USDA Natural Resources Conservation Service

Ecological site R032XY266WY
Shallow Sandy (SwSy) 5-9” Wind River Basin Precipitation Zone

Last updated: 5/01/2024
Accessed: 05/12/2025

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.

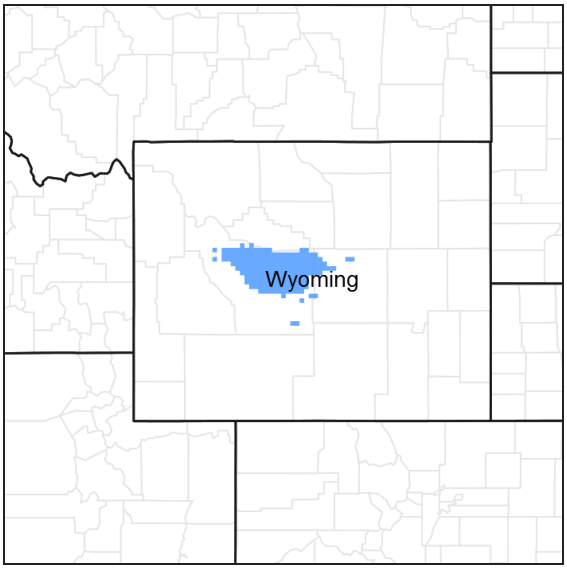


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R032XY250WY	**Sandy (Sy) 5-9” Wind River Basin Precipitation Zone**
R032XY262WY	**Shallow Loamy (SwLy) 5-9” Wind River Basin Precipitation Zone**

Similar sites

R032XY366WY	**Shallow Sandy (SwSy) 10-14" East Precipitation Zone** Shallow Sandy 10-14" East P.Z. has higher production.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on nearly level to 50% slopes.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Ridge (3) Escarpment
Flooding frequency	None
Ponding frequency	None
Elevation	4,500–6,600 ft
Slope	0–50%
Ponding depth	0 in
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 5-9 inches per year. The normal precipitation pattern shows peaks in May and June and a secondary peak in September. This amounts to about 50% of the mean annual precipitation. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall is about 20 inches annually. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation.

Temperatures show a wide range between summer and winter and between daily maximums and minimums, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

High winds are generally blocked from the basin by high mountains, but can occur in conjunction with an occasional thunderstorm.

Growth of native cool-season plants begins about April 1 and continues to about July 1. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October.

The following information is from the “Pavillion” climate station:
Minimum Maximum 5 yrs. out of 10 between
Frost-free period (days): 95 175 May 19 – September 19
Freeze-free period (days): 98 185 May 6 – October 3
Mean Annual Precipitation (inches): 2.50 12.54

Mean annual precipitation: 7.85 inches
Mean annual air temperature: 44.53 F (30.5 F Avg. Min. to 58.5 F Avg. Max.)
For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at http://www.wcc.nrcs.usda.gov/ website. Other climate station(s) representative of this precipitation zone include” Riverton”, “Arminto”, and “Lost Cabin”.

Table 3. Representative climatic features

Frost-free period (average)	175 days
Freeze-free period (average)	185 days
Precipitation total (average)	9 in

Influencing water features

Stream Type: None

Soil features

The soils of this site are shallow (10 - 20” to bedrock) well to excessively well-drained and formed in eolian deposits or alluvium over residuum or residuum. These soils have rapid to very rapid permeability and may occur on all slopes. The bedrock may be of any kind except igneous or volcanic and is virtually impenetrable to plant roots. Thin ineffectual layers of other soil textures are disregarded. The soil characteristics having the most influence on the plant community are the shallow depths and light textures which can affect the available moisture.

Major Soil Series correlated to this site include: Oceanet

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand (2) Fine sandy loam (3) Sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained
Permeability class	Rapid to very rapid
Soil depth	10–20 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	0.4–3 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–10%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Potential vegetation on this site is dominated by mid cool-season perennial grasses. Other significant vegetation includes winterfat and a variety of forbs and shrubs. The expected potential composition for this site is about 75% grasses, 10% forbs and 15% woody plants. The composition and production will vary naturally due to historical use, fluctuating precipitation and fire frequency.

As this site deteriorates, species such as threadleaf sedge, blue grama, and big sagebrush will increase. Weedy annuals will invade. Cool season grasses such as needleandthread, rhizomatous wheatgrasses, and Indian ricegrass will decrease in frequency and production.

