

Ecological site R009XY011ID

Stony Loam 12-16 PZ PSSPS-POSE

Last updated: 9/23/2020
Accessed: 05/21/2025

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.

Classification relationships

No data.

Associated sites

R009XY006ID	Loamy 12-16 PZ
R009XY012ID	South Slope Loamy 12-16 PZ PSSPS-POSE

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs either at the toe of steep slopes or as nearly level to gently sloping areas adjacent to rims at the top of such slopes. Slopes range from 0-30 percent. Elevations range from 700 to 1800 feet (200-550 meters).

Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	700–1,800 ft
Slope	0–30%

Climatic features

The elevation of MLRA 9 ranges from 2000 to 4000 feet with an average elevation of 3000 feet. Elevation along major streams averages only 650 feet above sea level. Average annual precipitation ranges from 20 to 25 inches with an average of 23 based on 9 long term climate stations located throughout the MLRA. Summers are relatively dry while precipitation is evenly distributed between fall, winter, and spring.

The maximum average annual temperature is 58 degrees Fahrenheit while the average minimum temperature is 35 degrees F. The average annual temperature is 46.8 degrees F. The frost free period ranges from 107 to 134 days and the freeze free period ranges from 143 to 173 days.

Table 3. Representative climatic features

Frost-free period (average)	134 days
Freeze-free period (average)	173 days
Precipitation total (average)	26 in

