

Saskatchewan Rangeland Ecosystems
Publication 13

Communities on Meadow and Marsh Ecosites



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NOTES

- This publication describes native grasslands and shrublands found on the Wet Meadow, Shallow Marsh, and Deep Marsh Ecosites in the Prairie Ecozone of Saskatchewan. Note that communities of Saline Wet Meadow, Saline Shallow Marsh and Saline Deep Marsh are shown in Publication 14.
- Several reference communities are shown for each ecosite. These probably reflect site-related variation (e.g. water depth, water permanence, slight salinity) at a finer scale than is captured by the ecosite classification.
- More detailed discussion of Ecoregions and Ecosites can be found in *Publication 1: Ecoregions and Ecosites*.

PHOTO CREDITS: Cover photo – Marsh complex in the Aspen Parkland (Jeff Thorpe); Page 7 – Wet Meadow with sedges and northern reed-grass in the Mixed Grassland (Jeff Thorpe); Page 11 - Wet Meadow with willows and sedges in the Aspen Parkland (Mae Elsinger); Page 14 – degraded Wet Meadow invaded by Canada thistle (Jeff Thorpe).

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)



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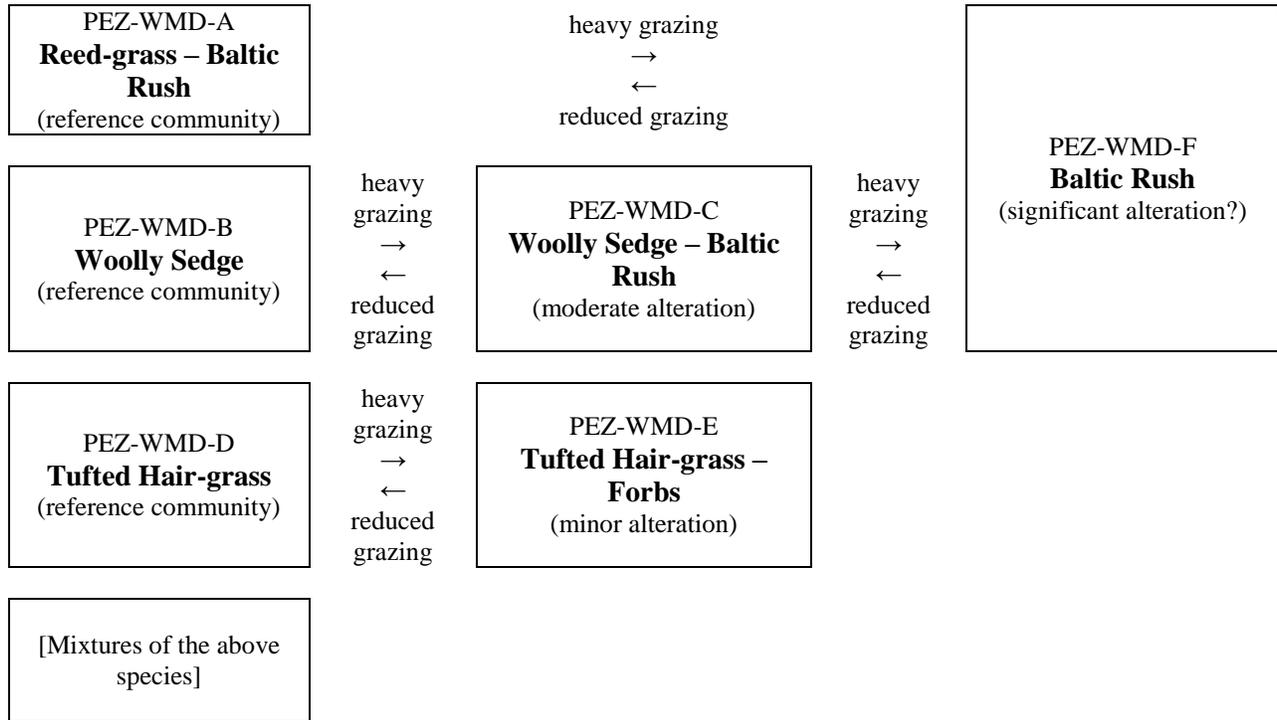
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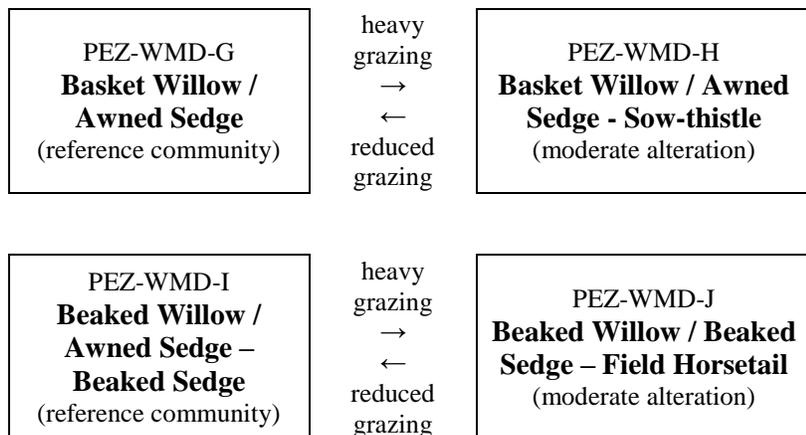
COMMUNITY SUMMARY AND STATE-AND-TRANSITION DIAGRAM

Wet Meadow Ecosite

Herbaceous communities:



Shrub communities:



Shallow Marsh Ecosite

Reference Communities

PEZ-SMH-A
Water Sedge – Beaked Sedge
(reference community)

PEZ-SMH-B
Awmed Sedge
(reference community)

PEZ-SMH-C
Creeping Spike-rush
(reference community)

PEZ-SMH-D
Spangletop
(reference community)

PEZ-SMH-E
Manna-grass
(reference community)

Disturbed Communities

PEZ-SMH-F
Reed Canary-grass
(grazing status?)

