: 05/08/2024

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): 012X–Lost River Valleys and Mountains

Land Resource Region: B (Northwestern Wheat and Range)
MLRA: 12 (Lost River Valleys and Mountains)

EPA EcoRegion: Level III (Middle Rockies)

LRU notes

012X-Lost River Valleys and Mountains

Precipitation or Climate Zone: 8-13” P.Z.
https://soils.usda.gov/survey/geography/mlra/index.html

Ecological site concept

Site receives additional water.
Soils are:
May be slightly saline or saline-sodic.
Deep to very deep. >35% (by volume) coarse fragments, mostly gravels, skeletal within 20” of soil surface.
Not strongly or violently effervescent in the to 20” of the soil profile.
textures usually range from fine sandy loam to silt loam in surface mineral 4”.
Slope is < 30%.
Clay content is = <35% in surface mineral 4”.
Site does not have an argillic horizon with > 35% clay.

Associated sites

R012XY002ID	**Gravelly Loam 12-16 PZ ARAR8/PSSP6-FEID**
R012XY003ID	**Saline Flat <8 PZ ATGA/ACHY**
R012XY004ID	**Gravelly Loam 8-12 PZ ARTRW8/PSSPS**
R012XY007ID	**Shallow Gravelly Loam 8-12 PZ ARAR8/PSSPS-ACHY**
R012XY017ID	**Shallow Fractured South 8-12 PZ ARTRW8/PSSPS-LESAS2**
R012XY018ID	**Saline Loamy 8-11 PZ SAVE4/LECI4**
R012XY023ID	**Dry Meadow PONE3-PHAL2**
R012XY026ID	**Dry Loamy 7-10 PZ ATCO-ARFR4/PSSPS**

R012XY032ID	**Loamy 8-12 PZ ARTRW8/PSSPS**
R012XY036ID	**Clayey 7-10 PZ ARTRW8-ATCO/PSSPS**
R012XY040ID	**Cold Gravelly 8-12 PZ ARNO4/HECOC8**
R012XY041ID	**Gravelly 7-10 PZ ATCO/SPCR**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. tridentata*
Herbaceous	(1) *Elymus lanceolatus ssp. lanceolatus* (2) *Leymus cinereus*

Physiographic features

This site occurs in alluvial bottomlands. Slopes vary from 1 to 15 percent and elevation ranges from 4700 to 6800 feet (1433-2072 meters).

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat
Elevation	1,433–2,073 m
Slope	0–15%
Water table depth	152 cm

Climatic features

MLRA 12 is dominated by dramatic changes in elevation which, in turn, influence local weather patterns. The intermontane valleys have elevations as low as 3800 feet, while the adjacent mountains may reach more than 12,600 feet. The average annual precipitation for the entire MLRA, based on 10 long term climate stations located throughout the MLRA, is approximately 9.38 inches. However, the dry valleys may have averages as low as 6 inches, while the upper peaks may have averages that exceed 46 inches per year.

Temperatures vary considerably over the year. The average annual temperature is 42.25 degrees F. The average low is 27.4 degrees while the average high temperature is 57 degrees.

In the summer the sun shines 78% of the time, but drops to 40% in the winter. The prevailing wind is location-dependent, and generally flows parallel to the orientation of the dominant valleys. In the summer localized afternoon upslope winds and evening downslope winds are common. The average windspeed is greatest in the spring and early summer.

The frost free period ranges from 102 to 107 days while the freeze free period ranges from 134 to 139 days across the MLRA.