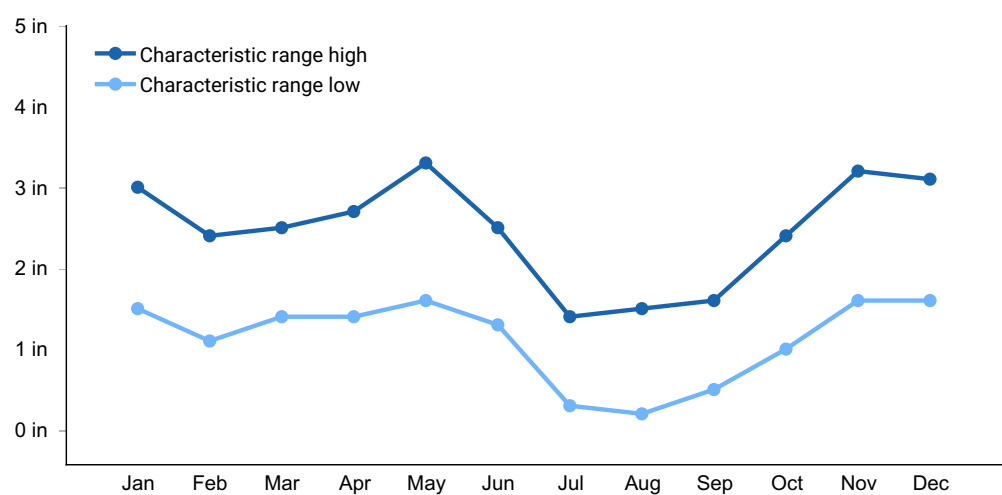


Figure 1. Monthly precipitation range

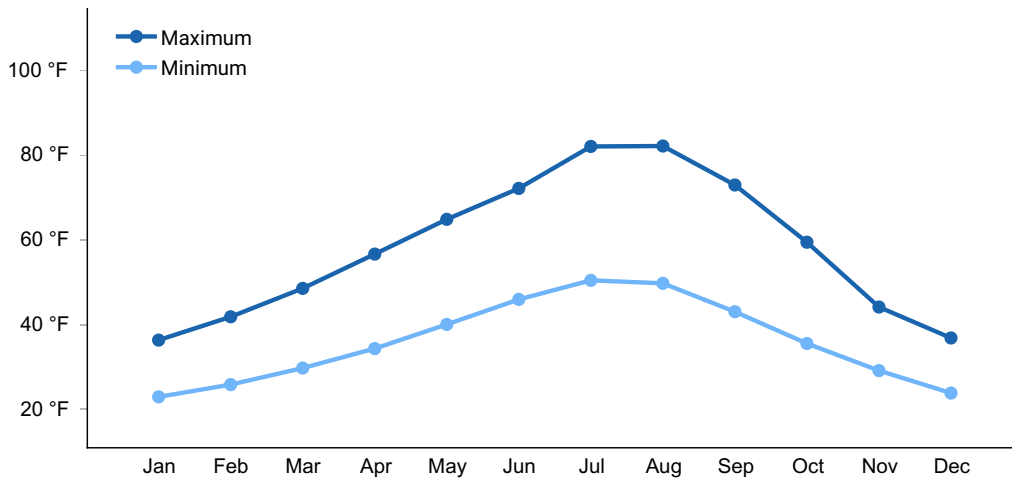


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils are very stony or extremely stony silt loam, clay loams or sandy loams over 20 inches (50 cm.) deep. Due to the high percentage of coarse fragments in the profile the available water holding capacity (AWC) is moderate to low.

Ecological dynamics

The dominant visual aspect of this site is grassland with bluebunch wheatgrass dominant. Composition by weight is approximately 70 to 80 percent grasses, 15 to 25 percent forbs, and 1 to 3 percent shrubs.

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

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

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 bluebunch wheatgrass with Sandberg bluegrass subdominant. There are a variety of forbs in small amounts. Woods' rose, plains pricklypear, and common snowberry make up the few shrubs that are in the plant community. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 1100 pounds per acre (1232 kilograms per hectare) in a normal year. Production in a favorable year is 1300 pounds per acre (1456 kilograms per hectare). Production in an unfavorable year is 900 pounds per acre (1008 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are more dominant than forbs followed by shallow rooted perennial grasses more dominant than shrubs.

This site has some values for late fall and spring range for big game. Upland game birds often use the site as summer and fall habitat. It is also well suited for livestock in the late spring and fall. This site has fair values for upland game bird hunting and big game hunting where it borders more brushy sites. Where this site occurs near ridgetops a pleasing view of surrounding area offers an aesthetic value.

The site is not easily degraded due to stony surface. Surface stones limit livestock access. Associated sites will usually degrade before this site.

Due to the gentle topography, infiltration is normally high and runoff low. Runoff, when it does occur is non-erosive except during high intensity convection storms.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency and ungulate grazing, bluebunch wheatgrass can become decadent. This is apparent by dead centers in the bunchgrasses. Fendler threeawn and sand dropseed may increase in the community. Some forbs may increase as well as shrubs if present.

When fires become more frequent than historic levels (20-50 years), bluebunch wheatgrass can be reduced in the plant community. Sandberg bluegrass and Fendler threeawn will increase. With continued short fire frequency, bluebunch wheatgrass can be completely eliminated along with some forbs. These species may be replaced by bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass may invade the site. Woods' rose and common snowberry, if present, will resprout. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

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

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

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

Weather influences:

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

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

Influence of insects and disease:

Outbreaks can affect vegetation health. Grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency.

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals will use this site mostly in the early spring and fall. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with a decrease in perennial bunchgrasses. 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.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase A to B. Develops with improper grazing management and no fire.

Phase A to C. Develops with fire.

Phase B to A. Develops with prescribed grazing.

Phase C to A. Develops with prescribed grazing and no fire.

State 1, Phase B to State 2. Develops through frequent fire and continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

State 1, Phase C to State 2. Develops through frequent fire or continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

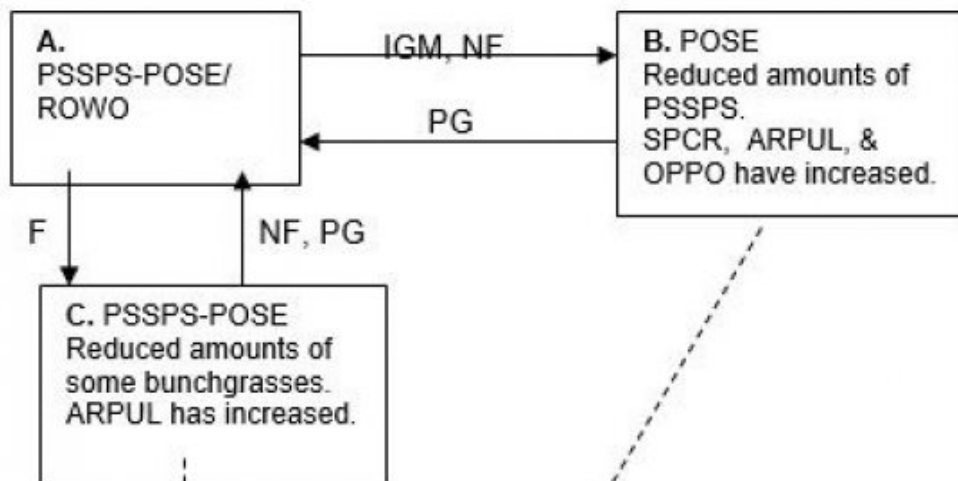
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is economically impractical to return this plant community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

