

Ecological site R009XY002ID North Slope Loamy 16-22 PZ

Last updated: 9/23/2020
Accessed: 05/20/2024

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.

Ecological site concept

This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD.

Associated sites

R009XY001ID	Shallow Stony Loam 16-22 PZ
R009XY003ID	Loamy 16-22 PZ
R009XY004ID	South Slope Loamy 16-22 PZ
R009XY008ID	Schist 16-22 PZ PSSPS-FEID
R009XY009ID	North Slope Schist 16-22 PZ FEID-PSSPS
R009XY010ID	South Slope Schist 16-22 PZ PSSPS-POSE

Similar sites

R009XY009ID	North Slope Schist 16-22 PZ FEID-PSSPS
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Symphoricarpos albus</i>
Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Pseudoroegneria spicata</i>

Physiographic features

This site occurs on steep and very steep (30-65 percent) north and east facing slopes. The site occurs on dissected alluvial terraces, canyon sides, canyon benches, hills on plateaus, along river canyons, and on the Palouse. Elevations range from 740-4000 feet (225-1225 meters).

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Canyon (3) Hill
Elevation	226–1,219 m
Slope	30–70%
Water table depth	152 cm
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)	660 mm

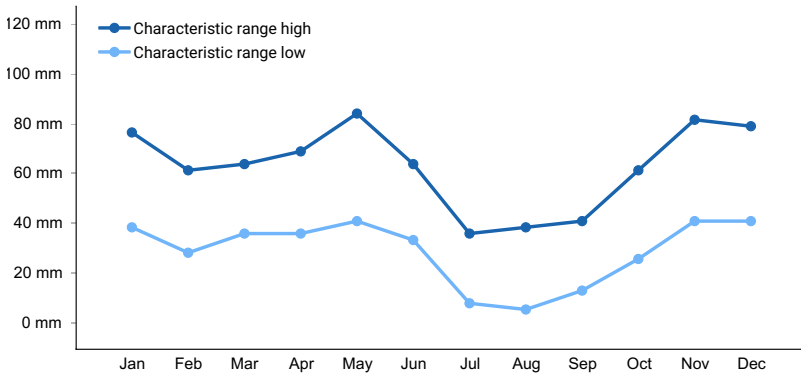


Figure 1. Monthly precipitation range

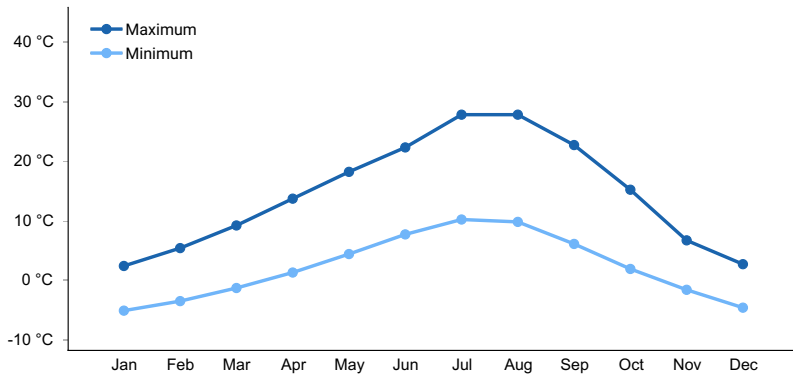


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are well drained loams and silt loams. The soils are formed in loess mixed with basalt or Seven Devils colluvium. Some volcanic ash may be present in the soil. They have moderate to slow permeability and runoff is medium to very high. The available water capacity of the soil profile is low to moderate. These soils are characterized by xeric moisture and mesic temperature regimes.

Soil Series Correlated to this Ecological Site

Almota
Athena
Jacket
Lawyer
Linville
McDaniel
Uhlig

Table 4. Representative soil features

Surface texture	(1) Ashy loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to slow
Soil depth	89–152 cm
Surface fragment cover <=3"	0–25%
Surface fragment cover >3"	0–20%
Available water capacity (0-101.6cm)	10.92–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	0–35%
Subsurface fragment volume >3" (Depth not specified)	0–50%

Ecological dynamics

The dominant visual aspect of this site has a grass and forb aspect. Idaho fescue and bluebunch wheatgrass are dominant. The site has a variety of forbs. The bluebunch wheatgrass on the site is usually rhizomatous. Composition by weight is approximately 65-75 percent grass, 20-30 percent forbs, and 0-10 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, Rocky Mountain elk, lagomorphs, and small rodents.

