Four Seasons Environmental Centre

Four Seasons
Environmental Centre

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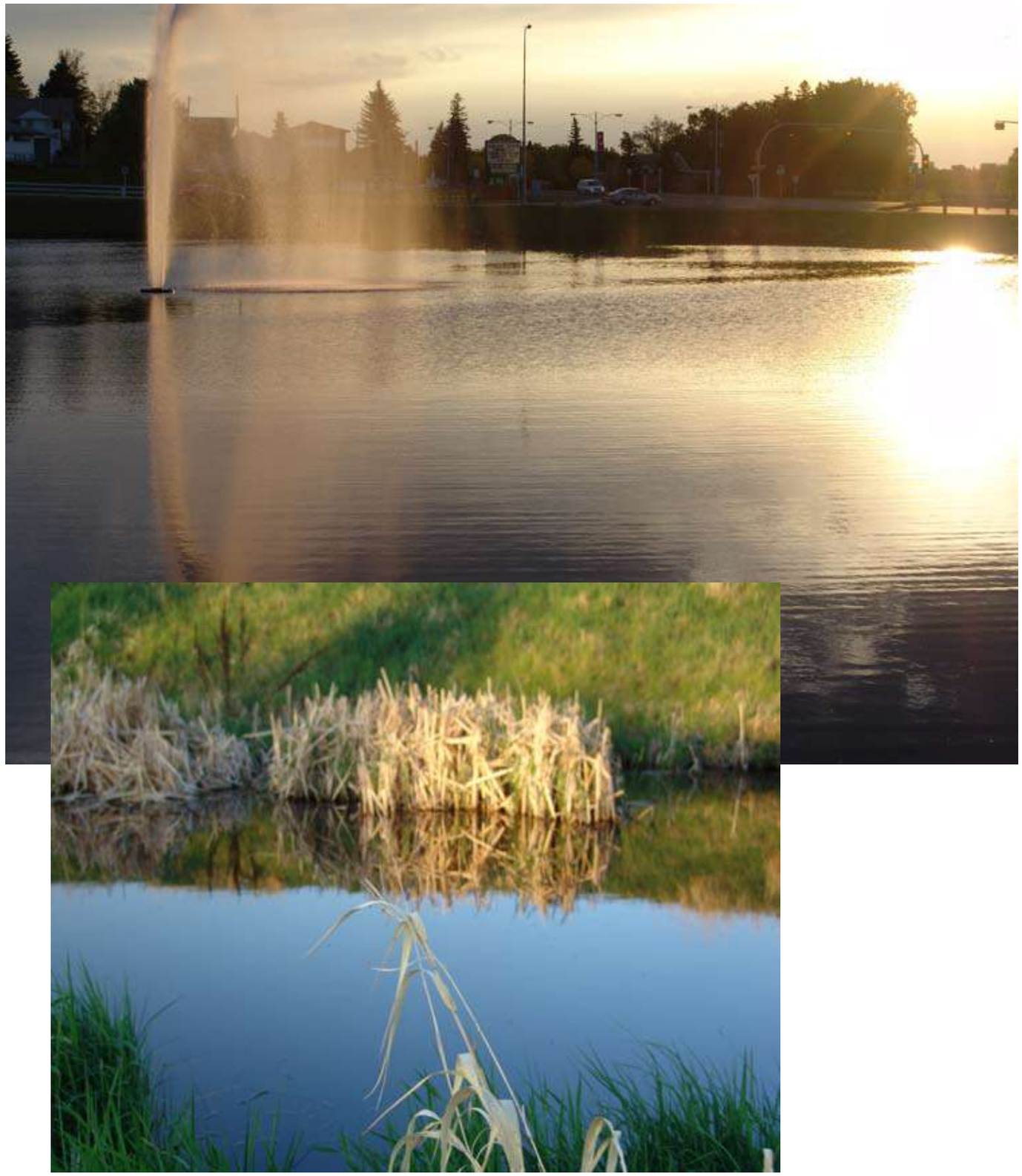
Hydrology