PEZ-SMH-G
Water Smartweed
(grazing status?)

Deep Marsh Ecosite

Reference Communities

PEZ-DMH-A
Cat-tail
(reference community)

PEZ-DMH-B
Hardstem and Softstem Bulrush
(reference community)

PEZ-DMH-D
Common Reed
(reference community)

Disturbed Communities

PEZ-DMH-C
Hardstem Bulrush – Foxtail Barley
(grazing status?)

?
→
←
?

PEZ-WMD-A

Reed-grass – Baltic Rush

Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: This community represents Wet Meadows dominated by either of the two subspecies of *Calamagrostis stricta*. It is interpreted to be a **reference community** for the Wet Meadow Ecosite, and can occur anywhere in the Prairie Ecozone. Stands with heavier grazing impact would show decreasing dominance of the reed-grasses and increases in fox-tail barley, Kentucky blue-grass, Canada thistle, and other weedy species.

While separate community types dominated by reed-grass, sedges, and tufted hair-grass are shown here, many wet meadows are dominated by mixtures of these species.

This description is derived from Table 58 in Thompson and Hansen (2001) and Table 50 in Thompson and Hansen (2003), which include some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids

Narrow reed-grass (<i>Calamagrostis stricta</i> ssp. <i>stricta</i>)	33% (0 - 98)
Northern reed-grass (<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>)	29% (0 - 90)
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	12% (0 - 60)
fowl blue-grass (<i>Poa palustris</i>)	6% (0 - 30)
fox-tail barley (<i>Hordeum jubatum</i>)	4% (0 - 20)
woolly sedge (<i>Carex pellita</i>)	3% (0 - 20)
western wheat-grass (<i>Pascopyrum smithii</i>)	2% (0 - 10)
Kentucky blue-grass (<i>Poa pratensis</i>)	2% (0 - 10)
tufted hair-grass (<i>Deschampsia cespitosa</i>)	1% (0 - 10)

Major forbs and half-shrubs

wild mint (<i>Mentha arvensis</i>)	4% (0 - 20)
stinging nettle (<i>Urtica dioica</i>)	3% (0 - 20)
silverweed (<i>Argentina anserina</i>)	2% (0 - 10)
sow-thistle (<i>Sonchus</i> spp.)	2% (0 - 10)
white sweet-clover (<i>Melilotus alba</i>)	2% (0 - 10)
Pennsylvania cinquefoil (<i>Potentilla pensylvanica</i>)	2% (0 - 10)
violet (<i>Viola</i> spp.)	1% (0 - 10)
Canada thistle (<i>Cirsium arvense</i>)	1% (0 - 3)

Minor graminoids

1%

Minor forbs and half-shrubs

4%

SIMILARITY TO REFERENCE COMMUNITY

reference community

RECOMMENDED STOCKING RATE

2.7 AUM/ha

(rates are for fully developed stands; should be discounted for drought years)

1.1 AUM/ac

PEZ-WMD-B, PEZ-WMD-C
Woolly Sedge
 Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: These communities represent Wet Meadows dominated by woolly sedge. They can occur anywhere in the Prairie Ecozone. PEZ-WMD-B is interpreted to be the **reference community**, while PEZ-WMD-C shows **moderate alteration** resulting from grazing impact. Stands with greater grazing impact would show decreasing dominance of sedges and increases in Kentucky blue-grass, quack grass, Canada thistle, and other weedy species.

While separate community types dominated by reed-grass, sedges, and tufted hair-grass are shown here, many wet meadows are dominated by mixtures of these species.

This description is derived from Tables 53 and 54 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

PEZ-WMD-B Woolly Sedge	PEZ-WMD-C Woolly Sedge – Baltic Rush
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STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids	PEZ-WMD-B	PEZ-WMD-C
woolly sedge (<i>Carex pellita</i>)	65% (10 - 98)	51% (10 - 98)
three-square bulrush (<i>Schoenoplectus pungens</i>)	3% (0 - 10)	4% (0 - 40)
creeping spike-rush (<i>Eleocharis palustris</i>)	6% (0 - 30)	
hairy-fruited sedge (<i>Carex lasiocarpa</i>)	4% (0 - 20)	
sweet grass (<i>Anthoxanthum hirtum</i>)	1% (0 - 3)	
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)		17% (0 - 80)
narrow reed-grass (<i>Calamagrostis stricta</i> ssp. <i>stricta</i>)		6% (0 - 50)
redtop (<i>Agrostis stolonifera</i>)		6% (0 - 40)
marsh reed-grass (<i>Calamagrostis canadensis</i>)		4% (0 - 40)
reed canary-grass (<i>Phalaris arundinacea</i>)		4% (0 - 30)
fowl blue-grass (<i>Poa palustris</i>)		4% (0 - 40)
Kentucky blue-grass (<i>Poa pratensis</i>)		3% (0 - 20)
beaked sedge (<i>Carex utriculata</i>)		2% (0 - 20)
Bebb's sedge (<i>Carex bebbii</i>)		1% (0 - 10)
tufted hair-grass (<i>Deschampsia cespitosa</i>)		1% (0 - 10)
quack grass (<i>Elymus repens</i>)		1% (0 - 10)
common timothy (<i>Phleum pratense</i>)		1% (0 - 10)

Major forbs and half-shrubs	PEZ-WMD-B	PEZ-WMD-C
fireweed (<i>Chamerion angustifolium</i>)	2% (0 - 10)	
water-hemlock (<i>Cicuta maculata</i>)		6% (0 - 40)
silverweed (<i>Argentina anserina</i>)		4% (0 - 40)
field horsetail (<i>Equisetum arvense</i>)		4% (0 - 40)
marsh cinquefoil (<i>Comarum palustre</i>)		3% (0 - 30)