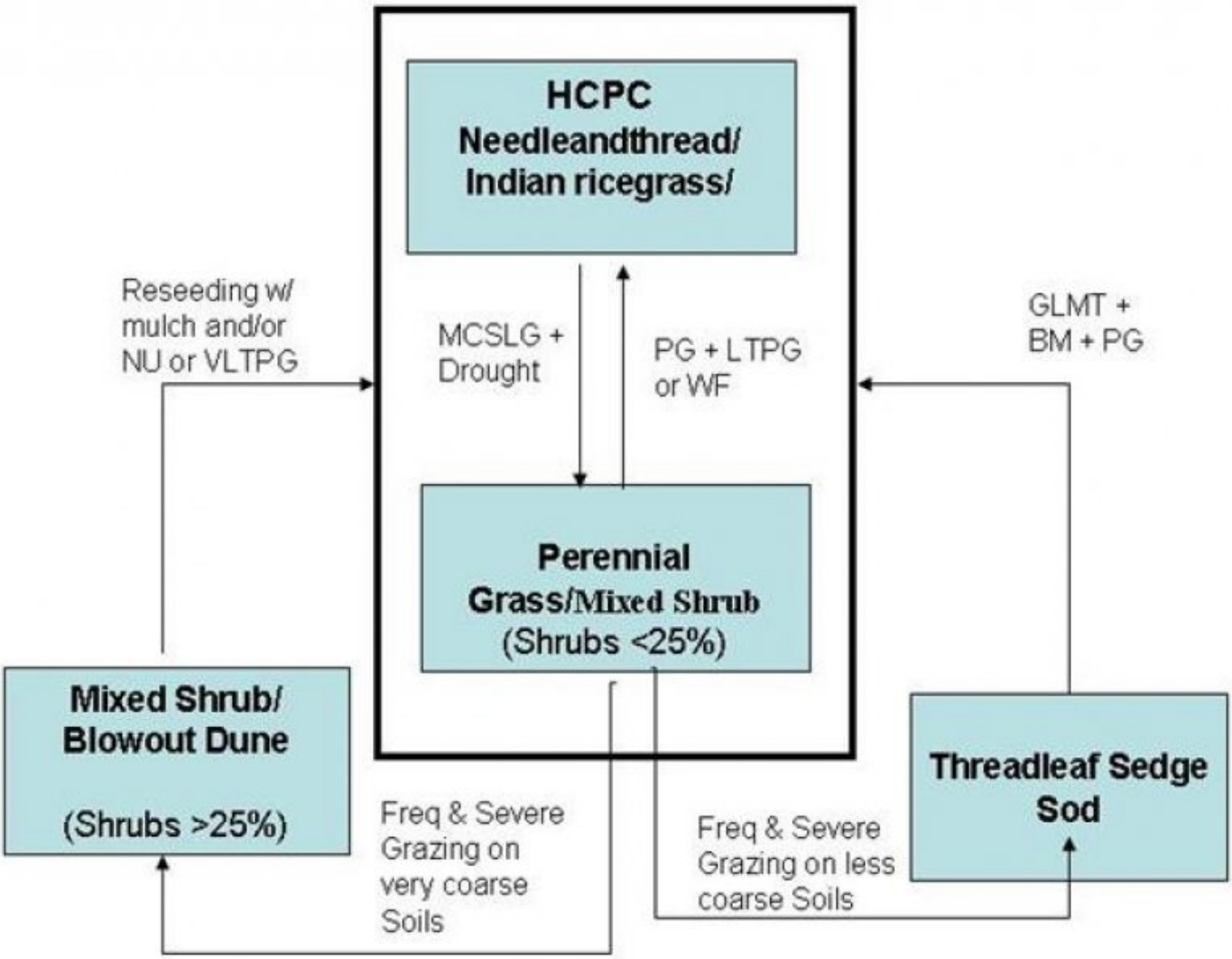
The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in

more detail in the plant community narratives following the diagram.

