

Ecological site R043BY422WY Loamy (Ly) 15-19" Northern Plains Precipitation Zone

Accessed: 05/02/2024

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.

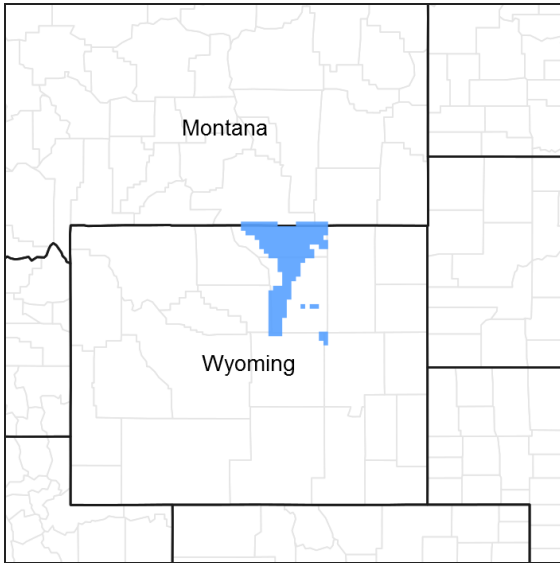


Figure 1. Mapped extent

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

R043BY404WY	Clayey (Cy) 15-19" Northern Plains Precipitation Zone
R043BY428WY	Lowland (LL) 15-19" Northern Plains Precipitation Zone
R043BY430WY	Overflow (Ov) 15-19" Northern Plains Precipitation Zone
R043BY450WY	Sandy (Sy) 15-19" Northern Plains Precipitation Zone
R043BY462WY	Shallow Loamy (SwLy) 15-19" Northern Plains Precipitation Zone

Similar sites

R058BY122WY	Loamy (Ly) 10-14" PZ Loamy 10-14" Northern Plains P.Z., has lower production.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on gently undulating rolling land.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Alluvial fan (3) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	1,128–2,286 m
Slope	0–30%
Ponding depth	0 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 15" to 19" per year. May is generally the wettest month. July, August and September are somewhat drier with daily amounts rarely exceeding one inch. Snowfall is quite heavy in the mountainous area. Annual snowfall averages close to 70 inches.

Sunshine is abundant in the latter part of the summer, the greatest amount being in July and August. Sunshine possibility during these two months averages 70 to 75% possibility with only a 65% possibility for June and September. Winter averages about 40% sunshine.

Because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the lower elevations and in the valleys as compared with the higher terrain. The average winter wind velocity is 8.5 mph, while the summer wind velocity averages 7.5 mph. Winds during storms and on ridges may exceed 45 mph.

Temperatures show a wide range between summer and winter, and between daily maximums and minimums. Summer nights are cool and temperatures drop into the forties at most places before sunrise. Summer daytime temperatures are usually in the seventies and occasionally reach eighty, but rarely reach the mid nineties. Winters are cold with daily lows below freezing most of the time. January has the coldest temperatures with a range of near 10 deg. F at night to the mid thirties in the afternoon. Temperatures of well below zero to –30 deg. F are not uncommon in the winter months.

The growing season for the cool season plants will generally start about April 15 to May 1 and continue to about October 10.

The following information is from the "Sheridan Airport" climate station:

Frost-free period (32 °F): 95-156 days; (5 yrs. out of 10, these days will occur between May 20 – September 20)

Freeze-free period 28 °F): 116-187 days; (5 yrs. out of 10, these days will occur between May 3 – October 2)

Mean annual precipitation: 14.7 inches

Mean annual air temperature: 45.0 °F (31.2 °F Avg. Min. – 58.8 °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: "Parkman 5 WNW"

Table 3. Representative climatic features

Frost-free period (average)	156 days
Freeze-free period (average)	187 days

Precipitation total (average)	483 mm
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Influencing water features

Stream type: None

Soil features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well-drained & moderately permeable. The surface soil will vary from 3" to 6" in thickness depending on the texture and permeability of the subsoil. The surface soil will be one or more of the following textures: very fine sandy loam, loam, silt loam and the friable portions of sandy clay loam, silty clay loam and clay loam. Loess material with little or no development is excluded from this site.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Sandy loam (3) Very fine sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	51–152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–10%
Available water capacity (0-101.6cm)	7.62–16 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

As this site deteriorates from improper grazing management, species such as blue grama, and big sagebrush will increase. Species such as cheatgrass will invade. Cool season grasses such as green needlegrass and western wheatgrass will decrease in frequency and production.