	PEZ-WMD-B	PEZ-WMD-C
western aster (<i>Symphyotrichum ascendens</i>)		3% (0 - 30)
wild mint (<i>Mentha arvensis</i>)		2% (0 - 10)
Canada thistle (<i>Cirsium arvense</i>)		1% (0 - 3)
water smartweed (<i>Persicaria amphibia</i>)		1% (0 - 10)

SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	50%
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RECOMMENDED STOCKING RATE (for fully developed stands; should be discounted for drought years)	2.7 AUM/ha 1.1 AUM/ac	2.7 AUM/ha 1.1 AUM/ac
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PEZ-WMD-D, PEZ-WMD-E
Tufted Hair-Grass
 Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: These communities represent Wet Meadows dominated by tufted hair-grass. They can occur anywhere in the Prairie Ecozone. PEZ-WMD- is interpreted to be the **reference community**, while PEZ-WMD- shows **minor alteration** resulting from grazing impact. Stands with greater grazing impact would show decreasing dominance of hair-grass and increases in fox-tail barley, silverweed, and other weedy species.

While separate community types dominated by reed-grass, sedges, and tufted hair-grass are shown here, many wet meadows are dominated by mixtures of these species.

This description is derived from Tables 59 and 60 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

	PEZ-WMD-D Tufted Hair-grass	PEZ-WMD-E Tufted Hair-grass - Forbs
Major graminoids		
tufted hair-grass (<i>Deschampsia cespitosa</i>)	77% (60 - 90)	70% (30 - 90)
fox-tail barley (<i>Hordeum jubatum</i>)	3% (0 - 10)	4% (0 - 20)
inland salt grass (<i>Distichlis spicata</i> var. <i>stricta</i>)	1% (0 - 3)	1% (0 - 10)
slender wheat-grass (<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>)	1% (0 - 3)	1% (0 - 10)
creeping spike-rush (<i>Eleocharis palustris</i>)	3% (0 - 20)	
three-square bulrush (<i>Schoenoplectus pungens</i>)	3% (0 - 20)	
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	1% (0 - 3)	
rough hairgrass (<i>Agrostis scabra</i>)		4% (0 - 30)
fowl blue-grass (<i>Poa palustris</i>)		3% (0 - 10)
western wheat-grass (<i>Pascopyrum smithii</i>)		1% (0 - 10)
awned sedge (<i>Carex atherodes</i>)		1% (0 - 10)

Major forbs and half-shrubs		
red samphire (<i>Salicornia rubra</i>)	1% (0 - 3)	
silverweed (<i>Argentina anserina</i>)		5% (0 - 40)
bastard toadflax (<i>Comandra umbellata</i>)		5% (0 - 40)
western aster (<i>Symphyotrichum ascendens</i>)		5% (0 - 40)
chamisso's arnica (<i>Arnica chamissonis</i>)		4% (0 - 30)
northern ragwort (<i>Packera streptanthifolia</i>)		1% (0 - 10)
western sea-blite (<i>Suaeda calceoliformis</i>)		1% (0 - 10)

Minor graminoids		1%
Minor forbs and half-shrubs		3%

SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	75%
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RECOMMENDED STOCKING RATE (for fully developed stands; should be discounted for drought years)	2.7 AUM/ha 1.1 AUM/ac	2.7 AUM/ha 1.1 AUM/ac
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PEZ-WMD-F
Baltic Rush

Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: This community represents Wet Meadows dominated by Baltic rush. This community may develop by **significant alteration** of other communities such as PEZ-WMD-A or PEZ-WMD-B as a result of grazing impact. It may also occur on somewhat Saline Wet Meadows.

This description is derived from Table 66 in Thompson and Hansen (2001), which includes some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids

Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	84% (60 - 98)
fox-tail barley (<i>Hordeum jubatum</i>)	9% (0 - 60)
fowl blue-grass (<i>Poa palustris</i>)	2% (0 - 20)
Kentucky blue-grass (<i>Poa pratensis</i>)	1% (0 - 20)
marsh reed-grass (<i>Calamagrostis canadensis</i>)	1% (0 - 10)
Canada blue-grass (<i>Poa compressa</i>)	1% (0 - 10)
bluebunch wheat-grass (<i>Pseudoroegneria spicata</i>)	1% (0 - 10)

Major forbs and half-shrubs

rayless groundsel (<i>Packera indecora</i>)	3% (0 - 40)
cuckoo-flower (<i>Cardamine pratensis</i>)	1% (0 - 20)
glaucous willowherb (<i>Epilobium glaberrimum</i>)	1% (0 - 20)
wild mint (<i>Mentha arvensis</i>)	1% (0 - 20)
seaside arrow-grass (<i>Triglochin maritimum</i>)	1% (0 - 10)
perennial sow-thistle (<i>Sonchus arvensis</i>)	1% (0 - 11)
prickly lettuce (<i>Lactuca serriola</i>)	1% (0 - 10)

Minor graminoids

2%

Minor forbs and half-shrubs

2%

SIMILARITY TO REFERENCE COMMUNITY

unknown

RECOMMENDED STOCKING RATE

insufficient data

PEZ-WMD-G, PEZ-WMD-H
Basket Willow / Awned Sedge
 Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: These communities represent Wet Meadows dominated by basket willow and awned sedge. They can occur anywhere in the Prairie Ecozone. PEZ-WMD-G is interpreted to be the **reference community**, while PEZ-WMD-H shows **moderate alteration** resulting from grazing impact and exotic invasion.

