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RANGE PLANT COMMUNITIES AND CARRYING CAPACITY FOR THE DRY AND CENTRAL MIXEDWOOD SUBREGIONS OF ALBERTA

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RANGE PLANT COMMUNITY TYPES AND CARRYING CAPACITY FOR THE DRY AND CENTRAL MIXEDWOOD SUBREGIONS

Second approximation

1997

Prepared by

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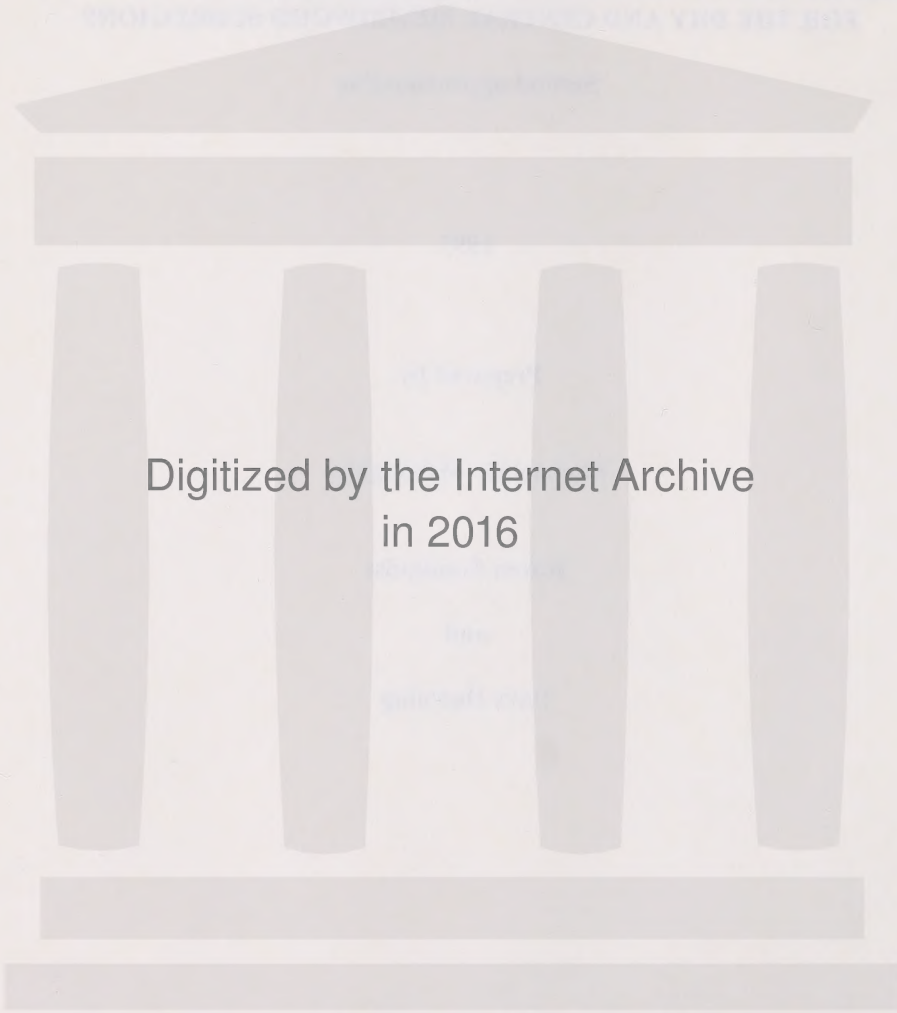
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Abstract

The Dry and Central Mixedwood subregions cover nearly 40% of the province and are dominated by aspen, jack pine on coarse textured soils and black spruce, willows and sedges in the poorly drained areas. The vegetative communities in these subregions are important because they provide summer range for livestock, prime habitat for many species of wildlife, productive watersheds, recreational areas and timber harvesting. Despite the importance of these vegetation types there is little information on their ecology. The lack of information makes it very difficult to develop management prescriptions for multiple use. As a result guides like this and "Ecosites of Northern Alberta" (Beckingham and Archibald 1996) are being developed to provide a framework that will easily group the vegetative community types. It is hoped these classification systems can be used by field staff to assess the ecology of the sites and develop management prescriptions on lands within each region.

This guide represents the analysis of 349 grass, shrubland, conifer and deciduous plots described in the Dry and Central Mixedwood subregions. These types are split into:

Dry Mixedwood subregion

A. Native grass and shrubland	13 types
B. Tame grasslands	8 types
C. Deciduous community types	16 types
D. Mixedwood and Conifer community types	9 types

Central Mixedwood subregion

A. Native grass and shrubland	12 types
B. Tame grasslands	7 types
C. Deciduous community types	15 types
D. Mixedwood and Conifer community types	10 types

Introduction

The province of Alberta is covered by a broad spectrum of vegetation regions from prairie in the South, to alpine vegetation in the mountains and dense forests in the Central and Northern parts of the province. These broad vegetation regions have been classified into 6 regions and 20 subregions (Dept. of Environmental Protection 1994). Each of the 20 subregions consists of groups of plant communities which are influenced by environmental conditions and human impacts. Intensive management of these regions requires the ability to recoqnize the vegetative communities that have similar productivities and respond to disturbance in the same way.

The vegetative communities in the province of Alberta are highly regarded by most resource managers for their ability to provide a wide variety of benefits. They are a classic example of multiple use land, providing summer range for livestock, prime habitat for many species of wildlife, productive watersheds and recreational areas. Despite the importance of these vegetation types there is little information on their ecology. The lack of information makes it very difficult to development management prescriptions for multiple use.

The purpose of this guide was to develop a framework that would easily group the plant community types utilized by livestock in the Dry and Central Mixedwood subregions of the province. This guide combines the Low and Mid Boreal Mixedwood ecoregion guides done by Sundquist and Willoughby in 1993 and 1994.

It is hoped this classification system can be used by field staff to assess the ecology and carrying capacity of the sites, in order to develop management prescriptions on lands within each region. This guide supplements the work done by Beckingham and Archibald (1996) on the forested community types in the Boreal Mixedwood of northern Alberta. Their guide is a good description of the forested community types found within the subregion, but it does not include forage production values and carrying capacities. It also does not provide a description of the native shrubland and grassland communities which are utilized extensively by livestock in these subregions.

Climate

Dry Mixedwood subregion

The Dry Mixedwood subregion represents a transition between the Central and Peace River Parklands and the Central Mixedwood subregions. This subregion occurs in three areas of the province. One section is located between the Central Parkland and the Central Mixedwood subregions in the southern portion of the boreal forest and includes the Onion Lake, Athabasca, Westlock plains and Whitefish and Frog Uplands ecodistricts (Strong and Thompson 1995). A second area is located immediately east of Edmonton in the Cooking Lake upland ecodistrict. The third and largest area parallels the Peace River in northwestern Alberta from Grande Prairie

to Fort Vermillion and includes the Debolt, Dunvegan, Falher, Smoky, Grimshaw, Manning, High Level and Boyer plains ecodistricts (Map 1).

Mean summer temperature averages 13.8°C and winter temperatures average -10.5 °C, which is somewhat warmer than the Central Mixedwood subregion and somewhat cooler than the Parkland subregions. Mean annual precipitation averages 380 mm which is drier than the Central Mixedwood, but wetter than the Parkland subregions.

The reference plant community in this subregion is dominated by Aspen, with a variable understorey dominated by rose, pea-vine, beaked hazelnut, saskatoon and marsh reedgrass. Jack pine stands are found on well drained, coarse-textured parent materials and poorly drained sites are dominated by black spruce, willows and sedge species.

Central Mixedwood subregion

This subregion is the largest in the province covering over 210,000 km^2 or nearly 32% of the province (Strong and Leggat 1992)(Map 2). Mean annual summer temperatures average 13.5 °C and winter temperatures average -13 °C, which is somewhat colder than the adjacent Dry Mixedwood subregion. Annual precipitation averages 397 mm of precipitation which is wetter than the Dry Mixedwood.

The modal plant communities are vegetated by aspen and balsam poplar with understories composed of a variety of herbs and deciduous shrubs. White spruce and balsam fir are the climatic climax species but are not well represented because of the frequent occurrence of fire. On dry, well drained, coarse-textured soils jack pine dominates and the poorly drained sites are dominated by black spruce, willows and sedge species. These reference communities are very similar to the Dry Mixedwood subregion, but the drier conditions of the Dry Mixedwood favours the formation of a number of native grassland communities, which are not found in the Central Mixedwood.

Map 1. Location of the Dry Mixedwood subregion in Alberta

Map 2. Location of the Central Mixedwood subregion in Alberta

Methods

A community type approach (Mueggler 1988) to classification was chosen in preference to the habitat type approach (Daubenmire 1952) or ecosystem association approach (Corns and Annas 1986) because of the lack of understanding of the successional sequences of the communities. Community types are aggregates of similar plant communities based upon existing floristics regardless of successional status (Mueggler 1988). Community types are what is actually seen in the field. After defining the community types, they then can be linked to the ecosystem associations developed by Corns and Annas (1986) and Beckingham and Archibald (1996). In the mean time community types can be used as the basis for mapping and range management planning.

Individual plots were initially classified within a forest region using cluster analysis (SAS) and ordination (DECORANA, Gauch 1982). These types were described in individual carrying capacity guides for each forest. This led to differences in classification of the same types between forests, particularly for deciduous forest types. In an effort to standardize the community name and gain some understanding of each community types ecology, all plots sampled in each forest were reclassified. As the study progressed it became quite evident that there were differences in the productivity of the communities between subregions. As a result, it was decided to develop the classification within the subregion framework. A subregion is a geographical area that has broad vegetation zones combined with climatic data. As a result, the vegetation within each subregion is strongly influenced by the climatic conditions.

Sampling for this guide occurred within the Dry and Central Mixedwood subregions . This guide outlines the preliminary classification of 349 plots.

The procedure for inventory followed the Range Survey Manual (1992) and uses the MF5 form. A plot consisted of a 10x10 m macroplot and ten randomly selected 1x1 m microplots to record the canopy cover of shrubs and ten nested 20x50 cm microplots to record the canopy cover of forbs and grass. At each macroplot a 50x100 cm was clipped and separated into trees, shrubs, forbs and graminoids, oven dried and weighed. The recommended stocking rate is based on 25 percent of the total production for forested types and 50% total production for grass and shrubland types and the fact that one animal requires 455 kg of dry weight material for one month of grazing.

How to use the guide

First decide what subregion you are in. Then decide the appropriate category the community type is in within each subregion. If the area has been cleared of trees, broken, and seeded down to tame forage species such as timothy or creeping red fescue, the community will be in the TAME GRASS category. If the area does not have an overstory tree canopy and has not been cleared and broken, the community will fall under the NATIVE GRASS and SHRUBLANDS category. The DECIDUOUS category includes all plant communities that are dominated by deciduous tree species. Communities which have begun to undergo succession from a deciduous to a conifer dominated overstory with an overstory cover greater than 15% for both deciduous and coniferous species fall into the MIXEDWOOD category. Those communities

dominated by a conifer overstory, White spruce, Black spruce or Jack pine are classified in the CONIFER category. Three plots were sampled in deciduous cutblocks. These plots were included in the deciduous category under deciduous cutblocks.

In order to understand how the community types in this guide are related to the ecosites and ecosite phases outlined in "Ecosites of Northern Alberta" (Beckingham and Archibald 1996), the community types in this guide are arranged by ecosite and ecosite phase (Table 1). **Ecosites** are defined as ecological units that develop under similar environmental influences (climate, moisture and nutrient regime). An **ecosite phase** is a subdivision of the ecosite based on the dominant species in the canopy. Table 1 is a reproduction of Figure 11 in the Ecosites of Northern Alberta guide with the community types in this guide highlighted. For the most part the ecosites and ecosite phases are the same, particularly for the forested community types, but a number of new ecosites had to be created for the grass and shrubland community types (Table 1). These included (dd)(mesic/medium) purple oatgrass/california oatgrass, (bb)(submesic/poor) grassland/shubland and (aa)(subxeric/medium) grassland. The "Grazing succession" category (Table 1) outlines the successionl sequence the community type will undergo with increased grazing pressure. DM refers to Dry Mixedwood subregion and CM refers to Central Mixedwood subregion.

In the rest of the guide the dominant plant species, canopy cover, environmental conditions, response to grazing, forage production and carrying capacity of the various community types for the Dry and Central Mixedwood subregions are outlined.

Results

The analysis of the 349 plots distinguished 90 community types in the two subregions. These types were split into 4 categories within each subregion:

Dry Mixedwood subregion

DMA. Native grass and shrubland	13 types
DMB. Tame grasslands	8 types
DMC. Deciduous community types	16 types
DMD. Mixedwood and Conifer community types	9 types

Central Mixedwood subregion

CMA. Native grass and shrubland	12 types
CMB. Tame grasslands	7 types
CMC. Deciduous community types	15 types
CMD. Mixedwood and Conifer community types	10 types

The dominant plant species, canopy cover, environmental conditions, forage production and carrying capacity (when available) are outlined for each community type.

Table 1. Ecosites, ecosite phases and plant community types for the Boreal Mixedwood subregion (adapted from Beckingham and Archibald 1996)(highlighted community types are described in this guide, non highlighted communities are outlined in guide to "Ecosites of Northern Alberta")

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
a lichen (subxeric/poor)	a1 lichen Pj	a1.1 Pj/bearberry/lichen **CMD2 Pj/Bearberry**	
		a1.2 Pj/blueberry/lichen	
		a1.3 Pj/green alder/lichen **DMD1 Pj/Alder** **CMD1 Pj/Alder**	
aa grassland (subxeric/medium)	aa1 moderate slope	**DMA5. Western porcupine grass-Sedge/Fringed sage**	
	aa2 steep slope	**DMA6. Northern wheatgrass/Fringed sage**	
b blueberry (submesic/medium)	b1 blueberry Pj-Aw	b1.1 Pj-Aw/blueberry - bearberry **DMD2 Pj-Aw/Bearberry** **CMD3.Aw-Pj/Bearberry/Lichen**	
		b1.2 Pj-Aw/blueberry - green alder	
		b1.3 Pj-Aw/blueberry - Labrador tea	
	b2 blueberry Aw(Bw)	b2.1 Aw(Bw)/blueberry - bearberry **DMC1. Aw/Rose/Bearberry** **DMC12. Aw/Rose-Blueberry** **CMC5 Aw/Blueberry**	**CMC6** **Aw/Rose/Twinflower**
		b2.2 Aw(Bw)/blueberry - green alder	
		b2.3 Aw(Bw)/blueberry - Labrador tea	
	b3 blueberry Aw-Sw	b3.1 Aw-Sw/blueberry - bearberry	
		b3.2 Aw-Sw/blueberry - green alder	

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
		b3.3 Aw-Sw/blueberry - Labrador tea	
	b4 blueberry Sw-Pj	b4.1 Sw-Pj/blueberry - bearberry	
		b4.2 Sw-Pj/blueberry - green alder	
bb grass/shrubland (submesic/poor)	bb1 plains wormwood	**DMA3. Plains wormwood/Sedge** **CMA5. Plains wormwood/Sheep fescue-Sedge**	**CMA6 Plains wormwood/ Kentucky bluegrass-Sedge**
	bb2 saskatoon	**DMA7. Saskatoon/Bearberry/Northern ricegrass**	**DMA8. Saskatoon/ Sweet clover/Smooth brome**
c Labrador tea - mesic (mesic/poor)	c1 Labrador tea - mesic Pj-Sb	c1.1 Pj-Sb/Labrador tea/feather moss	
		c1.2 Pj-Sb/green alder/feather moss	
		c1.3 Pj-Sb/feather moss	
d low-bush cranberry (mesic/medium)	d1 low-bush cranberry Aw	d1.1 Aw/Canada buffalo-berry **DMC5. Aw/Buffaloberry-Rose**	
		d1.2 Aw/saskatoon-pin cherry **DMC7. Aw/Saskatoon-Rose** **CMC9 Aw/Rose-Saskatoon**	
		d1.3 Aw/beaked hazelnut **DMC4. Aw/Rose-Hazelnut** **DMC13. Aw/Hazelnut-Rose/Peavine** **DMC14. Aw/Hazelnut-Rose/Wild sarsaparilla** **CMC3 Pb-Aw/Beaked hazelnut-Rose**	
		d1.4 Aw/green alder **DMC6. Aw/Alder/Mountain ricegrass** **CMA10 Willow-Alder/Marsh reedgrass**	
		d1.5 Aw/low-bush cranberry **DMC11. Aw/Rose-Low bush cranberry**	**CMC10 Aw-Pb/Rose/ Strawberry**

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
		d1.6 Aw/rose **DMC2. Aw/Rose/Tall forb** **DMC10. Deciduous cutblocks** **DMC15. Aw/Rose/Forb/Marsh reedgrass** **CMC8 Aw/Rose/Tall forb**	**DMC3. Aw/Rose/Low forb** **CMC7 Aw/Rose/Low forb** **CMC11 Aw/Rose/Clover**
		d1.7 Aw/beaked willow **CMC12 Aw/Alder-Willow-Rose** **CMC13 Aw/Willow** **CMA11 Willow/Fireweed**	
		d1.8 Aw/forb	
		d1.9 Aw/balsam fir	
	d2 low-bush cranberry Aw-Sw	d2.1 Aw-Sw/Canada buffalo-berry	
		d2.2 Aw-Sw/beaked hazelnut	
		d2.3 Aw-Sw/green alder	
		d2.4 Aw-Sw/low-bush cranberry	
		d2.5 Aw-Sw/rose **CMD7 Aw-Sw/Rose/Low forb**	
		d2.6 Aw-Sw/forb	
		d2.8 Aw-Sw/balsam fir/feather moss	
		d2.9 Aw-Sw/feather moss	
	d3 low-bush cranberry Sw	d3.1 Sw/Canada buffalo-berry **DMD3 Sw/Buffaloberry/Bearberry**	
		d3.2 Sw/green alder	**CMA12 Willow-Spruce/Kentucky bluegrass**
		d3.3 Sw/low-bush cranberry **DMD5 Aw-Sw/Rose/Marsh reedgrass** **DMD7 Sw-Pb-Aw/Rose/Twinflower**	

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
		d3.4 Sw/balsam fir/feather moss **CMD4 Balsam fir-Sw/Moss**	
		d3.5 Sw/feather moss **DMD4 Sw/Hazelnut/Moss** **CMD5 Sw/Moss**	**CMD6 Sw/Creeping red fescue**
dd purple oatgrass/ california oatgrass (mesic/medium)	dd1 grassland	**DMA4 Purple oatgrass/Sedge - California oatgrass**	
	dd2 shrubland		**CMA4 Snowberry/Kentucky bluegrass**
e dogwood (subhygric/rich)	e1 dogwood Pb-Aw	e1.1 Pb-Sw/dogwood/fern	
		e1.2 Pb-Aw/bracted honeysuckle/fern **DMC8. Pb/Red osier dogwood-Rose** **DMC16. Pb-Aw** **CMC1 Pb/Rose-Alder** **CMC14 Aw/Red osier dogwood-Rose**	**CMA3 Cow parsnip/ Kentucky bluegrass- Marsh reedgrass**
		e1.3 Pb-Aw/river alder/fern **CMC2 Pb-Aw/River alder**	
	e2 dogwood Pb-Sw	e2.1 Pb-Sw/dogwood/fern	
		e2.2 Pb-Sw/bracted honeysuckle/fern **DMD6 Aw-Pb-Sw/Willow/Wild sarsaparilla**	
		e2.3 Pb-Sw/river alder-green alder/fern	
		e2.4 Pb-Sw/balsam fir/fern	
		e2.5 Pb-Sw/fern/feather moss	
	e3 dogwood Sw	e3.1 Sw/dogwood/fern	
		e3.2 Sw/green alder-river alder/fern	
		e3.3 Sw/balsam fir/fern	
		e3.4 Pb-Sw/fern/feather moss	

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
f horsetail (hygric/rich)	f1 horsetail Pb-Aw	f1.1 Pb-Aw/horsetail **DMC9. Aw/Horsetail** **CMC15 Aw/Horsetail-Cow parnsip**	
	f2 horsetail Pb-Sw	f2.1 Pb-Sw/horsetail	
	f3 horsetail Sw	f3.1 Sw-horsetail	
		f3.2 Sw/feather moss	
	f4 horsetail/willow	**DMA12. Willow/Horsetail/Marsh reedgrass**	
		DMA13. Paper birch-Alder/Horsetail **CMC4 Bw/Willow**	
g Labrador tea - subhygric (subhygric/poor)	g1 Labrador tea - subhygric Sb-Pj	g1.1 Sb-Pj/Labrador tea/feather moss	
		g1.2 Sb-Pj/feather moss	
h Labrador tea/horsetail (hygric/medium)	h1 Labrador tea/horsetail Sw-Sb	h1.1 Sw-Sb/Labrador tea/horsetail	
		h1.2 Sw-Sb/Labrador tea/feather moss **CMD8 Aw-Sw/Labrador tea/Moss**	
i bog (subhygric/very poor)	i1 treed bog	i1.1 Sb/Labrador tea/cloudberry/peat moss **DMD9 Sb-Lt/Labrador tea/Moss** **CMD9 Sb/Labrador tea/Peat moss**	
	i2 shrubby bog	i2.1 Sb/Labrador tea/cloudberry/peat moss	
j poor fen (subhydric/medium)	j1 treed poor fen	j1.1 Sb-Lt/dwarf birch/sedge/peat moss **DMD8 Sb/Willow/Moss** **CMD10 Sb/Bog birch**	
	j2 shrubby poor fen	j2.1 Sb-Lt/dwarf birch/sedge/peat moss	
k rich fen (subhydric/rich)	k1 treed rich fen	k1.1 Lt/dwarf birch/sedge/golden moss	
	k2 shrubby rich fen	k2.1 dwarf birch/sedge/golden moss	
		k2.2 willow/sedge/brown moss **DMA10. Willow/Sedge** **CMA7 Willow/Sedge**	**CMA8 Willow/Sedge-Kentucky bluegrass**

Ecosite	Ecosite Phase	Plant Community Type	Grazing succession
		k2.3 willow/marsh reed grass **CMA9. Willow/Marsh reedgrass**	**DMA11. Willow/Marsh reedgrass-Kentucky bluegrass**
	k3 graminoid rich fen	k3.1 sedge fen **DMA1. Sedge meadow** **CMA1. Sedge meadow**	
		k3.2 marsh reed grass fen **DMA2. Marsh reedgrass meadow** **CMA2. Marsh reedgrass meadow**	**DMA9. Kentucky bluegrass-Rough hairgrass**
l marsh (hydric/rich)	l1 marsh	l1.1 cattail marsh	
		11.2 reed grass marsh	
		11.3 bulrush marsh	

Photo 1. The Western porcupine grass-Sedge/Fringed sage community is found throughout the Dry Mixedwood subregion on the south-facing slopes of the Smoky, Wapiti and Peace Rivers. This community provides early spring forage for both wildlife and cattle.

Photo 2. This picture represents the transition from sedge-marsh reedgrass meadows to willow sedge dominated community types. These community types provide a large amount of forage, but the moist conditions limit their use by livestock.

DM - NATIVE GRASS AND SHRUBLAND COMMUNITIES

The Dry Mixedwood subregion represents the transition between the Boreal forest and Parkland subregions. Aspen Parkland-like vegetation can develop where site conditions or drought conditions occur in combination with the driest climatic conditions (Strong 1992). The Grande Prairie area is an example where a number of these conditions occur. It is within this area that a number of native upland grassland community types have been described. On steep, south-facing slopes of the Smoky, Wapiti and Peace Rivers with subxeric moisture regimes and medium nutrient regimes the Western porcupine grass-Sedge/Fringed sage and Northern wheatgrass/Fringed sage community types are common (Figure 1). The Purple oatgrass-Sedge-California oatgrass community type is found on more upland sites with mesic moisture and medium nutrient regimes. Wilkinson and Johnston (1983) felt these grasslands to be the climax community type on Solonetzic soils. Indeed, Adams (1981) found the Western porcupine grass-Sedge dominated community on the Peace River slopes to be associated with Dark Gray Solods and Solonetzic Gray Luvisols. These grasslands provide important forage locally for both wildlife and domestic livestock. The grasslands of the south-facing river slopes are important spring forage sources because of early spring green-up.

On coarse textured, sandy soil, with submesic moisture and poor nutrient regimes which lack tree cover are found the Plains wormwood/Sedge and Saskatoon/Bearberry/Northern ricegrass community types. These community types are usually found in association with Jack pine dominated community types.

Wetter (subhydric/rich) sites are associated with sedge and marsh reedgrass dominated meadows. Sedge species are usually associated with the areas of free standing water and marsh reedgrass dominates the drier edges. Willow will invade into these meadows to form the Willow/Sedge and Willow/Marsh reedgrass community types.