Practice Limitations:

Severe limitations exist for seeding on this site due to stoniness. Only slight limitations exist for livestock movement on this site due to topography but surface stones can limit livestock movement. Moderate to severe limitations exist for facilitating practices due to surface stones.

State and transition model

STATE 1. Plant Community Phases



STATE 2.
ANNUALS, invasive and noxious plants.
Root sprouting shrubs can be present.

IGM &/or FF

UNKNOWN AND
NEW SITE

LEGEND

IGM- Improper grazing management
PG- Prescribed grazing
FF- Frequent fire
NF- No fire
F- Fire

→ Community pathway (within states)
- - - Reversible transition
— Threshold
→ Irreversible transition

PLANT LEGEND STATES 1 & 2

PSSPS - Bluebunch Wheatgrass
POSE - Sandberg Bluegrass
ROWO - Woods' Rose
SPCR - Sand Dropseed
ARPUL - Fendler Threawn
OPPO - Plains Pricklypear

State 1

State 1 Phase A

Community 1.1

State 1 Phase A

State 1. Phase A. Reference Plant Community Phase. This plant community is dominated by bluebunch wheatgrass with Sandberg bluegrass as subdominant. There are a variety of forbs in small amounts. Woods’ rose, plains pricklypear, and common snowberry make up the few shrubs that are in the plant community. Natural fire frequency is 20-50 years.

Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	705	860	1015
Forb	180	220	260
Shrub/Vine	20	20	25
Total	905	1100	1300

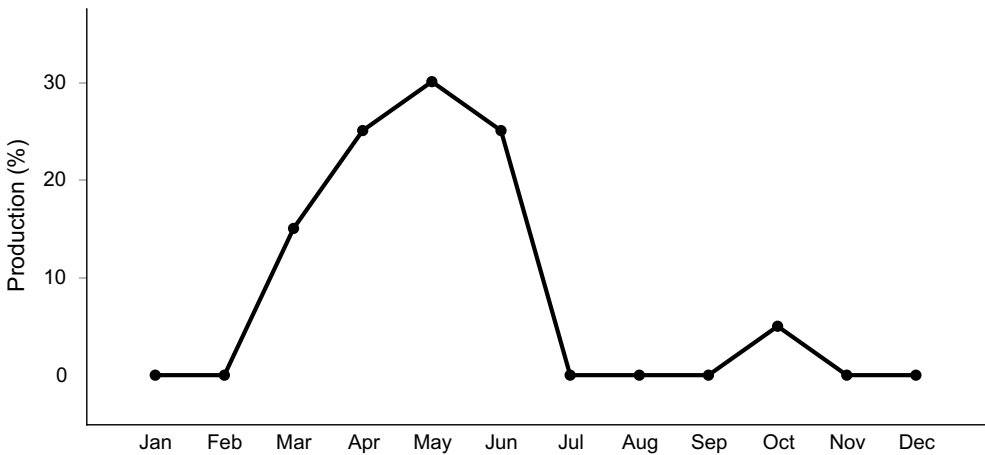


Figure 4. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

State 1, Phase B. This plant community is dominated by Sandberg bluegrass with reduced amounts of bluebunch wheatgrass. Sand dropseed, Fendler threeawn, and plains pricklypear have increased. All deep-rooted bunchgrasses are typically in low vigor. Forbs have increased. Some shrubs may have increased slightly. Some cheatgrass may have invaded the site. This state has developed due to improper grazing management and no fire.