While separate communities dominated by basket willow and beaked willow are shown here, many wet meadows are dominated by mixtures of willow species. Other shrubs such as shrubby cinquefoil (*Dasiphora fruticosa*) and swamp birch (*Betula pumila*) may also occur occasionally. The somewhat better-drained Basket Willow-Dogwood community is shown under the Subirrigated Ecosite.

This description is derived from Tables 32 and 33 in Thompson and Hansen (2001), which include some data from outside Saskatchewan. Recommended stocking rates are set at half of those in the herbaceous wet meadow communities.

STRUCTURE – no information

PEZ-WMD-G Basket Willow / Awned Sedge	PEZ-WMD-H Basket Willow / Awned Sedge - Sow-thistle
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SPECIES COMPOSITION (% canopy cover)

Major tall shrubs		
basket willow (<i>Salix petiolaris</i>)	96% (90 - 98)	81% (50 - 98)
red-osier dogwood (<i>Cornus sericea</i>)	1% (0 - 3)	6% (0 - 20)
beaked willow (<i>Salix bebbiana</i>)		1% (0 - 3)
plane-leaf willow (<i>Salix planifolia</i>)		1% (0 - 3)

Major short shrubs		
rose (<i>Rosa</i> spp.)		2% (0 - 10)
western snowberry (<i>Symphoricarpos occidentalis</i>)		1% (0 - 3)
northern gooseberry (<i>Ribes oxycanthoides</i>)		1% (0 - 3)
bog birch (<i>Betula glandulosa</i>)		1% (0 - 3)

Major graminoids		
awned sedge (<i>Carex atherodes</i>)	24% (3 - 60)	11% (0 - 40)
fowl blue-grass (<i>Poa palustris</i>)	3% (0 - 20)	2% (0 - 10)
smooth brome (<i>Bromus inermis</i>)		4% (0 - 20)
Kentucky blue-grass (<i>Poa pratensis</i>)		4% (0 - 20)
prairie sedge (<i>Carex prairea</i>)		4% (0 - 20)
redtop (<i>Agrostis stolonifera</i>)		3% (0 - 10)
beaked sedge (<i>Carex utriculata</i>)		3% (0 - 10)
alpine foxtail (<i>Alopecurus alpinus</i>)		2% (0 - 10)
water sedge (<i>Carex aquatilis</i>)		2% (0 - 10)
Rocky Mountain fescue (<i>Festuca saximontana</i>)		1% (0 - 3)
spangletop (<i>Scolochloa festucacea</i>)		1% (0 - 3)

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	PEZ-WMD-G	PEZ-WMD-H
Major forbs and half-shrubs		
perennial sow-thistle (<i>Sonchus arvensis</i>)	1% (0 - 3)	11% (0 - 40)
wild mint (<i>Mentha arvensis</i>)	1% (0 - 3)	1% (0 - 3)
common dandelion (<i>Taraxacum officinale</i>)		1% (0 - 3)
long-headed anemone (<i>Anemone cylindrica</i>)		4% (0 - 20)
yellow marsh-marigold (<i>Caltha palustris</i>)		2% (0 - 10)
aster (<i>Symphyotrichum</i> spp.)		2% (0 - 10)
cut-leaf avens (<i>Geum macrophyllum</i>)		2% (0 - 10)
common hound's-tongue (<i>Cynoglossum officinale</i>)		1% (0 - 3)
stemless raspberry (<i>Rubus arcticus</i>)		1% (0 - 3)
northern bedstraw (<i>Galium boreale</i>)		1% (0 - 3)
western dock (<i>Rumex occidentalis</i>)		1% (0 - 3)
silverweed (<i>Argentina anserina</i>)		3% (0 - 10)
Canada thistle (<i>Cirsium arvense</i>)		2% (0 - 3)
Minor graminoids	1%	
Minor forbs and half-shrubs	2%	3%
Minor moss		2%
SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	67%
RECOMMENDED STOCKING RATE (rates are for fully developed stands; should be discounted for drought years)	1.35 AUM/ha 0.55 AUM/ac	1.08 AUM/ha 0.44 AUM/ac



PEZ-WMD-I, PEZ-WMD-J
Beaked Willow / Awned Sedge
 Prairie Ecozone: Wet Meadow Ecosite

GENERAL DESCRIPTION: These communities represent Wet Meadows dominated by beaked willow and awned sedge. They can occur anywhere in the Prairie Ecozone. PEZ-WMD-I is interpreted to be the **reference community**, while PEZ-WMD-J shows **moderate alteration** resulting from grazing impact and exotic invasion.

While separate communities dominated by basket willow and beaked willow are shown here, many wet meadows are dominated by mixtures of willow species. Other shrubs such as shrubby cinquefoil (*Dasiphora fruticosa*) and swamp birch (*Betula pumila*) may also occur occasionally. The somewhat better-drained Beaked Willow-Dogwood community is shown under the Subirrigated Ecosite.

This description is derived from Tables 22 and 23 in Thompson and Hansen (2001), which include some data from outside Saskatchewan. Recommended stocking rates are set at half of those in the herbaceous wet meadow communities.