Introduction

Hydrology is the study of the movement and dispersal of water in our environment. Water is essential to all life and is one of our most important yet limited resources. Water in Camrose is supplied from Driedmeat Lake, where it is then filtered and purified numerous times by the Camrose Water Treatment Plant before it gets to our taps. Water plays an even larger role in our surrounding environment. Its supplies native plants and animals with the nourishment they need, provides homes for fish, invertebrates, birds and other mammals. Healthy riparian areas surrounding our waters also help to decrease the amounts and concentrations of contaminants that may leak into our creek, as well as provide unique habitats that create a great source for biodiversity.



The world's surface is 70% covered by water, only 3% of which is freshwater, and only 0.3% of that is landlocked surface water, not frozen in glaciers or ice caps. Canada is fortunate enough to have 9% of the worlds freshwater supply[1]. Much of this freshwater is associated with wetlands, which purify and enrich water and offer habitats to an array of organisms. Canada has about 14% of the world's wetlands, with Alberta having 11% of Canada's wetlands [1].

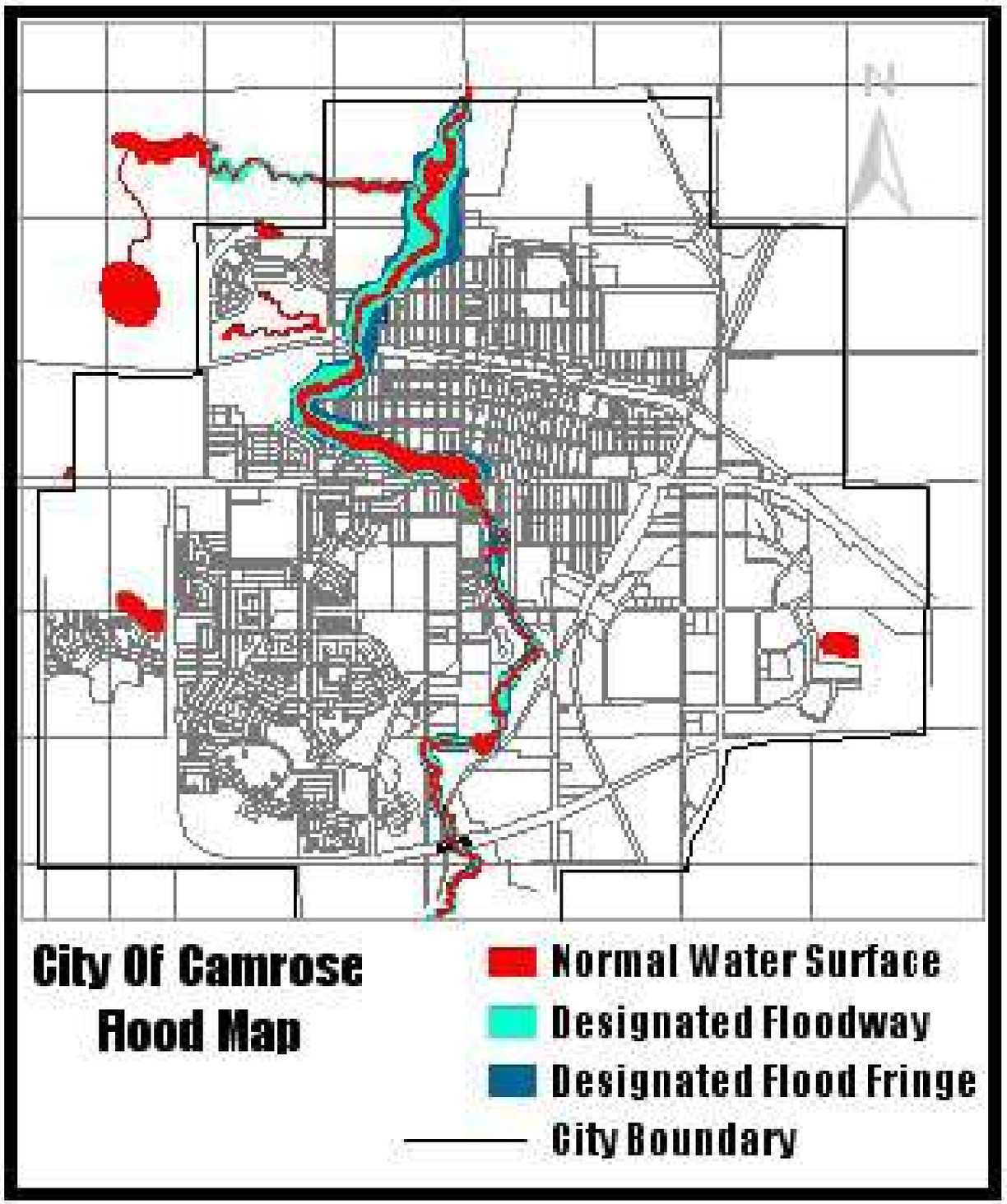
Associated with wetlands are riparian areas, or intermediate areas between streams and the surrounding land [2]. All of these water sources play a key role in the hydrological cycle or the movement of water from the ground, into the atmosphere and back to the surface where it flows as rivers and streams.