Fire has historically occurred on the site at intervals of 20-40 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 Idaho fescue and bluebunch wheatgrass. Common snowberry occurs as scattered patches on the site. Subdominant species include arrowleaf balsamroot, yarrow, geranium, cinquefoil, lupine, and oldmans whiskers. The plant species composition of Phase A is listed later under "Reference Plant community Phase Plant Species Composition".

Total annual production is 1300 pounds per acre (1440 kilograms per hectare) in a normal year. Production in a favorable year is 1500 pounds per acre (1670 kilograms per hectare). Production in an unfavorable year is 1100 pounds per acre (1220 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by perennial forbs being much more dominant than tall shrubs.

This site is suited for grazing by domestic livestock in late spring, summer, and fall. This site is important spring, summer, and fall range for big game. During the spring and summer it is important habitat for chukars and Hungarian partridge. Mourning doves, bald eagles, and Merriam's turkey also frequent the site. This site has high value for chukar, Hungarian partridge, quail, and big game hunting. Aesthetic values are good. A large variety of flora is present which have flowers that bloom in spring and early summer. The site position offers an excellent view of the surrounding countryside. The site is popular as a hiking area because of the variety of views and activities offered.

The site is fairly resistant to disturbances that can potentially degrade it as long as a good herbaceous cover is retained.

Impacts on the Plant Community.

Influence of fire:

In the absence of fire and/or grazing, bluebunch wheatgrass and Idaho fescue can become decadent due to build-up of old residues in the crown.

In the absence of normal fire frequency, snowberry and Woods' rose, if present, can increase to the point of being co-dominant with bluebunch wheatgrass and Idaho fescue on the site. When present, rose and snowberry also will develop into patches on the site.

When fires become more frequent than historic levels (20-40 years), Idaho fescue and bluebunch wheatgrass are reduced significantly. With continued short fire frequency, some of the strong root-sprouting shrubs will form dense thickets and will further reduce the grass component.

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, the plant community becomes susceptible to an increase in root-sprouting shrubs and noxious and invasive plants.

Continued improper grazing management influences fire frequency by increasing fine fuels.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in the shrub component. 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 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. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of insects and disease:

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. Kentucky bluegrass is very competitive on this site. Because of its shallow root system it prevents establishment of desirable, more productive bunchgrasses such as Idaho fescue and bluebunch wheatgrass.

Influence of wildlife:

Big game animals 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 the loss of the perennial grasses and the shrub component. This is most likely caused by an abnormally short fire frequency brought on by the replacement of perennial grasses with annual grasses. 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. The site has crossed the threshold. It is not economically feasible to move this state back towards State 1 with accelerating practices.

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

State 1 Phase B to State 3. Develops through continued improper grazing management. The site has crossed the threshold. It is not economically feasible to move this state back towards 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 not economically feasible to move this state back towards State 1 with accelerating practices.

Practice Limitations.

Severe limitations exist on this site for seeding and brush control using conventional ground moving equipment due to steep slopes greater than 30 percent.