STRUCTURE - no information

PEZ-WMD-I Beaked Willow / Awned Sedge – Beaked Sedge	PEZ-WMD-J Beaked Willow / Beaked Sedge – Field Horsetail
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SPECIES COMPOSITION (% canopy cover)

Major tall shrubs		
beaked willow (<i>Salix bebbiana</i>)	53% (20 - 80)	49% (10 - 80)
basket willow (<i>Salix petiolaris</i>)	6% (0 - 30)	5% (0 - 20)
yellow willow (<i>Salix famelica</i>)	1% (0 - 3)	2% (0 - 10)
red-osier dogwood (<i>Cornus sericea</i>)	1% (0 - 3)	1% (0 - 3)
Drummond's willow (<i>Salix drummondiana</i>)	1% (0 - 3)	
myrtle-leaved willow (<i>Salix myrtillifolia</i>)	4% (0 - 20)	
plane-leaf willow (<i>Salix planifolia</i>)	1% (0 - 3)	
false mountain willow (<i>Salix pseudomonticola</i>)		1% (0 - 3)
autumn willow (<i>Salix serissima</i>)		2% (0 - 10)
Booth's willow (<i>Salix boothii</i>)		1% (0 - 10)

Major short shrubs		
western snowberry (<i>Symphoricarpos occidentalis</i>)	1% (0 - 3)	3% (0 - 20)
bog birch (<i>Betula glandulosa</i>)	1% (0 - 3)	1% (0 - 10)

Major graminoids		
awned sedge (<i>Carex atherodes</i>)	27% (0 - 80)	8% (0 - 40)
beaked sedge (<i>Carex utriculata</i>)	12% (0 - 60)	17% (0 - 60)
smooth brome (<i>Bromus inermis</i>)	7% (0 - 20)	3% (0 - 20)
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	3% (0 - 20)	8% (0 - 40)
Kentucky blue-grass (<i>Poa pratensis</i>)	1% (0 - 3)	1% (0 - 3)
marsh reed-grass (<i>Calamagrostis canadensis</i>)	3% (0 - 10)	
woolly sedge (<i>Carex pellita</i>)	1% (0 - 3)	1% (0 - 3)

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	PEZ-WMD-I	PEZ-WMD-J
water sedge (<i>Carex aquatilis</i>)	2% (0 - 10)	1% (0 - 10)
Norway sedge (<i>Carex media</i>)	2% (0 - 10)	
alpine foxtail (<i>Alopecurus alpinus</i>)	1% (0 - 3)	
fowl blue-grass (<i>Poa palustris</i>)		2% (0 - 10)
common timothy (<i>Phleum pratense</i>)		4% (0 - 20)
redtop (<i>Agrostis stolonifera</i>)		7% (0 - 20)
fowl manna-grass (<i>Glyceria striata</i>)		1% (0 - 10)
tall manna-grass (<i>Glyceria grandis</i>)		5% (0 - 40)
reed canary-grass (<i>Phalaris arundinacea</i>)		3% (0 - 20)
American slough grass (<i>Beckmannia syzigachne</i>)		3% (0 - 20)
field meadow-foxtail (<i>Alopecurus pratensis</i>)		1% (0 - 10)
narrow reed-grass (<i>Calamagrostis stricta</i> ssp. <i>stricta</i>)		1% (0 - 10)
slender wheat-grass (<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>)		1% (0 - 10)

Major forbs and half-shrubs		
Lyall's angelica (<i>Angelica arguta</i>)	1% (0 - 3)	7% (0 - 40)
field horsetail (<i>Equisetum arvense</i>)	9% (0 - 40)	13% (0 - 80)
Canada goldenrod (<i>Solidago canadensis</i>)	2% (0 - 10)	6% (0 - 40)
common dandelion (<i>Taraxacum officinale</i>)	1% (0 - 3)	2% (0 - 10)
wild mint (<i>Mentha arvensis</i>)	1% (0 - 3)	6% (0 - 40)
cut-leaf avens (<i>Geum macrophyllum</i>)	1% (0 - 3)	2% (0 - 10)
American vetch (<i>Vicia americana</i>)	1% (0 - 1)	1% (0 - 3)
arrow-leaved colt's-foot (<i>Petasites sagittatus</i>)	1% (0 - 3)	4% (0 - 20)
smooth blue aster (<i>Symphyotrichum laeve</i>)	2% (0 - 10)	
western meadow-rue (<i>Thalictrum occidentale</i>)	1% (0 - 3)	
tall lungwort (<i>Mertensia paniculata</i>)	1% (0 - 3)	
water smartweed (<i>Persicaria amphibia</i>)	3% (0 - 20)	
yellow avens (<i>Geum aleppicum</i>)	2% (0 - 10)	
star-flowered solomon's-seal (<i>Maianthemum stellatum</i>)	2% (0 - 10)	
swamp horsetail (<i>Equisetum fluviatile</i>)	2% (0 - 10)	
violet (<i>Viola</i> spp.)	1% (0 - 3)	
bishop's-cap (<i>Mitella nuda</i>)	1% (0 - 3)	
sow-thistle (<i>Sonchus</i> spp.)	1% (0 - 3)	
cow-parsnip (<i>Heracleum maximum</i>)		4% (0 - 20)
white clover (<i>Trifolium repens</i>)		1% (0 - 10)
tall buttercup (<i>Ranunculus acris</i>)		1% (0 - 10)
Richardson's geranium (<i>Geranium richardsonii</i>)		1% (0 - 3)
Canada thistle (<i>Cirsium arvense</i>)		1% (0 - 10)
western aster (<i>Symphyotrichum ascendens</i>)		3% (0 - 20)
water-hemlock (<i>Cicuta maculata</i>)		3% (0 - 20)
common monkey-flower (<i>Mimulus guttatus</i>)		3% (0 - 20)

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	PEZ-WMD-I	PEZ-WMD-J
kidney-leaved white violet (<i>Viola renifolia</i>)		3% (0 - 20)
fringed loosestrife (<i>Lysimachia ciliata</i>)		1% (0 - 3)
modest aster (<i>Canadanthus modestus</i>)		1% (0 - 10)
Minor trees		1%
Minor tall shrubs	1%	1%
Minor short shrubs		1%
Minor graminoids	1%	2%
Minor forbs and half-shrubs	3%	8%
SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	57%
RECOMMENDED STOCKING RATE (rates are for fully developed stands; should be discounted for drought years)	1.35 AUM/ha 0.55 AUM/ac	1.08 AUM/ha 0.44 AUM/ac



PEZ-SMH-A

Water Sedge – Beaked Sedge

Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents Shallow Marsh dominated by water sedge or beaked sedge. It is most common in the Aspen Parkland Ecoregion, but may also occur in the Mixed Grassland. Some stands are dominated by water sedge and some by beaked sedge. It is interpreted to be a **reference community** for this ecosite. Communities impacted by heavy grazing are expected to show decreasing dominance by sedges and increases in forbs.