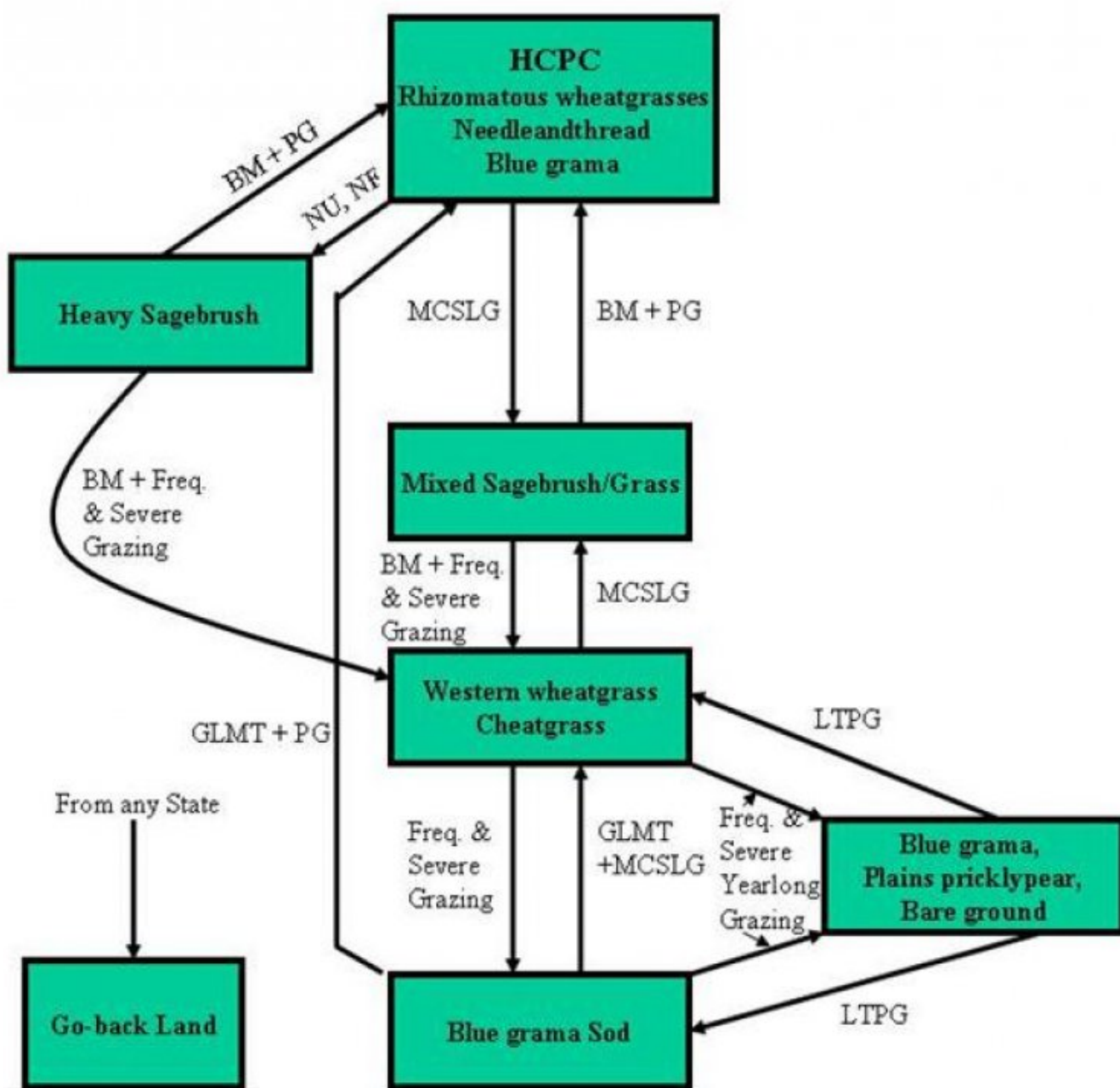
Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

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.

