

Ecological site R009XY023ID **North Slope Stony 16-22 PZ FEID-PSSPS**

Last updated: 9/23/2020
 Accessed: 05/06/2024

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.

Classification relationships

No data.

Associated sites

R009XY001ID	Shallow Stony Loam 16-22 PZ
R009XY002ID	North Slope Loamy 16-22 PZ
R009XY003ID	Loamy 16-22 PZ
R009XY008ID	Schist 16-22 PZ PSSPS-FEID
R009XY010ID	South Slope Schist 16-22 PZ PSSPS-POSE
R009XY017ID	Very Shallow 12-22 PZ PSSPS-POSE

Similar sites

R009XY002ID	North Slope Loamy 16-22 PZ
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on convex, moderate to steep north and east facing slopes in canyonlands. Elevations range from 800 to 4000 feet (225-1250 meters). Slopes range from 30 to 70 percent.

Table 2. Representative physiographic features

Landforms	(1) Canyon
Elevation	800–4,000 ft
Slope	30–70%
Water table depth	60 in
Aspect	N, E

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

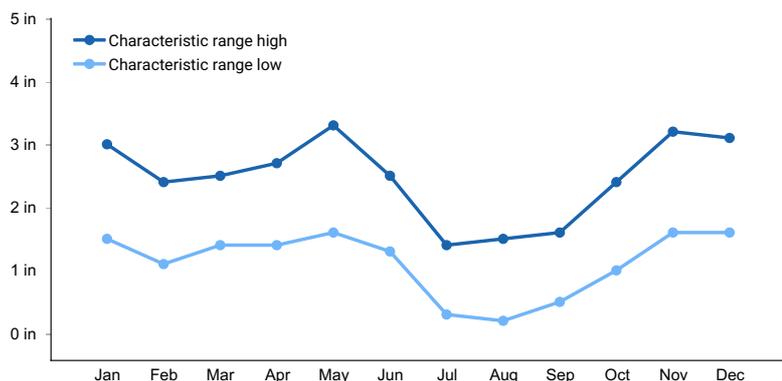


Figure 1. Monthly precipitation range

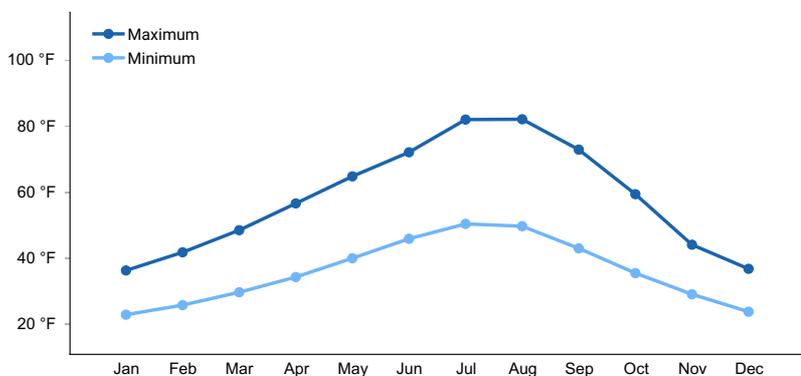


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils are well drained, moderately deep stony loams and silt loams developed in colluvium and residuum derived from basalt with an influence of loess. Permeability is moderately slow, runoff is high and available water capacity is low. These soils are characterized by xeric moisture and mesic temperature regimes.

Soil Series Correlated to this Ecological Site

No data

Table 4. Representative soil features

Surface texture	(1) Stony loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	20–40 in
Surface fragment cover <=3"	15–35%
Surface fragment cover >3"	2–10%
Available water capacity (0-40in)	2.6–3.8 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	35–60%
Subsurface fragment volume >3" (Depth not specified)	10–20%