State and transition model

R009XY002ID – North Slope Loamy 16-22

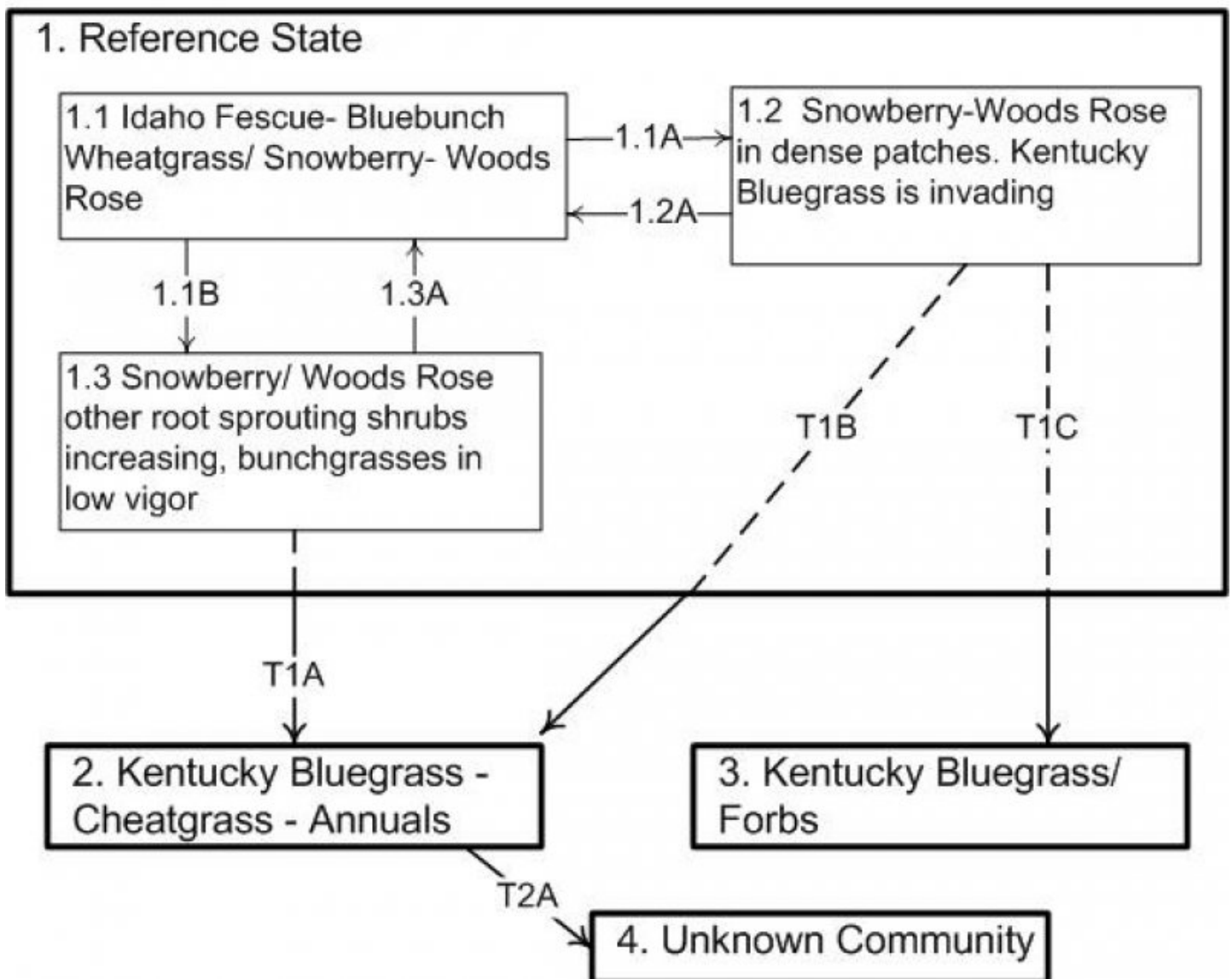


Figure 3. 9x-02

State 1
State 1 Phase A

Reference Plant Community Phase. This plant community is dominated by Idaho fescue and bluebunch wheatgrass. Subdominant shrub species can include common snowberry and Woods' rose. Woods' rose and snowberry occur in patches on the site. Arrowleaf balsamroot, yarrow, geranium, cinquefoil, lupine, and oldmans whiskers are the dominant forbs. Natural fire frequency is 20-40 years.

Community 1.1
State 1, Phase A

State 1, Phase A. Reference Plant Community Phase. This plant community is dominated by Idaho fescue and bluebunch wheatgrass. Subdominant shrub species can include common snowberry and Woods' rose. Woods' rose and snowberry occur in patches on the site. Arrowleaf balsamroot, yarrow, geranium, cinquefoil, lupine, and oldmans whiskers are the dominant forbs. Natural fire frequency is 20-40 years.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	863	1020	1177
Forb	308	364	420
Shrub/Vine	62	73	84
Total	1233	1457	1681

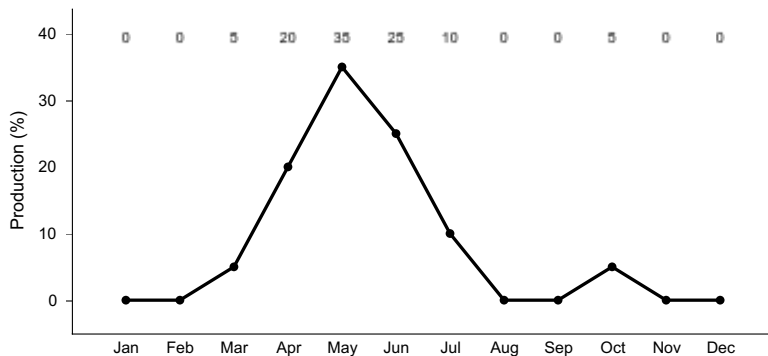


Figure 5. Plant community growth curve (percent production by month). ID0101, B9 PSSPS-FEID REFERENC PLANT COMMUNITY. State 1.