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)
- Na - found adjacent to a saline site

State 1

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community

Community 1.1

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community. This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. The site is dominated by cool season midgrasses. The major grasses include rhizomatous wheatgrass, Idaho fescue, needleandthread, and green needlegrass. Other grasses occurring on the site include Cusick, Canby, and Sandberg bluegrass, bluebunch wheatgrass, sideoats grama, and blue grama. Big sagebrush is a conspicuous element of this site, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Big sagebrush may become dominant on some areas with the absence of fire. Natural fire occurred frequently in this community and prevented sagebrush from being the dominant landscape. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently controlled burning has regained some popularity. Annual production on this site ranges from 1500 to 3000 pounds depending on climatic conditions. This plant community is extremely stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. 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: • No use and no fire for 20 years or more will convert this plant community to the Heavy Sagebrush Plant Community. • Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community. • When cropped annually and then abandoned without reseeding, the state is converted to the Go-back Land Plant Community.

Figure 4. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 2

Mixed Sagebrush/Grass Plant Community

Community 2.1

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush control. Big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Dominant grasses include needleandthread, rhizomatous wheatgrass, Idaho fescue, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, Canby bluegrass and Sandberg bluegrass. Forbs commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfp pea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort and plains pricklypear can also occur. This state produces between 900 and 2500 pounds annually, depending on the growing conditions. When compared to the Historical Climax Plant Community, sagebrush and blue grama have increased. Green needlegrass has decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community which will support domestic livestock and wildlife such as mule deer and antelope. The site is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama, sagebrush, and/or cheatgrass. The watershed is usually functioning. However, it can become at risk when canopy cover of sagebrush, blue grama sod, and/or bare ground increases. This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component

is intact, it tends to be resilient if the disturbance is not long-term. Transitions or pathways leading to other plant communities are as follows: • Brush management (chemical, fire, or mechanical), followed by prescribed grazing, will convert this plant community to the Rhizomatous wheatgrasses, Needleandthread, Blue grama Plant Community. The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the Rhizomatous wheatgrasses, Needleandthread, Blue grama Plant Community may be increased. • Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing as western wheatgrass will be reduced.

Figure 5. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 3 Heavy Sagebrush Plant Community

Community 3.1 Heavy Sagebrush Plant Community

This plant community is the result of protection from grazing and fire. Sagebrush dominates this plant community with canopy cover often exceeding 60%. The understory of grass includes western wheatgrass, green needlegrass, needleandthread, Idaho fescue, Sandberg bluegrass, and prairie junegrass. With complete protection from grazing and fire, the site will become dominated by big sagebrush. The cool season grasses are protected by the sagebrush canopy, but this protection makes them unavailable for grazing. Big sagebrush is long-lived and will persist for a long period. Production on this state ranges from 900 to 2400 pounds, depending on climatic conditions. This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community. Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased. Transitions or pathways leading to other plant communities are as follows: • Brush management, followed by prescribed grazing, will return this plant community to at or near the Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community. • Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

Figure 6. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 4 Western Wheatgrass/Cheatgrass Plant Community

Community 4.1 Western Wheatgrass/Cheatgrass Plant Community

This plant community is created when the Mixed Sagebrush/Grass Vegetation State or the Heavy Sagebrush Vegetation State is subjected to fire or brush control, followed by improper grazing management. Rhizomatous wheatgrasses are the main perennial grass. Cheatgrass has increased, severely decreasing the production of desirable cool-season grasses. Annual production ranges from 800 to 1500 pounds, depending on climatic conditions. This plant community is relatively stable with the rhizomatous wheatgrasses being somewhat resistant

to overgrazing and the cheatgrass effectively competing against the establishment of perennial cool-season grasses. An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community. Transitions or pathways leading to other plant communities are as follows: • Moderate continuous season-long grazing will eventually return this plant community to the Mixed Sagebrush/Grass Plant Community. • Frequent and severe grazing during the growing season of cool season grasses will change this state to the Blue grama sod Plant Community. • Frequent and severe yearlong grazing will convert this plant community to Blue grama, Plains Pricklypear, Bare Ground Plant Community. • Long-term, prescribed grazing will eventually return this plant community to at or near the Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community.