Table 3. Representative climatic features

Frost-free period (average)	107 days
Freeze-free period (average)	139 days
Precipitation total (average)	279 mm

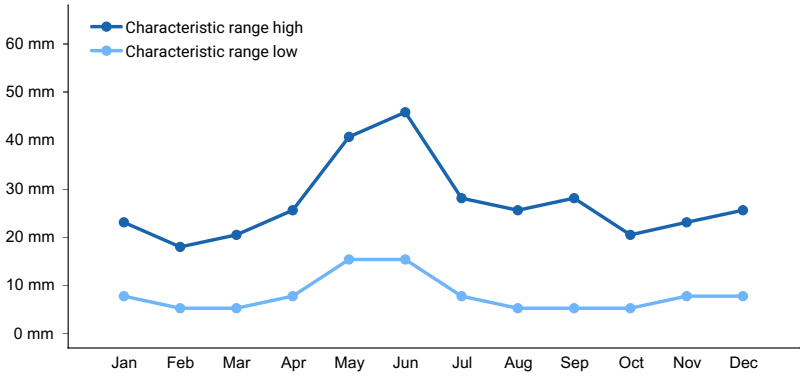


Figure 1. Monthly precipitation range

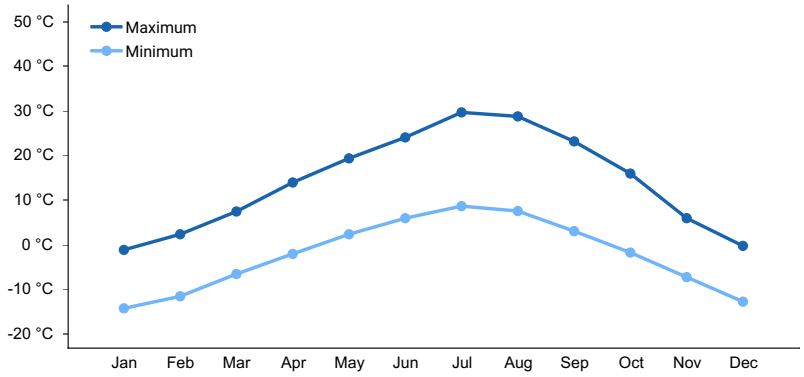


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is influenced by run on from adjacent sites.

Soil features

The soils of this site are mildly to moderately alkaline silt loams, loams and very gravelly and gravelly loams and fine sandy loams. They are very deep with poorly to somewhat excessively drainage. Some of the soils have a strongly contrasting textural stratification between 10 and 60 inches. Coarse fragments can exceed 35 percent by volume in the soil profile, especially in the subsoil. These are run-in areas and therefore are subject more to channel and gully erosion over sheet and rill erosion. The soils usually have a seasonal water table. Extensive channel or gully erosion may lower the water table and thus lower the productive potential of the soils. The available water capacity (AWC) is very low to moderate. Permeability ranges from slow to moderately rapid. These soils have a xeric soil moisture regime. The soil temperature regime ranges from frigid to cryic.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Very gravelly silt loam (3) Fine sandy loam
Drainage class	Poorly drained to somewhat excessively drained
Permeability class	Slow to moderately rapid
Soil depth	152 cm
Surface fragment cover <=3"	0–40%
Surface fragment cover >3"	0–5%
Available water capacity (0-101.6cm)	2.03–20.83 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)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	10–50%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

The dominant visual aspect of this site is basin wildrye with basin big sagebrush. Composition by weight is approximately 50 to 60 percent grass, 8 to 12 percent forbs and 30 to 40 percent shrubs.

During the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet winters. The site also evolved with some run-on from adjacent or upslope sites. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, Rocky Mountain elk and lagomorphs. Fire has historically occurred on the site at intervals of 20 to 40 years.

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 A. This plant community is dominated by thickspike wheatgrass and basin big sagebrush. Subdominant species include basin wildrye, bluebunch wheatgrass, balsamroot, and tapertip hawksbeard. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”.

Total annual production is 600 pounds per acre (673 kilograms per hectare) in a normal year. Production in a favorable year is 1000 pounds per acre (1121 kilograms per hectare). Production in an unfavorable year is 400 pounds per acre (449 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

FUNCTION:
This site is suitable for livestock grazing in the late spring, summer, and fall and winter grazing at lower elevations. Water is often limited in the summer and fall. This site provides good cover for most wildlife species in all seasons. This site has limited recreational opportunities other than hunting and hiking.