Ecological dynamics

The dominant visual aspect of this site is grassland with Idaho fescue and bluebunch wheatgrass co-dominant. Composition by weight is approximately 60 to 70 percent grasses, 25 to 35 percent forbs, and a trace to 5 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, white-tailed deer, Rocky Mountain elk, 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 co-dominated by Idaho fescue and bluebunch wheatgrass with prairie junegrass subdominant. Other major species include big bluegrass, Sandberg bluegrass, arrowleaf balsamroot, western yarrow, silky lupine, and tapertip hawksbeard. A variety of other forbs occur in minor amounts. Common snowberry, Woods' rose and green rabbitbrush can be present in small amounts on the site. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 1200 pounds per acre (1344 kilograms per hectare) in a normal year. Production in a favorable year is 1400 pounds per acre (1568 kilograms per hectare). Production in an unfavorable year is 1000 pounds per acre (1120 kilograms per hectare). Structurally, cool season deep-rooted perennial bunchgrasses are more dominant than forbs followed by shallow rooted perennial grasses more dominant than shrubs.

The site is suited for spring, summer, and fall use by all ungulates. Some use may be made of the site by upland birds. The primary recreational values are hunting and sightseeing.

Due to the steep slopes on this site, it is susceptible to degradation from erosion. The site has moderate to severe limitation for livestock grazing due to steep slopes. Most degradation occurs on the foot slopes of the site where it is adjacent to the drainage bottom. Runoff, when it does occur can be erosive particularly during high intensity convection storms.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency and ungulate grazing, common snowberry and Woods' rose will increase slightly.

When fires become more frequent than historic levels (20-50 years), Idaho fescue and bluebunch wheatgrass can be reduced in the plant community. With continued short fire frequency, bluebunch wheatgrass and Idaho fescue 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 species. Cheatgrass may invade the site as well as some Kentucky bluegrass. These fine fuels will cause fires to become more frequent. Common snowberry and Woods' rose may be maintained in the community due to sprouting from the crown.

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 common snowberry and Woods' rose will occur and noxious and invasive plants 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. Prescribed burns need careful planning. Areas without a suitable understory of perennial grasses are low priority areas for prescribed burns, especially if reseeding is not a possibility.

Weather influences:

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

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

Influence of Insects and disease:

Outbreaks can affect vegetation health. 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 in the spring, summer, 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.

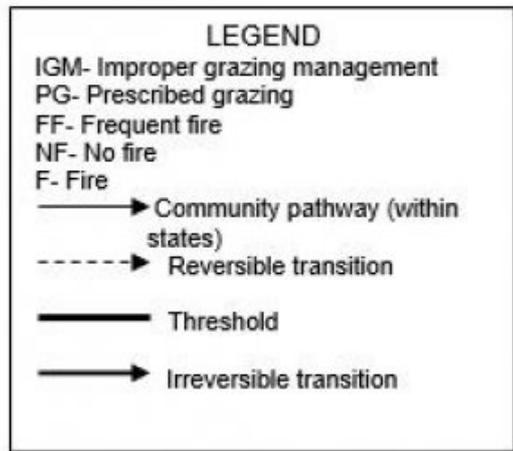
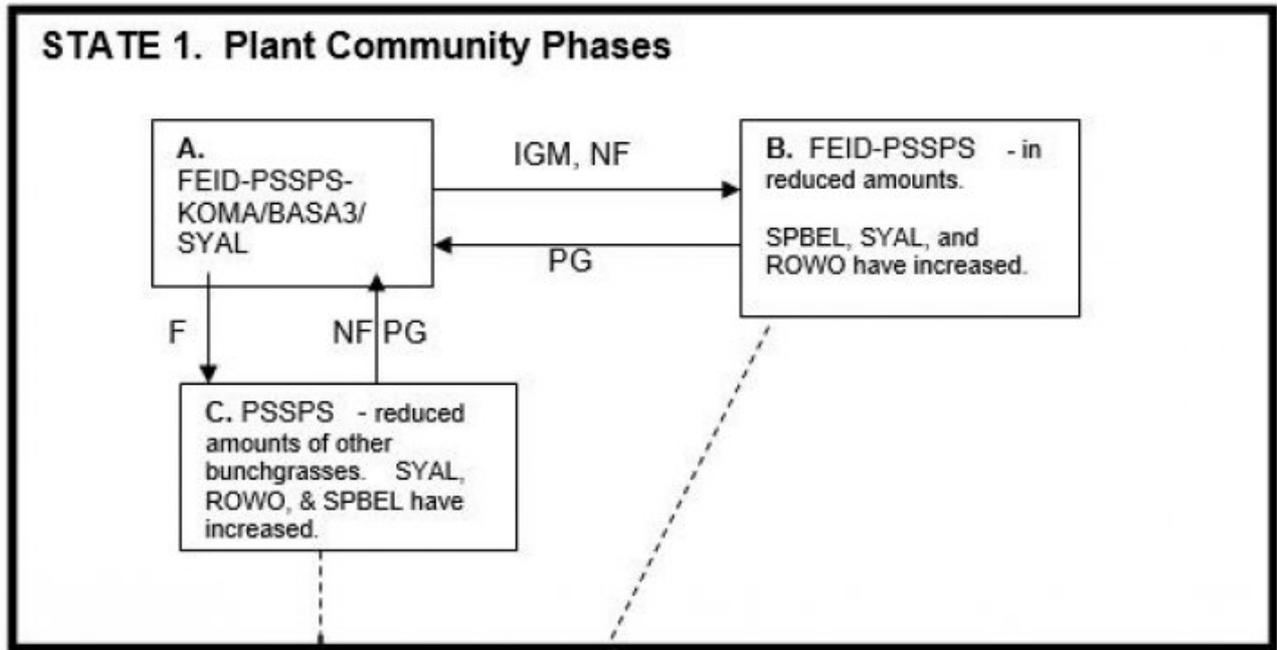
State 1, Phase C to State 2. Develops through frequent fire or continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