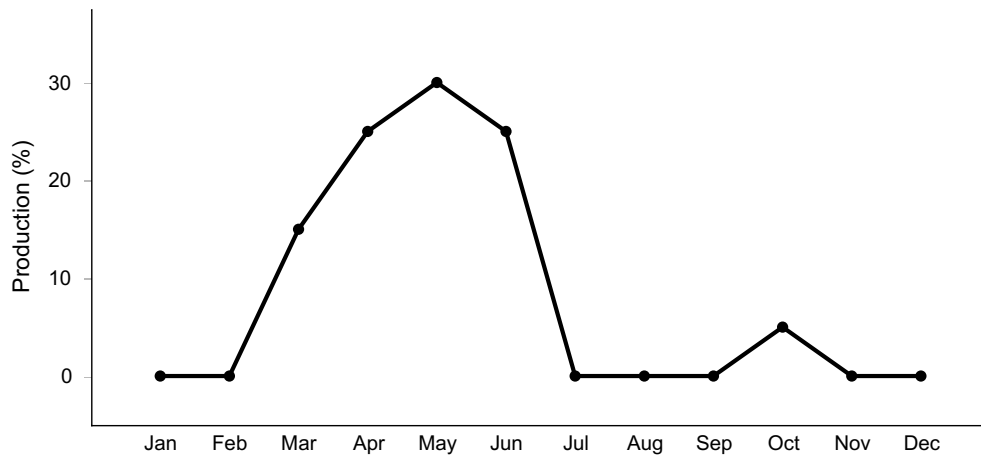


Figure 5. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

State 3

State 1 Phase C

Community 3.1

State 1 Phase C

State 1, Phase C. This plant community is dominated by bluebunch wheatgrass with increased amounts of Sandberg bluegrass. Fendler threeawn has increased. Forbs remain about in the same proportion as Phase A. If present, Woods' rose and common snowberry has re-sprouted from the roots or crowns. Some cheatgrass may have invaded the site. This plant community is the result of wildfire.

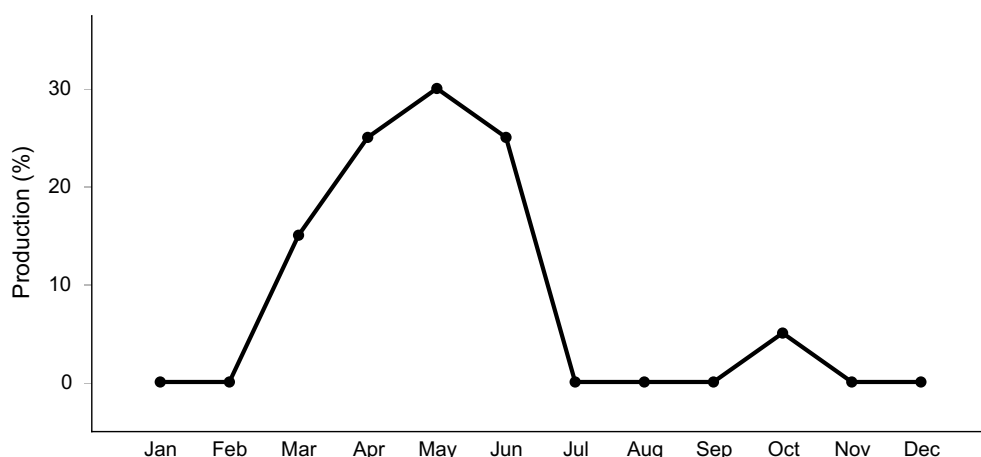


Figure 6. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

State 4

State 2

Community 4.1

State 2

State 2. This plant community is dominated by annual grasses and forbs including invasive and noxious plants. Root sprouting shrubs such as common snowberry 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. It also occurs with frequent fires or improper grazing management from Phase C, State 1. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices

