Saskatchewan Rangeland Ecosystems
Publication 10

Communities on the Thin Ecosite

Version 2

A project of the Saskatchewan Prairie Conservation Action Plan

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NOTES

- This publication describes native rangeland communities found on the Thin Ecosite in the Dry Mixed Grassland, Mixed Grassland, and Aspen Parkland regions of Saskatchewan.
- Classifications are tentative, because of the complexity of the Thin Ecosite. More research is needed to characterize the communities on this Ecosite in relation to aspect and slope position.
- In each region, a reference community, typical of ungrazed to lightly grazed areas, and a series of other communities related to increasing grazing impact, are described.
- In assessing rangeland health, this information can be used to pick the community that best fits the area being assessed. The degree of alteration of that community from the reference community can be used to answer Question 1 of the Saskatchewan Rangeland Health Assessment. This may require interpretation, because the area being assessed may not exactly match any of the described types.
- Another approach is to calculate the percent similarity of the area being assessed to the reference community, as a measure of the degree of alteration due to grazing impact. This measure is similar in both concept and result to the traditional range condition scale.
- State-and-transition diagrams are used to show that there may also be transitions related to factors such as exotic invasion or fire regime. These transitions should not be confused with grazing impacts.
- More detailed discussion of the above points can be found in *Publication 1: Ecoregions and Ecosites*.

PHOTO CREDITS: Front cover – South Saskatchewan River coulee; Page 9 – Upper Frenchman River coulees; Page 12 – aspen parkland on Thin Ecosite. (All photos by Bob Godwin).

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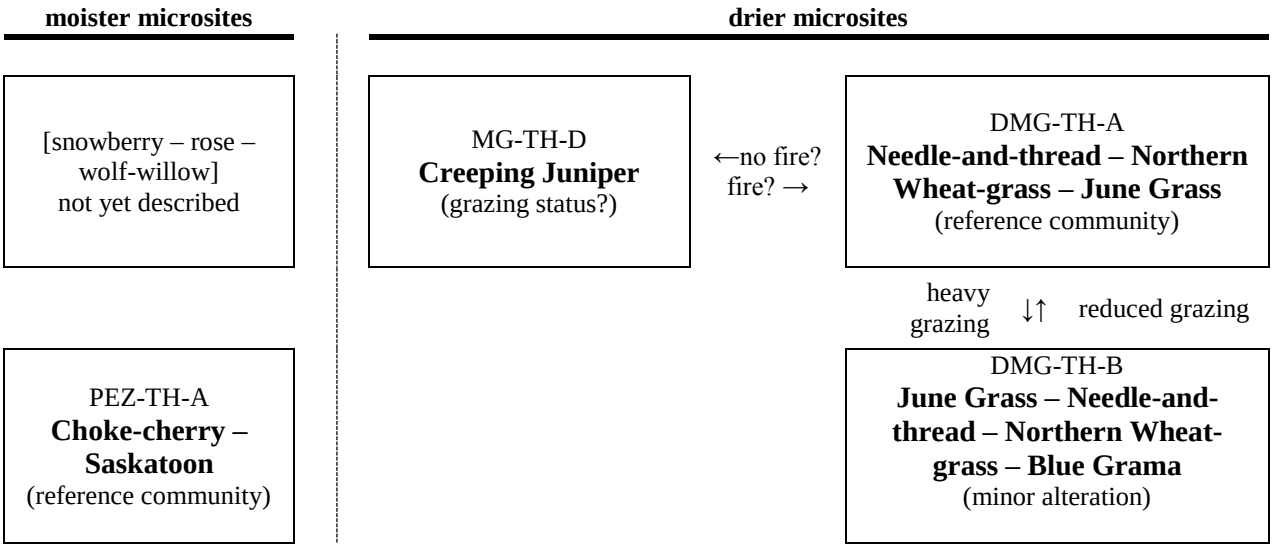
OBTAINING PUBLICATIONS: *Saskatchewan Rangeland Ecosystems* publications are available on the Prairie Conservation Action Plan website (http://www.pcap-sk.org/?s=9.resources_literature).