STRUCTURE (n=12)

tall shrub cover	5% (0 - 15)
herbaceous cover	79% (48 - 93)

SPECIES COMPOSITION (% foliar cover, n=12)

Major tall shrubs	
willow (<i>Salix</i> spp.)	5% (0 - 14)

Major graminoids	
water sedge (<i>Carex aquatilis</i>)	36% (15 - 63)
beaked sedge (<i>Carex utriculata</i>)	22% (2 - 38)
common cat-tail (<i>Typha latifolia</i>)	7% (0 - 15)
reed-grass (<i>Calamagrostis</i> spp.)	2% (0 - 3)
soft-stem bulrush (<i>Schoenoplectus tabernaemontani</i>)	1% (0 - 0)
green sedge (<i>Carex viridula</i>)	1% (0 - 0)
creeping spike-rush (<i>Eleocharis palustris</i>)	1% (0 - 0)
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	1% (0 - 3)

Major forbs and half-shrubs	
western willow aster (<i>Symphotrichum lanceolatum</i> var. <i>hesperium</i>)	1% (0 - 3)
dock (<i>Rumex</i> spp.)	1% (0 - 3)
sow-thistle (<i>Sonchus</i> spp.)	1% (0 - 3)
wild mint (<i>Mentha arvensis</i>)	1% (0 - 3)

Minor graminoids	3%
Minor forbs and half-shrubs	2%

SIMILARITY TO REFERENCE COMMUNITY	reference community
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RECOMMENDED STOCKING RATE	3.2 AUM/ha
(rates are for fully developed stands; should be discounted for drought years)	1.3 AUM/ac

PEZ-SMH-B
Awned Sedge
Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents Shallow Marsh dominated by awned sedge. It can occur anywhere in the Prairie Ecozone, where it is probably the most widespread Shallow Marsh community. It may also occur on somewhat Saline Shallow Marsh. It is interpreted to be a reference community for Shallow Marsh Ecosite. Communities with more grazing impact are expected to show decreasing dominance by sedges and increases in forbs.

The description is derived from Tables 51 and 52 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids		Major forbs and half-shrubs	
awned sedge (<i>Carex atherodes</i>)	84% (30 - 98)	water smartweed (<i>Persicaria</i> <i>amphibia</i>)	1% (0 - 20)
fowl blue-grass (<i>Poa palustris</i>)	5% (0 - 90)	marsh skullcap (<i>Scutellaria</i> <i>galericulata</i>)	1% (0 - 10)
beaked sedge (<i>Carex utriculata</i>)	2% (0 - 40)	swamp horsetail (<i>Equisetum</i> <i>fluviatile</i>)	1% (0 - 20)
small-fruited bulrush (<i>Scirpus</i> <i>microcarpus</i>)	2% (0 - 20)	northern willow-herb (<i>Epilobium</i> <i>ciliatum</i>)	1% (0 - 20)
spangletop (<i>Scolochloa festucacea</i>)	2% (0 - 40)	Minor graminoids	1%
water sedge (<i>Carex aquatilis</i>)	1% (0 - 30)	Minor forbs and half-shrubs	3%

SIMILARITY TO REFERENCE COMMUNITY	reference community
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RECOMMENDED STOCKING RATE	3.2 AUM/ha
(rates are for fully developed stands; should be discounted for drought years)	1.3 AUM/ac

PEZ-SMH-C
Creeping Spike-rush
 Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents Shallow Marsh dominated by spike-rush. It may also occur on somewhat Saline Shallow Marsh. It can occur anywhere in the Prairie Ecozone, and is interpreted to be a **reference community**.

The description is derived from Tables 63 and 64 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids		Major forbs and half-shrubs	
creeping spike-rush (<i>Eleocharis palustris</i>)	78% (40 - 98)	shore buttercup (<i>Ranunculus cymbalaria</i>)	2% (0 - 30)
Baltic rush (<i>Juncus arcticus</i> var. <i>balticus</i>)	2% (0 - 60)	tall scouring-rush (<i>Equisetum hyemale</i>)	2% (0 - 40)
short-awned foxtail (<i>Alopecurus aequalis</i>)	1% (0 - 20)	curled dock (<i>Rumex crispus</i>)	1% (0 - 20)
redtop (<i>Agrostis stolonifera</i>)	1% (0 - 20)	dock-leaved smartweed (<i>Persicaria lapathifolia</i>)	1% (0 - 20)
hardstem bulrush (<i>Schoenoplectus acutus</i>)	1% (0 - 10)	field horsetail (<i>Equisetum arvense</i>)	1% (0 - 20)
Minor graminoids	2%		
Minor forbs and half-shrubs	2%		

SIMILARITY TO REFERENCE COMMUNITY	reference community
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RECOMMENDED STOCKING RATE	3.2 AUM/ha
(rates are for fully developed stands; should be discounted for drought years)	1.3 AUM/ac

PEZ-SMH-D
Spangletop
Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents spangletop stands on the Shallow Marsh Ecosite in the Aspen Parkland and Mixed Grassland Ecoregions. It may also occur on somewhat Saline Shallow Marsh. It can occur anywhere in the Prairie Ecozone, and is interpreted to be a reference community.