Due to relatively flat slopes, position in the landscape, and potential for gully development, this site can degrade easily. Site degradation is usually the result of downstream changes of grade and/ or loss of the understory component which leads to the development of gullies. Once gullies begin to develop, erosion is accelerated by the concentrated water flows within the gully itself.

The site has moderately low runoff potential. Snow accumulates on the site due to the presence of tall shrubs.

Impacts on the Plant Community.
Influence of fire.

Immediately after a fire, basin wildrye is stimulated. Most sod-forming grasses such as thickspike wheatgrass remain in the community. Gray and green rabbitbrush typically re-sprout and basin big sagebrush is eliminated. In the absence of normal fire frequency, basin big sagebrush may increase. Grasses and forbs decrease as shrubs increase. Utah juniper can invade the site if a seed source is in the proximity. An increase in tall shrubs generally leads to an increase in juniper by providing bird perches and “nursery” sites for juniper establishment. See

“Influence of juniper” below. This site has a normal fire frequency of 20 to 40 years.

When fires become more frequent than historic levels (20-40 years), basin big sagebrush is reduced significantly. With continued short fire frequency, basin big sagebrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass. The rabbitbrushes can become the dominant overstory species. The understory species may be replaced by cheatgrass at lower elevations. Sandberg bluegrass and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants generally increase.

Influence of improper grazing management.

Season-long grazing and/or excessive utilization can be very detrimental to this site. The vigor of the perennial grasses can be reduced significantly by heavy early season grazing, especially basin wild rye. This type of management leads to reduced vigor of the other bunchgrasses also. With reduced vigor, recruitment of these species declines. Shrubs will increase (and Utah juniper can invade if a seed source is in the proximity).

Continued improper grazing management influences fire frequency by increasing fine fuels. The site then becomes susceptible to an invasion of noxious and invasive plants. If cheatgrass and/or medusahead increase due to improper grazing management and they become co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Once the understory is depleted of deep-rooted perennial grasses, surface erosion increases and may lead to the development of rills and gullies.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep these fine fuels from developing, thereby reducing fire frequency. However, a planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Any brush management should be carefully planned as a reduction in shrubs without a suitable understory of perennial grasses, can cause an increase in cheatgrass and/or medusahead which will lead to more frequent fire intervals.

Weather influences:

Because of the deep soils and influence of run-on, the production of this site changes little during dry years. 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.

Influence of Insects and disease:

Periodic disease and insect outbreaks can affect vegetation health. Outbreaks of Black grass bugs commonly occur on basin wildrye and the wheatgrasses. They seldom kill the plants but do reduce vigor and affect the palatability for grazing animals. Mormon crickets and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak. An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available.

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.

Wildlife utilize this site in all seasons. Their numbers are seldom high enough to adversely affect the plant community.

Watershed.

The largest threat to degradation of this site is that of rill and gully development. Soils are usually very deep and if the perennial grass cover is depleted, rill and gully development can occur rapidly. High run-off events from the adjacent uplands can severely damage or change the stream channel on the site. Once gully development begins, the water table is lowered. As the available soil moisture is lowered, productive potential is lost. Eventually the watertable is below the root zone of the perennial grasses. These grasses are ultimately replaced by shrubs, annual grasses, and forbs. Extreme gully development can move the site across the threshold to a new, less productive site.

Influence of juniper invasion:

The following discussion deals with both western juniper and Utah juniper.

In plant communities that are invaded by juniper, the species has a competitive advantage for the following reasons:
• Juniper is very drought tolerant.
• It has the ability to extract soil moisture from a wide range of soil depths.
• Juniper has high evapo-transpiration rates.
• The species intercepts rain and snow before it reaches the soil surface.
• It has the ability to grow as long as there is soil moisture and the temperature is above freezing.
• Juniper has a relatively rapid growth rate and is long-lived. It can readily over-top shade intolerant species which leads to mortality.
• Nutrient cycling is reduced.
• As the canopy closes, juniper gains control of energy capture.