Stoney Creek Watershed

Stoney Creek (about 32 km long) flows south from Miquelon Lakes where it is routed through the Lyseng Reservoir. It meanders its way through the Camrose city limits for roughly 8.5 km, and then flows into the Battle River. The final destination is the Hudson's Bay, by way of the North Saskatchewan River and Lake Winnipeg [3]. The total drainage area for Stoney Creek is approximately 355 km2 [4], while that of the Battle River is close to 30,000 km2

Stoney Creek carries sediments from the surrounding area during times of high water flow such as spring snowmelt and summer storms, and deposits them on the creeks banks [4]. This process builds up the banks of the creeks with the deposited soil consisting mostly of silty sandy clays, sands and gravels. These banks are mostly covered by vegetation along the entire length of the creek varying from cattails and grasses to brush and trees. There is roughly a 15m drop in elevation over the 8.5km of the creek in the city, with a 5 m drop at the Mirror Lake spillway. This creates a hydraulic discontinuity, making the southern half of the creek flow faster than the upper half. There are a number of structures that alter the flow of the creek through Camrose. These include the CRP and Grand Drive culverts, the 48th Avenue Bridge, and the Mirror Lake Dam and Spillway [4]. The Stoney Creek is usually flows slowly, but during April and May, the spring melt water may drastically raise the discharge of the creek, so much so that flooding sometimes occurs. The floodplain for the creek is fairly contained, so any municipal damage is usually limited.

In 1995, the city participated in a study to define a 100-year floodplain of the Stoney Creek. This study measured the annual and monthly flow rates of the Creek and mapped out the creek's maximum possible discharge, designated as a 100-year flood event. During a 100-year flood, the discharge was calculated to reach 34.3-36.3 cubic meters/second (34-36000 liters/second), which is much higher than the average of 0.5-1.0 cubic meters/second. As a result of this study, two areas were defined: 1) a flood risk area where development would be restricted and 2) a flood fringe, where development was conditional [4]. This information helped the city of Camrose develop a storm sewer system that would help manage floodwaters by directing overflow to retention ponds, or diverting it to flow outside of residential areas to minimize property damage [5].


N
City Of Camrose
Flood Map
Normal Water Surface
Designated Floodway
Designated Flood Fringe
City Boundary

Water Source and Treatment

Today Camrose is supplied with water from Driedmeat Lake, which lies roughly 8 km south of Camrose, but this wasn't always our water source. Before 1929, Camrose relied on wells, which supplied the small prairie town. In 1929, Calgary Power Ltd. took control of the water and power utilities for the town and dammed the Stoney Creek within the town limits making a reservoir capable now known as Mirror Lake. Later, a treatment plant was built [6]. In 1940, a military camp placed in Camrose spurred a dramatic increase in the need for water over the next several years. In 1952, a larger reservoir (Lyseng Reservoir) was made in the Stoney Creek drainage basin 8 miles north of
However, due to low creek levels, no transfer of water from the Lyseng Reservoir to Mirror Lake could be made during the winter [6].