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 on this site for accelerated and facilitating practices due to steep slopes. Moderate limitations exist on this site for vegetative management practices due to steep slopes.

State and transition model



- PLANT LEGEND STATES 1& 2**
- PSSPS - Bluebunch Wheatgrass
 - FEID - Idaho Fescue
 - KOMA - Prairie Junegrass
 - SYAL - Common Snowberry
 - ROWO - Woods' Rose
 - BASA3 - Arrowleaf Balsamroot
 - SPBEL - Shinyleaf Spirea

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 co-dominated by Idaho fescue and bluebunch wheatgrass with prairie junegrass subdominant. Other major species include Sandberg bluegrass, big bluegrass, arrowleaf balsamroot, western yarrow, silky lupine, and tapertip hawksbeard. A variety of other forbs

occur in minor amounts. Shinyleaf spirea, common snowberry, and Woods' rose can be present in small amounts on the site. Natural fire frequency is 20-50 years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	650	780	910
Forb	300	360	420
Shrub/Vine	50	60	70
Total	1000	1200	1400

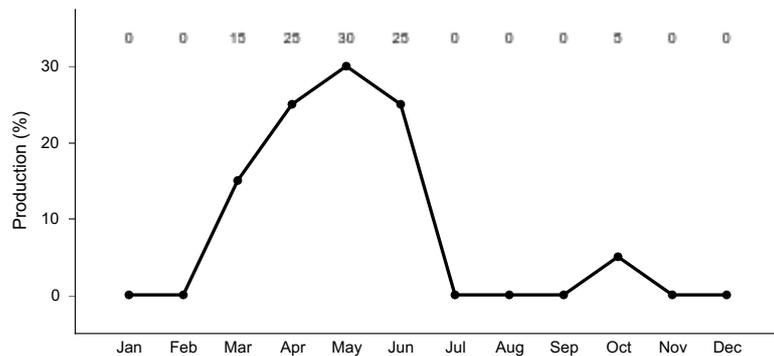


Figure 4. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

**State 2
State 1 Phase B**

**Community 2.1
State 1 Phase B**

State 1, Phase B. This plant community is dominated by reduced amounts of bluebunch wheatgrass and Idaho fescue. Shinyleaf spirea, common snowberry and Woods' rose have increased. All deep-rooted bunchgrasses are typically in low vigor. Forbs have increased. Some cheatgrass may have invaded the site along with Kentucky bluegrass. This state has developed due to improper grazing management and no fire.