As juniper extracts water, other plants are unable to acquire sufficient water and nutrients to sustain growth and reproduction, thus reducing cover and biomass in the interspaces. After the canopy closes, there is sufficient soil moisture available for shallow-rooted, shade tolerant species to persist directly under the tree.

The following hydrological impacts occur on sites invaded by juniper:
• Infiltration in the interspaces is reduced.
• Run-off increases resulting in increased sheet and rill erosion with elevated sediment loads.
• Soil temperatures increase in the interspaces which results in accelerated drying of the soil surface.
• Increased bare ground in the interspaces.
• Soil moisture storage is reduced.
As bare ground and interconnectiveness of bare ground increases, flow rates are accelerated (reduction of flow sinuosity) and run-off out of the area increases.

Degradation of these systems can result in the formation of a feedback cycle in which greater juniper cover and density results in greater plant and soil disturbance between the canopies.

In summary, a closed juniper community takes control of the following ecological processes: (1) hydrology, (2) energy capture and (3) nutrient cycling. The changes are primarily driven by the hydrological processes. The development of a closed juniper canopy always results in a transition across the threshold to a different state. Generally, when juniper canopy cover nears 20%, the plant community is approaching the threshold.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.
Phase A to B. Develops with either prescribed or wild fire.
Phase A to C. Usually results from improper grazing management and no fire.
Phase B to A. Develops in the absence of fire and prescribed grazing.
Phase C to B. Develops from prescribed grazing and fire.
Phase C to A. Develops from prescribed grazing and no fire.
Phase C to D. Develops from no fire and a juniper seed source in the proximity.
Phase D to B. Develops from fire or brush management.

State 1, Phase B to State 2. Develops through improper grazing management and/or frequent fire. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 1, Phase C to State 2. Develops through improper grazing management and fire. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 1, Phase D to State 3. Develops through improper grazing management and no fire. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 2 to State 3. Develops through no fire and with a juniper seed source in the proximity. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 2 to Unknown Site. Excessive soil loss and changes in the site hydrology caused by channel downcutting, improper grazing management and/or fire cause this state to cross the threshold and retrogress to a new site with reduced potential. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