With annual demand increasing, a new solution was needed. Mirror Lake's capacity could not be increased due to land values, and wells would not supply adequate amounts of water. If there were successive dry years, there was potential for the Lyseng Reservoir to lose its storage capacity, thus limiting water use. It was decided that Camrose needed a larger water source, and Driedmeat Lake was the answer [6] and has been the source of Camroses water since 1957. In 1980, the city of Camrose purchased the water system from Calgary Power Ltd. and put in a new water treatment facility in 1988.

City of Camrose Water Systems

Source: Water is a valuable natural resource. All water used in Camrose is supplied from Dried Meat Lake, located on the Battle River.

Alberta Environment regulates the amount of water the City of Camrose may draw from the lake to ensure that the lake's ecosystem is protected.

Water Treatment Plant: Safe drinking water is a carefully manufactured product. It is collected, treated, tested, and delivered to your home and business 24 hours a day. The City of Camrose uses a variety of treatment processes to remove contaminants from drinking water. Each drop of water that enters the treatment system takes approximately five days to treat and distribute. These processes include:

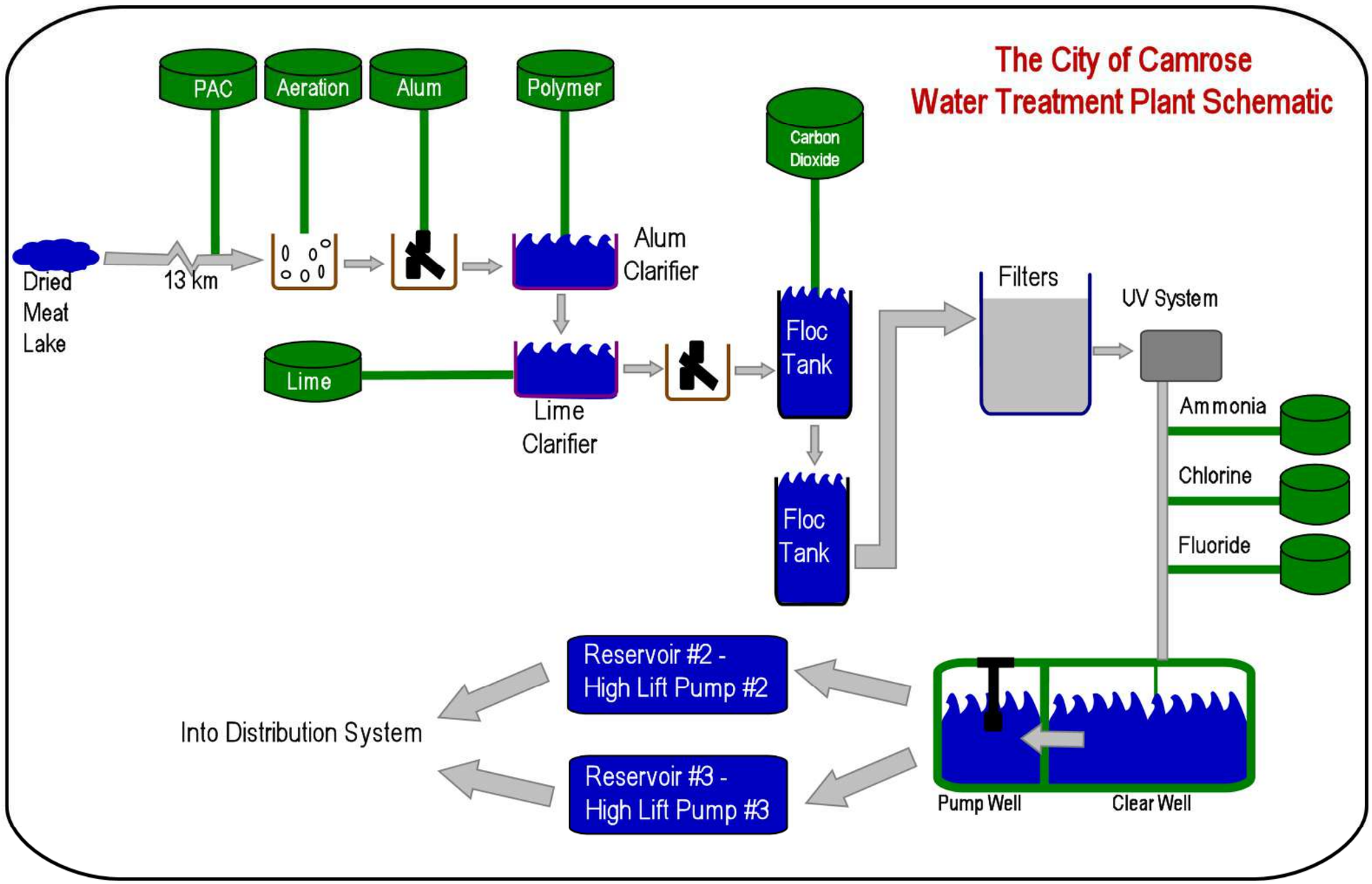
-*Powdered activated carbon (PAC)* removes organic materials, which cause taste and odor.

