

Ecological site R053BY007ND

Sands

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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.

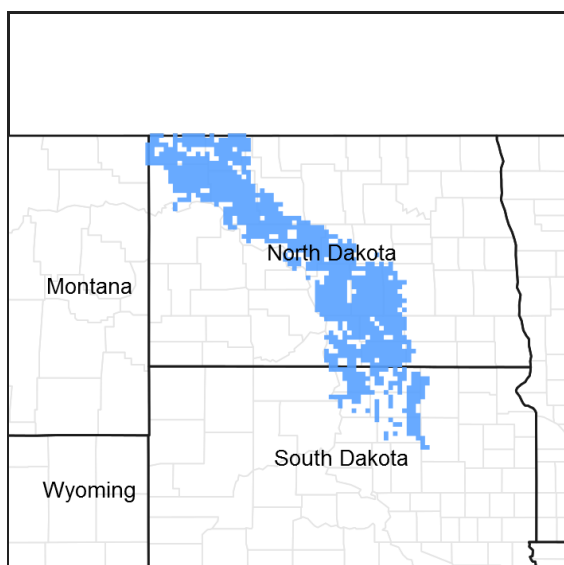


Figure 1. Mapped extent

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.

Classification relationships

Level IV Ecoregions of the Conterminous United States: 42a – Missouri Coteau; 42b – Collapsed Glacial Outwash; 42c – Missouri Coteau Slope; 42d – Northern Missouri Coteau; 42f – Southern Missouri Coteau Slope; 42g – Ponca Plains; and 42h – Southern River Breaks.

Associated sites

R053BY008ND	Sandy
R053BY009ND	Shallow Loamy

Similar sites

R053BY008ND	Sandy [Does not receive additional moisture. Found on dry uplands upslope from Loamy Overflow sites, down slope from Shallow Loamy sites. Similar landscape position as Loamy, Sands, Clayey sites; will ribbon up to 1 inches. Indicator species are prairie sandreed with western wheatgrass and green needlegrass intermixed. This site has less sand bluestem, needleandthread and sedges, more blue grama, green needlegrass and western wheatgrass, slightly less production, similar landscape position.]
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R053BY014ND	Choppy Sands [Deep entisol found on knobs and ridges of level to choppy sand blown plains; will not ribbon, found upslope from Sands sites; won't ribbon. Indicator species: Sand bluestem, prairie sandreed and needleandthread evenly mixed, some Canada wildrye, penstemon, lemon scurfpea western ragweed, yucca, silky prairie clover and leadplant. This site has far less production, thin "A" horizon, no mollic epipedon, more needleandthread, choppy landscape.]
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Calamovilfa longifolia</i> (2) <i>Hesperostipa comata</i> ssp. <i>comata</i>

Physiographic features

This site typically occurs on nearly level to moderately steep uplands.

Table 2. Representative physiographic features

Landforms	(1) Dune (2) Till plain (3) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	488–610 m
Slope	0–25%
Water table depth	203 cm
Aspect	Aspect is not a significant factor

Climatic features

MLRA 53B is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are characteristic. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains. The air masses move unobstructed across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 15 to 20 inches per year. The normal average annual temperature is about 41° F. January is the coldest month with average temperatures ranging from about 4° F (Powers Lake, ND) to about 10° F (Pollock, SD). July is the warmest month with temperatures averaging from about 67° F (Powers Lake, ND) to about 72° F (Pollock, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 62° F. This large annual range attests to the continental nature of this MLRA's climate. Winds average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of native cool-season plants begins in late March and continues to early to mid July. Native warm-season plants begin growth in mid May and continue to the end of August. Green up of cool-season plants can occur in September and October when adequate soil moisture is present.

Table 3. Representative climatic features

Frost-free period (average)	135 days
Freeze-free period (average)	156 days
Precipitation total (average)	508 mm

Influencing water features

No significant water features influence this site.

Soil features

These are deep to very deep, well to excessively drained, coarse textured soils. Saturated hydraulic conductivity is rapid to very rapid and available water capacity is moderate to very low. Salinity and sodicity are none. Soils on this site are highly susceptible to wind erosion. This site is on nearly level to steep outwash plains, terraces and till plains. Slope ranges from 0 to 25 percent. This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous. The soil surface is stable and intact.