STATE-AND-TRANSITION DIAGRAMS

Dry Mixed Grassland: Thin Ecosite



Mixed Grassland: Thin Ecosite

moister microsites

[snowberry – rose – wolf-willow]
not yet described

[shrubby cinquefoil]
Wood Mountain area; not yet described.

PEZ-TH-A
Choke-cherry – Saskatoon
(reference community)

[aspen woodland]
not yet described

[green ash woodland]
not yet described

drier microsites

MG-TH-D
Creeping Juniper
(grazing status?)

←no fire?

fire? →

MG-TH-A
Western Porcupine-grass – Northern Wheat-grass – Green Needle-grass
(reference community)

heavy grazing ↓↑ reduced grazing

MG-TH-B
Northern Wheat-grass – Needle-and-thread – Blue Grama – Western Wheat-grass
(moderate alteration)

heavy grazing ↓↑ reduced grazing

MG-TH-C
Needle-and-thread – Blue Grama – June Grass
(significant alteration)

Aspen Parkland: Thin Ecosite

moist microsites

[snowberry – rose – wolf-willow]
not yet described

PEZ-TH-A
Choke-cherry – Saskatoon
(reference community)

[aspen woodland]
not yet described

[green ash woodland]
not yet described

[bur oak woodland]
Qu'appelle Valley;
not yet described

drier microsites

[plains rough fescue – western porcupine-grass – green needle-grass?]
(reference community?)
(not yet described)

heavy grazing ↓↑ reduced grazing

MG-TH-E
Creeping Juniper
(grazing status?)

←no fire?

fire? →

AP-TH-A
Needle-and-thread – Northern Wheat-grass – Western Porcupine-grass
(moderate alteration?)

heavy grazing ↓↑ reduced grazing

AP-TH-B
Needle-and-thread – Blue Grama
(significant alteration?)

COMMUNITY DESCRIPTIONS

DMG-TH-A, DMG-TH-B

Needle-and-thread – Northern Wheat-grass – June Grass

Dry Mixed Grassland: Thin Ecosite

GENERAL DESCRIPTION: Grassland communities on the Thin Ecosite in the Dry Mixed Grassland. DMG-TH-A is interpreted to be the **reference community**, while DMG-TH-B shows **minor alteration** resulting from grazing impact. However, this interpretation may apply only to the most productive parts of the Thin Ecosite. DMG-TH-B may be a more appropriate reference community for steeper or warmer (south-facing) slopes, while the most extreme sites may have short-grass communities of blue grama, sedges, and plains muhly. The Thin Ecosite is complex, and more research is needed on the variation in potential composition with slope steepness and aspect.

	DMG-TH-A **Needle-and-thread – Northern Wheat-grass – June Grass**	DMG-TH-B **June Grass – Needle-and-thread – Northern Wheat-grass – Blue Grama**
STRUCTURE		
short shrub cover (n=3)	2% (1 - 3)	
cactus cover (n=3)	1% (0 - 1)	
herbaceous cover (n=7, n=3)	42% (13 - 66)	60% (54 - 67)
clubmoss cover (n=7, n=3)	30% (0 - 54)	47% (39 - 54)
moss cover (n=14, n=14)	8% (0 - 26)	17% (0 - 31)
lichen cover (n=3)	1% (0 - 2)	
litter cover (n=4, n=3)	39% (28 - 48)	24% (17 - 30)
bare soil (n=11, n=14)	3% (0 - 9)	4% (0 - 11)
SPECIES COMPOSITION (% biomass)	n=15	n=19
Major short shrubs		
silver sagebrush (*Artemisia cana*)	3% (0 - 4)	1% (0 - 3)
rose (*Rosa* spp.)	1% (0 - 0)	
Major graminoids		
needle-and-thread (*Hesperostipa comata*)	21% (3 - 33)	17% (5 - 25)
northern wheat-grass (*Elymus lanceolatus*)	18% (9 - 26)	12% (2 - 22)
June grass (*Koeleria macrantha*)	11% (4 - 18)	17% (8 - 29)
blue grama (*Bouteloua gracilis*)	5% (2 - 9)	11% (4 - 21)
sedge (*Carex* spp.)	5% (1 - 7)	6% (2 - 9)
western wheat-grass (*Pascopyrum smithii*)	4% (0 - 8)	4% (0 - 9)
plains reed-grass (*Calamagrostis montanensis*)	3% (0 - 7)	3% (0 - 6)
Sandberg's blue-grass (*Poa secunda ssp. secunda*)	3% (0 - 12)	2% (0 - 6)
green needle-grass (*Nassella viridula*)	2% (0 - 6)	1% (0 - 2)