-*Aeration* Fine bubbles of air are blown through the water to remove taste and odor causing substances in the water such as methane, hydrogen sulfide, and other volatiles.

-*Flocculation* Alum and polymers are added to the water to form tiny particles called 'floc' which attract dirt and other particles suspended in water.

-Sedimentation The flocculated particles then settle out of the water.

-*Water Softening* Lime bonds with calcium and magnesium and then settles out of the water.


The City of Camrose
Water Treatment Plant Schematic
PAC
Aeration
Alum
Polymer
Carbon Dioxide
Dried Meat Lake
13 km
Alum Clarifier
Lime
Lime Clarifier
Floc Tank
Filters
UV System
Ammonia
Chlorine
Fluoride
Floc Tank
Reservoir #2 - High Lift Pump #2
Reservoir #3 - High Lift Pump #3
Into Distribution System
Pump Well
Clear Well

There are a number of steps to treat the water before it reaches our taps. First, large screens on the water intake valves filter out large debris. Once the water reaches the treatment plants first clarifier, it is mixed with black powdered activated carbon to remove organic materials, then air is bubbled through it to remove any gasses. These materials affect taste and odor. Once this is complete it moves to the second clarifier where alum is added which makes any small particles in the water clump together so they can be filtered out in a solution called floc. Once this is done, the water needs to be softened, so they add lime to the mixture to remove calcium and magnesium and then they adjust the pH of the water to 8.3 so that it is neither corrosive nor aggressive. Then the water is filtered once again through a natural sand filter to remove any more particles. After this the water goes through a UV light treatment which inactivates any pathogenic organisms. Then chloramine is added to the water to protect against contamination, and fluoride is added to the water to prevent tooth decay [5]. Each day the water goes through 30 different chemical tests to ensure its quality. The city is continually upgrading their technology to bring the residents of Camrose better quality water.

Riparian Functions

The riparian and wetland areas surrounding the Stoney Creek are some of the most ecologically important environments in the Camrose area. They provide homes and refuge for a range of different organisms, from mammals such as deer and muskrats, to aquatic invertebrates, fish and an array of birds. They also improve water quality, filter out harmful chemicals, trap and store sediment and water, create primary productivity and maintain biodiversity [2].

Although riparian areas occupy only about 2% of the western landscape, they are home to the highest densities of breeding birds in Canada. Various studies have also shown that 90% of all mammals, birds and other vertebrates associated with grasslands depend on riparian areas at some point in their life cycles [7]. Apart from wildlife, domestic livestock are also dependent on riparian areas for water and shelter, but when poorly managed, they can lead to unhealthy riparian conditions.