These soils are susceptible to water and wind erosion. Loss of the soil surface layer can result in a shift in species composition and/or production.

Major soil series correlated to this ecological site can be found in Section II of the Natural Resources Conservation Service Field Office Technical Guide or the following web sites:

<http://www.nrcs.usda.gov/technical/efotg/>

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand (2) Loamy sand
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained
Permeability class	Rapid to very rapid
Soil depth	203 cm
Surface fragment cover <=3"	0–15%
Surface fragment cover >3"	0–1%
Available water capacity (0-101.6cm)	10.16–12.7 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

This site developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to climatic conditions and/or management actions. Due to the nature of the soils, the site is considered moderately resilient. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can readily return to the Historic Climax Plant Community (HCPC).

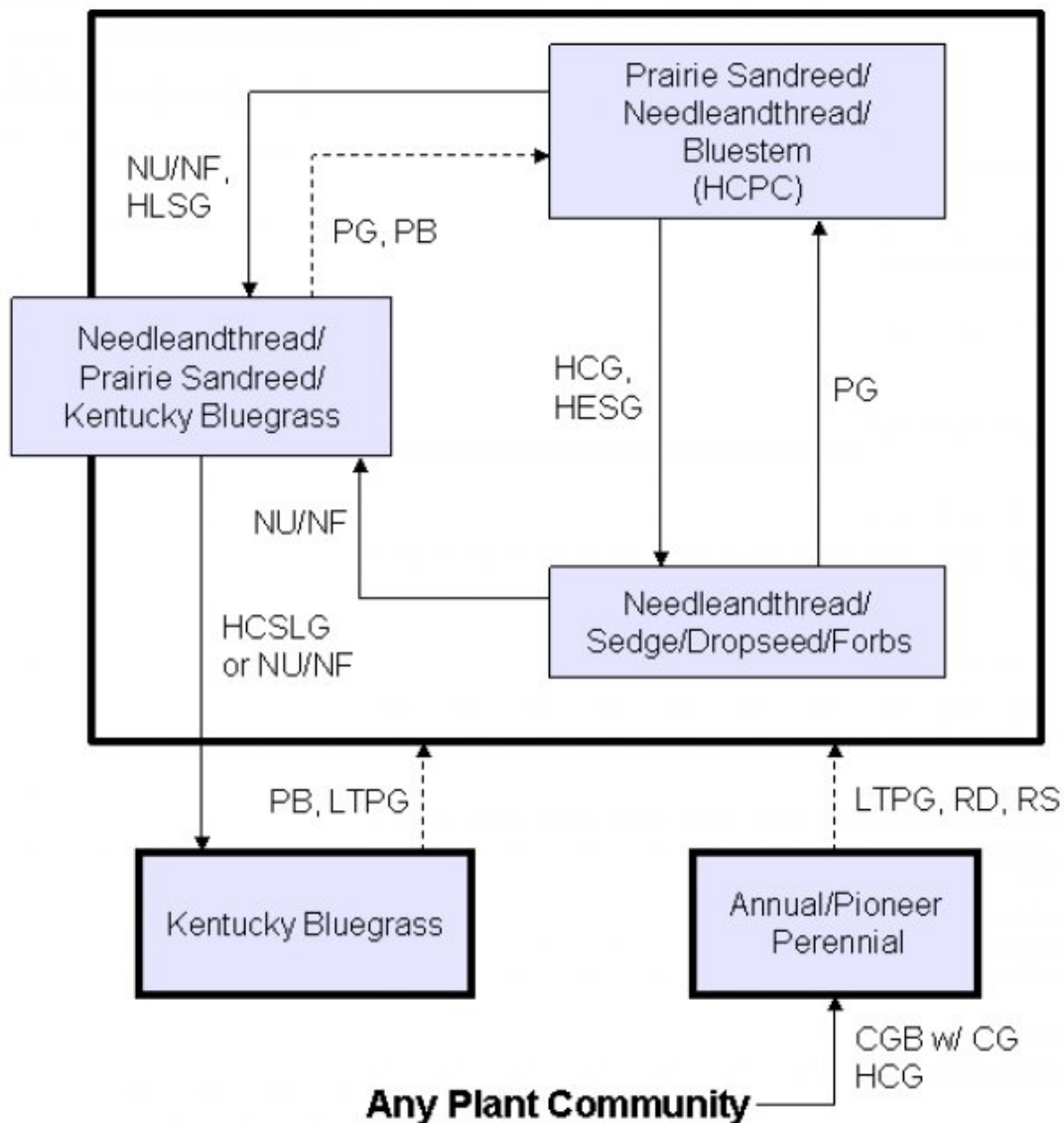
The plant community upon which interpretations are primarily based is the Historic Climax Plant Community. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been considered. Subclimax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