The description is derived from Table 82 in Thompson and Hansen (2001), which includes some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids

spangletop (<i>Scolochloa festucacea</i>)	94% (60 - 98)
awned sedge (<i>Carex atherodes</i>)	2% (0 - 10)
creeping spike-rush (<i>Eleocharis palustris</i>)	2% (0 - 20)

Minor graminoids

1%

SIMILARITY TO REFERENCE COMMUNITY

reference community

RECOMMENDED STOCKING RATE

3.2 AUM/ha

(rates are for fully developed stands; should be discounted for drought years)

1.3 AUM/ac

PEZ-SMH-E

Manna-grass

Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents manna-grass stands on the Shallow Marsh Ecosite. It is most common in the Aspen Parkland, but can occur in other ecoregions. It is interpreted to be a reference community. The community as described here is dominated by tall manna-grass (*Glyceria grandis*), but some stands are dominated by fowl manna-grass (*G. striata*) or northern manna-grass (*G. borealis*).

The description is derived from Table 52 in Thompson and Hansen (2003), which includes some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids		Major forbs and half-shrubs	
tall manna-grass (<i>Glyceria grandis</i>)	84% (60 - 98)	wild mint (<i>Mentha arvensis</i>)	4% (0 - 20)
American slough grass (<i>Beckmannia syzigachne</i>)	7% (0 - 30)	swamp horsetail (<i>Equisetum fluviatile</i>)	2% (0 - 10)
creeping spike-rush (<i>Eleocharis palustris</i>)	5% (0 - 20)	water smartweed (<i>Persicaria amphibia</i>)	1% (0 - 3)
short-awned foxtail (<i>Alopecurus aequalis</i>)	2% (0 - 10)	dock-leaved smartweed (<i>Persicaria lapathifolia</i>)	1% (0 - 3)
Bebb's sedge (<i>Carex bebbii</i>)	2% (0 - 10)	narrow-leaved willow-herb (<i>Epilobium leptophyllum</i>)	1% (0 - 3)
awned sedge (<i>Carex atherodes</i>)	2% (0 - 3)	small bedstraw (<i>Galium trifidum</i>)	1% (0 - 3)
fowl blue-grass (<i>Poa palustris</i>)	1% (0 - 3)		
fox-tail barley (<i>Hordeum jubatum</i>)	1% (0 - 1)	Minor graminoids	1%
common cat-tail (<i>Typha latifolia</i>)	1% (0 - 1)	Minor forbs and half-shrubs	1%

SIMILARITY TO REFERENCE COMMUNITY reference community

RECOMMENDED STOCKING RATE 3.2 AUM/ha
 (rates are for fully developed stands; should be discounted for drought years) 1.3 AUM/ac

PEZ-SMH-F

Reed Canary-grass

Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This community represents Shallow Marsh dominated by reed canary-grass. It can occur anywhere in the Prairie Ecozone. Its successional status is complicated by the fact that both native and exotic forms of reed canary-grass are present in the region. This species expands with disturbance, and in some areas it is considered to be an undesirable invasive. For these reasons, most communities dominated by reed canary-grass are interpreted to be disturbance-induced. However, the specific effects of grazing impact are unknown.

The description is derived from Tables 67 and 68 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids		Major forbs and half-shrubs	
reed canary-grass (<i>Phalaris arundinacea</i>)	93% (50 - 98)	Canada thistle (<i>Cirsium arvense</i>)	1% (0 - 20)
awned sedge (<i>Carex atherodes</i>)	2% (0 - 20)	water smartweed (<i>Persicaria amphibia</i>)	1% (0 - 10)
fowl blue-grass (<i>Poa palustris</i>)	1% (0 - 20)	field horsetail (<i>Equisetum arvense</i>)	1% (0 - 20)
redtop (<i>Agrostis stolonifera</i>)	1% (0 - 10)	wild mint (<i>Mentha arvensis</i>)	1% (0 - 10)
small-fruited bulrush (<i>Scirpus microcarpus</i>)	1% (0 - 10)	white sweet-clover (<i>Melilotus alba</i>)	1% (0 - 10)
Minor graminoids	1%		
Minor forbs and half-shrubs	1%		

SIMILARITY TO REFERENCE COMMUNITY unknown

RECOMMENDED STOCKING RATE 3.2 AUM/ha
 (rates are for fully developed stands; should be discounted for drought years) 1.3 AUM/ac

PEZ-SMH-G
Water Smartweed
Prairie Ecozone: Shallow Marsh Ecosite

GENERAL DESCRIPTION: This table represents smartweed stands on the Shallow Marsh Ecosite. These stands are usually the result of disturbance, such as recent cultivation or heavy grazing impact.

The description is derived from Table 72 in Thompson and Hansen (2001), which includes some data from outside Saskatchewan.

STRUCTURE – no information

SPECIES COMPOSITION (% canopy cover)

Major forbs and half-shrubs

water smartweed (<i>Persicaria amphibia</i>)	94% (80 - 98)
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Major graminoids

water sedge (<i>Carex aquatilis</i>)	4% (0 - 40)
awned sedge (<i>Carex atherodes</i>)	1% (0 - 10)

Minor graminoids	1%
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SIMILARITY TO REFERENCE COMMUNITY	unknown
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RECOMMENDED STOCKING RATE	insufficient data
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PEZ-DMH-A

Cat-tail

Prairie Ecozone: Deep Marsh Ecosite

GENERAL DESCRIPTION: This community represents cat-tail stands on the Deep Marsh Ecosite. It can occur anywhere in the Prairie Ecozone, and is interpreted to be a **reference community** for Deep Marsh Ecosite. Cat-tail spreads rapidly, so plants may appear on Shallow Marsh and Wet Meadow sites as a result of disturbance. In southeastern Saskatchewan, the exotic narrow-leaf cat-tail (*Typha angustifolia*), and hybrids (*Typha X glauca*) between narrow-leaf and common cat-tail, appear as invasives which displace common cat-tail stands.