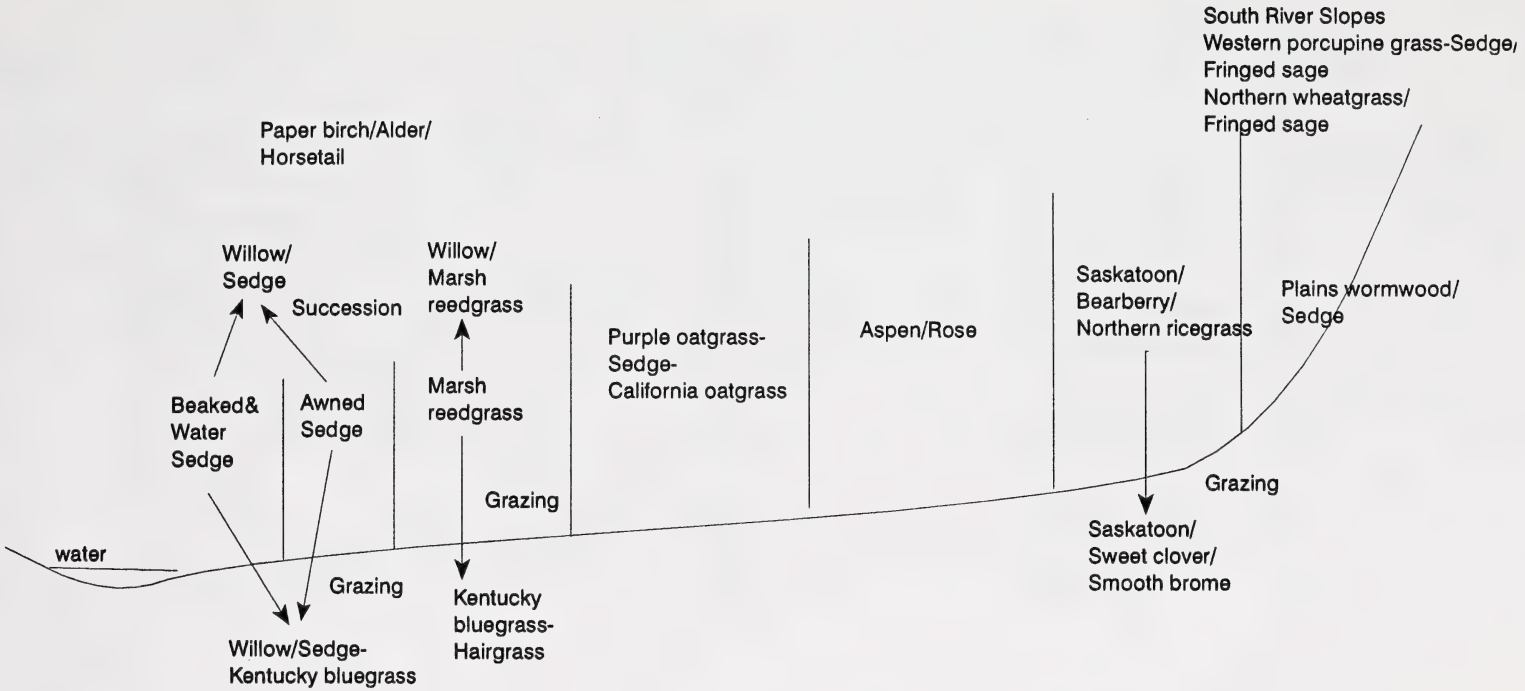
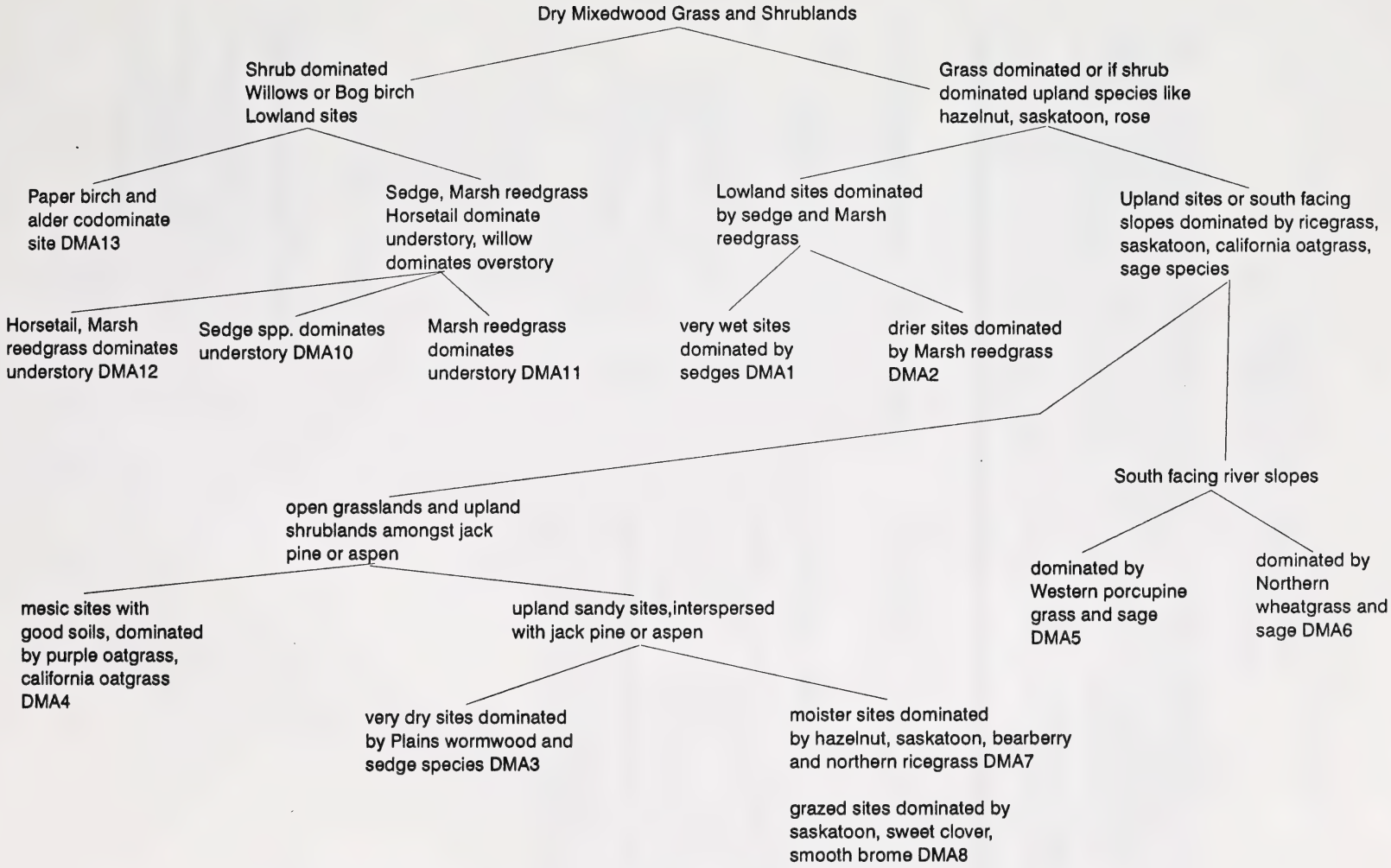


Figure 1. Ecology of the native grass and shrublands in the landscape of the Dry Mixedwood subregion.

Table 2. Grass and shrub community types for the Dry Mixedwood subregion

Community number	Community type	Total productivity (Kg/ha)	Ecosite	Carrying Capacity (Ha/AUM)
	Grasslands			
DMA1	Sedge meadow	3392	(subhydric/rich)	0.3
DMA2	Marsh reedgrass meadow	2424	(subhydric/rich)	0.4
DMA3	Plains wormwood/Sedge	1263	(submesic/poor)	0.7
DMA4	Purple oatgrass-Sedge-California oatgrass	2508	(mesic/medium)	0.4
DMA5	Western porcupine grass-Sedge/Fringed sage	847	(subxeric/medium)	1.1
DMA6	Northern wheatgrass/Fringed sage	1194	(subxeric/medium)	Non-use
DMA7	Saskatoon/Bearberry/Northern ricegrass	677	(submesic/poor)	1.3
DMA8	Saskatoon/Sweet clover/Smooth brome	1500	(submesic/poor)	0.6
DMA9	Kentucky bluegrass-Rough hairgrass	1884	(subhydric/rich)	0.3
	Shrublands			
DMA10	Willow/Sedge	1169	(subhydric/rich)	0.8
DMA11	Willow/Marsh reedgrass-Kentucky bluegrass	2126	(subhydric/rich)	0.4
DMA12	Willow/Horsetail/Marsh reedgrass	1852	(hygric/rich)	Non-
useDMA13	Paper birch/Alder/Horsetail	536	(hygric/rich)	Non-use



Key to native grass and shrublands in the Dry Mixedwood subregion

DMA1. Sedge meadows

(Carex aquatilis, C. rostrata, C. atherodes)

n=3 This wetland community type is found near fresh water. The sedge meadow is a poorly drained community. As one moves to the drier edges marsh reedgrass becomes predominant. Willows will invade into both the sedge and marsh reedgrass dominated meadows. The sedge meadow community is very productive, but the high water table, particulary in the spring when the sedge species are most palatable, restricts livestock movement. One study done in the Yukon found that crude protein on these meadows declined from a high of 10% in May to less than 5% in September (Bailey et al. 1992).

Beaked sedge found in abundance in this community is usually associated with nitrogen rich conditions and moving water (Brierly et al. 1985). Water sedge is often found in abundance in this community type and is associated with calcium rich stagnant water (MacKinnon et al. 1992).

PLANT COMPOSITION

	CANOPY COVER(%)
SHRUBS	
WILLOW SPP. *(Salix spp.)*	18
FORBS	
MARSH WILLOWHERB *(Epilobium palustris)*	1
DOCK *(Rumex acetosa)*	1
SKULL CAP *(Scutellaria galericulata)*	1
GRASSES	
BEAKED SEDGE (*Carex rostrata)*	54
AWNED SEDGE (*Carex atherodes*)	31
WATER SEDGE (*Carex aquatilis*)	2
MARSH REEDGRASS (*Calamagrostis canadensis*)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC
NUTRIENT REGIME (MEAN
PERMESOTROPHIC
ELEVATION:
586(579-600) M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	3325(1054-5028)
FORB	27(0-80)
SHRUB	40(0-120)
TOTAL	3392(1254-5028)

RECOMMENDED STOCKING RATE
0.3 Ha/AUM (Autumn only)

DMA2. Marsh reedgrass meadow

(Calamagrostis canadensis)

n=1 This community is found on the edges of sedge meadows and moist draws where the water table is lower. The lower water table makes this community accessible for most of the grazing season. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and their will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	1
PRICKLY ROSE (*Rosa acicularis*)	2
FORBS	
LEAFY-BRACTED ASTER *(Aster sibricus)*	4
DOCK , SORREL *(Rumex crispus)*	1
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	72
BALTIC RUSH *(Juncus balticus)*	9
KENTUCKY BLUEGRASS (*Poa pratensis*)	6
WATER SEDGE (*Carex aquatilis*)	3
AWNED SEDGE (*Carex atherodes*)	1

ELEVATION:
600 M

SOIL DRAINAGE (MEAN):
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	1254
FORB	1170
TOTAL	2424

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-HYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

DMA3. Plains wormwood/Sedge

(Artemisia campestris/Carex spp.)

n=1 This community type is found on coarse textured, sandy soils. It is generally found on hilltops and south-facing slopes in openings among Jack pine on the uplands and black spruce in the lowlands. This community type was also described on similar site conditions in the Central Mixedwood subregion. This community would be considered either secondary or non-use range for domestic livestock because of the low forage production and fragile nature of the community.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
SCOURING RUSH *(Equisetum hyemale)*	16
PLAINS WORMWOOD *(Artemisia campestris)*	10
LOW GOLDENROD *(Solidago missouriensis)*	3
AMERICAN VETCH *(Vicia americana)*	3
YELLOW BEARDSTONGUE (*Penstemon confertus*)	2
GRASSES	
KENTUCKY BLUEGRASS *(Poa pratensis)*	9
CREEPING RED FESCUE *(Festuca rubra)*	5
SEDGE (*Carex spp*)	35
SHEEP FESCUE (*Festuca saximontana*)	4

SLOPE(RANGE):
10

ASPECT:
SOUTH TO WESTERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	652
FORB	525
SHRUB	86
TOTAL	1263

SUGGESTED STOCKING RATE
0.7 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC-MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
RAPIDLY TO WELL

DMA4. Purple oatgrass-Sedge-California oatgrass

(Schizachne purpurascens-Carex spp.-Danthonia californica)

n=4 This community appears to be characteristic of dry grassy meadows on dark colored Solonetzic soils and gentle to level areas throughout the Dry Mixedwood subregion. Wilkinson and Johnson (1982), found there was a close correlation between large tracts of prairie vegetation and the distribution of solonetzic soils in the Peace River district of Alberta. They specifically described Western porcupine grass-Sedge/Fringed sage community on steep south -facing slopes and a Sedge-California oatgrass-Western porcupine grass on more gentle slopes. They felt the solonetzic soils supported grasslands and not forests because of their unfavourable ratios of Ca and Na, hard, columnar B-horizon, and relatively impermeable clay pan close to the surface. This community type appears to more similar to their Sedge-California oatgrass-Western porcupine grass community type. It is likely the heavy grazing pressure of the described sites favours the growth of purple oatgrass over Western porcupine grass on these sites.

This community type would be rated as primary range. Indeed many of the sites described were old homestead sites.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	3
SNOWBERRY	
(*Symphoricarpos occidentalis*)	12
SASKATOON	
(*Amelanchier alnifolia*)	1
FORBS	
STRAWBERRY	
(Fragaria virginiana)	14
MEADOW RUE	
(Thalictrum venulosum)	4
DANDELION	
(Taraxacum officinale)	8
YARROW	
(Achllea millefolium)	6
AMERICAN VETCH	
(*Vicia americana*)	5
GRASSES	
PURPLE OATGRASS	
(Schizachne purpurascens)	25
SLENDER WHEATGRASS	
(Agropyron trachycaulum)	12
KENTUCKY BLUEGRASS	
(*Poa pratensis*)	12
PRAIRIE SEDGE	
(*Carex prairea*)	9
JUNEGRASS	
(*Koeleria macrantha*)	4
CALIFORNIA OATGRASS	
(*Danthonia californica*)	9

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC
NUTRIENT REGIME (MEAN):
MESOTROPHIC
ELEVATION:
576-606(584) M
SOIL DRAINAGE (MEAN):
WELL
SLOPE % (RANGE):
2(0-5)
ASPECT:
SOUTH TO WEST

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	1463 (626-2578)
FORB	818(500-1192)
SHRUB	227(0-606)
TOTAL	2508(1600-3316)

SUGGESTED STOCKING RATE
0.4 HA/AUM

DMA5. Western porcupine grass-Sedge/Fringed sage

(Stipa curtiseta-Carex spp./Artemisia frigida)

n=2 This community type is found on steep, south-facing slopes along the banks of the Peace, Smoky and Wapiti rivers throughout the Dry Mixedwood subregion. Wilkinson and Johnson (1982), found there was a close correlation between large tracts of prairie vegetation and the distribution of solonetzic soils in the Peace River district of Alberta. They specifically described Western porcupine grass-Sedge/Fringed sage community on steep south -facing slopes and a Sedge-California oatgrass-Western porcupine grass on more gentle slopes. They felt the solonetzic soils supported grasslands and not forests because of their unfavourable ratios of Ca and Na, hard, columnar B-horizon, and relatively impermeable clay pan close to the surface. Adams (1981), found this community type as being a major source of spring forage for livestock in the Peace River area. He found that with increased grazing pressure sedge, junegrass, northern and western wheatgrass would increase as western porcupine grass declines. Often this community type is on steep enough slopes to be considered non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
FRINGED SAGE (*Artemisia frigida*)	3
WILLOW (*Salix spp.*)	10
SNOWBERRY (*Symphoricarpos occidentalis*)	4
FORBS	
LITTLE LEAVED EVERLASTING (*Antennaria parviflora*)	2
WHITE CAMUS (*Zigadenus elegans*)	1
GRASSES	
WESTERN PORCUPINE GRASS (*Stipa curtiseta*)	27
BLUNT SEDGE (*Carex obtusata*)	23
GREEN NEEDLEGRASS (*Stipa viridula*)	3
JUNEGRASS (*Koeleria macrantha*)	10
WESTERN WHEATGRASS (*Agropyron smithii*)	3
KENTUCKY BLUEGRASS (*Poa pratensis*)	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
XERIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC (2)

ELEVATION:
455-606(531) M

SOIL DRAINAGE (MEAN):
VERY RAPIDLY

SLOPE:
35%

ASPECT:
SOUTH AND WEST

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	729(752-806)
FORB	68(0-136)
TOTAL	847(752-942)

SUGGESTED STOCKING RATE
1.1 HA/AUM

DMA6. Northern wheatgrass/Fringed sage

(Agropyron dasystachyum/Artemisia frigida)

n=1 This community type is found on steep, south-facing slopes along the banks of the Peace, Smoky and Wapiti rivers throughout the Dry Mixedwood subregion. Adams (1981), felt this community type would form when the Western porcupine grass community was heavily to moderately grazed, but this community type was described in an area that had little grazing pressure. This community was located on a much steeper slope (90% vs 35%) than the previously described Western porcupine grass community type. It is likely that the drier site conditions and shallower soils favour the growth of northern wheatgrass over Western porcupine grass. This community type is located on a steep enough slope to be considered non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS		
	FRINGED SAGE (*Artemisia frigida*)	5
	SASKATOON (*Amelanchier alnifolia*)	8
	ROSE (*Rosa acicularis*)	8
	SNOWBERRY (*Symphoricarpos occidentalis*)	10
FORBS		
	WILD BLUE FLAX (*Linum lewesii*)	4
	LINDLEY'S ASTER (*Aster ciliolatus*)	2
	LOOSE FLOWERED MILK VETCH (*Astragalus tenellus*)	2
	DANDELION (*Taraxacum offincinale*)	2
GRASSES		
	NORTHERN WHEAT GRASS (*Agropyron dasystachyum*)	17
	BLUNT SEDGE (*Carex obtusata*)	1
	RICHARDSON NEEDLEGRASS (*Stipa richardsonii*)	3
	JUNEGRASS (*Koeleria macrantha*)	6
	WESTERN WHEATGRASS (*Agropyron smithii*)	2

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
XERIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC (2)

ELEVATION:
455 M

SOIL DRAINAGE (MEAN):
VERY RAPIDLY

SLOPE:
90%

ASPECT:
SOUTH AND WEST

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	798
FORB	80
SHRUB	316
TOTAL	1194

SUGGESTED STOCKING RATE
1.0 HA/AUM
RECOMMENDED STOCKING RATE
NON-USE

DMA7. Saskatoon/Bearberry/Indian ricegrass

(Amelanchier alnifolia/Arctostaphylos uva-ursi/Oryzopsis pungens)

n=1 This community represents small grassy openings within jack pine forests. Jack pine stands are associated with rapidly drained, acidic soils and poor nutrient status due to the coarse-textured eolian and fluvial parent material (Beckingham and Archibald 1996). It is likely these grassy openings are even drier, which favours the growth of shrubs. Forage productivity on these sites is only moderate averaging only 677 kg/ha. These sites are also heavily utilized by wildlife. As a result caution should be used when managing these sites for domestic livestock grazing to prevent overutilization.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
BLUEBERRY	
(Vaccinium myrtilloides)	2
HAZELNUT	
(*Corylus cornuta*)	1
SNOWBERRY	
(*Symphoricarpos occidentalis*)	7
SASKATOON	
(*Amelanchier alnifolia*)	15
PRICKLY ROSE	
(*Rosa acicularis)*	13
FORBS	
BEARBERRY	
(Arctostaphylos uva-ursi)	15
STRAWBERRY	
(Fragaria virginiana)	3
YELLOW PEAVINE	
(Lathyrus ochroleucus)	2
LINDLEY'S ASTER	
(Aster ciliolatus)	1
GRASSES	
NORTHERN RICEGRASS	
(*Oryzopsis pungens*)	5
SLENDER WHEATGRASS	
(*Agropyron trachycaulum*)	2
BLUNT SEDGE	
(*Carex obtusata*)	4
HAIRY WILDRYE	
(*Elymus innovatus*)	T
KENTUCKY BLUEGRASS	
(*Poa pratensis*)	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBMESIC
NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC-MESOTROPHIC
ELEVATION:
455-606(505) M
SOIL DRAINAGE (MEAN):
VERY RAPIDLY TO WELL
SLOPE (RANGE):
1(0-2)
ASPECT:
SOUTHERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	344(124-564)
FORB	189(82-296)
SHRUB	144(104-184)
TOTAL	677(524-830)

SUGGESTED STOCKING RATE
1.3 Ha/AUM

DMA8. Saskatoon/Sweet clover/Smooth brome

(Amelanchier alnifolia/Meliolatus officinalis/Bromus inermis)

n=2 This community type appears to represent the Saskatoon/Bearberry/Northern ricegrass community type which has undergone disturbance by livestock. Sweet clover and smooth brome are both weedy species and occur essentially where roads and settlement occurs. Sweet clover is well adapted to growing on roadsides and in waste places. Therefore, it is well suited to growing in the poor nutrient soils of the Saskatoon/Bearberry/Northern ricegrass community type. Unfortunately, forage production was not done for this community type, but sweet clover and brome can be very productive if grazed before they become overmature.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
ASPEN	
(Populus tremuloides)	5
SHRUBS	
SNOWBERRY	
(Symphoricarpos occidentalis)	20
PRICKLY ROSE	
(Rosa acicularis)	37
SASKATOON	
(*Amelanchier alnifolia*)	7
FORBS	
STRAWBERRY	
(Fragaria virginiana)	1
CREAM COLORED VETCHLING(PEAVINE)	
(Lathyrus ochroleucus)	2
NORTHERN BEDSTRAW	
(Galium boreale)	5
SWEET CLOVER	
(*Meliolatus officinalis*)	8
GRASSES	
SMOOTH BROME	
(Bromus inermis)	7
ROSS'S SEDGE	
(Carex rossii)	6
TIMOTHY	
(*Phleum pratense*)	5
KENTUCKY BLUEGRASS	
(*Poa pratensis*)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC-MESIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC-MESOTROPHIC

ELEVATION:
455 M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

SLOPE (RANGE):
4(3-5)

ASPECT:
SOUTHERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

TOTAL 1500*ESTIMATE

SUGGESTED STOCKING RATE
0.6 HA/AUM

DMA9. Kentucky bluegrass-Hairgrass

(Poa pratensis-Agrostis scabra)

n=1 This community type represents a Marsh reedgrass meadow that has undergone heavy prolonged grazing pressure and is now dominated by Kentucky bluegrass, rough hairgrass and dandelion. This community is a fairly productive community type and the species are generally palatable to livestock when grazed in the vegetative state, but the extremely heavy grazing pressure which is needed to displace the native grass species indicates that there are livestock distribution problems that should be addressed.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
DANDELION	
(Taraxacum officinale)	60
YELLOW PEAVINE	
(Lathyrus ochroleucus)	12
WILD STRAWBERRY	
(Fragaria virginiana)	14
YARROW	
(Achillea millefolium)	11
HORSETAIL	
(*Equisetum arvense*)	7
GRASSES	
KENTUCKY BLUEGRASS	
(Poa pratensis)	18
ROUGH HAIRGRASS	
(Agrostis scabra)	17
SLENDER WHEATGRASS	
(Agropyron trachycaulum)	5
FRINGED BROME	
(*Bromus ciliatus*)	4

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	1382
FORB	1682
TOTAL	3064

SUGGESTED STOCKING RATE
0.3 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
697 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

DMA10. Willow/Sedge
(Salix spp./Carex spp.)

n=2 This community type is found along the edges of sedge meadows and in moist depressions. Willow becomes established at the edges of the sedge meadows due to the shorter duration of standing water. Increased flooding and prolonged waterlogging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP.	
(Salix spp.)	25
FORBS	
MINT	
(Mentha arvensis)	1
GREEN SOREL	
(Rumex acetosa)	1
GRASSES	
AWNED SEDGE	
(Carex atherodes)	47
MARSH REEDGRASS	
(Calamagrostis canadensis)	1
BEAKED SEDGE	
(Carex rostrata)	39
WATER SEDGE	
(*Carex aquatilis*)	2

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	673(344-1002)
FORB	470(52-888)
SHRUB	11(0-22)
TOTAL	1169(448-1890)

SUGGESTED STOCKING RATE
0.8 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
576-606(588) M

SOIL DRAINAGE (MEAN):
POORLY

DMA11. Willow/Marsh reedgrass-Kentucky bluegrass

(Salix spp./Calamagrostis canadensis-Poa pratensis)

n=1 This community type is very similar to the Marsh reedgrass meadow, but has been heavily grazed favouring the growth of Kentucky bluegrass and dandelion. Continued heavy grazing pressure will eventually lead to a community that is similar to the Kentucky bluegrass-Rough hairgrass dominated community type.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	35
SNOWBERRY *(Symphoricarpos occidentalis)*	2
FORBS	
STRAWBERRY *(Fragaria virginiana)*	1
DANDELION *(Taraxacum offincinale)*	41
YELLOW PEAVINE *(Lathyrus ochroleucus)*	2
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	43
KENTUCKY BLUEGRASS *(Poa pratensis)*	32
BALTIC RUSH *(Juncus balticus)*	9

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	1922
FORB	176
SHRUB	28
TOTAL	2126

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
600 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

DMA12. Willow/Horsetail/Marsh reedgrass

(Salix spp./Equisetum arvensis/Calamagrostis canadensis)

n=1 This community type appears to be transitional between the horsetail (hygric/rich) and shrubby rich fen (subhydric/rich) ecosites described by Beckingham and Archibald (1996). It has plant species characteristic of both ecosites. This community type was also described in an area that had been extensively utilized by livestock. It is possible that the heavy grazing pressure favoured the growth of horsetail.

This community type is only moderately productive. Horsetail the principal forage species is generally unpalatable to domestic livestock and can be poisonous to livestock in large amounts (Lodge et al. 1968). Consequently, this community type should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	60
BRACTED HONEYSUCKLE (*Lonicera involcrata*)	1
PRICKLY ROSE (*Rosa acicularis*)	10
FORBS	
STRAWBERRY *(Fragaria virginiana)*	5
LINDLEY'S ASTER *(Aster ciliolatus)*	9
COMMON HORSETAIL *(Equisetum arvensis)*	18
LARGE LEAVED YELLOW AVENS *(Geum macrophyllum)*	3
DEWBERRY (*Rubus pubescens*)	5
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	22
HAIR-LIKE SEDGE *(Carex capillaris)*	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
667 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	580
FORB	1272
TOTAL	1852

SUGGESTED STOCKING RATE
0.5 HA/AUM
RECOMMENDED RATE
NON-USE

DMA13. Paper birch-Alder/Horsetail

(Betula papyrifera-Alnus tenuifolia/Equisetum arvensis)

n=1 This community represents a lowland site surrounding open water. The presence of larch and black spruce indicate the succession to a black spruce dominated community type. The high cover of alder indicates a relatively rich nutrient regime, but succession to black spruce will cause a leaching of nutrients as the soil begins to acidify. The forage productivity of this community is poor and many of the plant species are unpalatable. Consequently, this community type would be considered non-use for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
PAPER BIRCH (*Betula papyrifera*)	25
LARCH (*Larix laricina*)	5
BLACK SPRUCE (*Picea mariana*)	3
SHRUBS	
WILLOW SPP. *(Salix spp.)*	3
RIVER ALDER (*Alnus tenuifolia*)	45
BRACTED HONEYSUCKLE (*Lonicera involcrata*)	8
FORBS	
DEWBERRY *(Rubus pubescens)*	6
BISHOP'S CAP *(Mitella nuda)*	5
HORSETAIL *(Equisetum arvensis)*	28
TWINFLOWER *(Linnaea borealis)*	3
GRASSES	
SEDGE *(Carex spp.)*	3
MARSH REEDGRASS (*Calamagrostis canadensis*)	9

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	102
FORB	330
SHRUB	104
TOTAL	536

SUGGESTED STOCKING RATE
3.4 HA/AUM
RECOMMENDED RATE
NON-USE

DRY MIXEDWOOD SUBREGION

TAME FORAGE COMMUNITIES

Photo 3. Typical Range improvement clearing in the Dry Mixedwood subregion

DM - TAME FORAGE COMMUNITIES

(Cleared areas that have been broken and seeded to tame forage)

Throughout the Dry mixedwood subregion there are sites that have been deforested, broken, and seeded to tame forage. Usually these areas are mesic and moderately well to well drained with good nutrient levels. Because most of these tame forage stands are established on similar sites, the most influential factors affecting plant species composition are stand establishment and grazing regime.

Stand establishment is important because it determines what the initial plant species composition is going to be. Seed bed preparation and the type of seed sown are the two most important factors influencing stand establishment. Seed bed preparation is important because it helps to determine how well the sown seed germinates and establishes. If the seed bed is not well prepared the tame forage stand may establish poorly and native species can become a dominant component of the plant community. If the seed bed is well prepared, the community type that establishes will depend on the type of seed sown. If a mixture of Creeping Red Fescue, Timothy, and Alsike Clover is sown into the area a Creeping Red Fescue/ Alsike Clover community type will become established. Whereas, if a mixture of Smooth Brome Grass, Timothy, Creeping Red Fescue, and Red Clover is sown, a Smooth Brome/ Red Clover community type will become established.

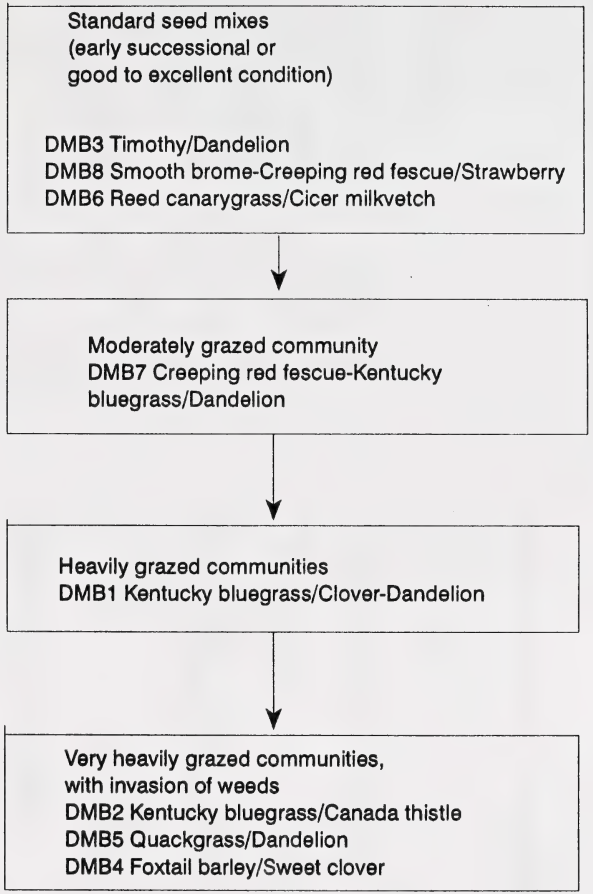
After the stand is established, the grazing regime applied to the stand will determine the plant species composition. Generally, a light to moderate amount of grazing allows the stand to maintain itself while sustained heavy grazing causes the stand to degrade. Damage to a stand due to over grazing occurs more readily while the stand is establishing than it does when the stand is established. This is because the forage plants in an establishing stand have not had time to develop energy reserves in their roots, and are therefore, more susceptible to grazing induced damage.