Heavy continuous grazing or continuous seasonal grazing, without adequate recovery opportunities following each grazing event during the growing season, will initially cause needleandthread, blue grama and threadleaf sedge to increase. Species such as sand bluestem and prairie sandreed decrease in frequency and production. In time, heavy continuous grazing will likely cause blue grama and threadleaf sedge to dominate and other pioneer perennials and annuals to increase. In this case, runoff will increase and infiltration will decrease. Soil erosion will be minimal.

This site if heavily disturbed through improper grazing, wildfire, excessive defoliation or any type of physical disturbance can lead to serious erosion problems (blowout) on these fragile soils. Extended periods of non-use and/or lack of fire will result in a plant community having high litter levels, which favors an increase in Kentucky bluegrass and/or smooth brome grass. In time, shrubs such as yucca and cactus will likely become a major feature on this site.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

State and transition model



CGB w/ CG – Cropped go-back with continuous grazing; **CSG** – Continuous seasonal grazing; **HCG** – Heavy continuous grazing; **HCPC** – Historical Climax Plant Community; **HCSLG** – Heavy continuous season-long grazing; **HESG** – Heavy early seasonal grazing; **HLSG** – Heavy late seasonal grazing; **LTPG** – Long-term prescribed grazing; **NU/NF** – Extended period of non-use & no fire; **PB** – Prescribed burning, followed by prescribed grazing; **PG** – Prescribed grazing; **RD** – Removal of disturbance; **RS** – Range seeding with prescribed grazing.

Community 1.1
Prairie Sandreed/Needleandthread/Bluestem

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This community evolved with grazing by large herbivores and occasional prairie fire. It is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for proper utilization, changes in season of use and adequate recovery periods following each grazing event. The potential vegetation is about 77% grasses or grass-like plants, 15% forbs, and 8% shrubs. The plant community is dominated by prairie sandreed, sand bluestem and needleandthread. Other grasses and grass-like plants occurring include little bluestem, blue grama, western wheatgrass, threadleaf and sun sedge. Significant forbs include penstemon, green sagewort, scurfpea and spiderwort. Leadplant, rose and fringed sagewort are the principal shrubs. This plant community is well adapted to the Northern Great Plains climatic conditions. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community in terms of soil stability, watershed function and biologic integrity.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1608	2382	3133
Forb	135	280	448
Shrub/Vine	50	140	230
Total	1793	2802	3811

Figure 5. Plant community growth curve (percent production by month).
ND5304, Missouri Coteau, warm-season dominant, cool-season sub-
dominant.. Warm-season dominant, cool-season sub-dominant..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	1	5	20	38	25	8	3	0	0	0