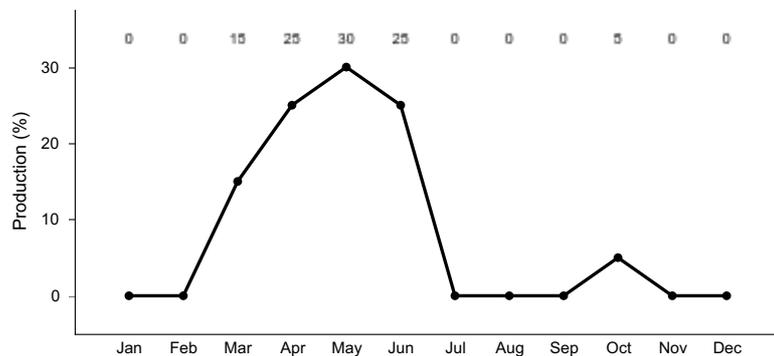


Figure 5. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

**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

shinyleaf spirea and common snowberry. Idaho fescue is still in the plant community but in reduced amounts and vigor. Woods' rose has also increased. Some cheatgrass may have invaded the site. This plant community is the result of wildfire.

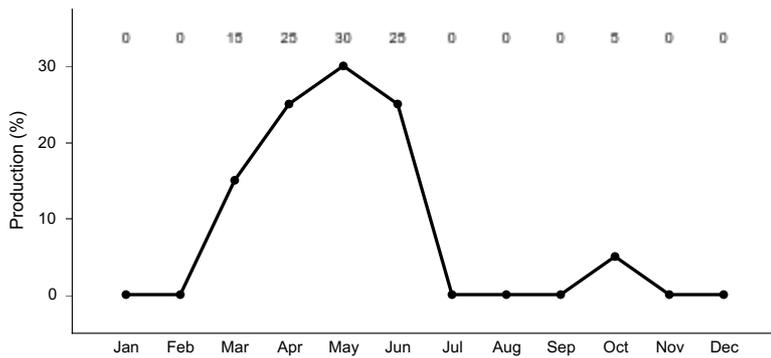


Figure 6. Plant community growth curve (percent production by month). ID0105, B9 SOUTH SLOPES PSSPS-FEID.

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. Some sprouting shrubs such as shinyleaf spirea, common snowberry, and Woods' rose can still be present in small amounts. 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 fire 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.

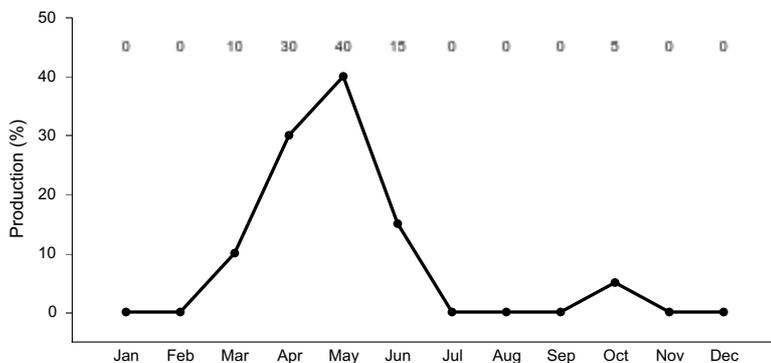


Figure 7. Plant community growth curve (percent production by month). ID0102, B9 BRTE-ANNUALS. State 2.