Well distributed light to moderate grazing will normally maintain a forage stand similar to what was seeded on the site. These stands are generally the most productive and provide the best grazing opportunities for livestock. They are normally considered to be in good to excellent range condition. Non use or very light grazing often results in the stand becoming dominated by the forage species that is most competitive under an ungrazed situation. Plant community changes which occur under heavy grazing are dependent on the grazing history (level of use, season of use and duration of the grazing regime). Overgrazed community types develop over a long period of repeated overgrazing. If weedy species such as Tall Buttercup, become established on overgrazed sites, they can quickly become a dominant species.

Table 3. Tame forage communities of the Dry Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
DMB1	Kentucky bluegrass/Clover-Dandelion	1408	702	13	2120	mesic/medium	0.5
DMB2	Kentucky bluegrass/Canada thistle	1500	500	0	2000	subhygric/rich	0.6
DMB3	Timothy/Dandelion	3893	565	0	4458	mesic/medium	0.2
DMB4	Foxtail barley/Sweet clover	1200	300	0	1500	mesic/medium	Non-use
DMB5	Quackgrass/Dandelion	1500	500	0	2300	mesic/medium	0.5
DMB6	Reed canarygrass/Cicer milkvetch	2995	0	0	2995	subhygric/rich	0.3
DMB7	Creeping red fescue-Kentucky bluegrass/Dandelion	1408	702	13	2120	mesic/medium	0.5
DMB8	Smooth brome-Creeping red fescue/Strawberry	3248	62	0	3310	mesic/medium	0.3

Tame grass plant communities



Key to tame forage communities in the Dry Mixedwood subregion

DMB1. Kentucky bluegrass/Clover-Dandelion

(Poa pratensis/ Trifolium spp.-Taraxacum officinale)

n=7 This community type has had a history of being grazed heavily throughout the growing season. Heavy grazing throughout the growing season, allows kentucky bluegrass, clover, and dandelion to out-compete all of the other vegetation. This community occurs on tame pastures or native rangeland that has been over grazed. It is considered to be in poor condition because forage production and nutritional value have been degraded

PLANT COMPOSITION CANOPY COVER(%)

TREES	
N/A	0
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	T
FORBS	
CLOVER	
(Trifolium spp.)	12
DANDELION	
(Taraxacum officinale)	35
WILD STRAWBERRY	
(Fragaria virginiana)	2
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	T
TIMOTHY	
(Phleum pratense)	3
KENTUCKY BLUEGRASS	
(Poa pratensis)	49

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
457-606 (587)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA

GRASS	1408(557-2270)
FORBS	702(60-1772)
SHRUBS	13(0-100)
TOTAL	2120(989-3051)

SUGGESTED STOCKING RATE
0.5 HA/AUM

DMB2. Kentucky bluegrass/Canada thistle

(Poa pratensis/Cirsium arvense)

n=1 This community type represents a native Marsh reedgrass community that has been heavily grazed for a prolonged period of time. The heavy grazing pressure has eliminated the native species cover and has allowed Kentucky bluegrass, dandelion and Canada thistle to invade onto the site. Canada thistle is unpalatable to livestock and restricts their movement throughout the field. If left untreated it will dominate the site and the field will become unuseable. Mowing or spraying with herbicide will help to control Canada thistle.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER	
(Trifolium spp.)	6
DANDELION	
(Taraxacum officinale)	19
CANADA THISTLE	
(Cirsium arvense)	29
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	1
FOXTAIL BARLEY	
(Hordeum jubatum)	1
KENTUCKY BLUEGRASS	
(Poa pratensis)	75

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1500
FORBS	500
TOTAL	2000

SUGGESTED STOCKING RATE
0.6 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
609M

DMB3. Timothy/Dandelion

(Phleum pratense / Taraxacum officinale)

n=3 This community type develops on sites that were seeded with a timothy, smooth brome, creeping red fescue, clover mixture. Timothy establishes much quicker than creeping red fescue or smooth brome on pastures that have been recently seeded. Eventually creeping red fescue and smooth brome will outcompete timothy and this community will likely become dominated by creeping red fescue and smooth brome. Timothy provides excellent forage for domestic livestock, especialy if timothy is kept in the vegetative state by mowing or grazing.

PLANT COMPOSITION

	CANOPY COVER(%)
SHRUBS	
WILLOW SPP.	
(Salix spp.)	13
FORBS	
ALSIKE CLOVER	
(Trifolium hybridum)	12
DANDELION	
(Taraxacum officinale)	19
WILD STRAWBERRY	
(Fragaria virginiana)	4
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	12
TIMOTHY	
(Phleum pratense)	50
SMOOTH BROME	
(Bromus inermis)	11

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
576-701(658)M

SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	3893(2294-5492)
FORBS	565(360-770)
SHRUBS	0
TOTAL	4458(3004-5852)

SUGGESTED STOCKING RATE
0.2 HA/AUM

DMB4. Foxtail barley/Sweet clover

(Hordeum jubatum/Meliolatus officinalis)

n=1 This community was found in a depressional area on a river flood plain in a field that appeared to have been cultivated. It is likely the cultivation process allowed foxtail barley to invade onto the site. Foxtail barley is also well adapted to growing on saline soils (Bailey et al. 1992). It is likely that the soils of this site are slightly saline. This community type would be considered non-use because the principle forage species foxtail barley is generally unpalatable to livestock. Foxtail barley can also cause injury to livestock. The sharp seeds and awns may work their way into tongues, gums, eyes, noses or skins of animals.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER	
(Trifolium spp.)	5
SWEET CLOVER	
(Meliolatus officinalis)	5
YELLOW LUCERNE	
(Medicago falcata)	11
COMMON PLANTAIN	
(*Plantago major*)	4
CANADA THISTLE	
(*Cirsium arvense*)	2
GRASSES	
FOXTAIL BARLEY	
(Hordeum jubatum)	68
TIMOTHY	
(Phleum pratense)	18
FOWL BLUEGRASS	
(Poa palustris)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC (3.30)

ELEVATION:
455M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1200
FORBS	300
SHRUBS	0
TOTAL	1500

SUGGESTED STOCKING RATE
NON - USE

DMB5. Quackgrass/Dandelion

(Agropyron repens/Taraxacum officinale)

n=1 This community type was described next to an old homestead. Quackgrass is a rhizomatous, introduced species that has become well established in the settled portions of the province as a vigorous, persistent weed. If kept in the vegetative state it can provide good productive forage for domestic livestock. Unfortunately, once this species has established onto cropland it is very difficult and expensive to control.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILD RED RASPBERRY *(Rubus ideaus)*	30
FORBS	
YELLOW PEAVINE *(Lathyrus ochroleucus)*	2
DANDELION *(Taraxacum officinale)*	25
COMMON YARROW *(Achillea millefolium)*	2
GRASSES	
QUACKGRASS *(Agropyron repens)*	45
KENTUCKY BLUEGRASS *(Poa pratensis)*	10
SMOOTH BROME (*Bromus inermis*)	15
CREEPING RED FESCUE (*Festuca rubra*)	15

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
579M

SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1500
FORBS	800
SHRUBS	0
TOTAL	2300

SUGGESTED STOCKING RATE
0.5 HA/AUM

DMB6. Reed canary grass/Cicer milkvetch

(Phalaris arundinacea/Astragalus cicer)

n=1 This community type represents pipelines that have been seeded with reed canary grass and cicer milkvetch. Reed canary grass establishes quickly in wet places that have been disturbed. Care should be taken when seeding reed canary grass. It appears that the commercial cultivars can be very invasive (Invasive plants of natural habitats 1992). In areas that have supported reed canary grass monocultures for extended periods many have seed banks devoid of other species. Cicer milkvetch is also well adapted to growing on moist soils, but this species is also invasive. Plants of cicer milkvetch were found growing off the pipeline under aspen. When seeding disturbed lands thought must be given to the compatibility of the tame species to the surrounding environment. The two dominant species of this community type appear to be invasive and probably should not have been seeded.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER *(Trifolium spp.)*	6
DANDELION *(Taraxacum officinale)*	2
CICER MILKVETCH *(Astragalus cicer)*	26
GRASSES	
CREEPING RED FESCUE *(Festuca rubra)*	11
REED CANARY GRASS *(Phalaris arundinacea)*	55
TIMOTHY *(Phleum pratense)*	9

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
667M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	2995(2769-3221)
TOTAL	2995(2769-3221)

SUGGESTED STOCKING RATE
0.3 HA/AUM

DMB7. Creeping red fescue-Kentucky bluegrass/Dandelion

(Festuca rubra - Poa pratensis/Taraxacum officinale)

n=9 This community type develops on sites that were seeded with a creeping red fescue, timothy, clover mixture and have a history of moderate to heavy grazing which has allowed Kentucky bluegrass and dandelion to invade into the stand. This community type is usually considered to be in fair condition.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
N/A	0
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	3
FORBS	
CLOVER	
(Trifolium spp.)	9
DANDELION	
(Taraxacum officinale)	12
WILD STRAWBERRY	
(Fragaria virginiana)	1
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	49
SLENDER WHEATGRASS	
(Agropyron trachycaulum)	1
TIMOTHY	
(Phleum pratense)	5
KENTUCKY BLUEGRASS	
(Poa pratensis)	13

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
457-606(597)M

SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1408(1104-227)
FORBS	702(60-1772)
SHRUBS	13(0-100)
TOTAL	2120(989-3051)

SUGGESTED STOCKING RATE
0.5 HA/AUM

DMB8. Smooth brome-Creeping red fescue/Strawberry

(Bromus inermis-Festuca rubra/Fragaria virginiana)

n=1 This community type occurs on cleared pastures that were seeded with a smooth brome, creeping red fescue-clover mix. With a moderate grazing regime, smooth brome grass is the most competitive forage plant seeded into this site. It out-competes timothy because it is strongly rhizomatous and is able to fill in the gaps between plants allowing it to shade out the timothy reducing its prominence in the stand. Smooth brome grass also out-competes creeping red fescue because it establishes faster.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	2
FORBS	
CLOVER	
(Trifolium spp.)	15
DANDELION	
(Taraxacum offincinale)	20
WILD STAWBERRY	
(Fragaria virginiana)	35
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	60
SMOOTH BROME	
(Bromus inermis)	75
TIMOTHY	
(Phleum pratense)	5
KENTUCKY BLUEGRASS	
(Poa pratensis)	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
579M

SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	3248
FORBS	62
SHRUBS	0
TOTAL	3310

SUGGESTED STOCKING RATE
0.33 HA/AUM

DRY MIXEDWOOD SUBREGION

DECIDUOUS FOREST COMMUNITY TYPES

Photo 4. Aw/Rose/Tall forb community type in the Dry Mixedwood subregion

DM - DECIDUOUS FOREST COMMUNITIES

All of the deciduous stands sampled in the Dry Mixedwood subregion were dominated by aspen and had a significant rose understory. In both Brierley et al. (1985) and Beckingham's (1993) deciduous classifications in the same subregion rose was the dominant or codominant understory shrub species in nearly every aspen-dominated community type. In Beckingham's classification rose was present in 205 of the 209 aspen-dominated stands. Rose is well adapted to a wide variety of site conditions with a moderate supply of nutrients. The moisture regime can vary from submesic to subhygric and the sites can be well to imperfectly drained.

It appears the secondary forb and shrub species in association with rose characterize the ecological conditions of aspen forest types in the Dry Mixedwood subregion. Indeed, many of the deciduous types in Beckingham's classification were based on the secondary shrub species.

In the Dry Mixedwood classification 9 community types were described in the Grande Prairie and Peace River area (Debolt, Dunvegan, Falher, Smoky, Grimshaw, Manning, High Level and Boyer Plains ecodistricts)(Strong and Thompson 1995). The Aspen/Bearberry-Rose type is found on well-drained, sandy sites in association with jack pine stands. The Aspen/Alder-Rose type is found on moist, moderately drained sites at higher elevations and the Aspen/Rose(Aw/Rose/Tall forb, Aw/Rose/Low forb, Aw/Rose-Hazelnut, Aw/Buffaloberry-Rose and Aw/Saskatoon-Rose) site types are moderately well-drained, with mesic moisture and mesotrophic nutrient regimes. Beckingham (1993), felt the Aspen/Buffaloberry type occurred on somewhat nutrient-poor soils. The three stands in this classification were also found at higher elevations (>650 m). The Aspen/Rose/Tall and Low forb community types occupy similar site conditions. The difference between these two types may be related to grazing pressure. The Aspen/Rose/Low forb type has a low total cover of forbs (48%), whereas the Aspen/Rose/Tall forb type has a high total cover of forbs (81%). The increased grazing pressure in the Aspen/Rose/Low forb type may have caused a reduction in forb cover. The Aspen/Rose-Hazelnut type is found on mesic, well-drained sites and appears to be the reference deciduous type for this subregion, particularly in the more eastern ecodistricts. The Aspen/Horsetail type was found on one moist poorly drained site adjacent to some willow shrublands.

One balsam poplar-dominated community was described in the western ecodistricts. This community was very typical of forests situated along the flood plains of rivers.

The hazelnut-dominated community types were very common within the eastern ecodistricts in the southern part of the subregion (St. Paul, Bonnyville, Smoky Lake). The presence of hazelnut appears to be indicative of warmer sites (Beckingham 1993) and have some fire history (Downing and Karpuk 1992). The Aw/Hazelnut-Rose/Wild sarsaparilla was slightly moister and appears to have a higher nutrient regime than the Aw/Hazelnut-Rose/Peavine community type. The Aw/Rose-Blueberry community type is typical of sandy, well-drained sites throughout the Dry Mixedwood subregion. This community type is very similar to the Aw/Blueberry-Rose community type described in the Central Mixedwood subregion. The Aw/Rose-Low-bush cranberry community type was described on the border between the Central and Dry Mixedwood subregions. It resembles the modal Aw/Rose-dominated community described in the Central Mixedwood subregion. The sequence of community types in the landscape of the eastern ecodistricts is outlined in figure 2.

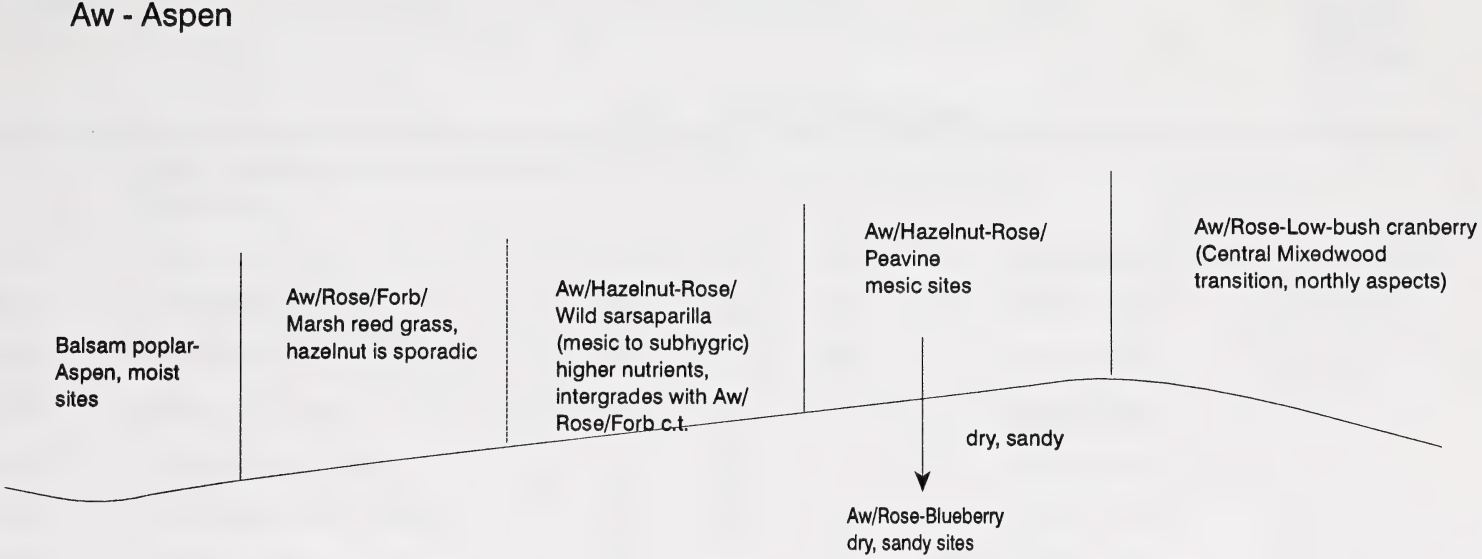


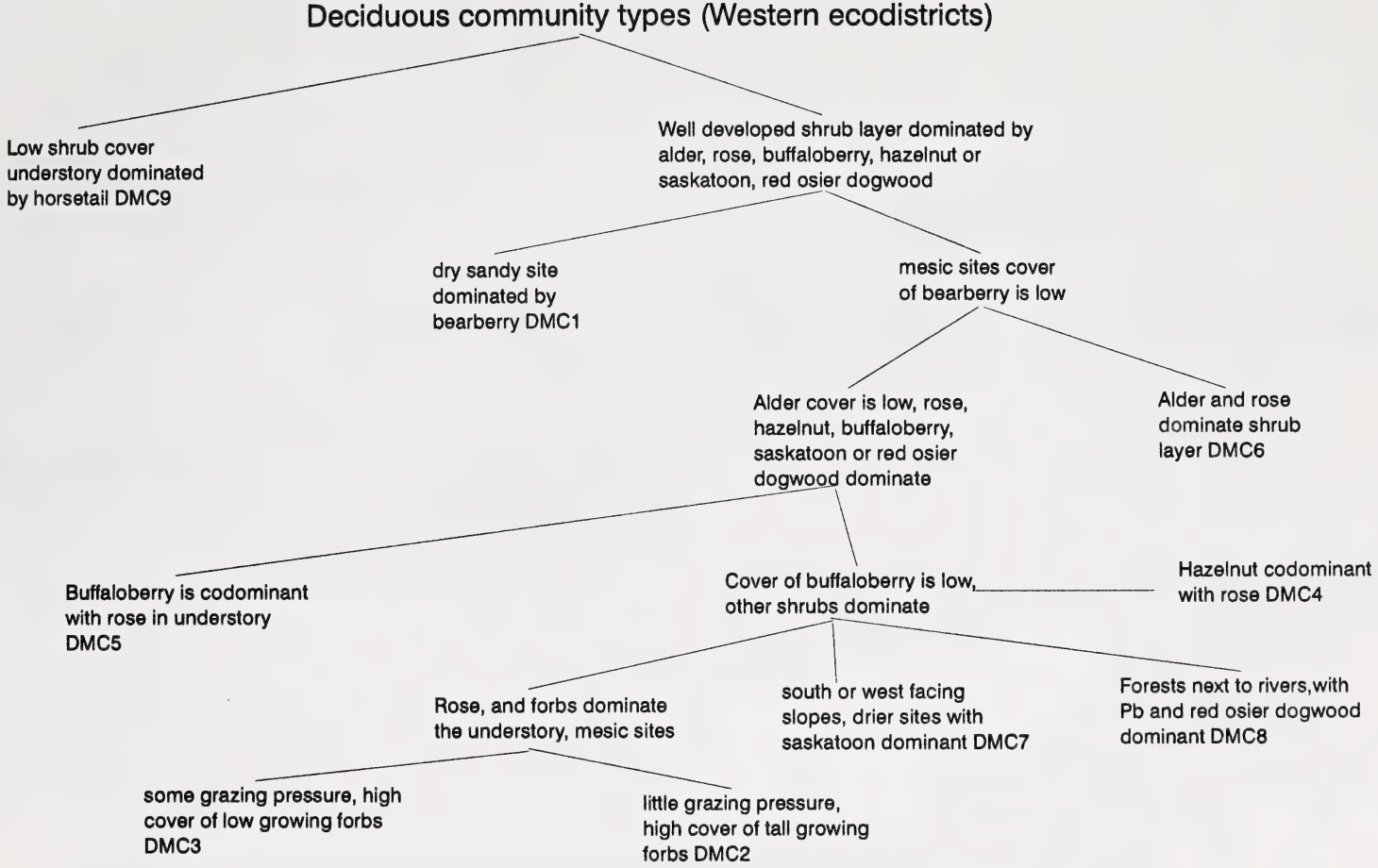
Figure 2. Sequence of deciduous community types in the landscape of the Dry Mixedwood subregion of east-central Alberta.

Table 4. Deciduous community types described in the Dry Mixedwood subregion

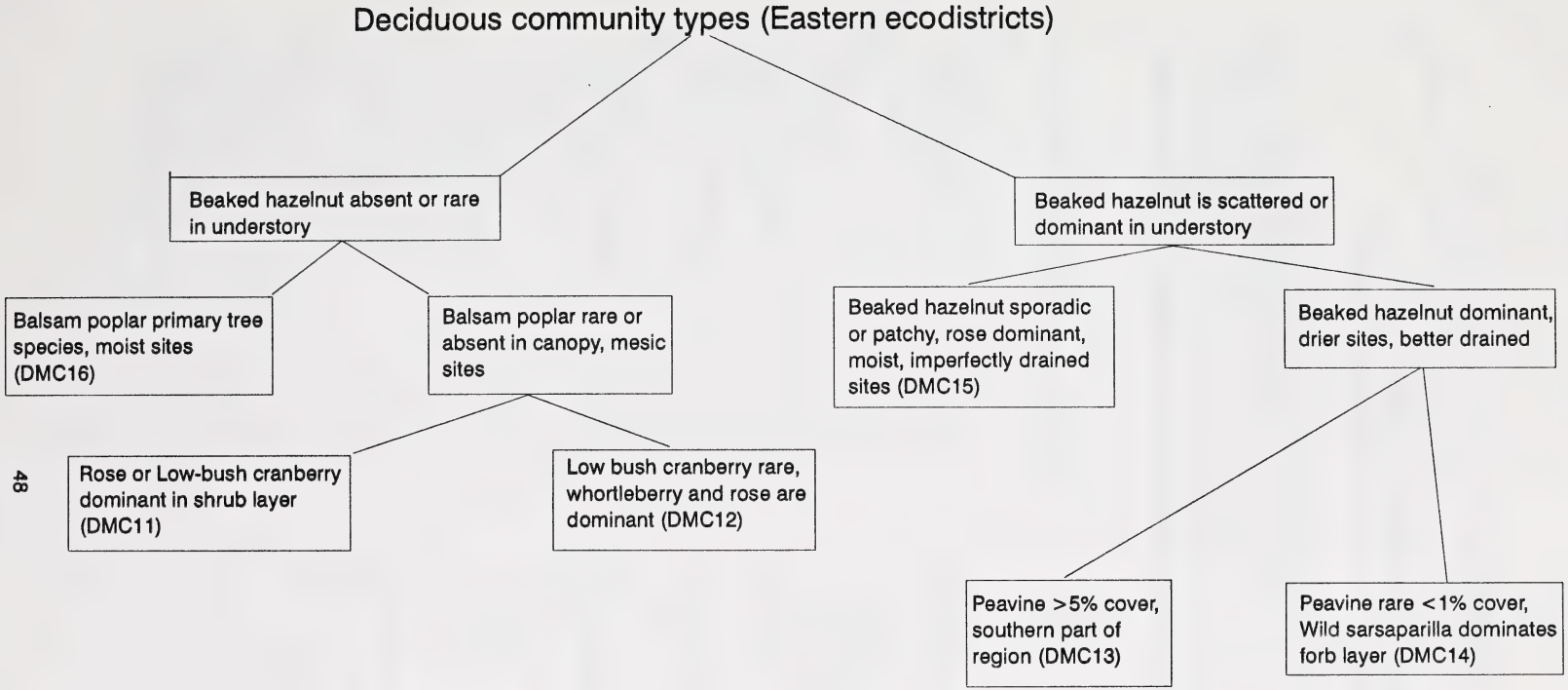
Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
	Western ecodistricts(Grande Prairie, Peace River)						
DMC1	Aw/Rose/Bearberry	339	263	145	728	submesic/medium	2.5
DMC2	Aw/Rose/Tall forb	169	507	282	958	mesic/medium	1.9
DMC3	Aw/Rose/Low forb	285	339	300	937	mesic/medium	2.0
DMC4	Aw/Rose-Hazelnut	77	457	441	995	mesic/medium	1.8
DMC5	Aw/Buffaloberry-Rose	19	658	219	897	mesic/medium	2.1
DMC6	Aw/Alder/Mountain ricegrass	170	356	556	1082	mesic/medium	1.7
DMC7	Aw/Saskatoon-Rose	264	587	514	1365	mesic/medium	1.3
DMC8	Pb/Red osier dogwood-Rose	50	150	400	600	subhygric/rich	Non-use
DMC9	Aw/Horsetail	272	638		910	hygric/rich	Non-use
DMC10	Deciduous cutblocks	626	580	810	2013	mesic/medium	1.0

Table 4. Deciduous community types described in the Dry Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
	Eastern ecodistricts (Smoky lake, St. Paul)						
DMC11	Aw/Rose-Low bush cranberry	261	418	163	842	mesic/medium	2.2
DMC12	Aw//Rose-Blueberry	303	177	193	673	submesic/poor	2.7
DMC13	Aw/Beaked hazelnut-Rose/Peavine	57	447	779	1283	mesic/medium	1.4
DMC14	Aw/Beaked hazelnut-Rose/Wild sarsaparilla	57	447	779	1283	mesic/medium	1.4
DMC15	Aw/Rose/Marsh reedgrass	130	513	467	1110	mesic/medium	1.6
DMC16	Pb-Aw	261	418	163	842	subhygric/rich	2.2



Key to deciduous communities in the western ecodistricts of the Dry Mixedwood subregion



Key to deciduous community types in the Dry Mixedwood of east-central Alberta

DMC1. Aw/Rose/Bearberry

(Populus tremuloides/Rosa acicularis/Arctostaphylos uva-ursi)

n=3 This community type is found on dry, well-drained, sandy sites interspersed with stands of jack pine and is part of the blueberry ecosite outlined by Beckingham and Archibald (1996). The canopy cover of aspen is open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this community type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease. This community type would be considered to be primary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	48
WHITE SPRUCE *(Picea glauca)*	5
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	14
SASKATOON *(Amelanchier alnifolia)*	8
BLUEBERRY *(Vaccinium myrtilloides)*	1
FORBS	
BEARBERRY *(Arctostaphylos uva-ursi)*	30
TWINFLOWER *(Linnaea borealis)*	8
LINDLEY'S ASTER *(Aster ciliolatus)*	3
WILD LILY OF THE VALLEY *(Maianthemum canadense)*	6
YELLOW PEAVINE *(Lathyrus ochroleucus)*	7
WILD SARSAPARILLA *(Aralia nudicaulis)*	1
GRASSES	
MOUNTAIN RICE GRASS *(Oryzopsis asperfolia)*	13
HAIRY WILDRYE (*Elymus innovatus*)	11
PURPLE OATGRASS (*Schizachne purpurascens*)	6
NORTHERN RICEGRASS (*Oryzopsis pungens*)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
455 M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	339(166-442)
FORBS	263(64-610)
SHRUBS	145(56-266)
TOTAL	728(230-1284)

SUGGESTED STOCKING RATE
2.5 HA/AUM

DMC2. Aw/Rose/Tall forb

(Populus tremuloides/Rosa acicularis/Tall forbs)

n=8 This community type is part of the low bush cranberry ecosite outlined by Beckingham and Archibald (1996). This community type is also very similar to the Aspen/Rose/Low forb community type, but the cover of forbs is much higher. This appears to be related to the grazing pressure. The higher the grazing pressure on the Aw/Rose/Tall forb community type appears to cause a reduction in the cover of tall growing forbs (wild sarsparilla, fireweed, peavine, showy aster) and favours the growth of low growing forbs (bunchberry, dewberry, wintergreen, strawberry). This community type is providing a moderate amount of forage for domestic livestock and would be considered primary range on a forested disposition.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN *(Populus tremuloides)*	57
BALSAM POPLAR *(Populus balsamifera)*	2
SHRUBS	
HAZELNUT *(Corylus cornuta)*	2
WILD RED RASPBERRY *(Rubus idaeus)*	7
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	5
PRICKLY ROSE *(Rosa acicularis)*	14
LOW BUSH CRANBERRY *(Viburnum edule)*	5
FORBS	
FIREWEED *(Epilobium angustifolium)*	3
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	4
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	2
WILD STRAWBERRY *(Fragaria virginiana)*	1
LINDLEY'S ASTER *(Aster ciliolatus)*	1
YELLOW PEAVINE *(Lathyrus ochroleucus)*	9
WILD SARSAPARILLA *(Aralia nudicaulis)*	29
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	3
MOUNTAIN RICEGRASS *(Oryzopsis asperifolia)*	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
455-600(496) M