State 2
Needleandthread/Prairie Sandreed/Kentucky Bluegrass

Community 2.1
Needleandthread/Prairie Sandreed/Kentucky Bluegrass

This plant community develops after an extended period of 10 or more years of non-use by herbivores and exclusion of fire. A similar plant community may develop with heavy late seasonal grazing (every year at the same time of year), except the litter levels will not be as high. Non-native grasses, such as Kentucky bluegrass, crested wheatgrass, and smooth brome grass tend to invade and may dominate this plant community. Other grasses present may include sand bluestem, prairie sandreed, little bluestem, western wheatgrass, and prairie junegrass. The common forbs include green sagewort, goldenrod, western wallflower, western ragweed and sweetclover. Fringed sagewort and prairie rose are the principal shrubs. Litter buildup reduces plant vigor and density, and native seedling recruitment declines. Due to a lack of tiller stimulation and sunlight, native bunchgrasses typically develop dead centers and native rhizomatous grasses are limited to small colonies. This plant community is dispersed throughout the pasture, encircling spot grazed areas, and areas distant from water sources. This is a typical pattern found in properly stocked pastures grazed season-long. This plant community is resistant to change without prescribed grazing or fire. The combination of both grazing and fire is most effective in moving this plant community towards the HCPC. Soil erosion is low. Runoff is similar to the HCPC. Once this plant community is reached, time and external resources will be needed to see any immediate recovery in diversity.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1480	2170	2858
Shrub/Vine	45	148	252
Forb	45	148	252
Total	1570	2466	3362

Figure 7. Plant community growth curve (percent production by month).
ND5302, Missouri Coteau, cool-season dominant, warm-season sub-dominant.. Cool-season dominant, warm-season sub-dominant..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	7	23	42	15	5	4	1	0	0

State 3

Needleandthread/Sedge/Dropseed/Forbs

Community 3.1

Needleandthread/Sedge/Dropseed/Forbs

This plant community is the result of long-term, heavy continuous grazing and/or heavy early seasonal grazing. Sand bluestem has been removed and prairie sandreed has been greatly reduced. Threadleaf sedge, blue grama and needleandthread have increased and are the dominant species. Other grasses include western wheatgrass, red threeawn, sand dropseed, and prairie junegrass. Forbs present include western ragweed, green sagewort, hairy goldaster, cudweed sagewort, scarlet globemallow and sweet clover. Fringed sagewort and cactus have also increased. Annual production, and consequently litter amounts, has been reduced substantially. Nutrient cycle, water cycle and energy flow are becoming impaired. This plant community is at risk of losing all tall warm season grasses. Wind scoured areas may exist where cover has been reduced or eliminated.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	387	823	1480
Forb	45	126	207
Shrub/Vine	17	61	106
Total	449	1010	1793

Figure 9. Plant community growth curve (percent production by month).
ND5302, Missouri Coteau, cool-season dominant, warm-season sub-dominant.. Cool-season dominant, warm-season sub-dominant..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	7	23	42	15	5	4	1	0	0

State 4

Kentucky Bluegrass

Community 4.1

Kentucky Bluegrass

This plant community developed from continued heavy continuous season-long grazing without adequate recovery periods between grazing events or from continued non-use and no fire for extended periods of time. Kentucky bluegrass will tend to dominate this plant community; however, other non-native species such as smooth bromegrass and crested wheatgrass may also become prevalent. Sand bluestem and prairie sandreed are absent

or nearly so, and other grasses and grass-likes present include sand dropseed, red threeawn, needleandthread, prairie junegrass and sun sedge. Forbs commonly found in this plant community include green sagewort, scurfpea, and sweetclover. When this plant community is reached through extended periods of non-use and no fire, litter buildup reduces native plant vigor and density severely, and native seedling recruitment is rare. Due to a lack of tiller stimulation and sunlight, native bunchgrasses typically develop dead centers and native rhizomatous grasses are limited to small colonies. This plant community can be dispersed throughout the pasture, encircling spot grazed areas, and areas distant from water sources. This is a sometimes found in properly stocked pastures grazed season-long.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1003	1551	2090
Forb	84	179	280
Shrub/Vine	34	63	95
Total	1121	1793	2465

Figure 11. Plant community growth curve (percent production by month).
ND5301, Missouri Coteau, cool-season dominant.. Cool-season dominant..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	8	24	45	10	3	5	2	0	0