Figure 7. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 5 Blue Grama Sod Plant Community

Community 5.1 Blue Grama Sod Plant Community

This plant community is the result of frequent and severe grazing during the growing season of the cool-season mid-grasses. A dense sod of blue grama dominates it. Pricklypear cactus can become dense enough so that livestock cannot graze forage growing within the cactus clumps. When compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. All cool-season mid-grasses and forbs have been greatly reduced. Plant diversity is extremely low. The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 450 lbs./acre in unfavorable years to about 750 lbs./acre in above average years. This sod bound plant community is very resistant to water infiltration. While this sod protects the site itself, off-site areas are affected by excessive runoff that can cause gully erosion. This sod is very resistant to change and may require a grazing land mechanical treatment, such as chiseling, to return the cool-season grass component. Transitions or pathways leading to other plant communities are as follows: • Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing, will return this plant community to near Historic Climax Plant Community condition. • Grazing land mechanical treatment, followed by moderate continuous season-long grazing, will convert this plant community to the Western Wheatgrass/Cheatgrass Plant Community. • Frequent and severe yearlong grazing will eventually convert this state to the Blue Grama, Plains Pricklypear, Bare Ground Plant Community.

Figure 8. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 6 Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community

Community 6.1 Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community

This plant community is often the result of invasion of prairie dogs. Prairie dogs are persistent once they become established. Large variations in prairie dog population occur due to occurrences such as outbreaks of plague. Even when prairie dog populations are reduced, they tend to recover rapidly. Perennial plants are decreased. Cheatgrass, annual weeds, and bare ground are increased. Plains pricklypear may have increased, rendering much of the forage unusable by livestock. Annual production ranges from 400 to 1000 pounds. This state is unhealthy and subject to increased erosion. Runoff is high on this state due to the sod nature of blue grama and bare ground. Transitions or pathways leading to other plant communities are as follows: • Long-term prescribed grazing will convert this plant community initially to the Blue Grama Sod Plant Community, when this state is dominated by blue

grama sod at the time of treatment. • Long-term prescribed grazing will convert this plant community to the Western Wheatgrass /Cheatgrass Plant Community, when this state has large amounts of cheatgrass, annual weeds, and bare ground at the time of treatment. Control of plains pricklypear cactus may be necessary.

Figure 9. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

State 7 Go-back Land Plant Community

Community 7.1 Go-back Land Plant Community

This plant community occurs on land that has been cropped annually in the past and then abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of red threeawn, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrass. Forage production is low since grasses such as red threeawn and cheatgrass are not used efficiently by livestock. Annual production ranges from 800 to 1500 pounds. The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low. Transitions or pathways leading to other plant communities are as follows: • Prescribed grazing may be used to increase desirable native cool-season grass production. It is usually difficult to return to near Historic Climax Plant Community condition in a timely manner because of past soil loss. • Grazing land mechanical treatment (i.e., chiseling) may improve forage production where significant rhizomatous wheatgrass is present to respond. Where there is a lack of perennial grasses, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. They do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded. In some cases, the single species or certain groups of species (e.g., wheatgrasses) may be more vulnerable to infestation by associated insects and/or diseases (e.g., black grass bugs).

Figure 10. Plant community growth curve (percent production by month). WY1301, 15-19NP Upland sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	45	35	10	0	5	0	0	0

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				247–616	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	247–616	–
2				247–616	
	spike fescue	LEK12	<i>Leucopoa kingii</i>	247–616	–
3				247–616	
	green needlegrass	NAVI4	<i>Nassella viridula</i>	247–616	–
4				247–493	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	247–493	–
5				123–247	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	123–247	–