	DMG-TH-A	DMG-TH-B
plains muhly (*Muhlenbergia cuspidata*)	1% (0 - 4)	1% (0 - 5)
slender wheat-grass (*Elymus trachycaulus ssp. trachycaulus*)	1% (0 - 0)	
blue-grass (Poa spp.)		1% (0 - 3)
Major forbs and half-shrubs		
pasture sage (*Artemisia frigida*)	5% (1 - 9)	9% (3 - 15)
scarlet mallow (*Sphaeralcea coccinea*)	2% (0 - 6)	2% (0 - 5)
American vetch (*Vicia americana*)	1% (0 - 4)	1% (0 - 4)
common broomweed (*Gutierrezia sarothrae*)	1% (0 - 4)	1% (0 - 3)
moss phlox (*Phlox hoodii*)	1% (0 - 3)	1% (0 - 5)
locoweed (*Oxytropis* spp.)	1% (0 - 3)	1% (0 - 2)
bastard toadflax (*Comandra umbellata ssp. pallida*)	1% (0 - 2)	1% (0 - 3)
fleabane (*Erigeron* spp.)	1% (0 - 2)	1% (0 - 0)
poverty-weed (*Iva axillaris*)	1% (0 - 2)	
golden bean (*Thermopsis rhombifolia*)	1% (0 - 2)	
dotted blazing-star (*Liatris punctata*)		1% (0 - 2)
hairy golden-aster (*Heterotheca villosa*)		1% (0 - 1)
pussytoes (*Antennaria* spp.)		1% (0 - 1)
three-flowered avens (*Geum triflorum*)		1% (0 - 2)
Major cactus		
plains prickly-pear (*Opuntia polyacantha*)	1% (0 - 1)	
Minor graminoids	2%	
Minor forbs and half-shrubs	6%	4%
SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	77%
RECOMMENDED STOCKING RATE	0.36 AUM/ha 0.15 AUM/ac	0.36 AUM/ha 0.15 AUM/ac

MG-TH-A, MG-TH-B, MG-C

Western Porcupine-grass – Northern Wheat-grass – Green Needle-grass

Mixed Grassland: Thin Ecosite

GENERAL DESCRIPTION: Grassland communities on the Thin Ecosite in the Mixed Grassland Ecoregion. MG-TH-A is interpreted to be the **reference community**, while MG-TH-B and MG-TH-C show **moderate and significant alteration**, respectively**,** resulting from grazing impact. However, this interpretation may apply only to the most productive parts of the Thin Ecosite. On steeper or warmer (south-facing) slopes, MG-TH-B or MG-TH-C, with higher proportions of needle-and-thread and blue grama, may be more appropriate reference communities. On the most extreme slopes, short-grass communities of blue grama, sedges, and plains muhly may represent the potential vegetation. The Thin Ecosite is complex, and more research is needed on the variation in potential composition in relation to slope steepness and aspect.