There are approximately 90 species of trees, shrubs, grasses and forbs found in the riparian area of Stoney Creek. The presence, absence or abundance of certain species helps to determine the health of the riparian area[7]. A healthy riparian area is well vegetated with deep-rooted tree, shrub and grass species that provide bank stability [2]. In an alluvial creek such as the Stoney Creek, it is extremely important to have secure banks so that sediment may be trapped thereby limiting erosion and excess sediment in the water which may be harmful to fish and other inhabitants of the creek.

Trapping sediments also improves water quality by filtering out contaminants and nutrients that may come from runoff or other pollution sources. This enriches the soil in the riparian area to promote enhanced vegetation growth. The floodplain of a riparian area is also crucial in minimizing the effects of floodwaters. In the event of a flood, a well developed floodplain can trap and store water and energy while reducing the energy of flowing water to limit the damage caused by erosion [2]

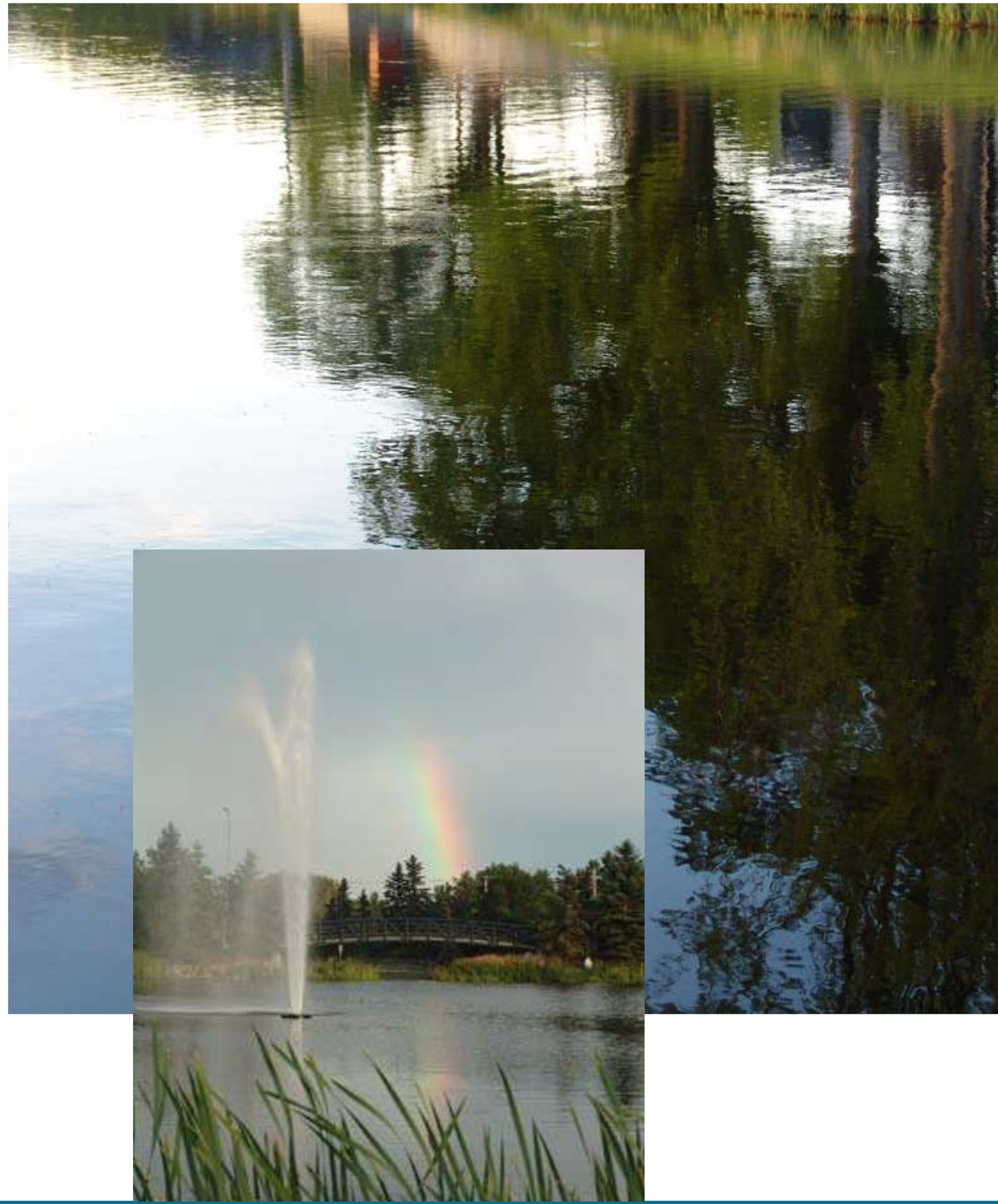
Perhaps the largest indicator of a healthy riparian area is biodiversity. The abundance of riparian vegetation not only aids in preserving the creek structure, but provides countless homes for a variety of wildlife species, such as muskrat, beavers, waterfowl, deer, moose, fish and aquatic invertebrates. By having such a diverse landscape, there is room enough to accommodate large numbers of species, each adapted to its own part of the environment. A complete riparian system keeps the food chain in check by minimizing the amount of nutrients and dissolved gasses in the water to prevent events such as algae blooms that rob the water of oxygen. Events such as these can cause desiccation of aquatic invertebrates and fish, which would mean that birds and other animals that relied on them for food would likely disappear.