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Tall & Mid Warm-Season			560–1037	
	prairie sandreed	CALO	<i>Calamovilfa longifolia</i>	420–841	–
	sand bluestem	ANHA	<i>Andropogon hallii</i>	140–420	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	28–280	–
2	Needlegrass			140–420	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	140–420	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	28–140	–
3	Other Native Grasses			140–420	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	56–140	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–140	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0–140	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–84	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	28–84	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0–56	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	28–56	–
	Scribner's rosette grass	DIOLS	<i>Dichanthelium oligosanthes var. scribnerianum</i>	0–28	–
4	Grass-Likes			140–280	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	84–196	–
	sun sedge	CAINH2	<i>Carex inops ssp. heliophila</i>	28–84	–
	Grass-like (not a true	2GL	<i>Grass-like (not a true grass)</i>	28–56	–

	grass)				
Forb					
6	Forbs			140–420	
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	28–112	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	28–84	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	28–84	–
	sunflower	HELIA3	<i>Helianthus</i>	28–84	–
	goldenrod	SOLID	<i>Solidago</i>	28–84	–
	hairy false goldenaster	HEVI4	<i>Heterotheca villosa</i>	28–56	–
	blazing star	LIATR	<i>Liatris</i>	0–56	–
	rush skeletonplant	LYJU	<i>Lygodesmia juncea</i>	28–56	–
	beardtongue	PENST	<i>Penstemon</i>	28–56	–
	scurfpea	PSORA2	<i>Psoralegium</i>	28–56	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	28–56	–
	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	28–56	–
	prairie clover	DALEA	<i>Dalea</i>	28–56	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	28–56	–
	sanddune wallflower	ERCAC	<i>Erysimum capitatum</i> var. <i>capitatum</i>	28–56	–
	wavyleaf thistle	CIUN	<i>Cirsium undulatum</i>	0–28	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–28	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–28	–
	large Indian breadroot	PEES	<i>Pediomelum esculentum</i>	0–28	–
	Nuttall's sensitive-briar	MINU6	<i>Mimosa nuttallii</i>	0–28	–
	longbract spiderwort	TRBR	<i>Tradescantia bracteata</i>	0–28	–
Shrub/Vine					
7	Shrubs			56–224	
	leadplant	AMCA6	<i>Amorpha canescens</i>	28–112	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	28–84	–
	rose	ROSA5	<i>Rosa</i>	28–56	–
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	28–56	–
	spiny star	ESVIV	<i>Escobaria vivipara</i> var. <i>vivipara</i>	0–28	–
	dwarf false indigo	AMNA	<i>Amorpha nana</i>	0–28	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–28	–

Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Tall & Mid Warm-Season			247–493	
	prairie sandreed	CALO	<i>Calamovilfa longifolia</i>	247–493	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	25–123	–
	sand bluestem	ANHA	<i>Andropogon hallii</i>	0–123	–
2	Needlegrass			247–493	

	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	247–493	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	0–74	–
3	Other Native Grasses			123–247	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–123	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–123	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	25–123	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	25–99	–
	Scribner's rosette grass	DIOLS	<i>Dichanthelium oligosanthes</i> var. <i>scribnerianum</i>	25–74	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	25–74	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–49	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0–25	–
4	Grass-Likes			123–247	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	74–247	–
	sun sedge	CAINH2	<i>Carex inops</i> ssp. <i>heliophila</i>	25–123	–
	Grass-like (not a true grass)	2GL	<i>Grass-like (not a true grass)</i>	0–74	–
5	Non-Native Grasses			123–493	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	123–370	–
	smooth brome	BRIN2	<i>Bromus inermis</i>	49–247	–
	cheatgrass	BRTE	<i>Bromus tectorum</i>	0–123	–
	crested wheatgrass	AGCR	<i>Agropyron cristatum</i>	0–123	–
Forb					
6	Forbs			49–247	
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	25–123	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	25–123	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	25–123	–
	sunflower	HELIA3	<i>Helianthus</i>	25–123	–
	sweetclover	MELIL	<i>Melilotus</i>	0–123	–
	scurfpea	PSORA2	<i>Psoralegium</i>	25–74	–
	blazing star	LIATR	<i>Liatris</i>	25–74	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–74	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–74	–
	goldenrod	SOLID	<i>Solidago</i>	25–74	–
	sanddune wallflower	ERCAC	<i>Erysimum capitatum</i> var. <i>capitatum</i>	0–49	–
	prairie clover	DALEA	<i>Dalea</i>	25–49	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	25–49	–
	beardtongue	PENST	<i>Penstemon</i>	0–25	–
	rush skeletonplant	LYJU	<i>Lygodesmia juncea</i>	0–25	–
	hairy false goldenaster	HEVI4	<i>Heterotheca villosa</i>	0–25	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–25	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–25	–
	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	0–25	–
	purple-headed fleabane	CHUM	<i>Chrysopsis cordulata</i>	0–25	–