Plant Community Narratives
Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

State and transition model



BM - Brush Management (fire, chemical, mechanical)
Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season
GLMT - Grazing Land Mechanical Treatment
LTPG - Long-term Prescribed Grazing
MCSLG - Moderate, Continuous Season-long Grazing
NU, NF - No Use and No Fire
PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
WF - Wildfire

State 1
Needleandthread/ Indian ricegrass

Community 1.1
Needleandthread/ Indian ricegrass

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores, soils less than 20 inches in depth, and periodic fires. The cyclical natural of the fire regime in this community prevented big sagebrush from being the dominant landscape. Cool season midgrasses dominate the state. Potential vegetation is about 75% grasses or grass-like plants, 10% forbs, and 15% woody plants. It is found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The major grasses include needleandthread, rhizomatous wheatgrasses, Indian ricegrass, and bluebunch wheatgrass. Other grasses and grass-likes occurring on the state include prairie sandreed, Sandberg bluegrass, and threadleaf sedge. Winterfat is a conspicuous component of this state. A variety of forbs and shrubs also occur in this state and plant diversity is high (see Plant Composition Table). The total annual production (air-dry weight) of this state is about 250 pounds per acre, but it can range from about 125 lbs./acre in unfavorable years to about 350 lbs./acre in above average years. The state is stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity). Transitions or pathways leading to other plant communities are as follows: • Moderate, Continuous Season-Long grazing will convert the plant community to the Perennial Grass/Mixed Shrub Plant Community. Prolonged Drought will exacerbate this transition.

Figure 3. Plant community growth curve (percent production by month). WY0801, 5-9WR upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			10	50	25	5		10			

State 2
Perennial Grass/ Mixed Shrub

Community 2.1
Perennial Grass/ Mixed Shrub

Historically, this plant community evolved under grazing and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock and will be exacerbated by prolonged drought conditions. In addition, the fire regime for this site has been modified and extended periods without fire is now common. This plant community is still dominated by cool-season grasses, while short warm-season grasses and miscellaneous forbs account for the balance of the understory. The overstory is comprised of a variety of shrubs. The dominant grasses includes needleandthread, rhizomatous wheatgrasses, threadleaf sedge, Sandberg bluegrass, and blue grama. Forbs commonly found on the site include badlands mule's-ear, waxleaf penstemon, little larkspur, sulfur flower buckwheat, fleabane, and lemon scurfpea. Shrubs can make up to 25% of the annual production. These include big sagebrush, silver sagebrush, skunkbush sumac, and green rabbitbrush. The overstory of shrubs and understory of grass and forbs provide a diverse plant community. When compared to the Historic Climax Plant Community, bluebunch wheatgrass, Indian ricegrass, and winterfat have decreased. Plains pricklypear cactus will also have increased, but occurs only in small patches. Threadleaf sedge, blue grama, big sagebrush, skunkbush sumac and a variety of forbs have increased. Total production is less as the mid cool season grasses are replaced with short warm season grasses. The total annual production (air-dry weight) of this state is about 200 pounds per acre, but it can range from about 75 lbs./acre in unfavorable years to about 300 lbs./acre in above average years. The herbaceous component is mostly intact and plant vigor and replacement capabilities are sufficient. Water flow patterns and litter movement may be occurring but only on steeper slopes. Incidence of pedestalling is minimal. Soils are mostly stable and the surface shows minimum soil loss. The communities' soil, biotic integrity and watershed is intact, although more than normal runoff may occur due to the sod forming vegetation and bare ground. Transitional pathways leading to other plant communities are as follows: • Prescribed grazing or possibly long-term prescribed grazing will return this plant community to the HCPC. The probability of this occurring is high especially if rotational grazing along with short deferred grazing is implemented as part of a prescribed method of

use. In addition, the removal of fire suppression will allow a somewhat natural fire regime to reoccur to more easily transition between this plant community and the HCPC. A prescribed fire treatment can be useful to hasten this transition, however, this may require a removal of grazing for a period of time to build a surplus of fine fuels. • Frequent and Severe grazing on coarse soils will convert this state to the Mixed Shrub/Blowout Dune Vegetation State. • Frequent and Severe grazing on less coarse soils will convert this state to the Threadleaf Sedge Sod Vegetation State.

Figure 4. Plant community growth curve (percent production by month). WY0801, 5-9WR upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			10	50	25	5		10			

