

*Saskatchewan Rangeland Ecosystems*  
*Publication 11*

# Communities on the Badlands Ecosite

Version 2

A project of the Saskatchewan Prairie Conservation Action Plan



Jeff Thorpe  
Saskatchewan Research Council  
2014 (revised)

Canada



## NOTES

- This publication describes native rangeland communities found on the Badlands Ecosite in the Dry Mixed Grassland and Mixed Grassland regions of Saskatchewan. Dry Mixed Grassland and Mixed Grassland were combined because data were insufficient for separate classifications. No classification was possible for the Aspen Parkland because of insufficient data.
- More detailed discussion of Ecoregions and Ecosites can be found in *Publication 1: Ecoregions and Ecosites*.
- The Badlands Ecosite is highly variable. While a few communities have been described based on available data, many other variations in species composition may be found in the field.
- Badlands landscapes are a mosaic of unvegetated and vegetated areas. The proportions of these areas must be used to estimate overall recommended stocking rates.

**PHOTO CREDITS:** Front cover – Killdeer Badlands; Page 6 – Big Muddy Badlands. (All photos by Bob Godwin).

### SUGGESTED CITATION

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**OBTAINING PUBLICATIONS:** *Saskatchewan Rangeland Ecosystems* publications are available on the Prairie Conservation Action Plan website ([http://www.pcap-sk.org/?s=9.resources\\_literature](http://www.pcap-sk.org/?s=9.resources_literature)).



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**COMMUNITY SUMMARY AND STATE-AND-TRANSITION DIAGRAM**  
**Mixed Grassland and Dry Mixed Grassland: Badlands Ecosite**

**Grasslands:**

**not saline**

**somewhat saline**

MG-BD-A  
**Northern Wheat-grass –  
Western Wheat-grass –  
Pasture Sage**  
reference community

MG-BD-B  
**Western Wheat-grass**  
reference community

heavy grazing ↓↑ reduced grazing

heavy grazing ↓↑ reduced grazing

grassland altered by grazing impact  
(not yet described)

grassland altered by grazing impact  
(not yet described)

**Shrub – grasslands:**

[rubber rabbit-brush / grasses]  
(not yet described)

**Prostrate shrublands:**

[creeping juniper]  
(not yet described)

**Unvegetated areas:**

MG-BD-C  
**Bare Shale Community**

## COMMUNITY DESCRIPTIONS

MG-BD-A

### Northern Wheat-grass - Western Wheat-grass - Pasture Sage

Mixed Grassland and Dry Mixed Grassland: Badlands Ecosite

**GENERAL DESCRIPTION:** Mixed prairie dominated by midgrasses, with significant amounts of shortgrasses and lesser amounts of half-shrubs and forbs. Grassland on the better vegetated areas within Badlands landscapes. Comparable to communities on the Clay Ecosite (e.g. MG-CY-B). Calculation of stocking rates requires estimation of the proportion of the area that is well vegetated.

#### STRUCTURE

herbaceous cover (n=14)	28% (20 – 39)	- midgrasses	approx. 15%
clubmoss cover (n=14)	10% (0 – 23)	- shortgrasses	approx. 5%
litter cover (n=14)	21% (11 – 35)	- half-shrubs	approx. 4%
bare soil (n=14)	34% (23 – 41)	- forbs	approx. 3%

#### SPECIES COMPOSITION (% biomass, n=16)

<b>Major short shrubs</b>		<b>Major forbs and half-shrubs</b>	
silver sagebrush ( <i>Artemisia cana</i> )	1% (0 - 3)	pasture sage ( <i>Artemisia frigida</i> )	12% (5 - 23)
<b>Major graminoids</b>		scarlet mallow ( <i>Sphaeralcea coccinea</i> )	3% (0 - 8)
northern wheat-grass ( <i>Elymus lanceolatus</i> )	27% (3 - 52)	Nuttall's atriplex ( <i>Atriplex gardneri</i> )	2% (0 - 7)
western wheat-grass ( <i>Pascopyrum smithii</i> )	20% (0 - 40)	American vetch ( <i>Vicia americana</i> )	2% (0 - 5)
june grass ( <i>Koeleria macrantha</i> )	7% (0 - 21)	Colorado rubberweed ( <i>Hymenoxys richardsonii</i> )	2% (0 - 5)
sedge ( <i>Carex spp.</i> )	7% (0 - 16)	broomweed ( <i>Gutierrezia sarothrae</i> )	1% (0 - 3)
Sandberg's blue-grass ( <i>Poa secunda</i> )	6% (0 - 14)	winter fat ( <i>Krascheninnikovia lanata</i> )	1% (0 - 2)
blue grama ( <i>Bouteloua gracilis</i> )	4% (0 - 11)	woolly yarrow ( <i>Achillea millefolium</i> )	1% (0 - 3)
needle-and-thread ( <i>Hesperostipa comata</i> )	1% (0 - 4)	rabbitbrush ( <i>Ericameria nauseosa</i> )	1% (0 - 0)
<b>Minor graminoids</b>	1%		
<b>Minor forbs and half-shrubs</b>	3%		

#### SIMILARITY TO REFERENCE COMMUNITY

unknown

#### RECOMMENDED STOCKING RATE

Dry Mixed Grassland	0.38 AUM/ha	0.15 AUM/ac
Mixed Grassland	0.55 AUM/ha	0.22 AUM/ac

**MG-BD-B**  
**Western Wheat-grass**  
**Mixed Grassland and Dry Mixed Grassland: Badlands Ecosite**

**GENERAL DESCRIPTION:** Mixed prairie dominated by midgrasses, with shortgrasses subdominant, and lesser amounts of half-shrubs and forbs. Grassland on better vegetated but somewhat saline areas within Badlands landscapes. Probably comparable to the Saline Upland Ecosite. Calculation of stocking rates requires estimation of the proportion of the area that is well vegetated.