	wavyleaf thistle	CION	<i>Cirsium undulatum</i>	0–25	–
Shrub/Vine					
7	Shrubs			49–247	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	25–123	–
	rose	ROSA5	<i>Rosa</i>	25–123	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	25–99	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–49	–
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–25	–
	spiny star	ESVIV	<i>Escobaria vivipara</i> var. <i>vivipara</i>	0–25	–

Table 11. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Tall & Mid Warm-Season			0–50	
	prairie sandreed	CALO	<i>Calamovilfa longifolia</i>	0–50	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–30	–
2	Needlegrass			50–252	
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	50–252	–
3	Other Native Grasses			50–202	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	20–151	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–50	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	10–50	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–50	–
	Scribner's rosette grass	DIOLS	<i>Dichanthelium oligosanthes</i> var. <i>scribnerianum</i>	10–50	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–30	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–20	–
4	Grass-Likes			50–151	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	50–151	–
	sun sedge	CAINH2	<i>Carex inops</i> ssp. <i>heliophila</i>	10–71	–
	Grass-like (not a true grass)	2GL	<i>Grass-like (not a true grass)</i>	0–50	–
5	Non-Native Grasses			0–50	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	0–50	–
	smooth brome	BRIN2	<i>Bromus inermis</i>	0–30	–
	cheatgrass	BRTE	<i>Bromus tectorum</i>	0–30	–
Forb					
6	Forbs			50–202	
	sweetclover	MELIL	<i>Melilotus</i>	0–101	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	20–101	–
	sunflower	HELIA3	<i>Helianthus</i>	10–81	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	20–81	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	10–50	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–50	–
	Forb, perennial	2EP	<i>Forb, perennial</i>	0–50	–

	Grass, perennial	Symbol	Grass, perennial	0-30	-
	goldenrod	SOLID	<i>Solidago</i>	10-40	-
	scurfpea	PSORA2	<i>Psoralegium</i>	10-40	-
	blazing star	LIATR	<i>Liatris</i>	10-30	-
	prairie clover	DALEA	<i>Dalea</i>	0-20	-
	sanddune wallflower	ERCAC	<i>Erysimum capitatum var. capitatum</i>	0-20	-
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	10-20	-
	rush skeletonplant	LYJU	<i>Lygodesmia juncea</i>	0-10	-
	wavyleaf thistle	CIUN	<i>Cirsium undulatum</i>	0-10	-
Shrub/Vine					
7	Shrubs			20-101	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	20-101	-
	rose	ROSA5	<i>Rosa</i>	10-81	-
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	10-40	-
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0-20	-
	spiny star	ESVIV	<i>Escobaria vivipara var. vivipara</i>	0-10	-

Table 12. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Tall & Mid Warm-Season			0-36	
	prairie sandreed	CALO	<i>Calamovilfa longifolia</i>	0-36	-
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0-18	-
2	Needlegrass			18-143	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	18-143	-
3	Other Native Grasses			36-179	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0-90	-
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	18-90	-
	Scribner's rosette grass	DIOLS	<i>Dichanthelium oligosanthos var. scribnerianum</i>	0-54	-
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	18-54	-
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-54	-
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0-54	-
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0-36	-
4	Grass-Likes			0-90	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	0-90	-
	sun sedge	CAINH2	<i>Carex inops ssp. heliophila</i>	0-54	-
	Grass-like (not a true grass)	2GL	<i>Grass-like (not a true grass)</i>	0-36	-
5	Non-Native Grasses			538-986	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	269-807	-
	smooth brome	BRIN2	<i>Bromus inermis</i>	90-538	-
	cheatgrass	BRTE	<i>Bromus tectorum</i>	0-179	-
	crested wheatgrass	AGCR	<i>Agropyron cristatum</i>	0-179	-