State 3
Mixed Shrub/ Blowout Dune

Community 3.1
Mixed Shrub/ Blowout Dune

This plant community is the result of frequent and severe grazing and protection from fire. Shrubs eventually dominate this vegetative state, as the annual production of shrubs will exceed 25%. Areas of bare sand also can dominate this site as wind scouring and deposition can occur and modify the soil surface. Yucca on coarser soils can also be a major part of this plant community. These shrub species are a significant component of the plant community and the preferred cool season grasses have been eliminated or greatly reduced. The dominant grasses are Sandberg bluegrass, threadleaf sedge, and blue grama. Weedy annual species such as cheatgrass may occupy the site if a seed source is available. Patches of pricklypear cactus can be noticeable. Shrubs such as skunkbush sumac, big and silver sagebrushes, green rabbitbrush, as well as a variety of forbs have increased significantly. Plant diversity is moderate to poor. The interspaces between plants have expanded leaving the amount of bare ground more prevalent. When compared to the HCPC, grass production and available forage has diminished significantly, but the total production is compensated by the increase in shrub production. The total annual production (air-dry weight) of this state is about 125 pounds per acre, but it can range from about 50 lbs./acre in unfavorable years to about 200 lbs./acre in above average years. This plant community is relatively resistant to change. Continued frequent and severe grazing does not seem to affect the plant composition or structure of the plant community. These areas are more resistant to fire as less fine fuels are available and the bare ground between the shrub plants is increased. Plant diversity is poor. Production is reduced and plant vigor is diminished due to blowing sand, which can defoliate the vegetative parts of the grass plants. The soils are exposed to wind as erosion is accelerated and blowouts increase. Pedestalling is pervasive and eolian deposits (dunes) form around the clumped vegetation. This situation is normally extensive. Transitions or pathways leading to other plant communities are as follows: • Reseeding with mulch and/or no use or very long-term prescribed grazing, is necessary to return a protective vegetation cover to this state so as to convert this to the Near HCPC conditions. No use may return protective vegetation cover to the site or possible prescribed grazing that may take generations, may also accomplish this goal. The grazing prescription most commonly used is complete deferment during the growing season, with limited use in the winter. This will provide as much plant litter cover as possible to protect the soil surface.

Figure 5. Plant community growth curve (percent production by month). WY0801, 5-9WR upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			10	50	25	5		10			

State 4
Threadleaf Sedge sod

Community 4.1
Threadleaf Sedge sod

This plant community can occur as a result of frequent and severe grazing on less coarse soils. Shrubs such as

skunkbush sumac, green rabbitbrush, and possibly yucca may remain significant components of the plant community, but a dense stand of threadleaf sedge is established. Pricklypear cactus can also become established in dense patches. The skunkbush sumac and yucca are present but are mostly localized on the ridgelines of the dunes that may have formed in localized areas. Grasses of importance are needleandthread, Fendler threeawn, Sandberg bluegrass and blue grama. Patches of annuals such as cheatgrass and other weedy annual forbs such as halogeton, Russian thistle, and kochia, will persist on this site, if not treated. The interspaces between plants will have diminished in size. When compared with the HCPC or the Perennial Grass/ Mixed Shrub Plant Communities, the annual production is less. Some of the historic grasses may not be present such as Indian ricegrass and prairie sandreed. The total annual production (air-dry weight) of this state is about 150 pounds per acre, but it can range from about 50 lbs./acre in unfavorable years to about 250 lbs./acre in above average years. This sod is some what resistant to change under moderate grazing and the reestablishment of perennial mid and tall grasses is difficult in this situation. The biotic integrity of this state is minimally functional and plant diversity is moderate to low. Erosion has been diminished as the sodded areas are resistant to wind erosive processes. Pedestalling is apparent along the sod edges. Transitional pathways leading to other plant communities are as follows: • Grazing land mechanical treatment (seeding, etc.), brush management if necessary, and prescribed grazing, will return this plant community to near Historic Climax Plant Community. Any chiseling or disturbance in the sod should be implemented carefully so as not to create large openings, which can expose the soil to wind erosion.

Figure 6. Plant community growth curve (percent production by month). WY0801, 5-9WR upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			10	50	25	5		10			

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				63–88	
	needle and thread	HECO26	*Hesperostipa comata*	63–88	–
2				25–50	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	25–50	–
3				38–63	
	western wheatgrass	PASM	*Pascopyrum smithii*	38–63	–
4				13–38	
	Montana wheatgrass	ELAL7	*Elymus albicans*	13–38	–
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	13–38	–
5				13–38	
	threadleaf sedge	CAFI	*Carex filifolia*	13–38	–
6				13–38	
	Grass, perennial	2GP	*Grass, perennial*	0–13	–
	Fendler threeawn	ARPUL	*Aristida purpurea var. longiseta*	0–13	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–13	–
	prairie sandreed	CALO	*Calamovilfa longifolia*	0–13	–
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	0–13	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	0–13	–
	Sandberg bluegrass	POSE	*Poa secunda*	0–13	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–13	–
Forb					