PERCENT SLOPE GRADIENT:
0 - 25(5)

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	169(0-444)
FORBS	507(72-988)
SHRUBS	282(118-378)
TOTAL	958(624-1810)

SUGGESTED STOCKING RATE
1.9 HA/AUM

DMC3. Aw/Rose/Low forb

(Populus tremuloides/Rosa acicularis/Low forbs)

n=19 This community type is part of the low bush cranberry ecosite described by Beckingham and Archibald (1996) and is very similar to the Aw/Rose/Tall forb community type previously described. The difference in the community types appears to be related to the grazing pressure. The higher the grazing pressure on the Aw/Rose/Tall forb community type appears to cause a reduction in the cover of tall growing forbs (wild sarsaparilla, fireweed, peavine, showy aster) and favours the growth of low growing forbs (bunchberry, dewberry, wintergreen, strawberry). This community type is providing a moderate amount of forage for domestic livestock and would be considered primary range on a forested disposition.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN *(Populus tremuloides)*	67
BALSAM POPLAR *(Populus balsamifera)*	2
SHRUBS	
WILLOW SPP. *(Salix spp.)*	3
SASKATOON *(Amelanchier alnifolia)*	3
WILD RED RASPBERRY *(Rubus idaeus)*	8
SNOWBERRY *(Symphoricarpos occidentalis)*	6
PRICKLY ROSE *(Rosa acicularis)*	24
FORBS	
FIREWEED *(Epilobium angustifolium)*	3
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	4
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	3
WILD STRAWBERRY *(Fragaria virginiana)*	3
LINDLEY'S ASTER *(Aster ciliolatus)*	3
BUNCHBERRY *(Cornus canadensis)*	4
WILD SARSAPARILLA *(Aralia nudicaulis)*	T
WINTERGREEN (*Pyrola asarifolia*)	3
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	4
SLENDER WHEATGRASS (*Agropyron trachycaulum)*	6
HAIRY WILDRYE (*Elymus innovatus*)	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
455-697(524) M

PERCENT SLOPE GRADIENT:
0 - 5

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	285(12-996)
FORBS	339(90-842)
SHRUBS	300(0-896)
TOTAL	937(414-2074)

SUGGESTED STOCKING RATE
2.0 HA/AUM

DMC4. Aw/Rose-Hazelnut

(Populus tremuloides/Rosa acicularis-Corylus cornuta)

n=6 Beaked hazelnut is a common component of many of the deciduous stands in both the western and eastern ecodistricts of the Dry Mixedwood subregion. The presence of hazelnut appears to be indicative of warmer sites and have some fire history (Downing and Karpuk 1992). The total forage productivity of this community type is only moderate, but the majority of the production is coming from hazelnut, which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock, limiting the forage availability. This community type would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN	
(Populus tremuloides)	52
BALSAM POPLAR	
(Populus balsamifera)	3
SHRUBS	
HAZELNUT	
(Corylus cornuta)	20
PRICKLY ROSE	
(Rosa acicularis)	18
SNOWBERRY	
(*Symphoricarpos occidentalis*)	7
SASKATOON	
(*Amelanchier alnifolia*)	9
LOW BUSH CRANBERRY	
(*Viburnum edule*)	4
FORBS	
SHOWY ASTER	
(Aster conspicuus)	2
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	2
PEAVINE	
(Lathyrus ochroleucus)	3
AMERICAN VETCH	
(Vicia americana)	1
FALSE SOLOMON'S SEAL	
(Smilacina racemosa)	3
WILD SARSAPARILLA	
(Aralia nudicaulis)	8
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
455 M

PERCENT SLOPE GRADIENT:
0-15 %

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	77(2-200)
FORBS	457(398-520)
SHRUBS	441(348-522)
TOTAL	995(830-1180)

SUGGESTED STOCKING RATE
1.8 HA/AUM

DMC5. Aw/Buffaloberry-Rose

(Populus tremuloides/ Shepherdia canadensis-Rosa acicularis)

n=3 This community type was found on mesic sites at higher elevations in the Saddle and Birch hills. Beckingham (1993) felt the Aw/Buffaloberry type was slightly drier and had a slightly poorer nutrient regime than the modal Aw/Rose community types. This type is providing a moderate amount of forage for domestic livestock, but the drier site conditions and poorer nutrient status will limit regrowth after grazing. Buffaloberry the predominant shrub species in this community type, is generally unpalatable to livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	65
SHRUBS	
BUFFALOBERRY *(Shepherdia canadensis)*	26
WILD RED RASPBERRY *(Rubus idaeus)*	5
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	1
PRICKLY ROSE *(Rosa acicularis)*	10
LOW BUSH CRANBERRY *(Viburnum edule)*	1
FORBS	
BUNCHBERRY *(Cornus canadensis)*	13
DEWBERRY OR RUNNING RASPBERY *(Rubus pubescens)*	4
YELLOW PEAVINE *(Lathyrus ochroleucus)*	13
TWINFLOWER *(Linnaea borealis)*	4
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	3
HAIRY WILDRYE *(Elymus innovatus)*	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
455-758(556) M

PERCENT SLOPE GRADIENT:
0-15

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	19(12-26)
FORBS	658(426-986)
SHRUBS	219(0-392)
TOTAL	897(840-1006)

SUGGESTED STOCKING RATE
2.1 HA/AUM

DMC6. Aw/Alder/Mountain ricegrass

(Populus tremuloides/ Alnus crispa/Oryzopsis asperifolia)

n=1 This community type was described at a higher elevation (600 m) in the Dry Mixedwood subregion. Brierly et al. (1985) and Beckingham (1993) both described aspen-alder communities at higher elevations (>600m). It appears that the presence of alder may indicate a transition from the Dry Mixedwood into the Lower Foothills subregion.

This community type is providing a moderate amount of forage for domestic livestock, but the high cover of alder will limit access. Consequently, this community type should be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
BALSAM POPLAR *(Populus balsamifera)*	1
TREMBLING ASPEN *(Populus tremuloides)*	60
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	12
WILD RED RASPBERRY *(Rubus idaeus)*	1
WHITE MEADOWSWEET *(Spiraea betulifolia)*	14
SNOWBERRY OR BUCKBRUSH *(Symphoricarpos occidentalis)*	1
FORBS	
CREAM-COLOURED VETCHLING *(Lathyrus ochroleucus)*	7
BUNCHBERRY *(Cornus canadensis)*	30
SPREADING DOGBANE *(Apocynum androsaemifolium)*	10
WILD SARSAPARILLA *(Aralia nudicaulis)*	26
GRASSES	
MOUNTAIN RICEGRASS *(Oryzopsis asperifolia)*	24
FRINGED BROME *(Bromus ciliatus)*	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
600 M

PERCENT SLOPE GRADIENT:
5 %

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	170
FORBS	356
SHRUBS	556
TOTAL	1082

SUGGESTED STOCKING RATE
1.7 HA/AUM

DMC7. Aw/Saskatoon-Rose

(Populus tremuloides/ Amelanchier alnifolia-Rosa acicularis)

n=1 This community type is found on mesic, well drained south facing slopes that overlook rivers and creeks. Generally, hazelnut, chokecherry, saskatoon and snowberry are indicative of the Dry Mixedwood subregion and are usually found associated with each other. When saskatoon predominates it usually occurs on south and west facing slopes. Saskatoon provides important browse for wild ungulates. Livestock also find saskatoon palatable and in areas where there is extensive cattle grazing this species can be heavily browsed.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	35
SHRUBS	
SASKATOON *(Amelanchier alnifolia)*	21
PRICKLY ROSE *(Rosa acicularis)*	31
WILD RED RASPBERRY *(Rubus idaeus)*	18
SNOWBERRY *(Symphoricarpos occidentalis)*	13
CHOKECHERRY (*Prunus virginiana*)	11
FORBS	
SPREADING DOGBANE *(Apocynum androsaemifolium)*	12
CANADA VIOLET *(Viola canadensis)*	4
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	1
LINDLEY'S ASTER *(Aster ciliolatus)*	1
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
455 M

PERCENT SLOPE GRADIENT:
5%

ASPECT:
SOUTHERLY

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	264
FORBS	587
SHRUBS	514
TOTAL	1365 *ESTIMATE

SUGGESTED STOCKING RATE
1.3 HA/AUM *ESTIMATE

DMC8. Pb/Red osier dogwood-Rose

(Populus balsamifera/Cornus stolonifera-Rosa acicularis)

n=1 This community type is typical of river floodplains throughout the Dry Mixedwood subregion. This community type tends to have a subhygric moisture and rich nutrient regime. Beckingham and Archibald (1996) found this community type on mid to lower slope topographic positions or near water courses where they recieve nutrient-rich seepage or flood waters for a portion of the growing season. This community type is one of the most productive in the Dry Mixedwood subregion, but the high cover of shrubs limits access to livestock. The high cover of tall growing shrubs (alder, red osier dogwood) also limits the growth of low shrubs, forbs and grass the principle forage species for domestic livestock in deciduous forests. As a result, this community should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
BALSAM POPLAR	
(Populus balsamifera)	35
TREMBLING ASPEN	
(Populus tremuloides)	10
SHRUBS	
RED OSIER DOGWOOD	
(Cornus stolonifera)	24
WILD RED RASPBERRY	
(Rubus idaeus)	18
PRICKLY ROSE	
(Rosa acicularis)	18
GREEN ALDER	
(Alnus crispa)	10
FORBS	
CANADA GOLDENROD	
(Solidago canadensis)	3
STRAWBERRY	
(Fragaria virginiana)	3
BUNCHBERRY	
(Cornus canadensis)	2
LINDLEY'S ASTER	
(Aster ciliolatus)	1
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
455 M

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	50
FORBS	150
SHRUBS	400
TOTAL	600

SUGGESTED STOCKING RATE
NON-USE

DMC9. Aw/Horsetail

(Populus tremuloides/Equisetum arvense)

n=1 This community occupies lowland sites adjacent to black spruce and willow lowlands. It is very moist and nutrient-rich. Horsetail types in the other subregions also tend to be moister and richer than the modal Aw/Rose types. Past overgrazing pressure appears to have been heavy at this site resulting in an alteration of understory species composition and productivity. Overuse in the past has resulted in less species diversity and an abundance of the increaser plant horsetail.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
ASPEN	
(Populus tremuloides)	85
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	T
FORBS	
HORSETAIL	
(Equisetum arvense)	61
BUNCHBERRY	
(Cornus canadensis)	7
TALL LUNGWORT	
(Mertensia paniculata)	6
DEWBERRY	
(Rubus pubescens)	6
VEINY MEADOW RUE	
(*Thalictrum venulosum*)	5
BISHOP'S CAP	
(*Mitella nuda*)	3
STRAWBERRY	
(*Fragaria virginiana*)	2
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
667 M

SOIL DRAINAGE:
IMPERFECTLY

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	272
FORBS	638
TOTAL	910

SUGGESTED STOCKING RATE
NON-USE

DMC10. Deciduous cutblocks and unseeded clearings

(Populus tremuloides)

n=4 This community type represents deciduous cutblocks and clearings that have not been seeded to tame forage species. Marsh reedgrass and strawberry initially dominated these areas. As succession occurs an understory of aspen and rose predominate. As the tree cover increases the understory species structure and diversity declines. Initially these clearings are very productive for domestic livestock until the trees grow back and limit accessiblity. Care should be taken when grazing these cutblocks that the trees are not damaged and there is sufficient regrowth to regenerate the cutblock.

PLANT COMPOSITION CANOPY COVER(%)

UNDERSTORY TREES	
WHITE BIRCH	
(Betula papyrifera)	T
BALSAM POPLAR	
(Populus balsamifera)	T
ASPEN	
(*Populus tremuloides*)	18
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	18
LOW BUSH CRANBERRY	
(Viburnum edule)	2
SNOWBERRY OR BUCKBRUSH	
(Symphoricarpos occidentalis)	3
WILD RED RASPBERRY	
(Rubus idaeus)	5
FORBS	
WILD STRAWBERRY	
(Fragaria virginiana)	22
PALMATE-LEAVED COLTSFOOT	
(Petasites palmatus)	2
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	2
NORTHERN BEDSTRAW	
(Galium boreale)	4
LINDLEY'S ASTER	
(Aster ciliolatus)	4
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	17

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
455-727(636) M

PERCENT SLOPE GRADIENT:
LEVEL

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	623
FORBS	580
SHRUBS	810
TOTAL	2013

SUGGESTED STOCKING RATE
1.0 HA/AUM

EASTERN ECODISTRICTS (SMOKY LAKE, ST PAUL)

Photo 5. Aw/Hazelnut-Rose community is very common in the eastern ecodistricts of the Dry Mixedwood subregion.

DMC11. Aw/Rose-Low bush cranberry

(Populus tremuloides/Rosa acicularis-Viburnum edule)

n=11 This community type occurs mainly along the Dry Mixedwood and Central Mixedwood subregion boundary in east-central Alberta. Stands occur on moderately moist, moderately well-drained and medium-textured Orthic Gray Luvisols that have developed in slightly stony till deposits. Slopes are gentle with variable aspects. This type may be expected farther south in the east-central part of the subregion on sites that are cooler and moister than the average. Like other deciduous community types described in the Central Mixedwood, this community type produces a moderate amount of forage for domestic livestock and would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN	
(Populus tremuloides)	52
SHRUBS	
LOW BUSH CRANBERRY	
(Viburnum edule)	13
PRICKLY ROSE	
(Rosa acicularis)	14
FORBS	
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	8
BUNCHBERRY	
(Cornus canadensis)	8
WILD STRAWBERRY	
(Fragaria virginiana)	3
FIREWEED	
(Epilobium angustifolium)	7
TALL LUNGWORT	
(*Mertensia paniculata*)	2
WILD LILY-OF-THE-VALLEY	
(*Maianthemum canadense*)	4
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	10
HAIRY WILDRYE	
(Elymus innovatus)	8

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
590--648(630) M

PERCENT SLOPE GRADIENT:
0

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	261
FORBS	418
SHRUBS	163
TOTAL	842 *ESTIMATE

SUGGESTED STOCKING RATE
2.2 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

DMC12. Aw/Rose-Blueberry

(Populus tremuloides/ Rosa acicularis-Vaccinium myrtilloides)

n=4 This community type is scattered throughout the Dry Mixedwood subregion on mainly dry, rapidly to well-drained sites. Sandy glaciofuluvial veneers and blankets or rubble clays typically mantle fine-textured till deposits. Soil nutrient levels are judged to be poor (submesotrophic) relative to other vegetation types because soils are slightly to moderately acid and have sandy to stony textures in the upper soil horizons. These stands tend to be relatively open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this commlunity type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN	
(Populus tremuloides)	49
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	17
BLUEBERRY	
(Vaccinium myrtilloides)	14
BUFFALOBERRY	
(Shepherdia canadensis)	7
FORBS	
BUNCHBERRY	
(Cornus canadensis)	15
WILD STRAWBERRY	
(Fragaria virginiana)	3
BEARBERRY	
(Arctostaphylos uva-ursi)	7
DEWBERRY	
(Rubus pubescens)	2
WILD LILY-OF-THE-VALLEY	
(*Maianthemum canadense*)	3
YELLOW PEAVINE	
(*Lathyrus ochroleucus*)	3
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	4
HAIRY WILDRYE	
(Elymus innovatus)	10
MOUNTAIN RICEGRASS	
(*Oryzopsis asperifolia*)	8

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
556-646(587) M

PERCENT SLOPE GRADIENT:
1-5(3)%

SOIL DRAINAGE:
RAPIDLY TO WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	303
FORBS	177
SHRUBS	193
TOTAL	673 *ESTIMATE

SUGGESTED STOCKING RATE
2.7 HA/AUM

DMC13. Aw/Beaked hazelnut-Rose/Wild peavine

(Populus tremuloides/Corylus cornuta-Rosa acicularis/Lathyrus ochroleucus)

n=13 This community occurs mainly in the south half of the Dry Mixedwood subregion in east-central Alberta. Typical sites are judged to be moderately well-drained and moderately moist. The trend toward warmer, drier conditions with more southerly locations in the Dry Mixedwood may explain the dominance of this type over the Aw/Beaked hazelnut-Rose/Wild sarsaparilla community type in this part of the subregion. The presence of high peavine cover appears to be indicative of a boreal-parkland climatic transition. The total forage production of this community type is moderate, but the majority of the production is coming from hazelnut, which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock and limits the forage availability. This community type would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN	
(Populus tremuloides)	53
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	21
LOW BUSH CRANBERRY	
(Viburnum edule)	2
HAZELNUT	
(Corylus cornuta)	35
FORBS	
BUNCHBERRY	
(Cornus canadensis)	7
WILD SARSAPARILLA	
(Aralia nudicaulis)	11
PURPLE PEAVINE	
(Lathyrus venosus)	11
DEWBERRY	
(Rubus pubescens)	7
WILD LILY-OF-THE-VALLEY	
(*Maianthemum canadense*)	5
YELLOW PEAVINE	
(*Lathyrus ochroleucus*)	7
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	4
HAIRY WILDRYE	
(Elymus innovatus)	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
570-690(630) M

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	57
FORBS	447
SHRUBS	779
TOTAL	1283 *ESTIMATE

SUGGESTED STOCKING RATE
1.4 HA/AUM

DMC14. Aw/Beaked hazelnut-Rose/Wild sarsaparilla

(Populus tremuloides/Corylus cornuta-Rosa acicularis/Aralia nudicaulis)

n=21 This community type is one of the most common types found within the Dry Mixedwood subregion of east-central Alberta. It occurs mainly on moderately well-drained, fine-textured and gently sloping till deposits. Beaked hazelnut is the dominant shrub in most stands and accounted for well over half of the total shrub cover. The total forage production of this community type is moderate, but the majority of the production is coming from hazelnut, which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock and limits the forage availability. This community type would be rated as secondary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	50
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	14
HAZELNUT *(Corylus cornuta)*	45
FORBS	
BUNCHBERRY *(Cornus canadensis)*	8
WILD SARSAPARILLA *(Aralia nudicaulis)*	13
DEWBERRY *(Rubus pubescens)*	5
WILD LILY-OF-THE-VALLEY (*Maianthemum canadense*)	4
YELLOW PEAVINE (*Lathyrus ochroleucus*)	6
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	3
HAIRY WILDRYE *(Elymus innovatus)*	2

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
556-709(624) M

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	57
FORBS	447
SHRUBS	779
TOTAL	1283

SUGGESTED STOCKING RATE
1.4 HA/AUM

DMC15. Aw/Rose/Forb/Marsh reedgrass

(Populus tremuloides/Rosa acicularis/Forb/Calamagrostis canadensis)

n=25 This community type is the most common and widespread aspen forest type found in the Dry Mixedwood subregion of east-central Alberta. Typical parent materials are moderately well to imperfectly drained, fine-textured and gently sloping till deposits in which Orthic and Gleyed Gray Luvisols have developed. This type is difficult to distinguish from the Aw/Rose-Low bush cranberry type towards the northern limit of the subregion. In the latter type the major distinguishing characteristic is the infrequent occurrence of beaked hazelnut. This community type is fairly productive and produces a moderate amount of palatable forage for domestic livestock. Consequently, this community type would be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN *(Populus tremuloides)*	51
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	22
HAZELNUT *(Corylus cornuta)*	4
WILD RED RASPBERRY *(Rubus idaeus)*	6
FORBS	
BUNCHBERRY *(Cornus canadensis)*	10
FIREWEED *(Epilobium angustifolium)*	7
DEWBERRY *(Rubus pubescens)*	7
WILD LILY-OF-THE-VALLEY *(Maianthemum canadense)*	3
YELLOW PEAVINE *(Lathyrus ochroleucus)*	6
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	14
HAIRY WILDRYE *(Elymus innovatus)*	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
556-693(617) M

SOIL DRAINAGE:
MODERATELY WELL TO IMPERFECTLY

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	130
FORBS	513
SHRUBS	467
TOTAL	1110

SUGGESTED STOCKING RATE
1.6 HA/AUM

DMC16. Pb-Aw

(Populus balsamifera-Populus tremuloides)

n=1 This community type apparently occurs infrequently in the east-central portion of the Dry Mixedwood subregion. This type may be expected in association with small depressions between till knobs, along stream channels or on valley sides where soil moisture and nutrient status are relatively high compared to the surrounding topography. Further sampling is necessary to determine whether this expectation is justified.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	40
BALSAM POPLAR (*Populus balsamifera*)	30
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	7
LOW BUSH CRANBERRY *(Viburnum edule)*	10
BRACTED HONEYSUCKLE (*Lonicera involcrata*)	7
TWINNING HONEYSUCKLE (*Lonicera dioica*)	7
FORBS	
BUNCHBERRY *(Cornus canadensis)*	15
WILD SARSAPARILLA *(Aralia nudicaulis)*	40
DEWBERRY *(Rubus pubescens)*	3
WILD LILY-OF-THE-VALLEY (*Maianthemum canadense*)	3
WINTERGREEN (*Pyrola asarifolia*)	10
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	4
HAIRY WILDRYE *(Elymus innovatus)*	2

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
625 M

SOIL DRAINAGE:
POORLY

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	261
FORBS	418
SHRUBS	163
TOTAL	842 *ESTIMATE

SUGGESTED STOCKING RATE
2.2 HA/AUM

DRY MIXEDWOOD SUBREGION

CONIFEROUS AND MIXEDWOOD FOREST COMMUNITIES

Photo 6. Pj/Bearberry community type in the Dry Mixedwood subregion

DM-CONIFEROUS AND MIXEDWOOD FORESTS

The mixedwood and coniferous community types described in this guide represent four ecosites as described by Beckingham and Archibald (1996). On sites with subxeric moisture and poor nutrient regimes, coarse textured, sandy soils open stands of jack pine generally dominate (Pj/Alder, Pj/Bearberry). These community types commonly have a carpet of lichens covering the forest floor and a thin organic layer typically less than 5 cm thick (Beckingham and Archibald 1996).

On slightly moister sites with submesic moisture and medium nutrient regimes aspen grows in conjunction with jack pine to form the Pj-Aw/Bearberry community type. The soils of this community type continue to be coarse-textured but the moisture and nutrient conditions are more favourable to the growth of aspen.

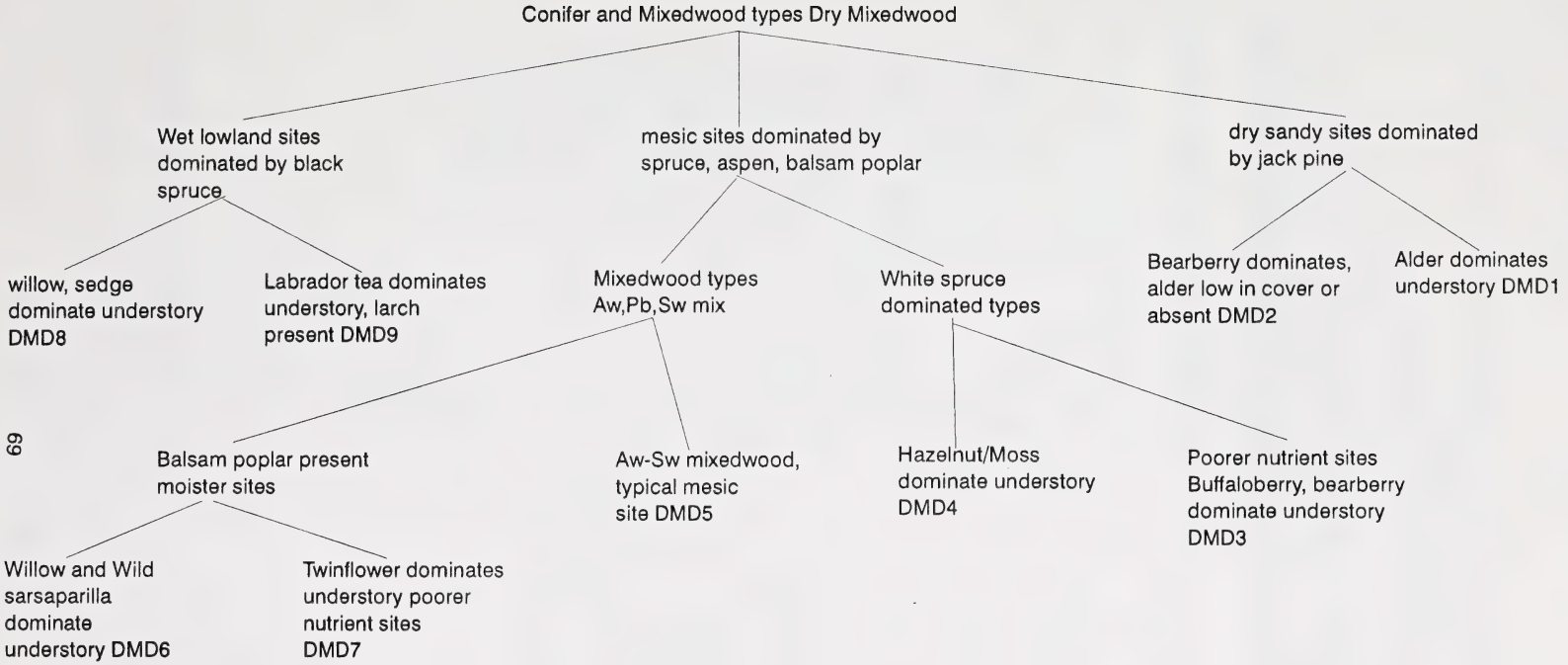
The mesic/medium sites are generally dominated by white spruce (Sw/Buffaloberry/Bearberry, Sw/Moss) and mixedwood communities of aspen and spruce (Aw-Sw/Rose/Marsh reedgrass, Aw-Pb-Sw/Willow/Wild sarsparilla, Sw-Pb-Aw/Rose/Twinflower). These communities represent the reference ecosite for the Boreal Mixedwood subregion (Beckingham and Archibald 1996). Generally, these sites have moderately fine to fine-textured till or glaciolacustrine parent materials. Pioneer deciduous species (aspen, balsam poplar and birch) are replaced with white spruce and balsam fir as these sites develop successionally. With succession shade tolerant plants take over the herbaceous layer as conifers dominate the canopy. These shade tolerant species are unproductive and often unpalatable for domestic livestock. Forage productivity declines from 2.3 ha/AUM in a deciduous community to 2.3-8.6 ha/AUM in a mixedwood community to less than 10 ha/AUM in a conifer community.

Black spruce and larch communites generally dominate on wetter sites with subhygric to subhydric moisture regimes and poor to medium nutrient regimes to form the Sb/Willow/Moss and Sb-Lt/Labrador tea/Moss community types. Larch is more tolerant of excessive moisture and is indicative of an enriched nutrient status, while black spruce is typical in areas of stagnating ground water with poor nutrient status (Hay et al. 1985). Generally, these community types are considered non-use for domestic livestock.

Beckingham and Archibald (1996), provide a good description on how the conifer and mixedwood community types are arranged in the landscape.

Table 5. Conifer and Mixedwood communities of the Dry Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
DMD1	Pj/Alder	160	175	191	526	subxeric/poor	Non use
DMD2	Pj-Aw/Bearberry	237	146	488	871	submesic/medium	Non use
DMD3	Sw/Buffaloberry/Bearberry	18	238	848	1104	mesic/medium	Non use
DMD4	Sw/Beaked hazelnut/Moss	0	132	74	206	mesic/medium	Non use
DMD5	Aw-Sw/Rose/Marsh reedgrass	468	534	440	1442	mesic/medium	1.3
DMD6	Aw-Pb-Sw/Willow/Wild sarsaparilla	20	400	56	476	subhygric/rich	Non use
DMD7	Sw-Pb-Aw/Rose/Twinflower	16	112	108	236	mesic/medium	Non use
DMD8	Sb/Wllow/Moss	401	89	242	732	subhydric/medium	9.9
DMD9	Sb-Lt/Labrador tea/Moss	10	40	50	100	subhydric/very poor	3.3



Key to conifer and mixedwood communities in the Dry Mixedwood subregion

DMD1. Pj/Alder

(Pinus banksiana/ Alnus crispa)

n=2 This community type is found on dry, rapidly drained, sandy soils with a poor nutrient status. Consequently, production is quite low. Cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the area of forage. This community type would be rated as secondary or non-use range.