	MG-TH-A **Western Porcupine-grass – Northern Wheat-grass – Green Needle-grass**	MG-TH-B **Northern Wheat-grass – Needle-and-thread – Blue Grama – Western Wheat-grass**	MG-TH-C **Needle-and-thread – Blue Grama – June Grass**
STRUCTURE – no information			
SPECIES COMPOSITION (% biomass)			
	n=13	n=17	n=18
Major short shrubs			
prairie rose (*Rosa arkansana*)	1% (0 - 4)		
Major graminoids			
western porcupine-grass (*Hesperostipa curtiseta*)	34% (8 - 59)	1% (0 - 6)	2% (0 - 5)
northern wheat-grass (*Elymus lanceolatus*)	17% (5 - 30)	24% (13 - 35)	10% (0 - 26)
needle-and-thread (*Hesperostipa comata*)	2% (0 - 9)	22% (8 - 37)	19% (9 - 35)
blue grama (*Bouteloua gracilis*)	1% (0 - 0)	12% (0 - 32)	17% (0 - 37)
western wheat-grass (*Pascopyrum smithii*)	3% (0 - 13)	10% (0 - 24)	9% (0 - 22)
June grass (*Koeleria macrantha*)	4% (0 - 9)	7% (0 - 15)	13% (4 - 20)
green needle-grass (*Nassella viridula*)	7% (0 - 24)	1% (0 - 3)	2% (0 - 5)
sedge (*Carex* spp.)	4% (0 - 9)	4% (0 - 10)	5% (0 - 13)
Hooker's oat-grass (*Avenula hookeri*)	2% (0 - 5)		1% (0 - 2)
Sandberg's blue-grass (*Poa secunda ssp. secunda*)	1% (0 - 2)		1% (0 - 2)
plains rough fescue (*Festuca altaica ssp. hallii*)	3% (0 - 9)		
sand-grass (*Calamovilfa longifolia*)	2% (0 - 0)		
plains muhly (*Muhlenbergia cuspidata*)	1% (0 - 0)		
early blue-grass (*Poa cusickii*)	1% (0 - 5)		
blue-grass (*Poa* spp.)		2% (0 - 5)	1% (0 - 3)
plains reed-grass (*Calamagrostis montanensis*)		1% (0 - 5)	1% (0 - 0)
crested wheat-grass (*Agropyron cristatum*)			2% (0 - 7)

	MG-TH-A	MG-TH-B	MG-TH-C
Major forbs and half-shrubs			
pasture sage (*Artemisia frigida*)	3% (0 - 10)	6% (0 - 16)	10% (0 - 25)
anemone (*Anemone* spp.)	1% (0 - 0)		1% (0 - 0)
ascending purple milk-vetch (*Astragalus laxmannii*)	1% (0 - 2)		
pliant milk-vetch (*Astragalus flexuosus*)	1% (0 - 2)		
winterfat (*Krascheninnikovia lanata*)		1% (0 - 2)	
prairie sage (*Artemisia ludoviciana*)		1% (0 - 5)	3% (0 - 7)
sweet-clover (*Melilotus* spp.)			1% (0 - 3)
moss phlox (*Phlox hoodii*)			1% (0 - 0)

Minor graminoids	1%	1%	1%
Minor forbs and half-shrubs	8%	4%	4%

SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	42%	36%

RECOMMENDED STOCKING RATE	0.53 AUM/ha 0.21 AUM/ac	0.42 AUM/ha 0.17 AUM/ac	0.32 AUM/ha 0.13 AUM/ac

MG-TH-D

Creeping Juniper

Mixed Grassland: Thin Ecosite

GENERAL DESCRIPTION: Prostrate shrub type found mainly on cooler slope aspects on the Thin Ecosite. While the data used to describe this community were from the Mixed Grassland Ecoregion, juniper communities in the Dry Mixed Grassland and Aspen Parkland are probably similar. May replace grassland on certain microsites, or with prolonged absence of fire. The status of this community with respect to grazing impact is uncertain. Its productivity for livestock grazing ranges from zero in dense juniper stands to low in more open stands. However, juniper provides valuable winter browse for deer.