State 5
State 3

Community 5.1
State 3

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Grass and Grasslike			—	

	Idaho fescue	FEID	<i>Festuca idahoensis</i>	300–420	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	300–420	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	75–105	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	30–40	–
	Geyer's sedge	CAGE2	<i>Carex geyeri</i>	0–5	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	0–5	–
2	Big Bluegrass			–	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	30–40	–
Forb					
3	Forbs			–	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	50–70	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	30–40	–
	silky lupine	LUSE4	<i>Lupinus sericeus</i>	30–40	–
	fernleaf biscuitroot	LODI	<i>Lomatium dissectum</i>	30–40	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	15–20	–
	buckwheat	ERIOG	<i>Eriogonum</i>	15–20	–
	phacelia	PHACE	<i>Phacelia</i>	15–20	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	15–20	–
	alumroot	HEUCH	<i>Heuchera</i>	15–20	–
	Ross' avens	GEROT	<i>Geum rossii</i> var. <i>turbinatum</i>	15–20	–
	aster	ASTER	<i>Aster</i>	15–20	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	15–20	–
	oneflower helianthella	HEUN	<i>Helianthella uniflora</i>	15–20	–
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	15–20	–
	milkvetch	ASTRA	<i>Astragalus</i>	15–20	–
	stonecrop	SEDUM	<i>Sedum</i>	0–5	–
	fireweed	CHANA2	<i>Chamerion angustifolium</i> ssp. <i>angustifolium</i>	0–5	–
	trumpet	COLLO	<i>Collomia</i>	0–5	–
	broadfruit mariposa lily	CANI	<i>Calochortus nitidus</i>	0–5	–
	scabland penstemon	PEDE4	<i>Penstemon deustus</i>	0–5	–
	ballhead waterleaf	HYCA4	<i>Hydrophyllum capitatum</i>	0–5	–
	shaggy fleabane	ERPU2	<i>Erigeron pumilus</i>	0–5	–
	nodding microseris	MINU	<i>Microseris nutans</i>	0–5	–
	silvery lupine	LUAR3	<i>Lupinus argenteus</i>	0–5	–
	cinquefoil	POTEN	<i>Potentilla</i>	0–5	–
	Venus penstemon	PEVE2	<i>Penstemon venustus</i>	0–5	–
	slender phlox	MIGR	<i>Microsteris gracilis</i>	0–5	–
	maidenstears	SIVU	<i>Silene vulgaris</i>	0–5	–
	old man's whiskers	GETR	<i>Geum triflorum</i>	0–5	–
	littleleaf pussytoes	ANMI3	<i>Antennaria microphylla</i>	0–5	–
	green gentian	FRASE	<i>Frasera</i>	0–5	–
	houndstongue hawkweed	HICY	<i>Hieracium cynoglossoides</i>	0–5	–

4	Shrubs			–	
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	30–40	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	1–20	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0–5	–
	parsnipflower buckwheat	ERHE2	<i>Eriogonum heracleoides</i>	0–5	–
	shinyleaf spirea	SPLU5	<i>Spiraea lucida</i>	0–5	–

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community dominated by herbaceous vegetation provides spring, summer, and fall forage for large herbivores. Important seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, prairie falcon, blue grouse, horned lark, and western meadowlark. Area sensitive species include Woodhouse's toad, ring-necked snake, grasshopper sparrow, and Merriam's shrew. Noxious and invasive plant species (cheatgrass, bulbous bluegrass, rush skeletonweed, and yellow star-thistle) may 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 - Idaho Fescue/ Bluebunch Wheatgrass/ Prairie Junegrass/ Arrowleaf Balsamroot/ Common Snowberry Reference Plant Community (RPC): This plant community provides a diversity of grasses and forbs used by native insect communities that assist in pollination. A sparse shrub community may be present on the site, providing additional pollinator habitat and vertical structure for wildlife. 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. Blue grouse and wild turkey may frequent the site for brood-rearing in the spring and summer. The plant community provides spring, summer, and fall forage for mule deer, white-tailed deer, and elk. Bluebunch wheatgrass, prairie junegrass, Idaho fescue, common snowberry, and Wood's rose are desirable forage for elk and mule deer. The grazing management will determine the quality and duration of forage available for mule deer, white-tailed deer, and elk. Snowberry and Wood's rose are used by quail, grouse, bear, rabbits, mice, elk, and deer. 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 - Idaho Fescue/ Bluebunch Wheatgrass/ Common Snowberry/ Wood's Rose/ Shinyleaf Spirea 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. Quality of cover habitat for ground-nesting birds is reduced due to improper grazing that results in a sparse understory and an increase in woody shrubs. Blue grouse and wild turkey may frequent the site for brood-rearing in the spring and summer. The reduced vigor of the herbaceous plant community results in a shorter grazing season for mule deer, white-tailed deer, and elk. Areas where shrubs have increased provide additional browse for large herbivores. The small mammal community would be similar to the State 1 Phase 1.1 small mammal community. The increase in woody shrubs would add cover habitat for small and large mammals.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Common Snowberry/ Wood's Rose/ Shinyleaf Spirea Plant