PERCENT COMPOSITION CANOPY COVER(%)

TREES	
JACK PINE	
(Pinus banksiana)	43
SHRUBS	
GREEN ALDER	
(Alnus crispa)	33
PRICKLY ROSE	
(Rosa acicularis)	9
SASKATOON	
(Amelanchier alnifolia)	5
FORBS	
TWIN-FLOWER	
(Linnaea borealis)	6
BEARBERRY	
(Arctostaphylos uva-ursi)	9
YELLOW PEAVINE	
(Lathyrus ochroleucus)	4
STRAWBERRY	
(*Fragaria virginiana*)	2
GRASSES	
SEDGES	
(Carex spp.)	6
HAIRY WILD RYE	
(Elymus innovatus)	3
NORTHERN RICEGRASS	
(Oryzopsis pungens)	6

SUBXERIC

NUTRIENT REGIME
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
2 - 8

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	160
FORBS	175
SHRUBS	191

SUGGESTED STOCKING RATE
NON-USE

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:

DMD2. Pj-Aw/Bearberry

(Pinus banksiana/Arctostaphylos uva-ursi)

n=4 This community represents a jack pine forest with a secondary canopy of aspen. It is very similar to the Pj/Alder community type, but it is found on slightly moister soils with better nutrient regimes. These conditions favour the growth of aspen. Like the previous community, cattle will utilize these area due to the easy access, however overutilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
JACK PINE	
(Pinus banksiana)	39
ASPEN	
(*Populus tremuloides*)	16
SHRUBS	
SASKATOON	
(Amelanchier alnifolia)	6
PRICKLY ROSE	
(Rosa acicularis)	7
BLUEBERRY	
(Vaccinium myrtilloides)	2
FORBS	
BEARBERRY	
(Arctostaphylos uva-ursi)	26
NORTHERN BEDSTRAW	
(Galium boreale)	1
WILD LILY-OF-THE-VALLEY	
(Maianthemum canadense)	3
CREAM-COLOURED VETCHLING	
(Lathyrus ochroleucus)	5
GRASSES	
HAIRY WILD RYE	
(Elymus innovatus)	6
NORTHERN RICEGRASS	
(*Oryzopsis pungens*)	3
MOSSES	
Moss spp.	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
0 - 5

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	237(185)
FORBS	146(6)
SHRUBS	488(52)

SUGGESTED STOCKING RATE
NON-USE

DMD3. Sw/Buffaloberry/Bearberry

(Picea glauca/ Shepherdia canadensis/Arctostaphylos uva-ursi)

n=1 This community type represents a very open spruce forest. It was found on a small, sandy hillcrest with a high water table. The site may have a high pH and be somewhat nutrient poor as indicated by the abundance of buffaloberry (Beckingham 1993). The majority of productivity is from buffaloberry which is unpalatable to livestock. Consequently, this community type would be considered non-use range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE	
(Picea glauca)	10
SHRUBS	
BUFFALOBERRY	
(Shepherdia canadensis)	48
PRICKLY ROSE	
(Rosa acicularis)	12
BLUEBERRY	
(Vaccinium myrtilloides)	7
SNOWBERRY	
(Symphoricarpos occidentalis)	5
FORBS	
BEARBERRY	
(Arctostaphylos uva-ursi)	19
TWINFLOWER	
(Linnaea borealis)	12
YELLOW PEAVINE	
(Lathyrus ochroleucus)	8
TOADFLAX	
(*Comandra umbellata*)	2
GRASSES	
MOUNTAIN RICEGRASS	
(Oryzopsis asperifolia)	8
NORTHERN RICEGRASS	
(Oryzopsis pungens)	6
SEDGE	
(Carex spp.)	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
0 - 4

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	18
FORBS	238
SHRUBS	848
TOTAL	1104

SUGGESTED STOCKING RATE
NON-USE

DMD4. Sw/Beaked hazelnut/Moss

(Picea glauca/Corylus cornuta/ Moss*)*

n=1 This is a mature white spruce forest which represents the climax or near climax vegetation for the area. The northerly aspect of this community type has probably protected the site from past disturbance by fires and allowed the community to undergo succession. The high canopy of spruce limits the light reaching the forest floor, limiting the growth of grasses and forbs. As a result, the forage productivity of this community type is very low. This community would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE	
(Picea glauca)	60
PAPER BIRCH	
(Betula papyrifera)	5
SHRUBS	
HAZELNUT	
(Corylus cornuta)	12
BOG CRANBERRY	
(Vaccinium vitis-idaea)	6
PRICKLY ROSE	
(Rosa acicularis)	6
FORBS	
BEARBERRY	
(Arctostapylos uva-ursi)	2
TWINFLOWER	
(Linnaea borealis)	8
BASTARD TOADFLAX	
(Geocaulon lividum)	2
STRAWBERRY	
(Fragaria virginiana)	2
MOSSES	
Moss spp.	73

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
5%

ASPECT:
NORTHERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	0
FORBS	132
SHRUBS	74
TOTAL	206

SUGGESTED STOCKING RATE
NON-USE

DMD5. Aw-Sw/Rose/Marsh reedgrass

(Populus tremuloides-Picea glauca/Rosa acicularis/Calamagrostis canadensis)

n=1 This community represents a highly productive aspen community that is succeeding to white spruce. The presence of tall forbs wild sarsaparilla and fireweed indicate a high nutrient regime and a light grazing regime. At present this community type has a good level of forage for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE *(Picea glauca)*	30
POPULUS TREMULOIDES *(Populus tremuloides)*	35
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	23
WILD RED RASPBERRY *(Rubus idaeus)*	15
BRISTLY BLACK CURRANT *(Ribes lacustre)*	10
LOW BUSH CRANBERRY *(Viburnum edule)*	8
FORBS	
BUNCHBERRY *(Cornus stolonifera)*	8
FIELD HORSETAIL *(Equisetum arvense)*	4
TALL LUNGWORT *(Mertensia paniculata)*	7
WILD SARSAPARILLA *(Aralia nudicaulis)*	5
DEWBERRY *(Rubus pubscens)*	5
FIREWEED *(Epilobium angustifolium)*	3
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	19

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
455 M

SOIL DRAINAGE:
MODERATELY WELL

PERCENT SLOPE GRADIENT:
1%

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	468
FORBS	534
SHRUBS	440
TOTAL	1442

SUGGESTED STOCKING RATE
1.3 HA/AUM

DMD6. Aw-Pb-Sw/Willow/Wild sarsaparilla

(Populus tremuloides-Populus balsamifera-Picea glauca/Salix spp./Aralia nudicaulis)

n=1 This community type has similar moisture and nutrient conditions to the Aw-Pb and Pb/Red osier dogwood-Rose community types, but this community is successionally more advanced. The abundance of tall shrubs limits the amount of light reaching the forest floor, which limits forage production. As a result, this community type would be considered non-use or marginal secondary range for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
ASPEN	
(Populus tremuloides)	35
WHITE SPRUCE	
(Picea glauca)	15
PAPER BIRCH	
(*Betula papyrifera*)	10
BALSAM POPLAR	
(*Populus balsamifera*)	25
SHRUBS	
GREEN ALDER	
(Alnus crispa)	45
WILLOW	
(Salix spp.)	25
LOW BUSH CRANBERRY	
(Viburnum edule)	10
PRICKLY ROSE	
(Rosa acicularis)	10
FORBS	
WILD SARSAPARILLA	
(Aralia nudicaulis)	13
BISHOP'S CAP	
(Mitella nuda)	11
CANADA VIOLET	
(Viola canadensis)	11
LADY FERN	
(Athyrium filix-femina)	5
DEWBERRY	
(Rubus pubescens)	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
MODERATELY WELL

PERCENT SLOPE GRADIENT:
20%

ASPECT:
EAST

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	20
FORBS	400
SHRUBS	56
TOTAL	476

SUGGESTED STOCKING RATE
NON-USE

DMD7. Sw-Pb-Aw/Rose/Twinflower

(Picea glauca-Populus balsamifera-Populus tremuloides/ Rosa acicularis/ Linnaea borealis)

n=1 This community is similar to the previous Aw-Pb-Sw/Willow/Wild sarsaparilla community type but is found on slightly drier sites with a poorer nutrient regime. Succession of this community type will likely be to a White spruce /Moss dominated community type. The thick overstory limits the growth of shrubs, forbs and grass. Consequently, there is little forage for domestic livestock. This community type would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE	
(Picea glauca)	35
TREMBLING ASPEN	
(Populus tremuloides)	20
BALSAM POPLAR	
(Populus balsamifera)	30
SHRUBS	
SNOWBERRY	
(Symphoricarpos occidentalis)	13
PRICKLY ROSE	
(Rosa acicularis)	18
BRACTED HONEYSUCKLE	
(Lonicera involcrata)	5
BUFFALO-BERRY	
(Shepherdia canadensis)	1
FORBS	
TWIN-FLOWER	
(Linnaea borealis)	22
BUNCHBERRY	
(Cornus canadensis)	8
WINTERGREEN	
(Pyrola asarifolia)	6
DEWBERRY	
(Rubus pubscens)	6
BISHOP`S CAP	
(Mitella nuda)	3
MOSSES	
Moss spp.	71

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
606 M
SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	16
FORBS	112
SHRUBS	108
TOTAL	236

SUGGESTED STOCKING RATE
NON-USE

DMC8. Sb/Willow/Moss

(Picea mariana/Salix spp./Moss)

n=3 This community type is part of the poor fen ecosite (Beckingham and Archibald 1996) because it has an intermediate nutrient regime between the bog and rich fen ecosites. Drainage on this community type is poor to very poor, but has some movement of water through the site. This community type has a well developed shrub layer and the grass layer consists mainly of marsh reedgrass and sedge species. The productivity of this type is moderate, but the high water table limits access to domestic livestock. This community would be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
LARCH	
(Larix laricina)	5
BLACK SPRUCE	
(Picea mariana)	13
SHRUBS	
WILLOW SPP.	
(Salix spp.)	14
BOG BIRCH	
(Betula glandulosa)	11
FORBS	
STEMLESS RASPBERRY	
(Rubus acaulis)	3
HORSETAIL	
(Equisetum arvense)	12
BISHOP'S CAP	
(Mitella nuda)	4
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	8
HAIR-LIKE SEDGE	
(Carex capillaris)	7
MOSSES	
Moss spp.	1

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	401
FORBS	89
SHRUBS	242
TOTAL	732

SUGGESTED STOCKING RATE

NON-USE

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606-697(657) M

SOIL DRAINAGE:
POORLY

DMD9. Sb-Lt/Labrador tea/Moss

(Picea mariana-Larix laricina/Ledum groenlandicum/Moss)

n=1 This community type is very similar to the previously described community type, but the nutrient status is poorer. This community type appears to be related to the bog ecosite described by Beckingham and Archibald (1996). The bog ecosite commonly has organic soils consisting of slowly decomposing peat moss. This community type is considered non-use for livestock, due to the lack of forage and poor accessibility.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
LARCH	
(Larix laricina)	15
BLACK SPRUCE	
(Picea mariana)	60
SHRUBS	
WILLOW SPP.	
(Salix spp.)	8
LABRADOR TEA	
(Ledum groenlandicum)	35
FORBS	
DWARF BRAMBLE	
(Rubus pedatus)	25
HORSETAIL	
(Equisetum arvense)	45
DWARF SCOURING RUSH	
(Equisetum scirpoides)	25
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	2
GOLDEN SEDGE	
(Carex aurea)	15
BEAKED SEDGE	
(*Carex rostrata*)	7
FOWL BLUEGRASS	
(*Poa palustris*)	2
MOSSES	
Moss spp.	95

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
OLIGOTROPHIC

ELEVATION:
576 M
SOIL DRAINAGE:
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	10
FORBS	40
SHRUBS	50
TOTAL	100

SUGGESTED STOCKING RATE
NON-USE

GRASSLAND AND SHRUBLAND COMMUNITY TYPES

Photo 7. This picture represents the Sheep fescue/Plains wormwood community type. This community type is common on dry sandy hills throughout the Central Mixedwood subregion.

CM - NATIVE GRASS AND SHRUBLAND COMMUNITIES

Upland native grasslands are very rare in the Central Mixedwood subregion. The communities that have been described on coarse textured, sandy soil, with submesic moisture and poor nutrient regimes which lack tree cover are the Plains wormwood/Sheep fescue-Sedge community type. This community type is usually found in association with jack pine dominated community types. Heavy grazing of this community type leads to a Kentucky bluegrass-Sedge/Plains wormword dominated type. On level, gravelly, well-drained sites adjacent to streams and rivers a snowberry dominated community type is common. This community is extensively grazed by livestock to form the Snowberry/Kentucky bluegrass dominated type (Figure 3).

Wetter (subhydric/rich) sites are associated with sedge and marsh reedgrass dominated meadows. Sedge species are usually associated with the areas of free standing water and marsh reedgrass dominates the drier edges. Willow will invade into these meadows to form the Willow/Sedge and Willow/Marsh reedgrass community types. Under grazing pressure these community types tended to be invaded by dandelion, clover and Kentucky bluegrass to form the Willow/Sedge-Kentucky bluegrass community type.

Fire is an important part of the ecology to the Central Mixedwood subregion. There are a number of shrubland community types which have a strong fire origin. These include the Willow-Alder/Marsh reedgrass, Willow/Fireweed and Willow-Spruce/ Kentucky bluegrass dominated community types.

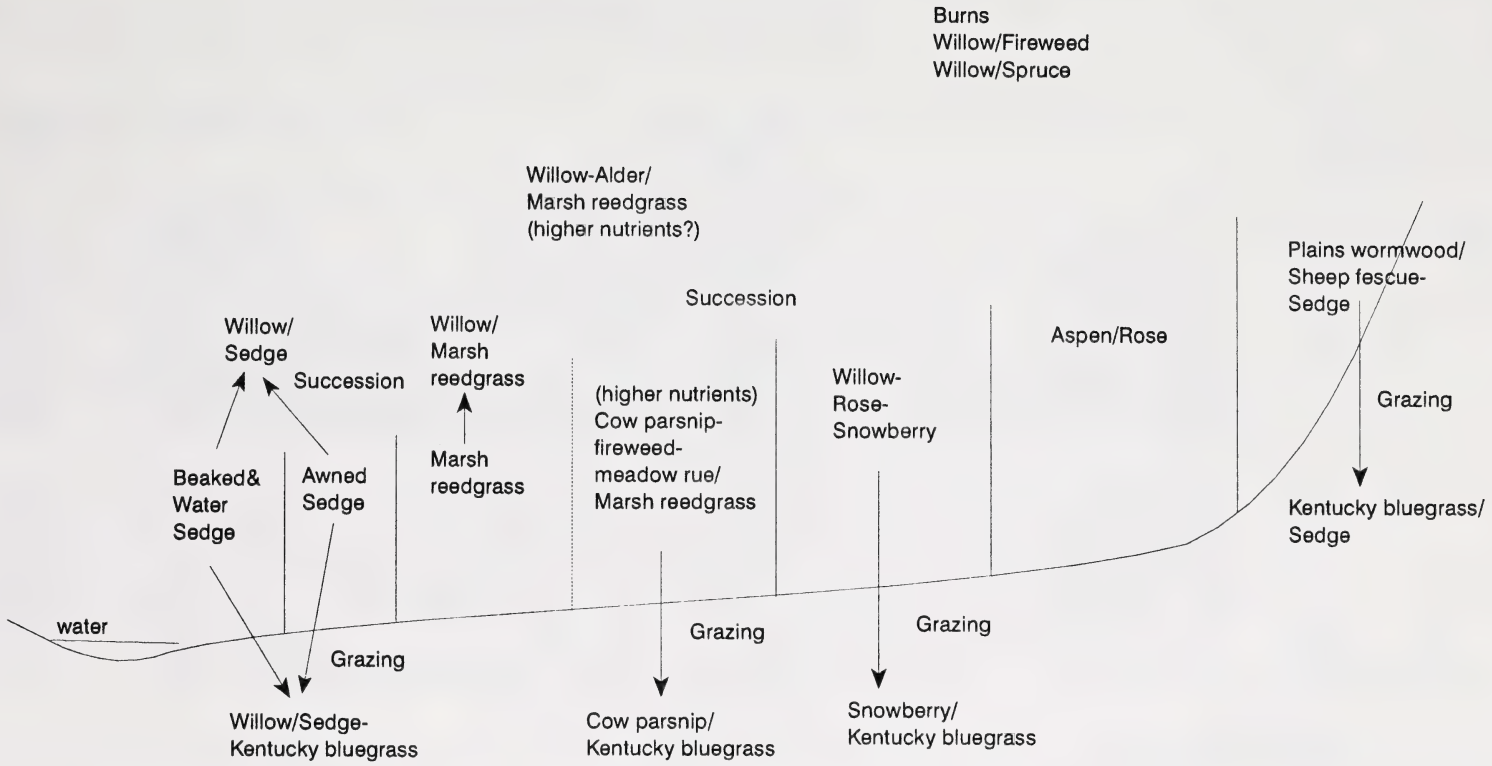
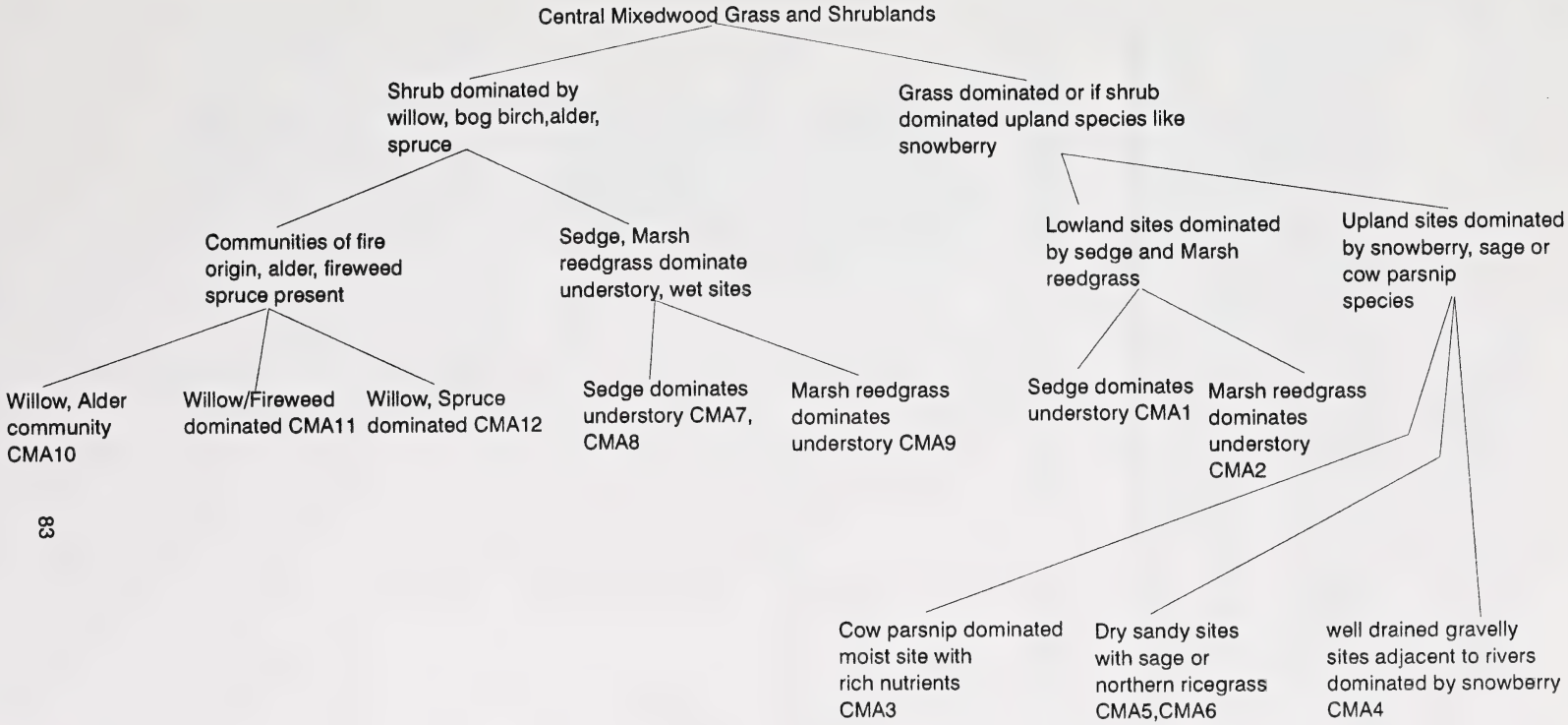


Figure 2. Ecology of the native grass and shrublands in the landscape of the Central Mixedwood subregion.

Table 6. Grass and shrub community types for the Central Mixedwood subregion

Community number	Community type	Total productivity (Kg/ha)	Ecosite	Carrying Capacity (Ha/AUM)
	Grasslands			
CMA1	Sedge meadow	2370	(subhydric/rich)	0.4
CMA2	Marsh reedgrass meadow	2117	(subhydric/rich)	0.4
CMA3	Cow parsnip/Kentucky bluegrass-Marsh reedgrass	2468	(subhygric/rich)	0.4
CMA4	Snowberry/Kentucky bluegrass	2790	(mesic/medium)	0.4
CMA5	Plains wormwood/Sheep fescue-Sedge	772	(subxeric/medium)	1.2
CMA6	Plains wormwood/Kentucky bluegrass-Sedge	862	(submesic/medium)	1.1
	Shrublands			
CMA7	Willow/Sedge	1072	(subhydric/rich)	0.8
CMA8	Willow/Sedge-Kentucky bluegrass	2138	(subhydric/rich)	0.3
CMA9	Willow/Marsh reedgrass	1529	(subhydric/rich)	0.6
CMA10	Willow-Alder/Marsh reedgrass	947	(subhygric/medium)	1.9
CMA11	Willow/Fireweed	1748	(mesic/medium)	0.5
CMA12	Willow-Spruce/Kentucky bluegrass	2524	(mesic/medium)	0.4



Key to native grass and shrublands in the Central Mixedwood subregion

CMA1. Sedge meadows

(Carex aquatilis, C. rostrata, C. atherodes)

n=5 This wetland community type is found near fresh water. The sedge meadow is a poorly drained community. As one moves to the drier edges marsh reedgrass becomes predominant. Willows will invade into both the sedge and marsh reedgrass dominated meadows. The sedge meadow community is very productive, but the high water table, particulary in the spring when the sedge species are most palatable, restricts livestock movement. One study done in the Yukon found that crude protein on these meadows declined from a high of 10% in May to less than 5% in September (Bailey et al. 1992).

Beaked sedge found in abundance in this community is usually associated with nitrogen rich conditions and moving water (Brierly et al. 1985). Water sedge is often found in abundance in this community type and is associated with calcium rich stagnant water (MacKinnon et al. 1992).

PLANT COMPOSITION

	CANOPY COVER(%)
FORBS	
MARSH SKULLCAP	
(Scutellaria galericulata)	5
NODDING BEGGARTICKS	
(Bidens cernua)	3
DANDELION	
(Taraxacum officinale)	1
GRASSES	
BEAKED SEDGE	
(*Carex rostrata)*	48
AWNED SEDGE	
(*Carex atherodes*)	13
WATER SEDGE	
(*Carex aquatilis*)	3
MARSH REEDGRASS	
(*Calamagrostis canadensis*)	8

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	2209(1498-300)
FORB	161(0-644)
TOTAL	2370(1498-3000)

RECOMMENDED STOCKING RATE
0.4 HA/AUM (AUTUMN ONLY)

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC-HYGRIC

NUTRIENT REGIME (MEAN
PERMESOTROPHIC

ELEVATION:
485(150-606) M

SOIL DRAINAGE (MEAN):
POORLY TO VERY POORLY

CMA2. Marsh reedgrass meadow

(Calamagrostis canadensis)

n=6 This community is found on the edges of sedge meadows and moist draws where the water table is lower. The lower water table makes this community accessible for most of the grazing season. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and their will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE BIRCH (*Betula papyrifera*)	2
SHRUBS	
WILLOW SPP. *(Salix spp.)*	1
FORBS	
NODDING BEGGARTICKS *(Bidens cernua)*	1
LEAFY-BRACTED ASTER *(Aster sibricus)*	T
DOCK , SORREL *(Rumex crispus)*	1
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	56
BEAKED SEDGE (*Carex rostrata*)	4
WATER SEDGE (*Carex aquatilis*)	4
AWNED SEDGE (*Carex atherodes*)	11

ELEVATION:
320(150-758) M

SOIL DRAINAGE (MEAN):
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	2068(1052-5110)
FORB	6(0-18)
SHRUB	42(0-254)
TOTAL	2117(1070-5110)

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
HYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

CMA3. Cow parsnip/Kentucky bluegrass-Marsh reedgrass

(Heracleum lanatum/Poa pratensis-Calamagrostis canadensis)

n=1 This community type is found on fine textured, silty soils adjacent to the Willow river near Wabasca . It represents a Willow/Cow parsnip/Marsh reedgrass community that has been cleared and then grazed extensively. The heavy grazing pressure has allowed dandelion and Kentucky bluegrass to invade onto the site. The high nutrient and moisture regime of this community type makes it extremely productive. Once cleared of shrubs it can provide a significant amount of forage for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

Shrubs	
GREEN ALDER (*Alnus crispa*)	1
PRICKLY ROSE (*Rosa acicularis*)	8
FORBS	
COW PARSNIP *(Heracleum lanatum)*	42
HORSETAIL *(Equisetum arvense)*	33
DANDELION *(Taraxacum officinale)*	27
FIREWEED *(Epilobium angustifolium)*	19
YELLOW PEAVINE (*Lathyrus ochroleucus*)	8
GRASSES	
KENTUCKY BLUEGRASS *(Poa pratensis)*	15
MARSH REEDGRASS *(Calamagrostis canadensis)*	10
FRINGED BROME (*Bromus ciliatus*)	2

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	200
FORB	1798
SHRUB	470
TOTAL	2468

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

CMA4. Snowberry/Kentucky bluegrass

(Symphoricarpos occidentalis/Poa pratensis)

n=4 This snowberry dominated community type appears to be common on level, well drained, gravelly areas along rivers throughout Northern Alberta. In the absence of disturbance this community type appears to be dominated by snowberry, rose, fireweed, slender wheatgrass and marsh reedgrass. Heavy grazing pressure causes the native forbs and grasses to decline and allows Kentucky bluegrass, dandelion and clover to increase. Because these clearings are some of the only natural openings throughout the Central Mixedwood they tend to be heavily utilized by livestock. Snowberry which is unpalatable to livestock will remain even under extreme grazing pressure.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
PRICKLY ROSE (*Rosa acicularis*)	3
BUCKBRUSH (*Symphoricarpos occidentalis*)	19
WILLOW (*Salix spp.*)	5
FORBS	
STRAWBERRY (*Fragaria virginiana*)	1
CLOVER (*Trifolium repens*)	29
DANDELION (*Taraxacum officinale*)	32
YARROW (*Achllea millefolium*)	2
AMERICAN VETCH (*Vicia americana*)	1
GRASSES	
MARSH REEDGRASS (*Calamagrostis canadensis*)	7
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	7
KENTUCKY BLUEGRASS (*Poa pratensis*)	38
PRAIRIE SEDGE (*Carex prairea*)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC
NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
576-606(586) M
SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	1337(800-1800)
FORB	1311(200-2390)
SHRUB	141(0-424)
TOTAL	2790(2000-3614)

SUGGESTED STOCKING RATE
0.4 HA/AUM

CMA5. Plains wormwood/Sheep fescue-Sedge

(Artemisia campestris/Festuca saximontana-Carex spp.)

n=3 This community type is found on coarse textured, sandy soils. It is generally found on hilltops and south-facing slopes in openings among Jack pine on the uplands and black spruce in the lowlands. This community type was also described on similar site conditions in the Dry Mixedwood subregion. This community would be considered either secondary or non-use range for domestic livestock because of the low forage production and fragile nature of the community.