STRUCTURE

short shrub cover (n=9)	1% (0 - 1)	clubmoss cover (n=5)	4% (1 - 6)
prostrate shrub cover(n=9)	34% (19 - 43)	moss cover (n=8)	27% (3 - 53)
herbaceous cover (n=9)	10% (3 - 19)	lichen cover (n=7)	9% (2 - 19)

SPECIES COMPOSITION (% foliar cover, n=9)

Major prostrate shrubs	
creeping juniper (*Juniperus horizontalis*)	34% (19 - 43)
Major graminoids	
northern wheat-grass (*Elymus lanceolatus*)	3% (1 - 9)
thread-leaved sedge (*Carex filifolia*)	3% (1 - 4)
plains muhly (*Muhlenbergia cuspidata*)	1% (0 - 2)
sun-loving sedge (*Carex inops ssp. heliophila*)	1% (0 - 3)
june grass (*Koeleria macrantha*)	1% (0 - 1)
Hooker's oat-grass (*Avenula hookeri*)	1% (0 - 1)
Major forbs and half-shrubs	
crocus anemone (*Pulsatilla patens*)	1% (1 - 1)
three-flowered avens (*Geum triflorum*)	1% (0 - 1)
moss phlox (*Phlox hoodii*)	1% (1 - 1)
Minor short shrubs	1%
Minor graminoids	2%
Minor forbs and half-shrubs	6%

SIMILARITY TO REFERENCE COMMUNITY	unknown
RECOMMENDED STOCKING RATE	none to low

AP-TH-A, AP-TH-B

Needle-and-thread – Northern Wheat-grass – Western Porcupine-grass

Aspen Parkland: Thin Ecosite

GENERAL DESCRIPTION: Grassland communities on the Thin Ecosite in the Aspen Parkland Ecoregion. These communities probably do not represent reference composition for the more productive parts of the Thin Ecosite, which are likely to be dominated by plains rough fescue, western porcupine-grass and green needle-grass. AP-TH-A would show **moderate alteration**, and AP-TH-B **significant alteration**, from such a reference community. However, they could represent reference composition for the steeper and warmer (south-facing) portions of the Thin Ecosite. This ecosite is complex, and more research is needed on the variation in potential composition with slope steepness and aspect.

	AP-TH-A **Needle-and-thread – Northern Wheat-grass – Western Porcupine-grass**	AP-TH-B **Needle-and-thread – Blue Grama**
STRUCTURE		
tall shrub cover (n=9, n=10)	1% (0 - 1)	1% (0 - 5)
short shrub cover (n=9, n=10)	0% (0 - 1)	2% (0 - 5)
prostrate shrub cover (n=9, n=10)	2% (0 - 3)	
herbaceous cover (n=9, n=10)	37% (24 - 53)	37% (19 - 68)
bare soil (n=1)		5% (5 - 5)
SPECIES COMPOSITION (% foliar cover)	(n=9)	(n=10)
Major tall shrubs		
saskatoon (*Amelanchier alnifolia*)		1% (0 - 3)
Major short shrubs		
western snowberry (*Symphoricarpos occidentalis*)		1% (0 - 3)
prairie rose (*Rosa arkansana*)		1% (0 - 3)
wolf-willow (*Elaeagnus commutata*)		1% (0 - 3)
Major prostrate shrubs		
creeping juniper (*Juniperus horizontalis*)	2% (0 - 3)	
Major graminoids		
needle-and-thread (*Hesperostipa comata*)	10% (0 - 20)	6% (0 - 15)
northern wheat-grass (*Elymus lanceolatus*)	8% (0 - 20)	1% (0 - 3)
western porcupine-grass (*Hesperostipa curtiseta*)	7% (0 - 15)	1% (0 - 3)
sedge (*Carex* spp.)	2% (0 - 6)	4% (0 - 15)
green needle-grass (*Nassella viridula*)	2% (0 - 5)	3% (0 - 15)
sand grass (*Calamovilfa longifolia*)	2% (0 - 3)	1% (0 - 3)

	AP-TH-A	**AP-TH-B**
plains rough fescue (*Festuca altaica ssp. hallii*)	2% (0 - 3)	3% (0 - 3)
blue grama (*Bouteloua gracilis*)	1% (0 - 3)	5% (0 - 15)
Kentucky blue-grass (*Poa pratensis*)	1% (0 - 3)	1% (0 - 3)
June grass (*Koeleria macrantha*)	1% (0 - 3)	
plains muhly (*Muhlenbergia cuspidata*)		2% (0 - 4)
common timothy (*Phleum pratense*)		1% (0 - 1)