7				13–25	
	Forb, perennial	2FP	*Forb, perennial*	0–13	–
	textile onion	ALTE	*Allium textile*	0–13	–
	Franklin's sandwort	ARFR	*Arenaria franklinii*	0–13	–
	Missouri milkvetch	ASMI10	*Astragalus missouriensis*	0–13	–
	woollypod milkvetch	ASPU9	*Astragalus purshii*	0–13	–
	bastard toadflax	COUM	*Comandra umbellata*	0–13	–
	little larkspur	DEBI	*Delphinium bicolor*	0–13	–
	threadleaf fleabane	ERFI2	*Erigeron filifolius*	0–13	–
	fleabane	ERIGE2	*Erigeron*	0–13	–
	shaggy fleabane	ERPU2	*Erigeron pumilus*	0–13	–
	sulphur-flower buckwheat	ERUM	*Eriogonum umbellatum*	0–13	–
	leafy wildparsley	MUDI	*Musineon divaricatum*	0–13	–
	plains pricklypear	OPPO	*Opuntia polyacantha*	0–13	–
	fuzzytongue penstemon	PEER	*Penstemon eriantherus*	0–13	–
	shinyleaf sandpaper plant	PENI	*Petalonyx nitidus*	0–13	–
	spiny phlox	PHHO	*Phlox hoodii*	0–13	–
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	0–13	–
	smooth woodyaster	XYGL	*Xylorhiza glabriuscula*	0–13	–
	meadow deathcamas	ZIVE	*Zigadenus venenosus*	0–13	–
Shrub/Vine					
8				25–50	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0–13	–
	silver sagebrush	ARCA13	*Artemisia cana*	0–13	–
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	0–13	–
	shadscale saltbush	ATCO	*Atriplex confertifolia*	0–13	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	0–13	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0–13	–
	winterfat	KRASC	*Krascheninnikovia*	0–13	–
	skunkbush sumac	RHTR	*Rhus trilobata*	0–13	–

Animal community

Animal Community – Wildlife Interpretations
Historic Climax Plant Community: The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of woody plants. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Perennial Grass/Mixed Shrub Plant Community: The combination of a shrub overstory and an understory of grasses and forbs provide a very diverse plant community for wildlife. This diversity provides important winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer’s sparrows’ nest in

big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Mixed Shrub/Blowout Dune Plant Community: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Perennial Grass/Mixed Shrub Plant Communities are limited. Generally, these are not target plant communities for wildlife habitat management.

Threadleaf Sedge Sod Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope.

Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Plant Community	Production (lb./ac)	Carrying Capacity* (AUM/ac)
Historic Climax Plant Community	125-350	.10
Perennial Grass/Mixed Shrub	75-300	.08
Mixed Shrub/Blowout Dune	35-200	.03
Threadleaf Sedge Sod	50-250	.05

* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrological functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B and C. Infiltration ranges from rapid to very rapid. Runoff potential for this site varies from low to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

Recreational uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood products

No appreciable wood products are present on the site.

Other products

none noted

Inventory data references

Information presented here has been derived from NRCS inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Chris Krassin, Range Management Specialist, NRCS and Everet Bainter, Range Management Specialist, NRCS. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, USDI and USDA Interpreting Indicators of Rangeland Health Version 3, and USDA NRCS Soil Surveys from various counties.

Contributors

C. Krassin

Approval

Kirt Walstad, 5/01/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	07/01/2005
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present

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2. **Presence of water flow patterns:** Barely observable

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3. **Number and height of erosional pedestals or terracettes:** Essentially non-existent

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 40-60% occurring in small areas throughout site

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5. **Number of gullies and erosion associated with gullies:** Active gullies should be restricted to areas of concentrated

water flow patterns on steeper slopes

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Small scoured sites may be observed

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is little to none based on topography and water flow patterns

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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):** Plant cover and litter is at 50% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 3 or greater.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Infiltration is rapid to very rapid

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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):** No compaction layer or soil surface crusting should be 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:

    Sub-dominant:

    Other:

    Additional: Mid stature Bunch Grasses > Mid Stature Rhizomatous Grasses > Shrubs > Short grasslikes = Short grasses > Forbs

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very Low

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14. **Average percent litter cover (%) and depth (in):** Average litter cover is 15-25% with depths of 0.1 to 0.2 inches

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-**

production): 250 lbs/ac

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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:** Threadleaf sedge, Blue grama, Big sagebrush, Silver sagebrush, Green rabbitbrush, skunkbush sumac, Badlands mules-ear, Prickly Pear, Broom Snakeweed, Unpalatable forbs, Annuals, Exotics, and Species found on Noxious Weed List

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17. **Perennial plant reproductive capability:** All species are capable of reproducing

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