PLANT COMPOSITION

	CANOPY COVER(%)
SHRUBS	
SASKATOON (*Amelanchier alnifolia*)	3
BLUEBERRY (*Vaccinium myrtilloides*)	3
FORBS	
SMOOTH SCOURING RUSH (*Equisetum laevigatum*)	1
PLAINS WORMWOOD (*Artemisia campestris*)	9
LOW GOLDENROD (*Solidago missouriensis*)	2
BEARBERRY (*Arctostaphylos uva-ursi*)	5
GRASSES	
KENTUCKY BLUEGRASS (*Poa pratensis*)	3
NORTHERN RICEGRASS (*Oryzopsis pungens*)	4
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	2
SEDGE (*Carex spp*)	9
SHEEP FESCUE (*Festuca saximontana*)	8

MESOTROPHIC

ELEVATION:
611 (576-652) M

SOIL DRAINAGE (MEAN):
RAPIDLY

SLOPE(RANGE):
22(15-30)%

ASPECT:
SOUTH TO WESTERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	469(270-612)
FORB	303(200-452)
TOTAL	772(470-978)

SUGGESTED STOCKING RATE
1.2 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC-SUBXERIC

NUTRIENT REGIME (MEAN):

CMA6. Plains wormwood/Kentucky bluegrass-Sedge

(Artemisia campestris/Poa pratensis-Carex spp.)

n=1 This community type is similar to the Plains wormwood/Sheep fescue-Sedge community type, but heavy grazing pressure and a higher nutrient and moisture regime has allowed Kentucky bluegrass to invade onto the site.

PLANT COMPOSITION

	CANOPY COVER(%)
SHRUBS	
SASKATOON (*Amelanchier alnifolia*)	2
CHOKECHERRY (*Prunus virginiana*)	8
SNOWBERRY (*Symphoricarpos occidentalis*)	3
FORBS	
MEADOW PARSNIP (*Zizia aptera*)	2
PLAINS WORMWOOD (*Artemisia campestris*)	4
LOW GOLDENROD (*Solidago missouriensis*)	2
BEARBERRY (*Arctostaphylos uva-ursi*)	10
GRASSES	
KENTUCKY BLUEGRASS (*Poa pratensis*)	49
NORTHERN RICEGRASS (*Oryzopsis pungens*)	4
SLENDER WHEATGRASS (*Agropyron trachycaulum*)	3
SEDGE (*Carex spp*)	13
SHEEP FESCUE (*Festuca saximontana*)	1

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE (MEAN):
RAPIDLY

SLOPE(RANGE):
15%

ASPECT:
SOUTH TO WESTERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)(N)

GRASS	824
FORB	38
TOTAL	862

SUGGESTED STOCKING RATE
1.1 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBMESIC

CMA7. Willow/Sedge

(Salix spp./Carex spp.)

n=6 This community type is found along the edges of sedge meadows and in moist depressions. Willow becomes established at the edges of the sedge meadows due to the shorter duration of standing water. Increased flooding and prolonged waterlogging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION	CANOPY COVER (%)
SHRUBS	
WILLOW SPP. *(Salix spp.)*	57
FORBS	
MINT *(Mentha arvensis)*	1
GREEN SOREL *(Rumex acetosa)*	1
FIREWEED *(Epilobium angustifolium)*	3
HORSETAIL *(Equisetum arvense)*	10
GRASSES	
AWNED SEDGE *(Carex atherodes)*	12
MARSH REEDGRASS *(Calamagrostis canadensis)*	12
BEAKED SEDGE *(Carex rostrata)*	7
WATER SEDGE *(Carex aquatilis)*	43

ELEVATION:
393(150-636) M

SOIL DRAINAGE (MEAN):
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	852(0-1734)
FORB	96(70-150)
SHRUB	100(0-364)
TOTAL	1072(214-2218)

SUGGESTED STOCKING RATE
0.8 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

CMA8. Willow/Sedge-Kentucky bluegrass

(Salix spp./Carex spp.-Poa pratensis)

n=3 This community type is very similar to the Willow/Sedge community, but has been heavily grazed favouring the growth of Kentucky bluegrass and dandelion. Continued heavy grazing pressure will eventually lead to a community that is similar to the Kentucky bluegrass/Dandelion dominated community type.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	25
PRICKLY ROSE (*Rosa acicularis*)	3
FORBS	
STRAWBERRY *(Fragaria virginiana)*	3
DANDELION *(Taraxacum offincinale)*	5
MINT *(Mentha arvensis)*	3
CLOVER (*Trifolium spp.*)	9
ARROW LEAVED COLTSFOOT (*Petasites sagittatus*)	4
GRASSES	
SEDGE *(Carex rostrata, aquatilis, atherodes.)*	40
KENTUCKY BLUEGRASS *(Poa pratensis)*	21

ELEVATION:
576 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	2121(1566-2478)
FORB	547(492-1204)
TOTAL	2138(2770-2970)

SUGGESTED STOCKING RATE
0.3 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

CMA9. Willow/Marsh reedgrass

(Salix spp./Calamagrostis canadensis)

n=7 The Marsh reedgrass community type is found along the edges of sedge meadows and in moist depressions. Willow will invade onto these sites to form the Willow/Marsh reedgrass community type. Increased grazing pressure on these sites will cause marsh reedgrass to decline and there will be an invasion of Kentucky bluegrass and dandelion. These sites are highly productive for domestic livestock and should be rated as primary range. Increased flooding and prolonged waterlogging may result in the disappearance of willow and a transition to a water sedge meadow.

These sites are fairly productive but difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility within the area.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	56
FORBS	
MINT *(Mentha arvensis)*	1
DANDELION *(Taraxacum officinale)*	3
GRASSES	
KENTUCKY BLUEGRASS *(Poa pratensis)*	3
MARSH REEDGRASS *(Calamagrostis canadensis)*	34
BEAKED SEDGE *(Carex rostrata)*	6
WATER SEDGE *(Carex aquatilis)*	4

SOIL DRAINAGE (MEAN):
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	1050(318-2010)
FORB	107(0-270)
SHRUB	208(0-554)
TOTAL	1529(588-2118)

SUGGESTED STOCKING RATE
0.6 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYDRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
333-576(537) M

CMA10. Willow-Alder/Marsh reedgrass

(Salix spp-Alnus tenuifolia/Calamagrostis canadensis)

n=4 This community type represents a tall willow and alder dominated type that is usually represented as an AIA aspen stand on phase III maps. It is typically found in very moist, poorly drained areas. Black spruce communities are usually found associated with this community type on the wetter edges. The understory of this community type is fairly open allowing for easy access by livestock. When this community is situated next to trails or seismic lines it is moderately utilized by livestock.

PLANT COMPOSITION CANOPY COVER(%)

SHRUBS	
WILLOW SPP. *(Salix spp.)*	49
RIVER ALDER (*Alnus tenuifolia*)	15
GREEN ALDER (*Alnus crispa*)	14
WILD RED RASPBERRY (*Rubus idaeus*)	17
BRACTED HONEYSUCKLE (*Lonicera involucrata*)	7
FORBS	
STRAWBERRY *(Fragaria virginiana)*	1
SWEET SCENTED BEDSTRAW *(Galium triflorum)*	4
WILD SARSAPARILLA *(Aralia nudicaulis)*	5
DEWBERRY (*Rubus pubscens*)	4
GRASSES	
MARSH REEDGRASS *(Calamagrostis canadensis)*	34
BEAKED SEDGE *(Carex rostrata)*	7

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
576 M

SOIL DRAINAGE (MEAN):
IMPERFECTLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	702(118-1102)
FORB	184(18-470)
SHRUB	61(0-132)
TOTAL	947(592-1296)

SUGGESTED STOCKING RATE
1.9 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-HYGRIC

CMA11. Willow/Fireweed

(Salix spp./Epilobium angustifolium)

n=1 This community type represents a 3 year old burn of a white spruce forest. Fireweed and marsh reedgrass early successional species quickly dominate the community after a fire. As this community undergoes succession the herbaceous understory will be suppressed as a result of shading by white spruce. Eliminating the tree canopy cover has increased the forage production of this site from 50-100 kg/ha under a spruce moss forest to over 1700 kg/ha on this community type.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
ASPEN	
(Populus tremuloides)	1
WHITE SPRUCE	
(Picea glauca)	10
SHRUBS	
WILLOW SPP.	
(Salix spp.)	21
FORBS	
STRAWBERRY	
(Fragaria virginiana)	2
FIREWEED	
(Epilobium angustifolium)	37
YARROW	
(Achillea millefolium)	2
LARGE LEAVED YELLOW AVENS	
(Geum macrophyllum)	2
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	19
HAIR-LIKE SEDGE	
(Carex capillaris)	1

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	190
FORB	1322
SHRUB	236
TOTAL	1748

SUGGESTED STOCKING RATE
0.5 HA /AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC-MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
150 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL

CMA12. Willow-Spruce/Kentucky bluegrass

(Salix spp.-Picea glauca/Poa pratensis)

n=1 This community represents an old spruce community which burned in 1968, succeeded to willow, and is now succeeding back to white spruce. After the fire, the canopy was opened up allowing for good forage productivity. Consequently, cattle grazing was quite heavy allowing Kentucky bluegrass and clover to establish. Thistle is now beginning to invade and will expand to other areas if not controlled. As the spruce continues to mature, the increasing canopy cover will cause a decline in overall production and this site will eventually become non-use for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
LARCH	
(*Larix laricina*)	8
WHITE SPRUCE(UNDERSTORY)	
(*Picea glauca*)	3
SHRUBS	
WILLOW SPP.	
(*Salix spp.*)	50
FORBS	
CLOVER	
(*Trifolium sp.*)	22
DANDELION	
(*Taraxacum officinale*)	14
MARSH HEDGE NETTLE	
(*Stachys palustris*)	6
BISHOP'S CAP	
(*Mitella nuda*)	6
CANADA THISTLE	
(*Cirsium arvense*)	2
GRASSES	
KENTUCKY BLUEGRASS	
(*Poa pratensis*)	77

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	1985
FORB	540
SHRUB	0
TOTAL	2524

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
SUBHYGRIC

NUTRIENT REGIME (MEAN):
PERMESOTROPHIC

ELEVATION:
667 M

SOIL DRAINAGE (MEAN):
MODERATELY WELL TO IMPERFECTLY

CENTRAL MIXEDWOOD SUBREGION

TAME FORAGE COMMUNITIES

Photo 8. This range improvement clearing exhibits signs of heavy grazing pressure and is slowly being invaded by tall buttercup.

CM - TAME FORAGE COMMUNITIES

(Cleared areas that have been broken and seeded to tame forage)

Throughout the Central Mixedwood subregion there are sites that have been deforested, broken, and seeded to tame forage. Usually these areas are mesic and moderately well to well drained with good nutrient levels. Because most of these tame forage stands are established on similar sites, the most influential factors affecting plant species composition are stand establishment and grazing regime.

Stand establishment is important because it determines what the initial plant species composition is going to be. Seed bed preparation and the type of seed sown are the two most important factors influencing stand establishment. Seed bed preparation is important because it helps to determine how well the sown seed germinates and establishes. If the seed bed is not well prepared the tame forage stand may establish poorly and native species can become a dominant component of the plant community. If the seed bed is well prepared, the community type that establishes will depend on the type of seed sown. If a mixture of Creeping Red Fescue, Timothy, and Alsike Clover is sown into the area a Creeping Red Fescue/ Alsike Clover community type will become established. Whereas, if a mixture of Smooth Brome Grass, Timothy, Creeping Red Fescue, and Red Clover is sown, a Smooth Brome/ Red Clover community type will become established.

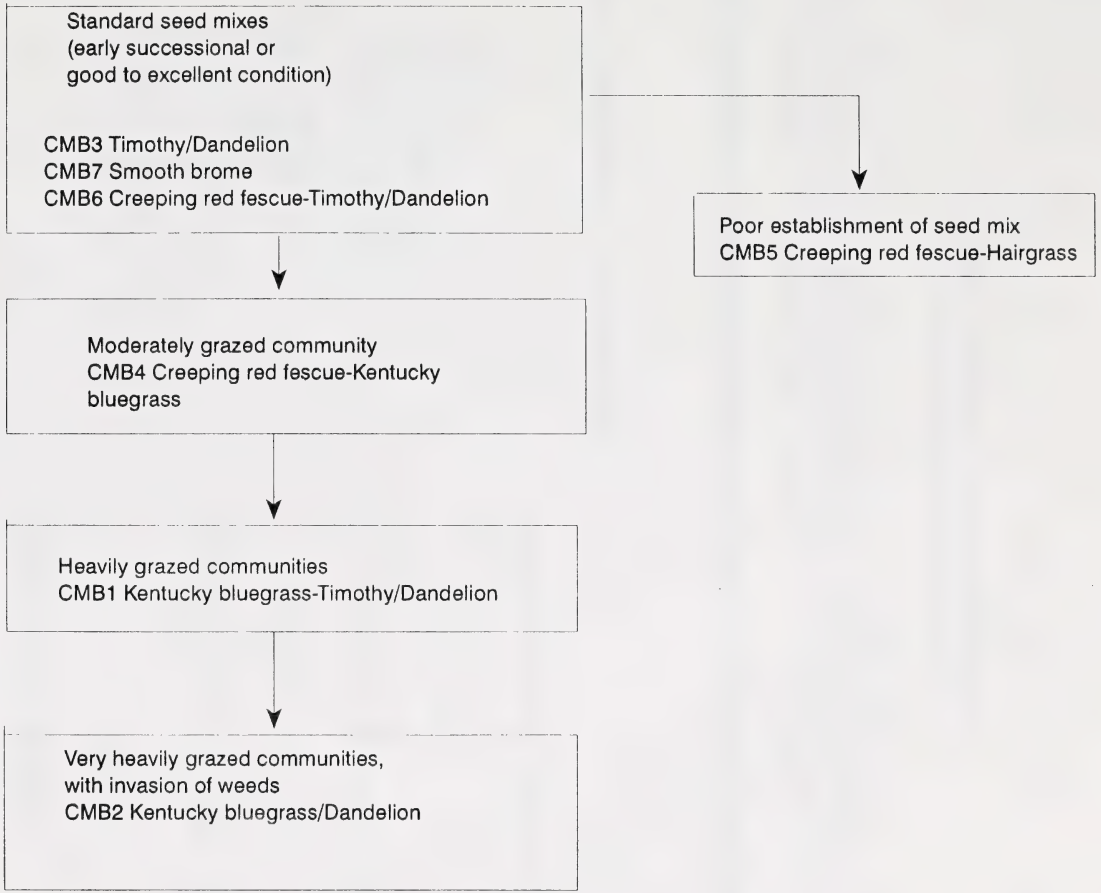
After the stand is established, the grazing regime applied to the stand will determine the plant species composition. Generally, a light to moderate amount of grazing allows the stand to maintain itself while sustained heavy grazing causes the stand to degrade. Damage to a stand due to over grazing occurs more readily while the stand is establishing than it does when the stand is established. This is because the forage plants in an establishing stand have not had time to develop energy reserves in their roots, and are therefore, more susceptible to grazing induced damage.

Well distributed light to moderate grazing will normally maintain a forage stand similar to what was seeded on the site. These stands are generally the most productive and provide the best grazing opportunities for livestock. They are normally considered to be in good to excellent range condition. Non use or very light grazing often results in the stand becoming dominated by the forage species that is most competitive under an ungrazed situation. Plant community changes which occur under heavy grazing are dependent on the grazing history (level of use, season of use and duration of the grazing regime). Overgrazed community types develop over a long period of repeated overgrazing. If weedy species such as Tall Buttercup, become established on overgrazed sites, they can quickly become a dominant species.

Table 7. Tame forage communities of the Central Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
CMB1	Kentucky bluegrass/Dandelion	2344	843	0	2929	mesic/medium	0.4
CMB2	Kentucky bluegrass-Timothy/Dandelion	1396	1098	17	2793	mesic/medium	0.3
CMB3	Timothy/Dandelion	2000	470	0	2470	mesic/medium	0.4
CMB4	Creeping red fescue/Kentucky bluegrass	1859	908	0	2767	mesic/medium	0.3
CMB5	Creeping red fescue/Hairgrass	832	302	0	1134	submesic/poor	0.8
CMB6	Creeping red fescue-Timothy/Dandelion	1328	750	19	2097	mesic/medium	0.4
CMB7	Smooth brome	2034	680	0	2714	mesic/medium	0.3

Tame grass plant communities



Key to tame forage communities in the Central Mixedwood subregion

CMB1. Kentucky bluegrass/Dandelion

(Poa pratensis/Taraxacum officinale)

n=8 This community type has had a history of being grazed heavily throughout the growing season. Heavy grazing throughout the growing season, allows Kentucky bluegrass, clover, and dandelion to out-compete all of the other vegetation. This community occurs on tame pastures or native rangeland that has been over grazed. It is considered to be in poor condition because forage production and nutritional value have been degraded

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER	
(Trifolium spp.)	13
DANDELION	
(Taraxacum officinale)	17
PLANTAIN	
(Plantago major)	4
GRASSES	
SMOOTH BROME	
(Bromus inermis)	6
QUACKGRASS	
(*Agropyron repens*)	12
TIMOTHY	
(Phleum pratense)	2
KENTUCKY BLUEGRASS	
(Poa pratensis)	55

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC-SUBHYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
576-667(594)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA

GRASS	2344(858-5304)
FORBS	843(0-3322)
TOTAL	2929(858-5371)

SUGGESTED STOCKING RATE
0.4 HA/AUM

CMB2. Kentucky bluegrass-Timothy/Dandelion

(Poa pratensis-Phleum pratense/Taraxacum officinale)

n=6 This community ytpe represents a tame pasture that is showing signs of heavy grazing pressure. The original seed mix species (such as timothy and smooth brome) are still present, however Kentucky bluegrass and dandelion have become established and are starting to take over. If allowed some rest, this field may recover to the original seeded species.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER *(Trifolium spp.)*	25
DANDELION *(Taraxacum officinale)*	36
CANADA THISTLE *(Cirsium arvense)*	3
HORSETAIL (*Equisetum arvense*)	6
GRASSES	
CREEPING RED FESCUE *(Festuca rubra)*	1
FOXTAIL BARLEY *(Hordeum jubatum)*	3
KENTUCKY BLUEGRASS *(Poa pratensis)*	39
TIMOTHY (*Phleum pratense*)	11
SMOOTH BROME (*Bromus inermis*)	2

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
576-606(596)M

SOIL DRAINAGE (MEAN):
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1396(700-2434)
FORBS	1098(280-2042)
SHRUB	17(0-100)
TOTAL	2793(1300-3902)

SUGGESTED STOCKING RATE
0.3 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

CMB3. Timothy/Dandelion

(Phleum pratense / Taraxacum officinale)

n=1 This community type develops on sites that were seeded with a timothy, meadow foxtail, clover mixture. Timothy establishes very quickly on pastures that have been recently seeded. If this pasture had been seeded with creeping red fescue and smooth brome they eventually will outcompete timothy and this community will likely become dominated by creeping red fescue and smooth brome. Timothy provides excellent forage for domestic livestock, especialy if timothy is kept in the vegetative state by mowing or grazing.

ELEVATION:
576M

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
ALSIKE CLOVER *(Trifolium hybridum)*	2
DANDELION *(Taraxacum officinale)*	42
WILD STRAWBERRY *(Frageria virginiana)*	2
GRASSES	
MEADOW FOXTAIL *(Alopecurus pratensis)*	3
TIMOTHY *(Phleum pratense)*	29

SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	2000
FORBS	470
SHRUBS	0
TOTAL	2470

SUGGESTED STOCKING RATE
0.4 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC TO SUBHYGRIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC TO PERMESOTROPHIC

CMB4. Creeping red fescue-Kentucky bluegrass

(Festuca rubra-Poa pratensis)

n=3 This community type represents recently seeded fields that have since been moderately to heavily grazed. Kentucky bluegrass has increased to equal the level of the seeded species, creeping red fescue. If heavy grazing pressure persists, Kentucky bluegrass and dandelion will dominate resulting in a decline in forage quality. This community type will require a period of rest each year with light to moderate grazing pressure to maintain good cover of creeping red fescue.

PLANT COMPOSITION

	CANOPY COVER(%)
Shrubs	
PRICKLY ROSE (*Rosa acicularis*)	3
FORBS	
CLOVER (*Trifolium spp.*)	2
DANDELION (*Taraxacum officinale*)	6
ALFALFA (*Medicago sativa*)	5
GRASSES	
KENTUCKY BLUEGRASS (*Poa pratensis*)	38
TIMOTHY (*Phleum pratense*)	1
CREEPING RED FESCUE (*Festuca rubra*)	34

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
579 (576-606)M

SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1859(846-2738)
FORBS	2722(120-2348)
SHRUBS	0
TOTAL	2767(1100-5086)

SUGGESTED STOCKING RATE
0.3 HA/AUM

CMB5. Creeping red fescue-Rough hairgrass

(Festuca rubra-Agrostis scabra)

n=1 This community type represents an area that was cleared and seeded, however due to poor soil conditions, it established poorly. The soils on this site are sandy to a depth of about 6 inches and hairgrass is well adapted to growing on these disturbed sites with poor nutrients. The overall cover of vegetation is sparse, therefore grazing should only be light in order to maintain the little cover of vegetation. This site should not have been approved for range improvement.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
THREE TOOTHED CINQUEFOIL *(Potentilla tridentata)*	3
ROUGH CINQUEFOIL *(Potentilla norvegica)*	1
GRASSES	
ROUGH HAIRGRASS *(Agrostis scabra)*	6
TIMOTHY (*Phleum pratense*)	2
CREEPING RED FESCUE (*Festuca rubra*)	12

SUBMESIC

NUTRIENT REGIME (MEAN):
SUBMESOTROPHIC

ELEVATION:
579M

SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	832
FORBS	302
SHRUBS	0
TOTAL	1134

SUGGESTED STOCKING RATE
0.8 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):

CMB6. Creeping red fescue-Timothy/Dandelion

(Festuca rubra-Phleum pratense/Taraxacum officinale)

n=9 This community type represents areas cleared of aspen, seeded to timothy, creeping red fescue and clover. In general, these sites are in good condition, but they will require adequate rest periods from grazing each season to remain in good condition.

PLANT COMPOSITION CANOPY COVER(%)

FORBS	
CLOVER	
(Trifolium spp.)	5
DANDELION	
(Taraxacum officinale)	7
COMMON YARROW	
(Achillea millefolium)	1
GRASSES	
CREEPING RED FESCUE	
(Festuca rubra)	50
KENTUCKY BLUEGRASS	
(Poa pratensis)	3
TIMOTHY	
(Phleum pratense)	6

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
576-636(603)M

SOIL DRAINAGE (MEAN):
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1328(724-2588)
FORB	750(250-1590)
SHRUB	19(0-162)
TOTAL	2097(1214-3268)

SUGGESTED STOCKING RATE
0.4 HA/AUM

CMB7. Smooth brome

(Bromus inermis)

n=2 This community type occurs on cleared pastures that were seeded with a smooth brome, timothy-clover mix. With a moderate grazing regime, smooth brome grass is the most competitive forage plant seeded into this site. It out-competes timothy because it is strongly rhizomatous and is able to fill in the gaps between plants allowing it to shade out the timothy. One of the sites had only been recently cleared and the forage species had not yet fully established. As a result, forage production was only 1/3 as high as expected.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
N/A	0
SHRUBS	
PRICKLY ROSE (*Rosa acicularis*)	3
FORBS	
CLOVER (*Trifolium spp.*)	2
GRASSES	
SMOOTH BROME (*Bromus inermis*)	31
SEDGE SPP. (*Carex spp.*)	4
TIMOTHY (*Phleum pratense*)	13
KENTUCKY BLUEGRASS (*Poa pratensis*)	8

ENVIRONMENTAL VARIABLES

MOISTURE REGIME (MEAN):
MESIC

NUTRIENT REGIME (MEAN):
MESOTROPHIC

ELEVATION:
576M

SOIL DRAINAGE (MEAN):
WELL (MODERATELY WELL)

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	2034
FORBS	680
TOTAL	2714

SUGGESTED STOCKING RATE
0.3 HA/AUM

CENTRAL MIXEDWOOD SUBREGION

DECIDUOUS FOREST COMMUNITY TYPES

Photo 9. Aw/Rose/Clover community type represents an deciduous community that has been moderately to heavily grazed for a number of years.

CM - DECIDUOUS FOREST COMMUNITIES

Balsam poplar is most commonly found on moist upland and alluvial bottomland sites; its best growth is on moist rich bottomlands with deep soil (Peterson and Peterson 1992). The nine stands with predominant balsam poplar (Pb) cover represent three community types in the Central Mixedwood subregion. The Pb-Aw/River alder community is found on lower slope positions and stream channels where there is seepage throughout the growing season. The Pb/Rose-Alder and Pb-Aw/Beaked hazelnut-Rose community types are found upslope on slightly drier and better drained soils. These two community types integrade into the Aw/Rose dominated community types on mesic/medium ecosites.

White birch is indicative of well-drained, sandy or silty loams (Wilkinson 1990). In Alberta this tree is found in association with balsam poplar on moist sites adjacent to small creeks and lowland areas. Pure stands of Alaska variety white birch are also found on dry sandy ridges with high watertables throughout northern Alberta. Beckingham (1993), found that white birch was well adapted to growing on a soil with a pH of less than 5.3. The White birch/Willow dominated community type maybe indicative of sites with slightly lower pH's.

More mesic sites tend to be dominated by aspen and rose. It is the underlying soil conditions and site history that appear to dictate which forb and shrub species will dominate these mesic sites. Blueberry and twinflower appear to indicate sandy soils with poorer nutrient regimes. An abundance of tall forbs (Aw/Rose/Tall forb) appears to be indicative of higher nutrient regimes that have not been disturbed by livestock. In contrast the low forb (Aw/Rose/Low forb) dominated type occupies sites similar to the tall forb type, but these sites appear to have been disturbed by livestock. Increased grazing pressure on these two community types leads to the formation of strawberry and clover dominated community types (Pb-Aw/Rose/Strawberry, Aw/Rose/Clover).

Sites that have a more subhygric moisture regime and are moderately well-drained tend to be dominated by willow and alder (Aw/Alder-Willow-Rose, Aw/Willow). The Aw/Rose-Saskatoon community was described on south and west facing slopes overlooking streams and rivers. This community is very similar to the community that was described in the Dry Mixedwood subregion. On sites with rich nutrient regimes red osier dogwood and horsetail dominated communities are very common. The Aw/Horsetail community is usually found on moister sites than the Aw/Red osier dogwood-Rose community type.