**STRUCTURE**

herbaceous cover (n=4)	22% (16 – 31)	- midgrasses	approx. 10%
clubmoss cover (n=4)	8% (3 – 11)	- shortgrasses	approx. 5%
litter cover (n=4)	18% (16 – 20)	- half-shrubs	approx. 3%
bare soil (n=4)	48% (39 – 58)	- forbs	approx. 3%

**SPECIES COMPOSITION (% biomass, n=9)**

<p><b>Major graminoids</b></p> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>western wheat-grass (<i>Pascopyrum smithii</i>)</td><td style="text-align: right;">23% (0 - 44)</td></tr> <tr><td>northern wheat-grass (<i>Elymus lanceolatus</i>)</td><td style="text-align: right;">8% (0 - 19)</td></tr> <tr><td>Sandberg's blue-grass (<i>Poa secunda</i>)</td><td style="text-align: right;">7% (0 - 20)</td></tr> <tr><td>salt grass (<i>Distichlis spicata</i> var. <i>stricta</i>)</td><td style="text-align: right;">6% (0 - 20)</td></tr> <tr><td>blue grama (<i>Bouteloua gracilis</i>)</td><td style="text-align: right;">5% (0 - 10)</td></tr> <tr><td>needle-and-thread (<i>Hesperostipa comata</i>)</td><td style="text-align: right;">5% (0 - 21)</td></tr> <tr><td>sedge (<i>Carex</i> spp.)</td><td style="text-align: right;">5% (0 - 13)</td></tr> <tr><td>june grass (<i>Koeleria macrantha</i>)</td><td style="text-align: right;">4% (0 - 11)</td></tr> <tr><td>Nuttall's alkali grass (<i>Puccinellia nuttalliana</i>)</td><td style="text-align: right;">3% (0 - 6)</td></tr> <tr><td>rough hair grass (<i>Agrostis scabra</i>)</td><td style="text-align: right;">3% (0 - 10)</td></tr> <tr><td>Canby's blue-grass (<i>Poa secunda</i>)</td><td style="text-align: right;">3% (0 - 5)</td></tr> <tr><td>alkali cord grass (<i>Spartina gracilis</i>)</td><td style="text-align: right;">1% (0 - 1)</td></tr> <tr><td>foxtail barley (<i>Hordeum jubatum</i>)</td><td style="text-align: right;">1% (0 - 1)</td></tr> <tr><td>blue-grass (<i>Poa</i> spp.)</td><td style="text-align: right;">1% (0 - 1)</td></tr> </tbody> </table>	western wheat-grass ( <i>Pascopyrum smithii</i> )	23% (0 - 44)	northern wheat-grass ( <i>Elymus lanceolatus</i> )	8% (0 - 19)	Sandberg's blue-grass ( <i>Poa secunda</i> )	7% (0 - 20)	salt grass ( <i>Distichlis spicata</i> var. <i>stricta</i> )	6% (0 - 20)	blue grama ( <i>Bouteloua gracilis</i> )	5% (0 - 10)	needle-and-thread ( <i>Hesperostipa comata</i> )	5% (0 - 21)	sedge ( <i>Carex</i> spp.)	5% (0 - 13)	june grass ( <i>Koeleria macrantha</i> )	4% (0 - 11)	Nuttall's alkali grass ( <i>Puccinellia nuttalliana</i> )	3% (0 - 6)	rough hair grass ( <i>Agrostis scabra</i> )	3% (0 - 10)	Canby's blue-grass ( <i>Poa secunda</i> )	3% (0 - 5)	alkali cord grass ( <i>Spartina gracilis</i> )	1% (0 - 1)	foxtail barley ( <i>Hordeum jubatum</i> )	1% (0 - 1)	blue-grass ( <i>Poa</i> spp.)	1% (0 - 1)	<table style="width: 100%; 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<b>SIMILARITY TO REF. COMM.</b>	unknown																																																								

**RECOMMENDED STOCKING RATE**

Dry Mixed Grassland	0.26 AUM/ha	0.10 AUM/ac
Mixed Grassland	0.37 AUM/ha	0.15 AUM/ac

MG-BD-C

**Bare Shale Community**

**Mixed Grassland and Dry Mixed Grassland: Badlands Ecosite**

**GENERAL DESCRIPTION:** Nearly bare bedrock shales, with variable but generally low plant cover consisting of a few specialized species. These areas have almost no grazing capacity, and should not be included in stocking rate calculations.

**STRUCTURE**

herbaceous cover (n=3)                      2% (1 – 3)

**SPECIES COMPOSITION (% foliar cover, n=4)**

**Major species**

long-leaved sage ( <i>Artemisia longifolia</i> )	2% (0 - 3)
rillscale ( <i>Atriplex suckleyi</i> )	1% (0 - 2)
povertyweed ( <i>Iva axillaris</i> )	1% (0 - 2)
foxtail barley ( <i>Hordeum jubatum</i> )	1% (0 - 2)

**SIMILARITY TO REFERENCE COMMUNITY**

unknown

**RECOMMENDED STOCKING RATE**

none