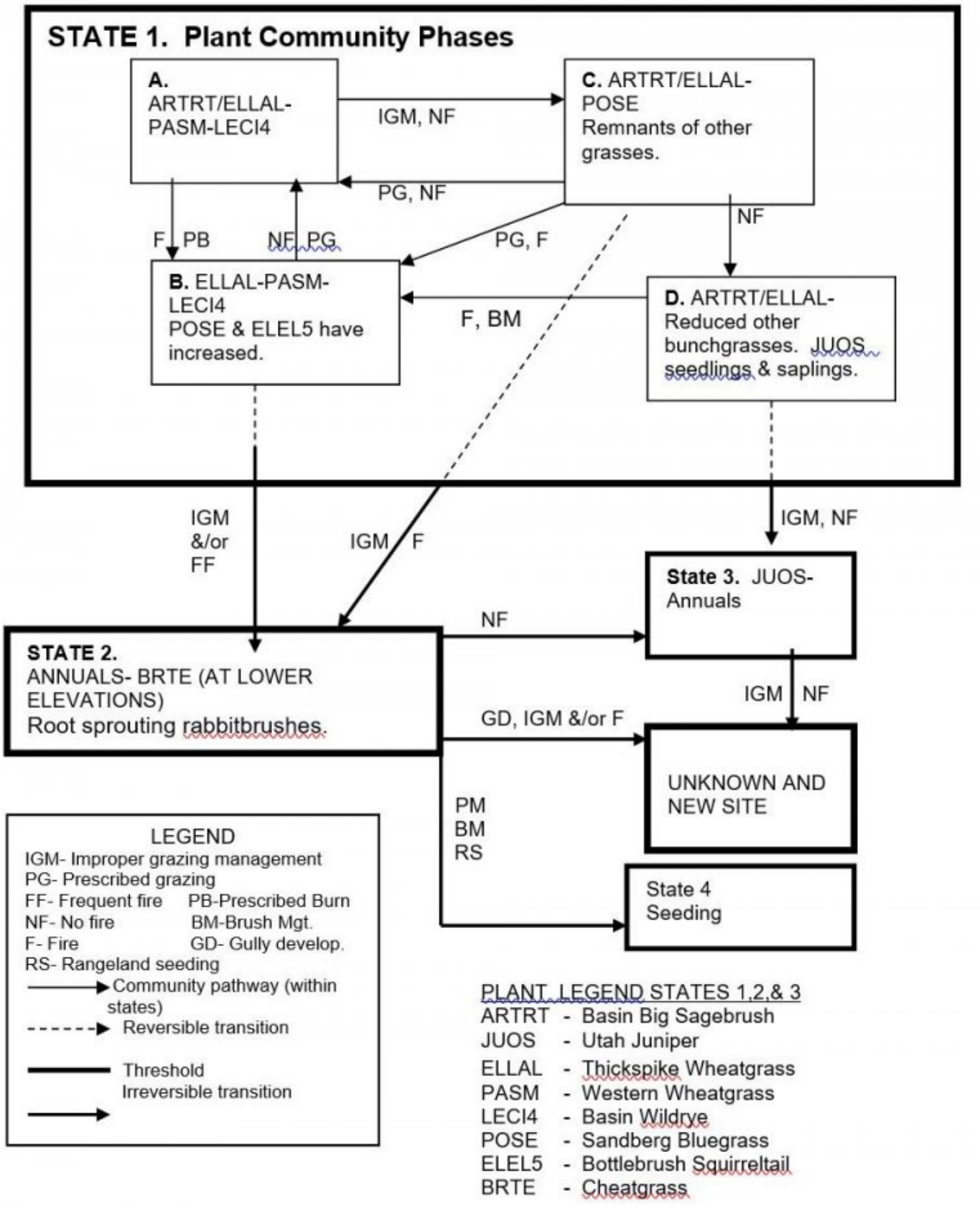
State 3 to Unknown Site. Develops through continued improper grazing management and no fire. Excessive soil loss and changes in the site hydrology cause this state to cross the threshold and retrogress to a new site with reduced potential. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 2 to State 4. Pest management, brush management and range seeding are used to change this plant community.

Practice Limitations:

Range seeding on this site has a slight to moderate limitation due to low precipitation. Mechanical, chemical and prescribed burning can be used on this site to control brush. This site has slight limitations to implementing vegetative management and facilitating practices.

State and transition model



State 1
State 1, Phase A, Reference Plant Community Phase.

Community 1.1
State 1, Phase A, Reference Plant Community Phase.

This plant community is dominated by thickspike wheatgrass, western wheatgrass and basin big sagebrush.

Subdominant species include basin wildrye, bluebunch wheatgrass, balsamroot and tapertip hawksbeard. Other important species include Sandberg bluegrass, Indian ricegrass and green rabbitbrush. Natural fire frequency is 20 to 40 years.

State 2
State 1, Phase B.

Community 2.1
State 1, Phase B.

This plant community is dominated thickspike wheatgrass and western wheatgrass with increased amounts of basin wildrye. Sandberg bluegrass and bottlebrush squirreltail have increased. Because of fires, few shrubs are present except for resprouting species such as rabbitbrush. Forbs and other sod-forming grasses are the in about the same proportion as plant community A. This phase has developed due to fire.

State 3
State 1, Phase C.

Community 3.1
State 1, Phase C.

This plant community is dominated by basin big sagebrush with thickspike wheatgrass in the understory. Remnants of basin wildrye, Nevada bluegrass, western wheatgrass, Indian ricegrass and Letterman’s needlegrass are present but in low vigor. The perennial grasses that remain are typically protected in and around the sagebrush plants. This phase has developed due to improper grazing management and lack of fire.