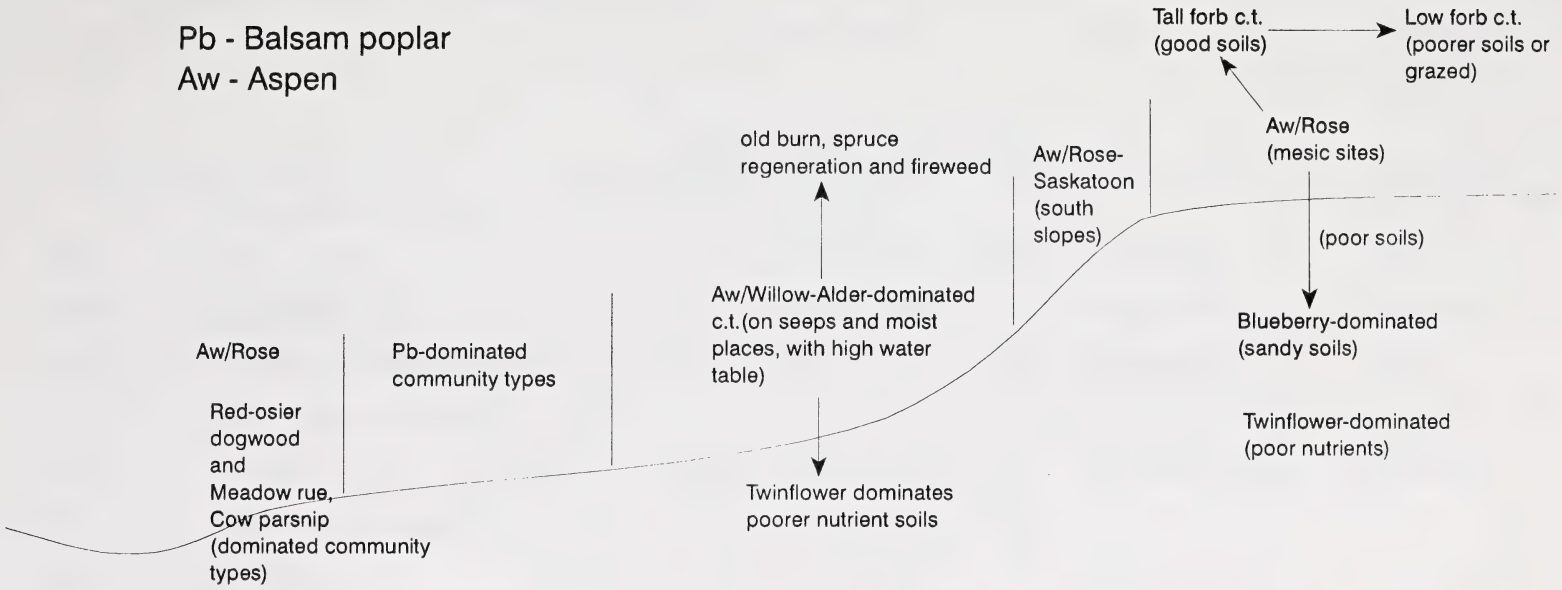


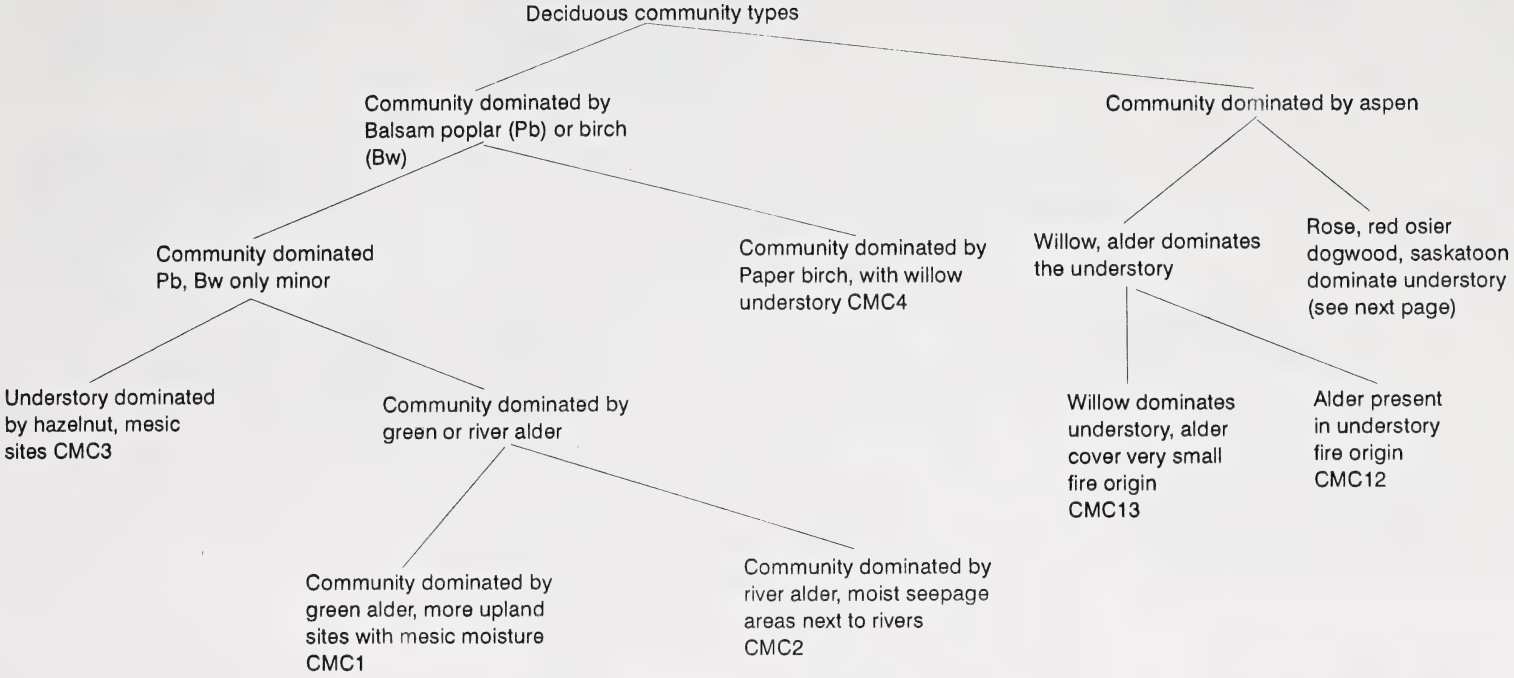
Figure 4. Sequence of Aspen/Rose-dominated community types in the landscape of the Central Mixedwood subregion.

Table 8. Deciduous community types described in the Central Mixedwood subregion

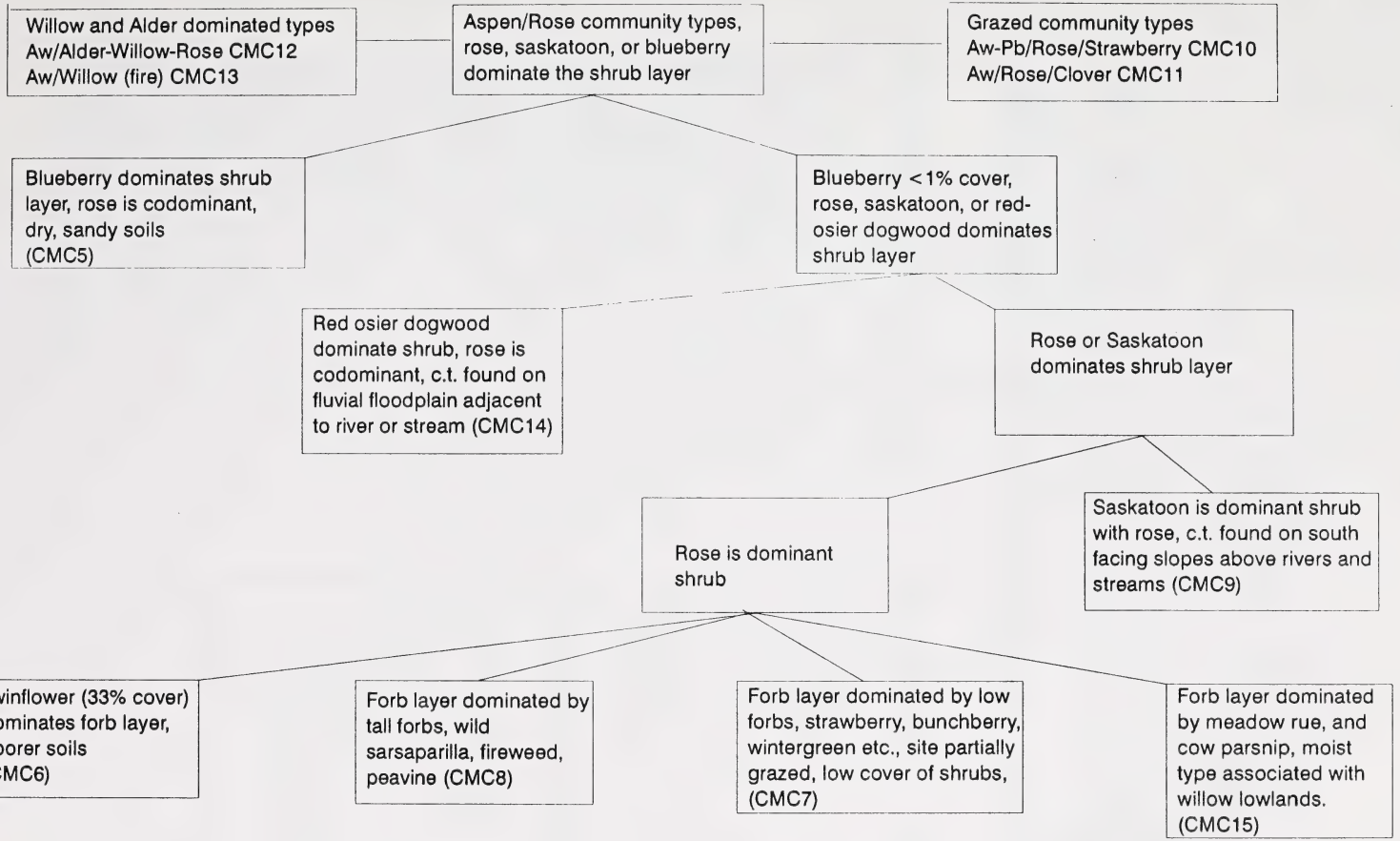
Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
	Balsam poplar dominated						
CMC1	Pb/Rose-Alder	185	490	154	829	subhygric/rich	2.2
CMC2	Pb-Aw/River alder	7	193	340	540	subhygric/rich	Non-use
CMC3	Pb-Aw/Beaked hazelnut-Rose	222	272	411	905	mesic/medium	2.0
	White birch dominated						
CMC4	Bw/Willow	340	342	74	752	subhygric/medium	Non-use
	Aspen/Rose dominated						
CMC5	Aw/Blueberry	1005	169	138	1312	submesic/medium	1.4
CMC6	Aw/Rose/Twinflower	41	183	125	372	submesic/medium	4.9
CMC7	Aw/Rose/Low forb	253	334	235	837	mesic/medium	2.0
CMC8	Aw/Rose/Tall forb	202	352	257	811	mesic/medium	2.0
CMC9	Aw/Rose-Saskatoon	25	279	111	415	mesic/medium	4.0
CMC10	Aw-Pb/Rose/Strawberry	259	327	128	709	mesic/medium	3.0

Table 8. Deciduous community types described in the Central Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
CMC11	Aw/Rose/Clover	512	192	224	928	mesic/medium	2.0
CMC12	Aw/Alder-Willow-Rose	75	200	225	499	subhygric/medium	3.6
CMC13	Aw/Willow	461	493	209	1162	subhygric/medium	1.6
CMC14	Aw/Red Osier dogwood-Rose	7	205	265	479	subhygric/rich	Non-use
CMC15	Aw/Horsetail-Cow parsnip	1292	1440		2732	hygric/rich	0.7



Key to balsam poplar, paper birch, aspen/alder-willow dominated communities in the Central Mixedwood subregion.



Key to Aspen/Rose community types in the Central Mixedwood subregion

CMC1. Pb/Rose-Alder

(Populus balsamifera/Rosa acicularis-Almus crispa)

n=3 This community was found on moderately well-drained sites with subhygric moisture regimes. Beckingham (1993), described a similar community type. He found these forests to develop on parent materials that are neutral to alkaline, thus they tended to have a relatively high level of nutrient availability and potentially high production levels.

This commmunity is producing only a moderate forage base for domestic livestock. Green alder, which makes a large part of the total forage production for this vegetation type, is generally unpalatable to livestock. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN	
(Populus tremuloides)	1
BALSAM POPLAR	
(Populus balsamifera)	63
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	15
GREEN ALDER	
(Alnus crispa)	14
LOW BUSH CRANBERRY	
(Viburnum edule)	11
FORBS	
STRAWBERRY	
(Fragaria virginiana)	7
TWINFLOWER	
(Linnaea borealis)	1
NORTHERN BEDSTRAW	
(Galium boreale)	5
TALL LUNGWORT	
(Mertensia paniculata)	5
YELLOW PEAVINE	
(Lathyrus ochroleucus)	5
WILD SARSAPARILLA	
(Aralia nudicaulis)	1
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	6
NORTHERN RICEGRASS	
(*Oryzopsis pungens*)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
567 M

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	185(0-552)
FORBS	490(234-978)
SHRUBS	154(0-250)
TOTAL	829(474-1530)

SUGGESTED STOCKING RATE
2.2 HA/AUM
RECOMMENDED STOCKING RATE
NON-USE

CMC2. Pb-Aw/River alder

(Populus balsamifera-Populus tremuloides/Alnus tenuifolia)

n=3 This community type is found on moist lower slope positions. A similar community type was described on similar sites in the Lower Foothills subregion (Willoughby and Downing 1995). The high cover of alder limits the light reaching the understory and results in low production of grass and forbs. The majority of the total forage production comes from alder which is generally inaccessible and unpalatable to livestock. Consequently this community type would be rated as non-use for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN *(Populus tremuloides)*	23
BALSAM POPLAR *(Populus balsamifera)*	26
SHRUBS	
RIVER ALDER *(Alnus tenuifolia)*	27
RED OSIER DOGWOOD *(Cornus stolonifera)*	10
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	3
PRICKLY ROSE *(Rosa acicularis)*	9
LOW BUSH CRANBERRY *(Viburnum edule)*	4
FORBS	
HORSETAIL *(Equisetum arvense)*	14
DEWBERRY OR RUNNING RASPBERRY *(Rubus pubescens)*	6
BISHOP'S CAP *(Mitella nuda)*	4
WILD STRAWBERRY *(Fragaria virginiana)*	3
LINDLEY'S ASTER *(Aster ciliolatus)*	2
YELLOW PEAVINE *(Lathyrus ochroleucus)*	3
WILD SARSAPARILLA *(Aralia nudicaulis)*	29
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC TO HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
454(150-606) M

PERCENT SLOPE GRADIENT:
0 - 2

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	7(2-20)
FORBS	193(62-376)
SHRUBS	340(200-438)
TOTAL	540(202-816)

SUGGESTED STOCKING RATE
NON-USE

CMC3. Pb-Aw/Beaked hazelnut-Rose

(Populus balsamifera-Populus tremuloides/Corylus cornuta-Rosa acicularis)

n=2 This community type was described on south facing slopes and is very similar to the the beaked hazelnut communities described in the Dry Mixedwood subregion. This type appears to occupy warmer and drier microsites that resemble the Dry Mixedwood's climate. The total production of this type is high, but the majority of production is coming from hazelnut which is largely unpalatable to livestock at proper stocking levels. The high cover of hazelnut also restricts access to livestock, limiting the forage availability. This community would be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN	
(Populus tremuloides)	40
BALSAM POPLAR	
(Populus balsamifera)	65
SHRUBS	
HAZELNUT	
(Corylus cornuta)	16
SASKATOON	
(Amelanchier alnifolia)	6
WILD RED RASPBERRY	
(Rubus idaeus)	6
PRICKLY ROSE	
(Rosa acicularis)	8
FORBS	
WILD LILY-OF-THE-VALLEY	
(Maianthemum canadense)	5
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	6
YELLOW PEAVINE	
(Lathyrus ochroleucus)	4
VEINY MEADOW RUE	
(Thalictrum venulosum)	3
WILD SARSAPARILLA	
(Aralia nudicaulis)	11
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	5
MOUNTAIN RICEGRASS	
(*Oryzopsis asperifolia*)	3
SEDGE	
(*Carex spp.*)	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
588(576-600) M

PERCENT SLOPE GRADIENT:
5-10 (7.5)%

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	222(74-370)
FORBS	272(234-310)
SHRUBS	411(152-670)
TOTAL	905(756-1054)

SUGGESTED STOCKING RATE
2.0 HA/AUM

CMC4. Bw/Willow

(Betula papyrifera/Salix spp.)

n=1 This community type was described on a very moist site that was burned or cleared and is now undergoing succession to a paper birch dominated community type. The understory of this community type is dominated by sphagnum moss, which is characteristic of the poor fen ecosite described by Beckingham and Archibald (1996). The site was likely dominated by black spruce and larch prior to disturbance. The poor nutrient status and very moist conditions make this community type unsuitable for livestock grazing. This community type should be rated as non-use.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
PAPER BIRCH	
(Betula papyrifera)	55
SHRUBS	
WILLOW	
(Salix spp.)	50
FORBS	
SMALL BOG CRANBERRY	
(Oxycoccus microcarpus)	25
SWAMP HORSETAIL	
(Equisetum fluviatile)	19
MARSH CINQUEFOIL	
(Potentilla palustris)	12
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	7
HAIR-LIKE SEDGE	
(*Carex capillaris*)	6
BEAKED SEDGE	
(*Carex rostrata*)	6
MOSSES	
PEAT MOSS	
(*Sphagnum spp.*)	93

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
576 M

SOIL DRAINAGE:
VERY POOR

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	340
FORBS	342
SHRUBS	74
TOTAL	756

SUGGESTED STOCKING RATE
NON-USE

CMC5. Aw/Blueberry

(Populus tremuloides/ Vaccinium myrtilloides)

n=4 This is a very dry, well-drained community type with sandy soil. It is found in conjunction with jack pine stands. Productivity of shrubs is largely blueberry, which is unpalatable to livestock.

These stands tend to be relatively open allowing for easy access by livestock, but the dry site conditions and poorer nutrient status limit the amount of regrowth after grazing. If this community type is managed for one rotation a year, it can contribute significantly to the overall carrying capacity of a lease.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	45
SHRUBS	
WILLOW *(Salix spp.)*	5
WILD RED RASPBERRY *(Rubus idaeus)*	2
BLUEBERRY *(Vaccinium myrtilloides)*	20
PRICKLY ROSE *(Rosa acicularis)*	11
FORBS	
BUNCHBERRY *(Cornus canadensis)*	7
BEARBERRY *(Arctostaphylos uva-ursi)*	3
YELLOW PEAVINE *(Lathyrus ochroleucus)*	4
TWINFLOWER *(Linnaea borealis)*	4
STRAWBERRY (*Fragaria virginiana*)	4
GRASSES	
PURPLE OATGRASS *(Schizachne purpurascens)*	3
HAIRY WILDRYE *(Elymus innovatus)*	5
MOUNTAIN RICEGRASS (*Oryzopsis asperfolia*)	3

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
604(600-606) M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1005(98-1794)
FORBS	169(0-388)
SHRUBS	138(0-452)
TOTAL	1312(762-1794)

SUGGESTED STOCKING RATE
1.4 HA/AUM

ENVIRONMENTAL VARIABLES

CMC6. Aw/Rose/Twinflower

(Populus tremuloides/ Rosa acicularis/Linnaea borealis)

n=6 This community type has been grazed moderately to heavily and is very similar to the grazed Pb/Rose/Strawberry and Aw/Rose/Low forb community types. Grazing pressure reduces the cover of shrubs and tall-growing forbs and allows the low-growing forbs to increase in cover. This community type occupies soils with poor nutrient regimes. The poor nutrient status appears to favour the growth of twinflower, a species that is well adapted to growing on poor soils (Corns and Annas 1986). This may explain why twinflower is predominant on this community type and not on the other grazed community types.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
BALSAM POPLAR	
(Populus balsamifera)	3
TREMBLING ASPEN	
(Populus tremuloides)	53
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	11
WILD RED RASPBERRY	
(Rubus idaeus)	1
LOW BUSH CRANBERRY	
(Viburnum edule)	2
SNOWBERRY OR BUCKBRUSH	
(Symphoricarpos occidentalis)	3
FORBS	
CREAM-COLOURED VETCHLING	
(Lathyrus ochroleucus)	3
BUNCHBERRY	
(Cornus canadensis)	5
TWINFLOWER	
(Linnaea borealis)	19
STRAWBERRY	
(Fragaria virginiana)	5
WINTER GREEN	
(*Pyrola asarifolia*)	3
GRASSES	
MOUNTAIN RICEGRASS	
(Oryzopsis asperifolia)	1
HAIRY WILDRYE	
(*Elymus innovatus)*	3
PURPLE OATGRASS	
(*Schizachne purpurascens*)	3
KENTUCKY BLUEGRASS	
(*Poa pratensis*)	2

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC TO MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
634(579-733) M

PERCENT SLOPE GRADIENT:
2(0-5)%

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	41(6-102)
FORBS	183(70-270
SHRUBS	125(16-294)
TOTAL	372(190-490)

SUGGESTED STOCKING RATE
4.9 HA/AUM

CMC7. Aw/Rose/Low forb

(Populus tremuloides/Rosa acicularis/Low forb)

n=14 This type occupies mesic, well-drained sites with medium nutrient regimes. This type is similar to the Aw/Rose/Tall forb community type, but this type appears to occupy drier sites with poorer nutrient regimes. It has also been observed that this type can also be produced when the tall forb community is grazed for a number of years. The increased grazing pressure may explain why the production on this type is lower than the tall forb type.

Forage production in this type is good, but the low-growing forbs are not as accessible to livestock as the tall growing forbs. Despite these limitations this community type should still be rated as primary range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN	
(Populus tremuloides)	49
BALSAM POPLAR	
(*Populus balsamifera*)	9
WHITE SPRUCE	
(*Picea glauca*)	2
SHRUBS	
SASKATOON	
(Amelanchier alnifolia)	3
PRICKLY ROSE	
(Rosa acicularis)	16
WILD RED RASPBERRY	
(Rubus idaeus)	6
SNOWBERRY	
(Symphoricarpos occidentalis)	9
LOW BUSH CRANBERRY	
(*Viburnum edule*)	2
FORBS	
STRAWBERRY	
(Fragaria virginiana)	5
FIREWEED	
(Epilobium angustifolium)	3
YELLOW PEAVINE	
(*Lathyrus ochroleucus*)	3
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	4
LINDLEY'S ASTER	
(Aster ciliolatus)	3
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	6
HAIRY WILDRYE	
(*Elymus innovatus*)	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
617(579-667) M

PERCENT SLOPE GRADIENT:
3(0-15)%

ASPECT:
VARIABLE

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	253(6-660)
FORBS	334(76-830)
SHRUBS	235(38-1154)
TOTAL	837(312-2086)

SUGGESTED STOCKING RATE
2.0 HA/AUM

CMC8. Aw/Rose/Tall forb

(Populus tremuloides/Rosa acicularis/Tall forb)

n=13 This type appears to be the modal aspen community type in the absence of disturbance on mesic, medium to rich sites. The presence of tall forbs wild sarsaparilla, fireweed, and peavine distinguish this community from the low forb type. It is unclear why there is a difference in the tall and low forb types. Corns and Annas (1986) recoqnized the two types in the Lower Foothills subregion. They felt the wild sarsaparilla type was moister and had a higher nutrient regime. It has also been observed that the low forb type can be produced when the tall forb community is lightly to moderately grazed for a number of years (Willoughby 1996).

The forage production on this community type is good. The majority of the vegetation is palatable to livestock. This community type would be rated as primary range for domestic livestock. Wild sarsaparilla, a major component of this community type appears to be very sensitive to any disturbance by livestock.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
BALSAM POPLAR	
(Populus balsamifera)	9
TREMBLING ASPEN	
(Populus tremuloides)	49
SHRUBS	
RED OSIER DOGWOOD	
(Cornus stolonifera)	3
WILD RED RASPBERRY	
(Rubus ideaus)	2
PRICKLY ROSE	
(Rosa acicularis)	16
LOW BUSH CRANBERRY	
(*Viburnum edule*)	7
FORBS	
WILD SARSAPARILLA	
(Aralia nudicaulis)	22
STRAWBERRY	
(Fragaria virginiana)	3
BUNCHBERRY	
(Cornus canadensis)	4
LINDLEY'S ASTER	
(Aster ciliolatus)	2
FIREWEED	
(*Epilobium angustifolium*)	5
DEWBERRY	
(*Rubus pubscens*)	6
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	8

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC
ELEVATION:
617(576-697)M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	202(3-812)
FORBS	352(179-480)
SHRUBS	257(60-1058)
TOTAL	811(459-1470)

SUGGESTED STOCKING RATE
2.0 HA/AUM

CMC9. Pb-Aw/Rose-Saskatoon

(Populus tremuloides/Rosa acicularis-Amelanchier alnifolia)

n=2 This community type is found on mesic, well drained south facing slopes that overlook rivers and creeks. This community is also similar to the Aw/Saskatoon-Rose community that was described in the Dry Mixedwood subregion. Both community types occur on south and west facing slopes. Saskatoon provides important browse for wild ungulates. Livestock also find saskatoon palatable and in areas where there is extensive cattle grazing this species can be heavily browsed.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
ASPEN	
(Populus tremuloides)	20
BALSAM POPLAR	
(*Populus balsamifera*)	44
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	22
SASKATOON	
(*Amelanchier alnifolia*)	25
RED OSIER DOGWOOD	
(*Cornus stolonifera*)	7
RIVER ALDER	
(*Alnus tenuifolia*)	8
WILLOW	
(*Salix spp.*)	8
FORBS	
HORSETAIL	
(Equisetum arvense)	3
BUNCHBERRY	
(Cornus canadensis)	1
TALL LUNGWORT	
(Mertensia paniculata)	2
DEWBERRY	
(Rubus pubescens)	3
YELLOW PEAVINE	
(*Lathyrus ochroleucus*)	4
WILD SARSAPARILLA	
(*Aralia nudicaulis*)	3
STRAWBERRY	
(*Fragaria virginiana*)	4
GRASSES	
MOUNTAIN RICEGRASS	
(Oryzopsis asperifolia)	1

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL TO RAPIDLY

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	25(0-50)
FORBS	279(240-318)
SHRUBS	111(10-212)
TOTAL	415(250-580)

SUGGESTED STOCKING RATE
4.0 HA/AUM

CMC10. Aw-Pb/Rose/Strawberry

(Populus tremuloides-Populus balsamifera/Rosa acicularis/Fragaria virginiana)

n=4 This community type appears to have been moderately grazed in the past. As grazing pressure becomes heavy, there is a reduction in shrub, tall forbs and native grass cover and an increase in cover of low growing forbs(dandelion and strawberry). Continued heavy grazing pressure eventually leads to a decline in all native plants and Kentucky bluegrass, clover and dandelion will predominate in the understory (Willoughby 1996). The forage production on this community type is only moderate and is slightly less than other Aw and Pb dominated community types. A period of rest would greatly benefit the production on this community type.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE BIRCH	
(Betula papyrifera)	3
BALSAM POPLAR	
(Populus balsamifera)	28
ASPEN	
(*Populus tremuloides*)	41
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	14
LOW BUSH CRANBERRY	
(Viburnum edule)	1
SNOWBERRY OR BUCKBRUSH	
(Symphoricarpos occidentalis)	6
WILD RED RASPBERRY	
(Rubus idaeus)	2
FORBS	
WILD STRAWBERRY	
(Fragaria virginiana)	13
DANDELION	
(Taraxacum officinale)	3
DEWBERRY OR RUNNING RASPBERRY	
(Rubus pubescens)	2
NORTHERN BEDSTRAW	
(Galium boreale)	2
LINDLEY'S ASTER	
(Aster ciliolatus)	3
FIREWEED	
(*Epilobium angustifolium*)	2
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	7

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
576-606(584) M

PERCENT SLOPE GRADIENT:
LEVEL

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	259(0-617)
FORBS	327(142-524)
SHRUBS	128(23-234)
TOTAL	709(496-916)

SUGGESTED STOCKING RATE
3.0 HA/AUM

CMC11. Aw/Rose/Clover

(Populus tremuloides/Rosa acicularis/Trifolium spp.)

n=1 This community type is represented by aspen stands that have recieved moderate to heavy grazing pressure for a number of years. As a result, native forbs have declined and clover has increased in the understory. A small portion of the original shrub and tall forb understory still remains. Although, grass production has dropped, forb production remains high due to the dense cover of clover. This community has not been grazed as long as the Aw/Kentucky bluegrass/Clover community type (Willoughby 1996).

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	30
BALSAM POPLAR (*Populus balsamifera*)	18
SHRUBS	
WILD RED RASPBERRY *(Rubus idaeus)*	3
PRICKLY ROSE *(Rosa acicularis)*	5
FORBS	
CLOVER *(Trifolium sp.)*	18
DANDELION *(Taraxacum officinale)*	4
WILD STRAWBERRY *(Fragaria virginiana)*	1
HORSETAIL *(Equisetum arvense)*	4
WILD LILY-OF-THE-VALLEY (*Maianthemum canadense*)	1
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	2
KENTUCKY BLUEGRASS *(Poa pratensis)*	10
CREEPING RED FESCUE (*Festuca rubra*)	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	512
FORBS	192
SHRUBS	224
TOTAL	928

SUGGESTED STOCKING RATE
2.0 HA/AUM

CMC12. Aw/Alder-Willow-Rose

(Populus tremuloides/ Alnus crispa-Salix spp.-Rosa acicularis)

n=13 This community type is scattered throughout the Central Mixedwood subregion on mainly mesic to subhygric, well-drained sites. This community is likely of fire origin. Many of the plots were described from a large fire that burned through the area in 1968. The aspen trees are also young and very dense. The high cover of aspen, alder, and willow limits the amount of light reaching the understory. Consequently, there is little forage available for domestic livestock. This community type would be rated as secondary or non-use range.