Community 1.2
State 1, Phase B

This plant community is dominated by snowberry and Woods' rose occurring in patches with reduced amounts of bluebunch wheatgrass and Idaho fescue. All deep-rooted bunchgrasses are typically in low vigor. Kentucky bluegrass has invaded. This phase has developed due to improper grazing management and no fire. Some cheatgrass, medusahead, and ventenata may have invaded the site.

Community 1.3
State 1, Phase C

This plant community is dominated by snowberry and Woods' rose in the overstory. Other root-sprouting shrubs, such as ninebark, hawthorn, serviceberry, and spirea, if present, are increasing. Bluebunch wheatgrass and Idaho fescue are in low vigor. Some cheatgrass and Kentucky bluegrass may have invaded the site. This plant community is the result of wildfire.

Pathway Phase A to B
Community 1.1 to 1.2

Develops with improper grazing management and no fire.

Pathway Phase A to C Community 1.1 to 1.3

Develops with fire

Pathway Phase B to A Community 1.2 to 1.1

Develops with prescribed grazing

Pathway Phase C to A Community 1.3 to 1.1

Develops with prescribed grazing and no fire

State 2 State 1 Phase B

Community 2.1 State 2: Annuals

This plant community is dominated by cheatgrass and other annuals. Root sprouting shrubs such as snowberry and Woods' rose can be present. 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. The site has crossed the threshold. It is not economically feasible to move this state back towards State 1 with accelerating practices.

State 3 State 3

This state is strongly dominated by Kentucky bluegrass. It is controlling the site. Some forbs such as common teasel, may be present. This state has developed due to improper grazing management. The site has crossed the threshold. Some soil loss may have occurred.

Community 3.1 State 1 Phase C

State 1, Phase C. This plant community is dominated by snowberry and Woods' rose in the overstory. Other root-sprouting shrubs, such as ninebark, hawthorn, serviceberry, and spirea, if present, are increasing. Bluebunch wheatgrass and Idaho fescue are in low vigor. Some cheatgrass and Kentucky bluegrass may have invaded the site. This plant community is the result of wildfire.

State 4 Unknown new site

Transition T1 State 1 to 2

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

Transition T2 State 1 to 3

State 1 Phase B to State 3. Develops through continued improper grazing management. The site has crossed the threshold. It is not economically feasible to move this state back towards State 1 with accelerating practices.

Transition T3 State 2 to 4

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 not economically feasible to move this state back towards State 1 with accelerating practices.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Perrenial Grass Dominant			–	
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	140–762	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	140–762	–
2	Perrenial Grass/Grasslike Subdominant			–	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–45	–
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	0–45	–
	oniongrass	MEBU	<i>Melica bulbosa</i>	0–45	–
	Geyer's sedge	CAGE2	<i>Carex geyeri</i>	0–45	–
	blue wildrye	ELGLG	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	0–45	–
3	Big Bluegrass			–	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–45	–
Forb					
4	Forbs			–	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0–45	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–45	–
	pale agoseris	AGGL	<i>Agoseris glauca</i>	0–45	–
	sticky purple geranium	GEVI2	<i>Geranium viscosissimum</i>	0–45	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	0–45	–
	cinquefoil	POTEN	<i>Potentilla</i>	0–45	–
	lupine	LUPIN	<i>Lupinus</i>	0–45	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–45	–
	strawberry	FRAGA	<i>Fragaria</i>	0–45	–
	old man's whiskers	GETR	<i>Geum triflorum</i>	0–45	–
	western stoneseed	LIRU4	<i>Lithospermum ruderales</i>	0–45	–
	mule-ears	WYAM	<i>Wyethia amplexicaulis</i>	0–45	–
	white hawkweed	HIAL2	<i>Hieracium albiflorum</i>	0–45	–
	catchfly	SILEN	<i>Silene</i>	0–45	–
	hardtop	DENST	<i>Desmodium</i>	0–45	–