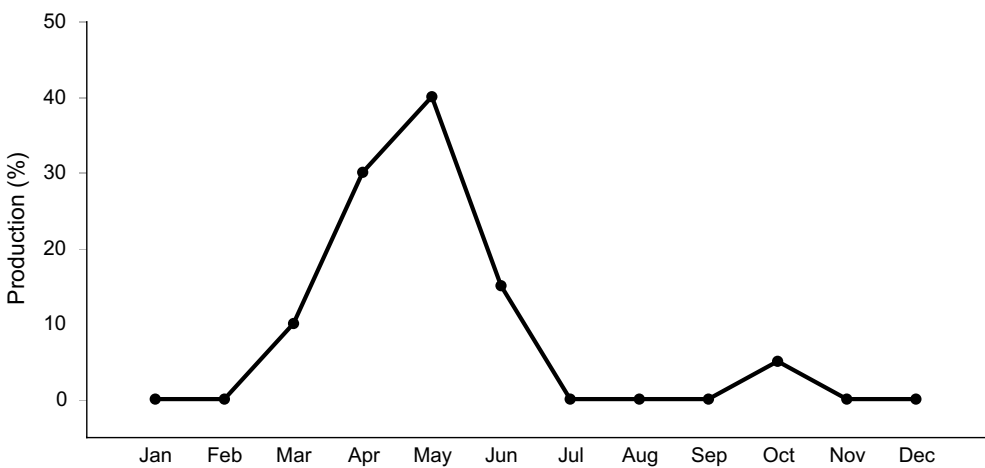


Figure 7. Plant community growth curve (percent production by month). ID0102, B9 BRTE-ANNUALS. State 2.

State 5
State 3

Community 5.1
State 3

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Grass and Grasslike			—	
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	495–715	—
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	90–130	—
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	40–60	—
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	20–25	—
	Fendler threeawn	ARPUL	<i>Aristida purpurea</i> var. <i>longiseta</i>	1–20	—
Forb					
2	Forbs			—	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	55–80	—
	silky lupine	LUSE4	<i>Lupinus sericeus</i>	30–40	—
	nineleaf biscuitroot	LOTR2	<i>Lomatium triternatum</i>	30–40	—
	common yarrow	ACMI2	<i>Achillea millefolium</i>	20–25	—
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	1–20	—
	shaggy fleabane	ERPU2	<i>Erigeron pumilus</i>	1–20	—
	beardtongue	PENST	<i>Penstemon</i>	1–20	—
	buckwheat	ERIOG	<i>Eriogonum</i>	1–20	—
	western stoneseed	LIRU4	<i>Lithospermum ruderales</i>	1–20	—
	phacelia	PHACE	<i>Phacelia</i>	1–20	—
	oneflower helianthella	HEUN	<i>Helianthella uniflora</i>	1–20	—
Shrub/Vine					
3	Shrubs			—	
	Woods' rose	ROWO	<i>Rosa woodsii</i>	1–15	—
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	1–15	—
	common snowberry	SYAL	<i>Symphoricarpos albus</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 is dominated by herbaceous vegetation which provides forage for large herbivores. Important seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, jackrabbits, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Area sensitive species include Woodhouse's toad, ring-necked snake, grasshopper sparrow, and Merriam's shrew. Areas of noxious and invasive plant species (cheatgrass, bulbous bluegrass, and rush skeletonweed) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse, provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 - Bluebunch Wheatgrass/ Sandberg Bluegrass/ Wood's Rose Reference Plant Community (RPC): This plant community provides a diversity of grasses and forbs, used by native insect communities that assist in pollination. The reptile and amphibian community is represented by western rattlesnake, northern alligator lizard, ring-necked snake, pygmy short-horned lizard, western toad, Woodhouse's toad, tiger salamander, Columbia spotted frog, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of this site by amphibians. The plant community supports a variety of migratory and resident avian species that prefer grassland plant communities for food, brood-rearing, and nesting cover. They may include savannah sparrow, lark sparrow, grasshopper sparrow, Say's phoebe, western kingbird, horned lark, and western meadowlark. The plant community provides spring, fall, and winter forage for mule deer and elk. Bluebunch wheatgrass and Wood's rose are desirable forage species for elk and mule deer. The grazing management will determine the quality and amount of forage available for mule deer and elk. A small mammal population including Preble's shrew, mountain cottontail, white-tailed jackrabbit, Merriam's shrew, western jumping mouse, and deer mouse may utilize this site.