PLANT COMPOSITION

	Canopy Cover(%)
Trees	
Trembling Aspen	
(Populus tremuloides)	55
Shrubs	
Prickly Rose	
(Rosa acicularis)	11
Blueberry	
(Vaccinium myrtilloides)	1
Willow	
(Salix spp.)	13
Green alder	
(*Alnus crispa*)	35
Forbs	
Bunchberry	
(Cornus canadensis)	10
Wild Strawberry	
(Fragaria virginiana)	2
Twinflower	
(Linnaea borealis)	11
Dewberry	
(Rubus pubescens)	3
Wild lily-of-the-valley	
(*Maianthemum canadense*)	2
Yellow peavine	
(*Lathyrus ochroleucus*)	2
Grasses	
Marsh Reed Grass	
(Calamagrostis canadensis)	5
Hairy wildrye	
(Elymus innovatus)	1
Mountain ricegrass	
(*Oryzopsis asperfolia*)	T

ENVIRONMENTAL VARIABLES

Moisture Regime:
mesic to subhygric

Nutrient Regime:
mesotrophic to permesotrophic

Elevation:
635(333-758) m

Percent Slope Gradient:
5(0-15)%

Soil Drainage:
well To Moderately well

CARRYING CAPACITY:

Forage Production in Kg/Ha (+-std dev):

Grass	75(8-350)
Forbs	200(2-476)
Shrubs	225(5-660)
Total	499(100-930)

Suggested Stocking Rate
3.6 ha/AUM

CMC13. Aw/Willow

(Populus tremuloides/Salix spp.)

n=4 This community type is similar to the Aw/Alder-Willow-Rose community type, but lacks the cover of alder. Previously, this community type was split into four community types (Willoughby and Downing 1995). These included the Aw/Willow-Rose/Twinflower, Aw/Willow-Rose/Bunchberry, Aw/Rose-Willow-Pin cherry/Fireweed and Aw/Rose-Willow-Saskatoon. All four community types appeared to have had a fire origin, but had slightly different moisture and nutrient regimes which affected forage productivity. Productivity varied from 1326 to 1306 kg/ha on the Aw/Willow-Rose/Bunchberry and Aw/Rose-Willow-Pin cherry/Fireweed types to 606 kg/ha on the Aw/Willow-Rose/Twinflower type. Because the sample size was so small it was felt to be impractical to split the four community types and they were lumped into this one type for the purpose of this guide. As this community undergoes succession forage productivity will decline.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN	
(Populus tremuloides)	53
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	13
WILLOW SPP.	
(Salix spp.)	27
LOW BUSH CRANBERRY	
(Viburnum edule)	4
FORBS	
BUNCHBERRY	
(Cornus canadensis)	13
WILD SARSAPARILLA	
(Aralia nudicaulis)	9
YELLOW PEAVINE	
(Lathyrus ochroleucus)	5
DEWBERRY	
(Rubus pubescens)	7
WILD LILY-OF-THE-VALLEY	
(*Maianthemum canadense*)	6
FIREWEED	
(*Epilobium angustifolium*)	11
TWINFLOWER	
(*Linnaea borealis*)	5
GRASSES	
MARSH REED GRASS	
(Calamagrostis canadensis)	7
HAIRY WILDRYE	
(Elymus innovatus)	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC TO SUBHYGRIC

NUTRIENT REGIME:
MESOTROPHIC TO PERMESOTROPHIC

ELEVATION:
542(333-636) M

SOIL DRAINAGE:
WELL TO MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	461(2-708)
FORBS	493(362-552)
SHRUBS	209(107-378)
TOTAL	1162(606-1367)

SUGGESTED STOCKING RATE
1.6 HA/AUM

CMC14. Aw/Red osier dogwood-Rose

(Populus tremuloides/Cornus stolonifera-Rosa acicularis)

n=4 This community is typical of river floodplains throughout the Central Mixedwood subregion. This community has a subhygric moisture and rich nutrient regime. Beckingham and Archibald (1996) found this community type on mid to lower slope topographic positions or near water courses where they recieve nutrient-rich seepage or flood waters for a portion of the growing season. This community type is one of the most productive in the Central Mixedwood, but the high cover of shrubs limits access to livestock. The high cover of tall growing shrubs (alder, red osier dogwood) also limits the growth of low shrubs, forbs and grass the principle forage species for domestic livestock in deciduous forests. As a result, this community should be rated as secondary or non-use range.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
TREMBLING ASPEN *(Populus tremuloides)*	44
BALSAM POPLAR (*Populus balsamifera*)	16
SHRUBS	
PRICKLY ROSE *(Rosa acicularis)*	10
RED OSIER DOGWOOD *(Cornus stolonifera)*	28
GREEN ALDER (*Alnus crispa*)	2
FORBS	
LADY FERN *(Athyrium filix-femina)*	2
WILD SARSAPARILLA *(Aralia nudicaulis)*	4
DEWBERRY *(Rubus pubescens)*	3
WILD LILY-OF-THE-VALLEY (*Maianthemum canadense*)	3
YELLOW PEAVINE (*Lathyrus ochroleucus*)	4
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	3
HAIRY WILDRYE *(Elymus innovatus)*	2

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
602(600-606)M

SLOPE PERCENT:
2(1-3)%

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	7(2-22)
FORBS	205(66-372)
SHRUBS	265(20-358)
TOTAL	476(226-714)

SUGGESTED STOCKING RATE
NON-USE

CMC15. Aw/Horsetail-Cow parsnip

(Populus tremuloides/Equisetum arvense-Heracleum lanatum)

n=1 This community type occupies lowland sites adjacent to black spruce and willow lowlands. It is very moist and nutrient rich. Horsetail types in other subregions also tend to be moister and richer than the modal Aw/Rose types. This site is very productive and produces a large amount of forage for domestic livestock. Horsetail is generally unpalatable to livestock and can be poisonous to horses. In contrast cow parsnip is very palatable to livestock. This community type would therefore be rated as primary or secondary range for domestic livestock.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
TREMBLING ASPEN *(Populus tremuloides)*	12
SHRUBS	
WILD RED RASPBERRY (*Rubus idaeus*)	3
FORBS	
COW PARSNIP *(Heracleum lanatum)*	30
FIREWEED *(Epilobium angustifolium)*	1
HORSETAIL *(Equisetum arvense)*	25
TALL LUNGWORT (*Mertensia paniculata*)	18
TALL LARKSPUR (*Delphinium glaucum*)	13
GRASSES	
MARSH REED GRASS *(Calamagrostis canadensis)*	47

SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY:

FORAGE PRODUCTION IN KG/HA (+-STD DEV):

GRASS	1292
FORBS	1440
TOTAL	2732

SUGGESTED STOCKING RATE
0.7 HA/AUM

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYGRIC TO HYGRIC

NUTRIENT REGIME:
PERMESOTROPHIC

ELEVATION:
758 M

CENTRAL MIXEDWOOD SUBREGION

CONIFEROUS AND MIXEDWOOD FOREST COMMUNITIES

Photo 10. The Balsam fir-White spruce/Moss community type is the climatic climax community for the Central Mixedwood subregion.

CM-CONIFEROUS AND MIXEDWOOD FORESTS

The mixedwood and coniferous community types described in this guide represent five ecosites as described by Beckingham and Archibald (1996). On sites with subxeric moisture and poor nutrient regimes, coarse textured, sandy soils open stands of jack pine generally dominate (Pj/Alder, Pj/Bearberry). These community types commonly have a carpet of lichens covering the forest floor and a thin organic layer typically less than 5 cm thick (Beckingham and Archibald 1996).

On slightly moister sites with submesic moisture and medium nutrient regimes aspen grows in conjunction with jack pine to form the Aw-Pj/Bearberry/Lichen community type. The soils of this community type continue to be coarse-textured but the moisture and nutrient conditions are more favourable to the growth of aspen.

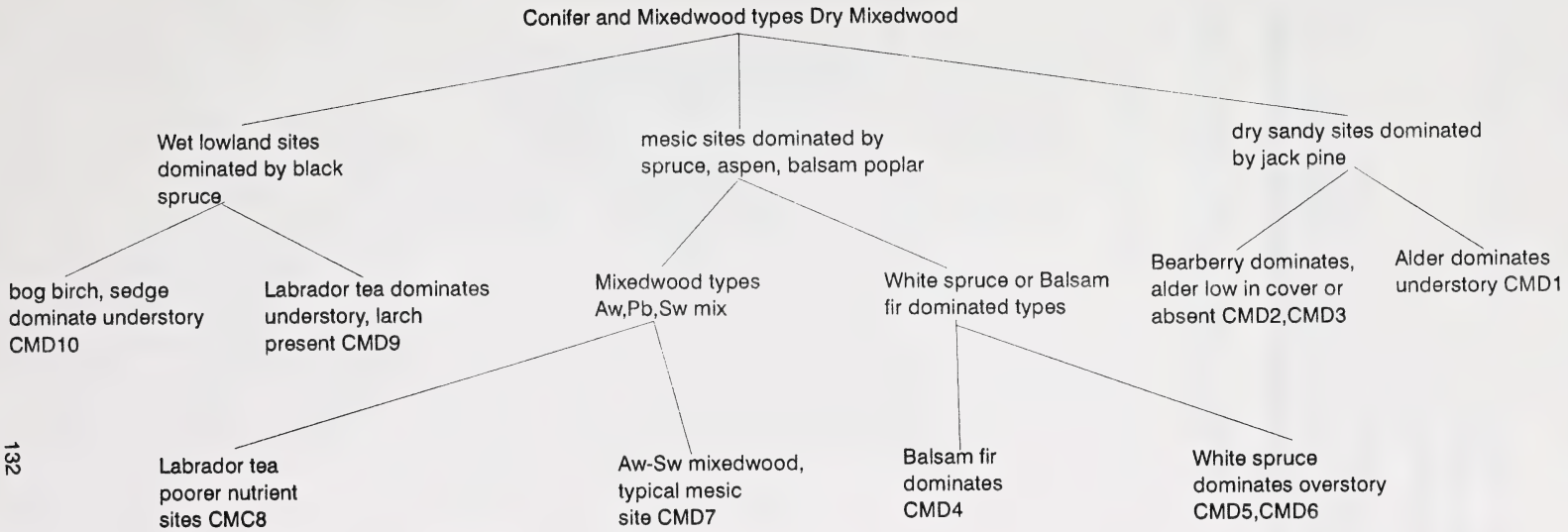
The mesic/medium sites are generally dominated by white spruce (Balsam fir-Sw/Moss, Sw/Moss, Sw/Creeping red fescue) and mixedwood communities of aspen and spruce (Aw-Sw/Rose/Low forb). These communities represent the reference ecosite for the Boreal Mixedwood subregion (Beckingham and Archibald 1996). Generally, these sites have moderately fine to fine-textured till or glaciolacustrine parent materials. Pioneer deciduous species (aspen, balsam poplar and birch) are replaced with white spruce and balsam fir as these sites develop successionally. With succession shade tolerant plants take over the herbaceous layer as conifers dominate the canopy. These shade tolerant species are unproductive and often unpalatable for domestic livestock. Forage productivity declines from 2.3 ha/AUM in a deciduous community to 2.3-8.6 ha/AUM in a mixedwood community to less than 10 ha/AUM in a conifer community.

Black spruce and larch communites generally dominate on wetter sites with subhygric to subhydric moisture regimes and poor to medium nutrient regimes to form the Sb/Bog birch and Sb/Labrador tea/Moss community types. Larch is more tolerant of excessive moisture and is indicative of an enriched nutrient status, while black spruce is typical in areas of stagnating ground water with poor nutrient status (Hay et al. 1985). Generally, these community types are considered non-use for domestic livestock.

Beckingham and Archibald (1996), provide a good description on how the conifer and mixedwood community are arranged in the landscape.

Table 9. Conifer and Mixedwood communities of the Central Mixedwood subregion

Community number	Community type	Productivity (kg/ha)				Ecosite	Carrying capacity (ha/AUM)
		Grass	Forb	Shrub	Total		
CMD1	Pj/Alder	0	40	86	126	subxeric/poor	Non use
CMD2	Pj/Bearberry	25	47	41	113	subxeric/poor	Non use
CMD3	Aw-Pj/Bearberry/Lichen	28	46	134	208	submesic/medium	Non use
CMD4	Balsam fir-Sw/Moss	0	102	0	102	mesic/medium	Non use
CMD5	Sw/Moss	10	78	54	143	mesic/medium	Non use
CMD6	Sw/Creeping red fescue	525	100	0	625	mesic/medium	3.0
CMD7	Aw-Sw/Rose/Low forb	86	194	128	408	mesic/medium	4.5
CMD8	Aw-Sw/Labrador tea/Moss	0	96	96	192	submesic/poor	Non use
CMD9	Sb/Labrador tea/Peat moss	52	61	91	228	subhydric/very poor	Non use
CMD10	Sb/Bog birch	104	90	400	594	subhydric/medium	Non use



Key to conifer and mixedwood communities in the Central Mixedwood subregion

CMD1. Pj/Alder

(Pinus banksiana/ Alnus crispa)

n=1 This community type is found on dry, rapidly drained, sandy soils with a poor nutrient status. Consequently, production is quite low. Cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the area of forage. This community type would be rated as secondary or non-use range.

PERCENT COMPOSITION	CANOPY COVER(%)
TREES	
JACK PINE	
(Pinus banksiana)	45
SHRUBS	
GREEN ALDER	
(Alnus crispa)	41
PRICKLY ROSE	
(Rosa acicularis)	5
BLUEBERRY	
(Vaccinium myrtilloides)	13
FORBS	
TWIN-FLOWER	
(Linnaea borealis)	4
BEARBERRY	
(Arctostaphylos uva-ursi)	T
WILD SARSAPARILLA	
(Aralia nudicaulis)	3
WILD LILY-OF-THE-VALLEY	
(*Maianthemum canadense*)	4
GRASSES	
SEDGES	
(Carex spp.)	4
HAIRY WILD RYE	
(Elymus innovatus)	4
NORTHERN RICEGRASS	
(Oryzopsis pungens)	5

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBXERIC

NUTRIENT REGIME
POOR

ELEVATION:
606 M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
2 - 8

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	0
FORBS	40
SHRUBS	86
TOTAL	126

SUGGESTED STOCKING RATE
NON-USE

CMD2. Pj/Bearberry

(Pinus banksiana/Arctostaphylos uva-ursi)

n=2 This community represents a jack pine forest which is very similar to the Pj/Alder community type. Like the previous community cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
JACK PINE	
(Pinus banksiana)	38
ASPEN	
(*Populus tremuloides*)	1
SHRUBS	
BOG CRANBERRY	
(Vaccinium vitis-idaea)	6
PRICKLY ROSE	
(Rosa acicularis)	T
BLUEBERRY	
(Vaccinium myrtilloides)	2
FORBS	
BEARBERRY	
(Arctostaphylos uva-ursi)	18
NORTHERN BEDSTRAW	
(Galium boreale)	T
WILD LILY-OF-THE-VALLEY	
(Maianthemum canadense)	2
PHILADEPHLIA FLEABANE	
(Erigeron philadelphicus)	1
GRASSES	
HAIRY WILD RYE	
(Elymus innovatus)	2
SEDGE SPP.	
(*Carex spp.*)	5
NORTHERN RICEGRASS	
(*Oryzopsis asperifolia*)	2
MOSSES	
Moss spp.	18

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
624(576-671) M

SOIL DRAINAGE:
RAPIDLY

PERCENT SLOPE GRADIENT:
10%

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	25(0-50)
FORBS	47(40-54)
SHRUBS	41(10-72)
TOTAL	113(100-126)

SUGGESTED STOCKING RATE
NON-USE

CMD3. Aw-Pj/Bearberry/Lichen

(Populus tremuloides-Pinus banksiana/Arctostaphylos uva-ursi/Lichen)

n=2 This community type represents a aspen forest with a secondary canopy of jack pine. It is very similar to the Pj/Bearberry community type, but it is found on slightly moister soils with better nutrients. These conditions favour the growth of aspen. Like the previous community cattle will utilize these areas due to the easy access, however overutilization will quickly deplete the forage supply. This community type would be rated as secondary range and should be grazed on a single rotation per year.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
JACK PINE	
(Pinus banksiana)	15
ASPEN	
(*Populus tremuloides*)	20
SHRUBS	
BOG CRANBERRY	
(Vaccinium vitis-idaea)	4
PRICKLY ROSE	
(Rosa acicularis)	1
BLUEBERRY	
(Vaccinium myrtilloides)	8
FORBS	
BEARBERRY	
(Arctostaphylos uva-ursi)	8
TWINFLOWER	
(Linnaea borealis)	T
WILD LILY-OF-THE-VALLEY	
(Maianthemum canadense)	2
TOADFLAX	
(*Comandra umbellata*)	1
GRASSES	
SLENDER WHEATGRASS	
(Agropyron trachycaulum)	2
NORTHERN RICEGRASS	
(Oryzopsis pungens)	2
SEDGE	
(Carex spp.)	4
LICHENS	49

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC

NUTRIENT REGIME:
SUBMESOTROPHIC

ELEVATION:
576 M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	28
FORBS	46
SHRUBS	134
TOTAL	208

SUGGESTED STOCKING RATE
NON-USE

CMD4. Balsam fir-Sw/Moss

(Abies balsamea-Picea glauca/ Moss*)*

n=1 This is a mature balsam fir forest which represents the climax vegetation for the area. The northerly aspect of this community type has probably protected the site from past disturbance by fires and allowed the community to undergo succession. The high canopy of balsam fir and spruce limits the light reaching the forest floor, limiting the growth of grasses and forbs. As a result, the forage productivity of this community type is very low. This community would be considered non-use.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE	
(Picea glauca)	25
BALSAM FIR	
(Abies balsamea)	40
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	T
FORBS	
BUNCHBERRY	
(Cornus canadensis)	10
TWINFLOWER	
(Linnaea borealis)	4
WOODLAND HORSETAIL	
(Equisetum sylvaticum)	6
RUNNING CLUBMOSS	
(*Lycopodium clavatum*)	3
MOSSES	
FEATHER MOSS	
(*Pleurozium schreberi*)	51
STAIRSTEP MOSS	
(*Hylocomium splendens*)	37

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
5%

ASPECT:
NORTHERLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	0
FORBS	102
SHRUBS	0
TOTAL	102

SUGGESTED STOCKING RATE
NON-USE

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
333 M

CMD5. Sw/Moss
(Picea glauca/Moss)

n=7 This community is considered successionally mature. A more continuous cover of feather moss and presence of balsam fir would bring this community type closer to the climax community described previously. The limited light penetration in this community discourages understory development, making this a non-use area for domestic livestock.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
WHITE SPRUCE	
(Picea glauca)	41
ASPEN	
(Populus tremuloides)	4
BALSAM FIR	
(Abies balsamea)	7
SHRUBS	
PRICKLY ROSE	
(Rosa acicularis)	4
RED OSIER DOGWOOD	
(Cornus stolonifera)	2
LOW BUSH CRANBERRY	
(Viburnum edule)	2
FORBS	
BUNCHBERRY	
(Cornus stolonifera)	8
FIELD HORSETAIL	
(Equisetum arvense)	1
TWINFLOWER	
(Linnaea borealis)	8
PALMATE LEAVED COLTSFOOT	
(Petasites palmatus)	2
DEWBERRY	
(Rubus pubescens)	1
FIREWEED	
(Epilobium angustifolium)	1
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	1
MOSS	
STAIR STEP MOSS	
(Hylocomium splendens)	18
FEATHERMOSS	
(Pleurozium schreberi)	8

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
415(150-606) M

SOIL DRAINAGE:
WELL

PERCENT SLOPE GRADIENT:
1%

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	10(0-40)
FORBS	78(0-172)
SHRUBS	54(0-158)
TOTAL	143(36-370)

SUGGESTED STOCKING RATE
NON-USE

ENVIRONMENTAL VARIABLES

CMD6. Sw/Creeping red fescue

(Picea glauca/Festuca rubra)

n=1 This community type represents an old cultivated field which has been planted to white spruce. The canopy of spruce is beginning to shade the understory causing a decline in productivity, however, there is still enough forage for grazing between the spruce trees.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
ASPEN	
(Populus tremuloides)	1
WHITE SPRUCE	
(Picea glauca)	35
BALSAM POPLAR	
(*Populus balsamifera*)	1
SHRUBS	
SNOWBERRY	
(Symphoricarpos occidentalis)	5
PRICKLY ROSE	
(Rosa acicularis)	10
FORBS	
STRAWBERRY	
(Fragaria virginiana)	11
CLOVER	
(Trifolium hybridum)	5
DANDELION	
(Taraxacum officinale)	5
LINDLEY'S ASTER	
(Aster ciliolatus)	3
GRASSES	
CREEPING RED FESCUE	
(*Festuca rubra*)	29
HAIRY WILDRYE	
(*Elymus innovatus*)	12
SLENDER WHEATGRASS	
(*Agropyron trachycaulum*)	11
SEDGE	
(*Carex spp.*)	3

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC

NUTRIENT REGIME:
MESOTROPHIC

ELEVATION:
606 M

SOIL DRAINAGE:
WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	525
FORBS	100
SHRUBS	0
TOTAL	625

SUGGESTED STOCKING RATE
3.0 HA/AUM

CMD7. Aw-Sw/Rose/Low forb

(Populus tremuloides-Picea glauca/ Rosa acicularis/Low forb)

n=5 This community type is dominated by aspen in the primary canopy and by spruce in the secondary canopy. It occupies similar site conditions to the Aw/Rose/Low forb community type. As spruce succeeds into the canopy it reduces the amount of light reaching the forest floor reducing the growth of shrubs, forbs and grass. This community type would be rarely used by livestock and should be rated as secondary range.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
WHITE SPRUCE	
(Picea glauca)	29
TREMBLING ASPEN	
(Populus tremuloides)	33
BALSAM POPLAR	
(Populus balsamifera)	3
SHRUBS	
SNOWBERRY	
(Symphoricarpos occidentalis)	2
PRICKLY ROSE	
(Rosa acicularis)	10
BRACTED HONEYSUCKLE	
(Lonicera involcrata)	4
BUFFALOBERRY	
(Shepherdia canadensis)	2
FORBS	
TWINFLOWER	
(Linnaea borealis)	3
BUNCHBERRY	
(Cornus canadensis)	4
WINTERGREEN	
(Pyrola asarifolia)	1
DEWBERRY	
(Rubus pubscens)	2
BISHOP'S CAP	
(Mitella nuda)	1
GRASSES	
HAIRY WILDRYE	
(*Elymus innovatus*)	5
MARSH REEDGRASS	
(*Calamagrostis canadensis*)	3
MOSSES	
Moss spp.	4

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
MESIC
NUTRIENT REGIME:
MESOTROPHIC
ELEVATION:
573(150-758) M
SOIL DRAINAGE:
WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	86(2-308)
FORBS	194(70-418)
SHRUBS	128(50-308)
TOTAL	408(160-1034)

SUGGESTED STOCKING RATE
4.5 HA/AUM

CMC8. Aw-Sw/Labrador tea/Moss

(Populus tremuloides-Picea glauca/Ledum groenlandicum/Moss)

n=1 This community type has relatively poor nutrient status. Labrador tea and bog cranberry are indicative of acidic soil surface soil conditions. Beckingham and Archibald (1996) described this ecosite with a jack pine and black spruce dominated overstory. The moisture and nutrient conditions of this community type are probably better than there ecosite, which allows aspen and white spruce to dominate the overstory, but the soil conditions are poorer than the Aw-Sw/Rose/Low forb community type. This community type does not produce much palatable forage and therefore would be classified as non-use.

PLANT COMPOSITION

	CANOPY COVER(%)
TREES	
ASPEN	
(Populus tremuloides)	55
WHITE SPRUCE	
(Picea glauca)	40
SHRUBS	
LABRADOR TEA	
(Ledum groenlandicum.)	11
BLUEBERRY	
(Vaccinium myrtilloides)	8
BOG CRANBERRY	
(*Vaccinium vitis-idaea*)	4
FORBS	
BUNCHBERRY	
(Cornus canadensis)	5
TWINFLOWER	
(Linnaea borealis)	5
BASTARD'S TOADFLAX	
(Geocaulon lividum)	3
COW-WHEAT	
(*Melampyrum lineare*)	3
GRASSES	
HAIRY WILDRYE	
(Elymus innovatus)	1
MOSSES	
Moss spp.	67

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBMESIC- MESIC
NUTRIENT REGIME:
SUBMESOTROPHIC-MESOTROPHIC

ELEVATION:
333 M
SOIL DRAINAGE:
MODERATELY WELL

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	0
FORBS	96
SHRUBS	96
TOTAL	192

SUGGESTED STOCKING RATE
NON-USE

CMD9. Sb/Labrador tea/Moss

(Picea mariana/Ledum groenlandicum/Moss)

n=1 This community type appears to be related to the bog ecosite described by Beckingham and Archibald (1996). The bog ecosite commonly has organic soils consisting of slowly decomposing peat moss. This community type is considered non-use for livestock, due to the lack of forage and poor accessibility.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
LARCH	
(Larix laricina)	15
BLACK SPRUCE	
(Picea mariana)	31
SHRUBS	
WILLOW SPP.	
(Salix spp.)	5
LABRADOR TEA	
(Ledum groenlandicum)	29
FORBS	
CLOUDBERRY	
(Rubus chamaemorus)	8
HORSETAIL	
(Equisetum arvense)	4
DWARF SCOURING RUSH	
(Equisetum scirpoides)	1
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	3
SEDGE	
(Carex aurea)	4
WATER SEDGE	
(*Carex aquatilis*	3
MOSSES	
Peat Moss.	47

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
OLIGOTROPHIC

ELEVATION:
615(579-636) M

SOIL DRAINAGE:
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	52(0-192)
FORBS	61(0-286)
SHRUBS	91(0-200)
TOTAL	228(30-678)

SUGGESTED STOCKING RATE
NON-USE

CMD10. Sb/Willow-Bog birch

(Picea mariana/Salix spp.-Betula glandulosa)

n=1 This community type is part ot the poor fen ecosite (Beckingham and Archibald 1996) because it has an intermediate nutrient regime between the bog and rich fen ecosites. Drainage on this community type is poor to very poor, but has some movement of water through the site. This community type has a well developed shrub layer and the grass layer consists mainly of marsh reedgrass and sedge species. The productivity of this type is moderate, but the high water table limits access to domestic livestock. This community would be rated as non-use.

PLANT COMPOSITION CANOPY COVER(%)

TREES	
LARCH	
(Larix laricina)	10
BLACK SPRUCE	
(Picea mariana)	5
SHRUBS	
WILLOW SPP.	
(Salix spp.)	30
BOG BIRCH	
(Betula glandulosa)	24
BLUEBERRY	
(*Vaccinium myrtilloides*)	12
FORBS	
SMALL BOG CRANBERRY	
(Oxycoccus microcarpus)	57
HORSETAIL	
(Equisetum arvense)	2
THREE FLW'D SOLOMON`S-SEAL	
(Smilicina trifolia)	5
GRASSES	
MARSH REEDGRASS	
(Calamagrostis canadensis)	6
SEDGE	
(Carex aurea)	2
MOSSES	
Peat Moss.	47

SOIL DRAINAGE:
POORLY

CARRYING CAPACITY

FORAGE PRODUCTION IN KG/HA (+-STD. DEV.)

GRASS	104
FORBS	90
SHRUBS	400
TOTAL	594

SUGGESTED STOCKING RATE
NON-USE

ENVIRONMENTAL VARIABLES

MOISTURE REGIME:
SUBHYDRIC
NUTRIENT REGIME:
OLIGOTROPHIC

ELEVATION:
576 M

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APPENDIX 1

VEGETATION REPORTS AND SPECIES LISTS FOR EACH PLANT COMMUNITY TYPE

(See volume 11)