	beardtongue	FEN51	<i>Fenestronia</i>	0-45	-
	bluebells	MERTE	<i>Mertensia</i>	0-45	-
	smallflower woodland-star	LIPA5	<i>Lithophragma parviflorum</i>	0-45	-
	ballhead waterleaf	HYCA4	<i>Hydrophyllum capitatum</i>	0-45	-
	tailcup lupine	LUCA	<i>Lupinus caudatus</i>	0-45	-
	oneflower helianthella	HEUN	<i>Helianthella uniflora</i>	0-45	-
	pepperweed	LEPID	<i>Lepidium</i>	0-45	-
	Idaho blue-eyed grass	SIID	<i>Sisyrinchium idahoense</i>	0-45	-
	broadfruit mariposa lily	CANI	<i>Calochortus nitidus</i>	0-45	-
	longleaf phlox	PHLO2	<i>Phlox longifolia</i>	0-45	-
	largehead clover	TRMA3	<i>Trifolium macrocephalum</i>	0-45	-
	nodding microseris	MINU	<i>Microseris nutans</i>	0-45	-
	starwort	STELL	<i>Stellaria</i>	0-45	-
	woolly groundsel	PACA15	<i>Packera cana</i>	0-45	-
	trumpet	COLLO	<i>Collomia</i>	0-45	-
	largeflower triteleia	TRGR7	<i>Triteleia grandiflora</i>	0-45	-
	slender phlox	MIGR	<i>Microsteris gracilis</i>	0-45	-
	whitestem frasera	FRAL2	<i>Frasera albicaulis</i>	0-45	-
	spreading dogbane	APAN2	<i>Apocynum androsaemifolium</i>	0-45	-
	yellow Indian paintbrush	CAFL7	<i>Castilleja flava</i>	0-45	-
Shrub/Vine					
5	Shrubs			-	
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	11-45	-
	Woods' rose	ROWO	<i>Rosa woodsii</i>	11-45	-
	mallow ninebark	PHMA5	<i>Physocarpus malvaceus</i>	0-28	-
	black hawthorn	CRDO2	<i>Crataegus douglasii</i>	0-28	-
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	0-28	-
	parsnipflower buckwheat	ERHE2	<i>Eriogonum heracleoides</i>	0-17	-
	creeping barberry	MARE11	<i>Mahonia repens</i>	0-17	-

Animal community

Wildlife Interpretations.

This site is important spring, summer, and fall range for big game. During the spring and summer it is important habitat for chukars and Hungarian partridge. Mourning doves, bald eagles, and Merriam's turkey also frequent the site.

Grazing Interpretations:

This site is suited for grazing by domestic livestock in late spring, summer, and fall. The most suitable grazing use of the site is with yearling cattle or sheep due to steep slopes.

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

Soils on this site are in hydrologic group B. The soils on this site have moderate to slow rate of water transmission.

Recreational uses

Aesthetic values are good. A large variety of flora is present which have flowers that bloom in spring and early summer. The site position offers an excellent view of the surrounding countryside. The site is popular as a hiking area because of the variety of views and activities offered. This site has high value for chukar, Hungarian partridge, quail, and big game hunting.

Wood products

None.

Other products

None.

Other information

Field Offices

Grangeville, ID

Lewiston, ID

Nezperce, ID

Orofino, ID

Plummer, ID

Cascade, 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: Idaho County, ID
Location 2: Latah County, ID
Location 3: Adams County, ID

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.

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.

Contributors

Dave Franzen And Jacy Gibbs

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	03/23/2009
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

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

- 3. Number and height of erosional pedestals or terracettes:** Both occur on this site but are not 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 bases of tall shrubs and large bunchgrasses.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** May range from 10-20 percent but additional data is needed.

- 5. Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

- 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 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):** Structure ranges from weak very granular to weak medium sub angular blocky. Soil organic matter (SOM) ranges from 2 to 6 percent. The A or A1 horizon is typically 2 to 8 inches thick and moist surface color is very dark gray to very dark brown.

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. Tall shrubs catch blowing snow in the interspaces.

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: perennial forbs

Other: shrubs

Additional:

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.

14. **Average percent litter cover (%) and depth (in):** Additional litter cover data is needed but is expected to be 15-30 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Is 1300 pounds per acre (1440 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 65-75 percent of the total production, forbs 20-30 percent and shrubs 0-10 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, medusahead, ventenata, Kentucky bluegrass, curlycup gumweed, St. Johnswort, rush skeletonweed, musk thistle, yellow star-thistle, scotch thistle, and diffuse and spotted knapweed.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in most years.
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