7	Shrubs			36–90	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	18–90	–
	rose	ROSA5	<i>Rosa</i>	18–54	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	0–36	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–36	–
Forb					
6	Forbs			90–269	
	sweetclover	MELIL	<i>Melilotus</i>	0–179	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–90	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–90	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	18–90	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	18–90	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	18–90	–
	sunflower	HELIA3	<i>Helianthus</i>	18–90	–
	scurfpea	PSORA2	<i>Psoraleidium</i>	18–54	–
	goldenrod	SOLID	<i>Solidago</i>	18–54	–
	sanddune wallflower	ERCAC	<i>Erysimum capitatum var. capitatum</i>	0–36	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	18–36	–
	blazing star	LIATR	<i>Liatris</i>	18–36	–
	prairie clover	DALEA	<i>Dalea</i>	0–36	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–18	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–18	–
	wavyleaf thistle	CIUN	<i>Cirsium undulatum</i>	0–18	–

Animal community

Wildlife Interpretations:
Under development.

Grazing Interpretations:

This site is well adapted to managed grazing by domestic livestock. The predominance of herbaceous plants across all plant community phases best lends these sites to grazing by cattle but other domestic grazers with differing diet preferences may also be a consideration depending upon management objectives. Often, the current plant community does not entirely match any particular plant community (as described in the ecological site description). Because of this, a resource inventory is necessary to document plant composition and production. Proper interpretation of this inventory data will permit the establishment of a safe, initial stocking rate for the type and class of animals and level of grazing management. More accurate stocking rate estimates should eventually be calculated using actual stocking rate information and monitoring data.

Hydrological functions

Water is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic groups A and B. Infiltration varies from very rapid to rapid and runoff potential varies from negligible to low 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 exception would be where short grasses form a dense 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 Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

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

Seed harvest of native plant species can provide additional income on this site.

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. All descriptions were peer reviewed and/or field-tested by various private, state and federal agency specialists. Those involved in developing this site description include: Stan Boltz, NRCS Range Management Specialist; Michael D. Brand, State Land Dept., Director Surface Management; David Dewald, NRCS State Biologist; Paul Drayton, NRCS District Conservationist; Jody Forman, NRCS Range Management Specialist; Dennis Froemke, NRCS Range Management Specialist; Jeff Printz, NRCS State Range Management Specialist; Josh Saunders, NRCS Range Management Specialist; Kevin Sedivec, Extension Rangeland Management Specialist; Darrell Vanderbusch, NRCS Resource Soil Scientist; and Lee Voigt, NRCS Range Management Specialist.

Other references

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Contributors

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Approval

Suzanne Mayne-Kinney, 1/11/2024

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.

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Date	01/17/2012
Approved by	Suzanne Mayne-Kinney
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None.

2. **Presence of water flow patterns:** None.

3. **Number and height of erosional pedestals or terracettes:** None.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10 to 15%.

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

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

7. **Amount of litter movement (describe size and distance expected to travel):** None.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil aggregate stability ratings should typically be greater than 5. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.

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

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool- and warm-season grasses) with fine and coarse roots positively influences infiltration.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.

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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: Mid and tall warm-season grasses >

Sub-dominant: Mid, cool-season grasses > forbs

Other: Grass-likes > short, warm-season grasses > shrubs > short cool-season grasses

Additional: Due to differing root structure and distribution, Kentucky bluegrass and smooth brome grass do not fit into reference plant community F/S groups.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** None.
-

14. **Average percent litter cover (%) and depth (in):**
-

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Representative value = 2500 lbs/ac air dry with a range of 1600 to 3400 lbs./ac air dry depending upon growing conditions.
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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:** State and local noxious weeds, Kentucky bluegrass, smooth brome grass.
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17. **Perennial plant reproductive capability:** All species exhibit high vigor relative to climatic conditions. Do not rate based solely on seed production. Perennial grasses should have vigorous rhizomes or tillers.
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