Major forbs and half-shrubs		
golden bean (*Thermopsis rhombifolia*)	1% (0 - 3)	2% (0 - 4)
prairie crocus (*Pulsatilla patens*)	1% (0 - 3)	
hairy wild-parsley (*Lomatium foeniculaceum*)		2% (0 - 4)
northern bedstraw (*Galium boreale*)		2% (0 - 4)
common yarrow (*Achillea millefolium*)		1% (0 - 1)

Minor short shrubs	1%	
Minor graminoids	1%	2%
Minor forbs and half-shrubs	1%	2%

SIMILARITY TO REFERENCE COMMUNITY	unknown	unknown

RECOMMENDED STOCKING RATE		
drier part of region	0.64 AUM/ha 0.26AUM/ac	0.48 AUM/ha 0.20AUM/ac
moister part of region	0.98 AUM/ha 0.40 AUM/ac	0.74 AUM/ha 0.30 AUM/ac

PEZ-TH-A

Choke-cherry - Saskatoon

Prairie Ecozone: Thin Ecosite

GENERAL DESCRIPTION: The most common tall shrub type on the Thin Ecosite. This community can occur on cool slope aspects anywhere in the Prairie Ecozone. Some stands are dominated by choke-cherry and some by saskatoon. High production of palatable browse, but low production of herbage.

STRUCTURE

tree cover (n=6)	0% (0 - 1)
tall shrub cover (n=6)	43% (31 - 62)
short shrub cover (n=6)	18% (1 - 35)

prostrate shrub cover (n=6)	1% (0 - 2)
herbaceous cover (n=6)	22% (9 - 40)
moss cover (n=3)	3% (0 - 7)

SPECIES COMPOSITION (% foliar cover, n=6)

Major trees	
trembling aspen (*Populus tremuloides*)	1% (0 - 3)

Major prostrate shrubs	
creeping juniper (*Juniperus horizontalis*)	1% (0 - 2)

Major tall shrubs	
choke-cherry (*Prunus virginiana*)	25% (8 - 51)
saskatoon (*Amelanchier alnifolia*)	16% (2 - 38)
red-osier dogwood (*Cornus sericea ssp. stolonifera*)	1% (0 - 2)
pin cherry (*Prunus pensylvanica*)	1% (0 - 2)

Major graminoids	
Kentucky blue-grass (*Poa pratensis*)	7% (0 - 20)
western porcupine-grass (*Hesperostipa curtiseta*)	3% (0 - 8)
plains muhly (*Muhlenbergia cuspidata*)	3% (0 - 8)
slender wheat-grass (*Elymus trachycaulus ssp. trachycaulus*)	1% (0 - 2)
awned wheat-grass (*Elymus trachycaulus ssp. subsecundus*)	1% (0 - 2)

Major short shrubs	
northern snowberry (*Symphoricarpos albus*)	6% (0 - 19)
western snowberry (*Symphoricarpos occidentalis*)	4% (0 - 9)
low juniper (*Juniperus communis*)	3% (0 - 9)
Wood's rose (*Rosa woodsii*)	2% (0 - 6)
northern gooseberry (*Ribes oxyacanthoides*)	2% (0 - 3)
Canada buffalo-berry (*Shepherdia canadensis*)	1% (0 - 2)
wolf-willow (*Elaeagnus commutata*)	1% (0 - 2)

Major forbs and half-shrubs	
western Canada violet (*Viola canadensis*)	2% (0 - 6)
northern bedstraw (*Galium boreale*)	1% (0 - 2)
star-flowered solomon's-seal (*Maianthemum stellatum*)	1% (0 - 2)
fairy bells (*Prosartes trachycarpum*)	1% (0 - 2)

Minor graminoids	2% (0 - 0)
Minor forbs and half-shrubs	4% (0 - 0)

SIMILARITY TO REFERENCE COMMUNITY	unknown

RECOMMENDED STOCKING RATE	unknown