State 4
State1, Phase D.

Community 4.1
State1, Phase D.

This plant community is dominated by basin big sagebrush with thickspike wheatgrass in the understory. Utah juniper has invaded the site (a seed source is in the proximity) in the form of seedlings and saplings. Remnants of basin wildrye, Nevada bluegrass and Indian ricegrass are present but in low vigor. This phase has developed due to no recent fires.

State 5
State 2.

Community 5.1
State 2.

This plant community is dominated by annuals (cheatgrass at lower elevations), forbs and root-sprouting rabbitbrushes. This state has developed due to improper grazing management and/or frequent fire from Phase B, State 1 and improper grazing management and fire from Phase C, State 1. Some soil loss has occurred. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 6
State 3.

Community 6.1
State 3.

This plant community is dominated by Utah juniper with annuals in the understory. Most shrubs have died as well as

perennial grasses and forbs. Invasive annuals have replaced the understory but the understory is sparse due to dominance by junipers. This state has developed due to improper grazing management and the lack of fire. This site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerating practices.

State 7
State 4.

Community 7.1
State 4.

This plant community is made up of either introduced or native species that attempt to mimic the historic plant community.

State 8
Unknown new site.

Community 8.1
Unknown new 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. Gully development has lowered the watertable so that it is below the root zone of the deep-rooted perennial grasses and forbs. This state has developed due to gully development, continued improper grazing management, and/or fires from State 2 and improper grazing management and no fire from State 3.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and to a lesser degree, pronghorn antelope. Important seasonal habitat is provided by the tall dense vegetation for resident and migratory animals including western toad, sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Area sensitive species may include burrowing owl, pygmy rabbit, Great Basin ground squirrel, Idaho pocket gopher, and Merriam’s shrew. Changes in the plant community composition can reduce the number and diversity of wildlife species in the area. With reduced shrub cover, shrub-steppe obligate avian and mammal species become rare including sage-grouse, brewer’s sparrow, sage thrasher, sage sparrow, and pygmy rabbits. Encroachment of noxious and invasive plant species (cheatgrass and bulbous bluegrass) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water is provided by seasonal runoff, artificial water catchments, adjacent streams, and spring sites.

State 1 Phase 1.1 - Basin Big Sagebrush/ Basin Wildrye/ Thickspike Wheatgrass Reference Plant Community (RPC): The RPC provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in the pollination process for the plant community. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, western toad, and northern leopard frog. Amphibians are associated with springs, streams, and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of these sites by amphibians. The plant community supports a variety of migratory and resident avian species that utilize the grasses, forbs, shrubs, and water for food, brood-rearing, and nesting cover. When streams are adjacent to this site, significant use of the tall and dense vegetation by waterfowl and shorebirds may occur. Shrub-steppe obligate bird species include the Brewer’s sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (i.e. lek sites, brood-rearing, winter cover

and food) for sage-grouse is provided by this diverse plant community. The plant community supports seasonal (late spring, summer, and winter) habitat needs for mule deer providing food, thermal cover, and young of year cover. Antelope may utilize the site for thermal and young of year cover. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, jackrabbits, deer mice, Great Basin kangaroo rats, and pygmy rabbits would utilize the site.

State 1 Phase 1.2 - Thickspike Wheatgrass/ Western Wheatgrass/ Basin Wildrye/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of fire. Large areas of Phase 1.2 would fragment the reference plant community and would reduce the quality of habitat for shrub-steppe obligate animal species. The plant community, dominated by herbaceous vegetation with little or no basin big sagebrush provides less vertical structure, limiting use by sagebrush obligate animals. An increase in tall green rabbitbrush would provide some replacement vertical structure and late summer and fall pollinator habitat. Insect diversity may be reduced but a native forb plant community similar to State 1 Phase 1.1 would still support select pollinators. Reptile use, including short horned lizard, sagebrush lizard, and western rattlesnakes, would be limited due to the absence of sagebrush. The dominance of herbaceous vegetation with little sagebrush canopy cover would prevent use of these areas for nesting by Brewer’s sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides brood-rearing habitat for sage grouse when sagebrush cover is nearby. The dominance of herbaceous vegetation improves habitat for grassland avian species (horned lark, savannah sparrow, vesper sparrow, and western meadowlark). Mule deer and antelope habitat including forage, thermal cover, and young of year cover would still be provided by an increase in basin wildrye. Small mammal diversity would be reduced and the site would not provide suitable habitat for pygmy rabbits.