Community: This plant community is the result of fire. Insect diversity would be similar to the State 1, Phase 1.1 insect community. An increase in Wood's rose, common snowberry, and shinyleaf spirea would add pollinator habitat. The reptile community would be similar to the State 1 Phase 1.1 reptile community. Quality of cover and food habitat for grassland dependant birds is reduced due to poor vigor and production of herbaceous vegetation and increase in woody shrubs. Blue grouse and wild turkey may frequent the site for brood-rearing in the spring and summer. The reduced vigor of herbaceous plants and improper grazing management provides a shorter grazing season for mule deer, white-tailed deer, and elk. The increase in common snowberry and Wood's rose would provide additional browse for large herbivores. Small mammal populations would be similar to those in State 1, Phase 1.1. An increase in woody vegetation increases quality of cover habitat for small and large mammals.

State 2 – Cheatgrass/ Annuals/ Noxious Weeds Plant Community: This state has developed due to frequent fires and improper grazing management from Phase 1.2, State 1. It also occurs with frequent fire or improper grazing management from Phase 1.3, State 1. The plant community supports harmful insects, such as grasshoppers with 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. Diversity of grassland avian species is reduced due to poor cover and forage habitat. 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 diversity and 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 the habitat for animal species that historically used the site.

Grazing Interpretations.

This site is suitable for late spring, summer and fall grazing by livestock.

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 conditions of the vegetative cover are good, natural erosion hazard is slight to moderate.

Recreational uses

The primary recreational values are hunting and sightseeing.

Wood products

None.

Other products

None.

Other information

Field Offices

Grangeville, ID

Nezperce, ID

Orofino, ID

Lewiston, ID

Moscow, ID

Plummer, 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	
General legal description	South of Lewiston on Craig Mountain Wildlife Management Unit.

Other references

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/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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Date	04/17/2009
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills can occur on this site. If rills are present they are likely to occur immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam. Stones on the surface will reduce rill formation.

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

3. **Number and height of erosional pedestals or terracettes:** Neither is extensive. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes also occur on the site uphill from tall shrub bases and large bunchgrasses. Contour terracettes can form from livestock grazing on steeper slopes.

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 areas in mid-seral status bare ground may range from 20 to 30 percent.

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

6. **Extent of wind scoured, blowouts and/or 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 3 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 4 to 6 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A or A1 horizon is typically 4 to 11 inches thick with dark grayish brown or dark brown moist color. Structure ranges from strong fine to medium fine granular. Soil organic matter (SOM) ranges from 2 to 4 percent.

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.

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: forbs

Other: shallow rooted grasses

Additional: tall shrubs

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Little decadence is expected to occur on this site.
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14. **Average percent litter cover (%) and depth (in):** Additional litter cover data is needed but is expected to be 15-20 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Is 1200 pounds per acre (1344 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 60-70 percent of the total production, forbs 25-35 percent and shrubs trace to 5 percent.
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Includes cheatgrass, bulbous bluegrass, Kentucky bluegrass, rush skeletonweed, musk and scotch thistle, diffuse and spotted knapweed, leafy spurge, dalmation toadflax, and yellow star thistle.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in most years.
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