6				123–247	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	123–247	–
7				123–247	
	Cusick's bluegrass	POCU3	<i>Poa cusickii</i>	123–247	–
8				123–247	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	123–247	–
9				123–370	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–123	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–123	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–123	–
	nodding brome	BRAN	<i>Bromus anomalus</i>	0–123	–
	Pumpelly's brome	BRINP5	<i>Bromus inermis</i> ssp. <i>pumpellianus</i> var. <i>pumpellianus</i>	0–123	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	0–123	–
	needleleaf sedge	CADU6	<i>Carex duriuscula</i>	0–123	–
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	0–123	–
	plains reedgrass	CAMO	<i>Calamagrostis montanensis</i>	0–123	–
	onespike danthonia	DAUN	<i>Danthonia unispicata</i>	0–123	–
	Montana wheatgrass	ELAL7	<i>Elymus albicans</i>	0–123	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–123	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–123	–
	spike trisetum	TRSP2	<i>Trisetum spicatum</i>	0–123	–
Forb					
10				123–370	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–123	–
	yarrow	ACHIL	<i>Achillea</i>	0–123	–
	rosy pussytoes	ANRO2	<i>Antennaria rosea</i>	0–123	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	0–123	–
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	0–123	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–123	–
	field chickweed	CEAR4	<i>Cerastium arvense</i>	0–123	–
	prairie clover	DALEA	<i>Dalea</i>	0–123	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–123	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–123	–
	aster	EUCEP2	<i>Eucephalus</i>	0–123	–
	hairy false goldenaster	HEVI4	<i>Heterotheca villosa</i>	0–123	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–123	–
	lupine	LUPIN	<i>Lupinus</i>	0–123	–
	bluebells	MERTE	<i>Mertensia</i>	0–123	–
	silverleaf Indian breadroot	PEAR6	<i>Pediomelum argophyllum</i>	0–123	–
	beardtongue	PENST	<i>Penstemon</i>	0–123	–
	phlox	PHLOX	<i>Phlox</i>	0–123	–

	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0-123	-
	American vetch	VIAM	<i>Vicia americana</i>	0-123	-
	deathcamas	ZIGAD	<i>Zigadenus</i>	0-123	-
Shrub/Vine					
11				0-123	
	big sagebrush	ARTR2	<i>Artemisia tridentata</i>	0-123	-
12				0-49	
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0-49	-
13				0-123	
	silver sagebrush	ARCA13	<i>Artemisia cana</i>	0-123	-
14				0-123	
	Woods' rose	ROWOW	<i>Rosa woodsii var. woodsii</i>	0-123	-
15				0-123	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	0-123	-

Animal community

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community (HCPC): 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.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on 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.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Western Wheatgrass/Cheatgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Blue Grama Sod and Go-back Land Plant Communities: 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 Western Wheatgrass/Cheatgrass Plant Community is limiting. Generally, these are not target plant communities for wildlife habitat management.

Blue Grama, Plains Pricklypear, Bare Ground Plant Community: Benefits to other wildlife are largely due to the subterranean structure created by the prairie dogs, not the sparse vegetation found on this plant community.

Introduced Pasture: These communities are highly variable depending on the species planted. Refer to Forage

Suitability Groups for more information.

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 Carrying Capacity*

(lb./ac) (AUM/ac)

Rhizomatous WG, Needleandthread, Blue Grama 1500-3000 .6

Heavy Sagebrush 900-2400 .35

Mixed Sagebrush/Grass 900-2500 .5

Western Wheatgrass/Cheatgrass 800-1500 .35

Blue grama, Plains Pricklypear, Bare ground 400-1000 .25

Blue grama sod 450-750 .20

Go-back Land 800-1500 .35

* - 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, with localized areas in hydrologic group D. Infiltration ranges from moderately slow to moderate. 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

Inventory Data References (narrative)

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Inventory Data References

Data Source Number of Records Sample Period State County

SCS-RANGE-417 1971-1994 WY

Ocular estimates 5 1990-1999 WY

Contributors

G. Mitchell

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	04/01/2005
Approved by	E. Bainter
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 15-25% occurring in small areas throughout site

5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

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 75% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.

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

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. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderate.

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.

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 stature grasses/grasslikes > Forbs

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

14. **Average percent litter cover (%) and depth (in):** Average litter cover is 30-40% with depths of 0.25 to 1.0 inches

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2200 lbs/ac

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: Blue grama, Big sagebrush, Prickly Pear, Cheatgrass, 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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