State 1 Phase 1.3 - Basin Big Sagebrush/ Thickspike Wheatgrass/ Sandberg Bluegrass Plant Community: This plant community is the result of improper grazing management and a lack of fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. The reduced herbaceous understory results in a reduced diversity of insects. You can expect a decrease in populations and diversity of reptiles due to the reduced diversity and canopy cover of herbaceous vegetation. Shrub-steppe obligate bird species include Brewer’s sparrow, sage sparrow, sage thrasher, and sage-grouse. Reduced herbaceous understory is a key factor in reducing the quality of habitat (food and cover) for avian species. Habitat (lek sites, brood-rearing, winter cover and food) for sage-grouse is limited due to the reduced diversity and canopy cover of herbaceous vegetation. The loss of basin wildrye reduces the quality of thermal cover and young of year cover for mule deer and antelope. The reduced understory will result in a shorter forage season for large mammals. A small mammal population including golden-mantled ground squirrels, chipmunks, jackrabbits, deer mice, Great Basin kangaroo rats, and pygmy rabbits would utilize this plant community.

State 1 Phase 1.4 - Basin Big Sagebrush/ Thickspike Wheatgrass/ Utah Juniper Plant Community: This plant community is the result of a lack of recent fire. An increase in canopy cover of sagebrush and juniper contributes to a sparse herbaceous understory. A reduced herbaceous understory results in lower diversity and numbers of insects. The reptile community will be similar to State 1 Phase 1.1 community represented by leopard lizard, short horned lizard, sagebrush lizard, western rattlesnake, and western skink. The reduced diversity of insects and understory cover may reduce the quality of food and cover for reptile populations. As juniper increases, habitat cover for Brewer’s sparrow, sage thrasher, and sage sparrow may increase. Remaining sagebrush provides brood-rearing, winter cover, and winter food for sage-grouse but as juniper encroaches the quality of this habitat is severely reduced or eliminated. The plant community supports limited forage habitat, during spring and fall for mule deer. As juniper encroachment occurs, the site will provide additional thermal cover for large mammals. A small mammal population including golden-mantled ground squirrels, jackrabbits, deer mice, and kangaroo rats may utilize this site.

State 2 – Annuals/ Cheatgrass/ Rabbitbrushes Plant Community: This state has developed due to fire and improper grazing management. Large areas of State 2 would fragment the reference plant community and would reduce the quality of habitat for shrub-steppe obligate animal species. This plant community would not support as diverse an insect community as in State 1 Phase 1.1 due to the loss of the native forb community. The rabbitbrushes would provide late summer and fall pollinator habitat. Food and cover for reptile species would be reduced due to the loss of the sagebrush community. As rabbitbrush establishes it would provide vertical structure for animals. The plant community would not support the habitat requirements for sage-grouse, sage thrasher, Brewer’s sparrow, or sage sparrow. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Mule deer may utilize the invasive herbaceous vegetation in the early part of the year and rabbitbrush in the winter when the plants would be more palatable. The rabbitbrush may provide limited young of year cover for mule deer

and antelope. Pygmy rabbits would not utilize this site due to the loss of sagebrush.