State 1 Phase 1.2 - Sandberg Bluegrass/ Sand Dropseed/ Fendler Threeawn Plant Community: This phase has developed due to improper grazing management and no fire. An increase in forbs would continue to support a variety of insects. The reptile and amphibian community is represented by western rattlesnake, gophersnake, terrestrial gartersnake, and western toad. Amphibians are associated with springs adjacent to the site. Spring developments that capture all available water would preclude the use of the area by amphibians. The quality of cover habitat for ground-nesting birds is reduced due to

improper grazing, which results in sparse herbaceous vegetation. The reduced vigor of native plants provides a shorter grazing season for mule deer and elk. Quality of winter forage for large herbivores is reduced due to poor grazing management, resulting in a loss of native deep-rooted grasses and an increase in threeawn. Small mammal populations would be similar to those in State 1 Phase 1.1.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass Plant Community: This plant community is the result of fire. The insect community would be similar to the State 1 Phase 1.1 insect community. Wood's rose and common snowberry may be increasing and would increase pollinator habitat. The reptile community would be similar the to State 1 Phase 1.1 reptile community. The quality of cover and food habitat for birds would be similar to that in State 1 Phase 1.1. Deep-rooted bunchgrasses are reduced in vigor resulting in a shorter grazing season for mule deer and elk. Thesmall mammal community would be similar to the State 1 Phase 1.1 small mammal community. An increase in woody vegetation may increase the quality of cover habitat for large and small mammals.

State 2 – Cheatgrass/ Annuals/ Noxious Weeds Plant Community: This state has developed due to frequent fires and improper grazing management from State 1 Phase 1.2. It also occurs with frequent fire or improper grazing management from State 1 Phase 1.3. The plant community supports harmful insects, such as grasshoppers due to improved breeding conditions. The plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. The diversity of grassland avian species is reduced due to poor cover and food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large herbivores 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 herbivores would not regularly utilize these areas due to poor forage and cover conditions. The populations of small mammals would be reduced due to poor cover and food habitat. Large blocks of this plant community would fragment the reference plant community and reduce the quality of habitat for animal species that historically used the site.

Grazing Interpretations.

This site is best suited to grazing in early summer and fall by domestic livestock.

Extremely stony areas can somewhat limit livestock movement.

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.

Hydrological functions

The soils in this site are in hydrologic group C. When the hydrologic condition of the vegetation cover is good, natural erosion hazard is slight.

Recreational uses

This site has fair values for upland game bird hunting and big game hunting where it borders more brushy sites. Where this site occurs near ridgetops a pleasing view of surrounding area offers an aesthetic value.

Wood products

None.

Other products

None.

Other information

Field Offices

Grangeville, ID

Craigmont, ID

Orofino, ID

Lewiston, ID

Moscow, ID

St. Maries, ID

Coeur d'Alene, 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

Bruce Knapp, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Nez Perce County, ID	
Township/Range/Section	T34N R5W S15

Other references

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

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National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004.

www.fs.fed.us/database/feis.

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

Approval

Kendra Moseley, 9/23/2020

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.

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Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA- NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	04/15/2009
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. If rills are present they are likely to occur on slopes greater than 15 percent and immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam. Stones on the surface reduce rill development.

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2. **Presence of water flow patterns:** Water-flow patterns rarely occur on this site. When they occur they are short and disrupted by cool season grasses and surface stones and are not extensive.
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3. **Number and height of erosional pedestals or terracettes:** Both are rare on this site. In areas where slopes approach 15 percent and where flow patterns and/or rills are present, a few pedestals may be expected.
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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 20-30 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:** Blowouts and depositional areas are usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.
-
7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 2 feet following a significant run-off event. 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 3 to 5 but needs to be tested.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** No data.

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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 run-off and increase infiltration.
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** 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: cool season deep-rooted perennial bunchgrasses
- Sub-dominant: perennial forbs
- Other: shallow rooted bunchgrasses
- Additional: shrubs
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bluebunch wheatgrass can become decadent in the absence of normal fire frequency and ungulate grazing. This is most noticeable as dead centers within the bunches.
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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 0.1 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 1100 pounds per acre (1232 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 70-80 percent of the total production, forbs 15-25 percent and shrubs 1-3 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: Includes cheatgrass, bulbous bluegrass, rush skeletonweed, musk and scotch thistle, diffuse and spotted knapweed, and leafy spurge.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in most years.
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