The description is derived from Tables 83 and 84 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE - no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids		Major forbs and half-shrubs	
common cat-tail (<i>Typha latifolia</i>)	88% (50 - 98)	wild mint (<i>Mentha arvensis</i>)	1% (0 - 20)
soft-stem bulrush (<i>Schoenoplectus tabernaemontani</i>)	5% (0 - 80)	broad-leaved arrowhead (<i>Sagittaria latifolia</i>)	1% (0 - 40)
three-square bulrush (<i>Schoenoplectus pungens</i>)	2% (0 - 50)	water-hemlock (<i>Cicuta maculata</i>)	1% (0 - 20)
creeping spike-rush (<i>Eleocharis palustris</i>)	1% (0 - 20)	desert goosefoot (<i>Chenopodium pratericola</i>)	1% (0 - 20)
beaked sedge (<i>Carex utriculata</i>)	1% (0 - 10)	water-parsnip (<i>Sium suave</i>)	1% (0 - 20)
hardstem bulrush (<i>Schoenoplectus acutus</i>)	1% (0 - 20)		
fox-tail barley (<i>Hordeum jubatum</i>)	1% (0 - 20)	Minor graminoids	1%
reed canary-grass (<i>Phalaris arundinacea</i>)	1% (0 - 20)	Minor forbs and half-shrubs	2%

SIMILARITY TO REFERENCE COMMUNITY	reference community
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RECOMMENDED STOCKING RATE	non-use areas
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PEZ-DMH-B, PEZ-DMH-C
Hardstem and Softstem Bulrush
 Prairie Ecozone: Deep Marsh Ecosite

GENERAL DESCRIPTION: These communities represent stands of hardstem or softstem bulrush on the Deep Marsh Ecosite. They can occur anywhere in the Prairie Ecozone. Some stands are dominated by softstem bulrush, and some by hardstem bulrush. Stands dominated by hardstem bulrush can also occur on somewhat Saline Deep Marsh. PEZ-DMH- is interpreted to be the **reference community**, while PEZ-DMH shows **minor alteration** resulting from disturbance.

The description is derived from Tables 76 and 77 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

	PEZ-DMH-B Hardstem Bulrush – Softstem Bulrush	PEZ-DMH-C Hardstem Bulrush – Fox- tail Barley
STRUCTURE - no information		
SPECIES COMPOSITION (% canopy cover)		
Major graminoids		
hardstem bulrush (<i>Schoenoplectus acutus</i>)	71% (0 - 98)	73% (0 - 98)
soft-stem bulrush (<i>Schoenoplectus tabernaemontani</i>)	13% (0 - 80)	2% (0 - 30)
common cat-tail (<i>Typha latifolia</i>)	1% (0 - 10)	
fox-tail barley (<i>Hordeum jubatum</i>)		10% (0 - 90)
creeping spike-rush (<i>Eleocharis palustris</i>)		3% (0 - 40)
quack grass (<i>Elymus repens</i>)		3% (0 - 40)
spike-rush (<i>Eleocharis</i> spp.)		2% (0 - 30)
awned sedge (<i>Carex atherodes</i>)		1% (0 - 10)
prairie bulrush (<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>)		1% (0 - 10)
Major forbs and half-shrubs		
swamp horsetail (<i>Equisetum fluviatile</i>)		6% (0 - 80)
cocklebur (<i>Xanthium strumarium</i>)		2% (0 - 30)
water smartweed (<i>Persicaria amphibia</i>)		2% (0 - 20)
lamb's-quarters (<i>Chenopodium album</i>)		1% (0 - 10)
curled dock (<i>Rumex crispus</i>)		1% (0 - 10)
wild mint (<i>Mentha arvensis</i>)		1% (0 - 10)
rough water-horehound (<i>Lycopus asper</i>)		1% (0 - 10)
golden dock (<i>Rumex fueginus</i>)		1% (0 - 10)
northern willow-herb (<i>Epilobium ciliatum</i>)		1% (0 - 10)
Minor graminoids	0%	2%
Minor forbs	1%	3%
SIMILARITY TO REFERENCE COMMUNITY	ref. comm.	74%
RECOMMENDED STOCKING RATE	non-use areas	

PEZ-DMH-D
Common Reed

Prairie Ecozone: Deep Marsh Ecosite

GENERAL DESCRIPTION: This community represents stands of common reed on the Deep Marsh Ecosite. It can also occur on somewhat Saline Deep Marsh. It can occur anywhere in the Prairie Ecozone, and is interpreted to be a **reference community** for Deep Marsh Ecosite. Common reed sometimes spreads onto Shallow Marsh and Wet Meadow Ecosites, and the species composition as described here shows some species of these drier sites. However, the largest stands of common reed are emergents on the Deep Marsh Ecosite, with few accompanying species.

The description is derived from Tables 69 and 70 in Thompson and Hansen (2001), which include some data from outside Saskatchewan.

STRUCTURE - no information

SPECIES COMPOSITION (% canopy cover)

Major graminoids

common reed (<i>Phragmites australis</i>)	91% (80 - 98)
smooth-cone sedge (<i>Carex laeviconica</i>)	2% (0 - 20)
creeping spike-rush (<i>Eleocharis palustris</i>)	1% (0 - 10)

Major forbs and half-shrubs

Canada thistle (<i>Cirsium arvense</i>)	3% (0 - 20)
American wild licorice (<i>Glycyrrhiza lepidota</i>)	2% (0 - 20)
white sweet-clover (<i>Melilotus alba</i>)	2% (0 - 20)
curled dock (<i>Rumex crispus</i>)	2% (0 - 20)
perennial sow-thistle (<i>Sonchus arvensis</i>)	1% (0 - 10)

Minor graminoids 1%

Minor forbs and half-shrubs 2%

SIMILARITY TO REFERENCE COMMUNITY reference community

RECOMMENDED STOCKING RATE non-use areas