State 3 – Utah Juniper/ Annuals Plant Community: This site has developed due to improper grazing management and the lack of fire. The loss of native forbs and understory vegetation will reduce insect diversity on the site. The lack of flowering plants limits use of the habitat by pollinators like butterflies and moths. Quality of habitat for reptilian species identified in State 1 Phase 1.1 is limited. This plant community does not support the habitat requirements for sage-grouse. Birds using this site as resident or migratory habitat include Juniper titmouse, western bluebird, and Virginia's warbler. The Juniper titmouse relies heavily on juniper seeds for winter food. Hunting success by raptors may decrease due to the heavy overstory of juniper. The plant community supports limited seasonal habitat (food and cover) for mule deer in the spring and fall. As juniper encroachment occurs, the site will provide additional thermal cover for large mammals.

State 4 - Range Seeding Plant Community: The proposed seeding mixture (native or non-native) would determine the animal species that would utilize the area. A diverse seed mixture of grasses and forbs would provide similar habitat conditions as described in State 1 Phase 1.2. A diverse seed mixture of grasses, forbs, and shrubs would provide similar habitat conditions as described in State 1 phase 1.1 or 1.3. A monoculture of non-native grass species would not support diverse populations of insects, reptiles, birds, or mammals. Sagebrush obligate animal species would not be supported with a monoculture of grass species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, deer mouse, kangaroo rat, mule deer, and antelope would utilize this site for nesting and/or seasonal foraging. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large areas of State 4 with no brush cover would fragment the reference plant community and would reduce the quality of habitat for shrub-steppe obligate animal species.

Grazing Interpretations.
This site is suitable for livestock grazing in the late spring, summer, and fall and winter grazing at lower elevations. Water is often limited in the summer 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. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Recreational uses

This site offers limited recreational opportunities except for hunting. Occasional off-road vehicle use occurs.

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, Range Management Specialist, IASCD
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD
Kristen May, Resource Soil Scientist, NRCS, Idaho

Other references

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Contributors

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Approval

Kendra Moseley, 9/21/2020

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/Natural Resources Conservation Service Brendan Brazee, State Range Conservationist 9173 W. Barnes Drive, Suite C Boise, ID 83709 (208) 378-5722
Date	01/15/2008
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** They are not common on this site. If the site is degrading due to gully down-cutting, rills may occur on the side slopes of the gully.

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2. **Presence of water flow patterns:** They are common on this site. When they occur, they are long - often running the length of the site and disrupted by cool season grasses and tall shrubs. Water flow patterns are also common from run-in from the adjacent uplands.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals are rare on this site. Terracettes are also rare.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Data is not available. On sites in mid-seral status, bare ground may range from 40-60 percent.

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5. **Number of gullies and erosion associated with gullies:** No active gullies on the site. Gullies can form on the site and reduce the potential of the site.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Blowouts and depositional areas are 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 6 feet or more following a significant run-off event. Coarse litter generally does not move except when overland flow occurs.

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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 but need to be tested.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A or A1 horizon is typically 2 to 12 inches thick. Structure ranges from weak and moderate very fine, fine and medium granular to weak thin and medium platy to moderate very fine and fine subangular blocky. Soil organic matter (SOM) ranges from 1 to 4 percent.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Especially deep-rooted bunchgrasses and sod-forming grasses slow run-off and increase infiltration. Tall shrubs accumulate 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.

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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: Sod-forming grasses >cool season deep rooted perennial bunchgrasses>tall 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):** Basin wildrye, sod-forming grasses, basin big sagebrush and antelope bitterbrush, when present, will become decadent in the absence of fire 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 20-25 percent to a depth of 0.2 inches. Under mature shrubs and basin wildrye, 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):** Annual production is 600 pounds per acre (673 Kg/ha) in a year with normal precipitation and temperatures. **(This production seems low and needs to be verified in field.)** Perennial grasses produce 50-60 percent of the total production, forbs 8-12 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:** Potential invasive species include cheatgrass, bulbous bluegrass, leafy spurge, whitetop, annual kochia, annual mustards, Russian thistle, halogeton, prickly pear cactus, rush skeletonweed, Canada, musk and scotch thistle and diffuse and spotted knapweed.

17. **Perennial plant reproductive capability:** In all functional groups, there is the potential to reproduce in most years.