Riparian areas provide many benefits. They provide areas for scenic appreciation, tourism, recreation, and enjoyment by those who live in the area surrounding the riparian zone. They also provide economic benefits, such as higher property values of the residences adjacent to riparian areas[2].

Threats to Riparian Areas

Due to the many benefits that a riparian area has to offer, they are often exploited to the point where they lose productivity. By modifying the landscape in and around a riparian zone, you risk losing the natural vegetation that maintains the community structure. Activities such as development, grazing or agricultural practices may change the dominant vegetation to non-native species that out-compete the native vegetation creating a biologically assimilated landscape. At this point the stream may lose its sediment holding capabilities, leading to bank loss and sedimentation of the water.

Another effect comes with traffic in the area of the riparian zone, in the form of livestock or machines[2]. They create holes and indentations that collectively flatten the ground, eliminating its ability to absorb water back into the ground. This creates a larger amount of runoff from the area, and any contaminants that may have been present, can go directly into the stream rather than being absorbed by the surrounding vegetation. Damming a riparian area can also have detrimental effects such as the loss of resident vegetation, fish and wildlife and decreased bank stability. The riparian area is adapted to high and low water flows, and so are lots of the



organisms associated with them. However, when water is removed entirely, the dynamics of the riparian area do not function properly and its inhabitants may disappear. The presence of invasive plant species can also be a sign of an unhealthy riparian area. Although usually associated with disturbances such as development, invasive species can wipe out native vegetation quickly, changing the landscape. They often have short life cycles, which allows them to spread quickly, and shallow roots that don't aid in bank structure. Species such as the Canada thistle, Leafy spurge, and noxious chamomile, are all considered invasive species and can be signs that an area is degrading [2]

How You Can Help

There are lots of ways that people can get involved in the protection of our water resources. To limit the amount of wastewater generated, you can simply conserve water. Small adjustments can add up, saving water and money. The city of Camrose has a public education program that informs the public about the source and treatment of water in Camrose. The city provides water saving kits available at City Hall, Engineering Department, or City of Camrose Public Works Office [5]. The official Website for Camrose also has tips for conserving water in the bathroom, kitchen and laundry room and can be accessed at: http://www.camrose.com/engineer/water/waterwise.htm. The city has also taken part in the Yellow Fish

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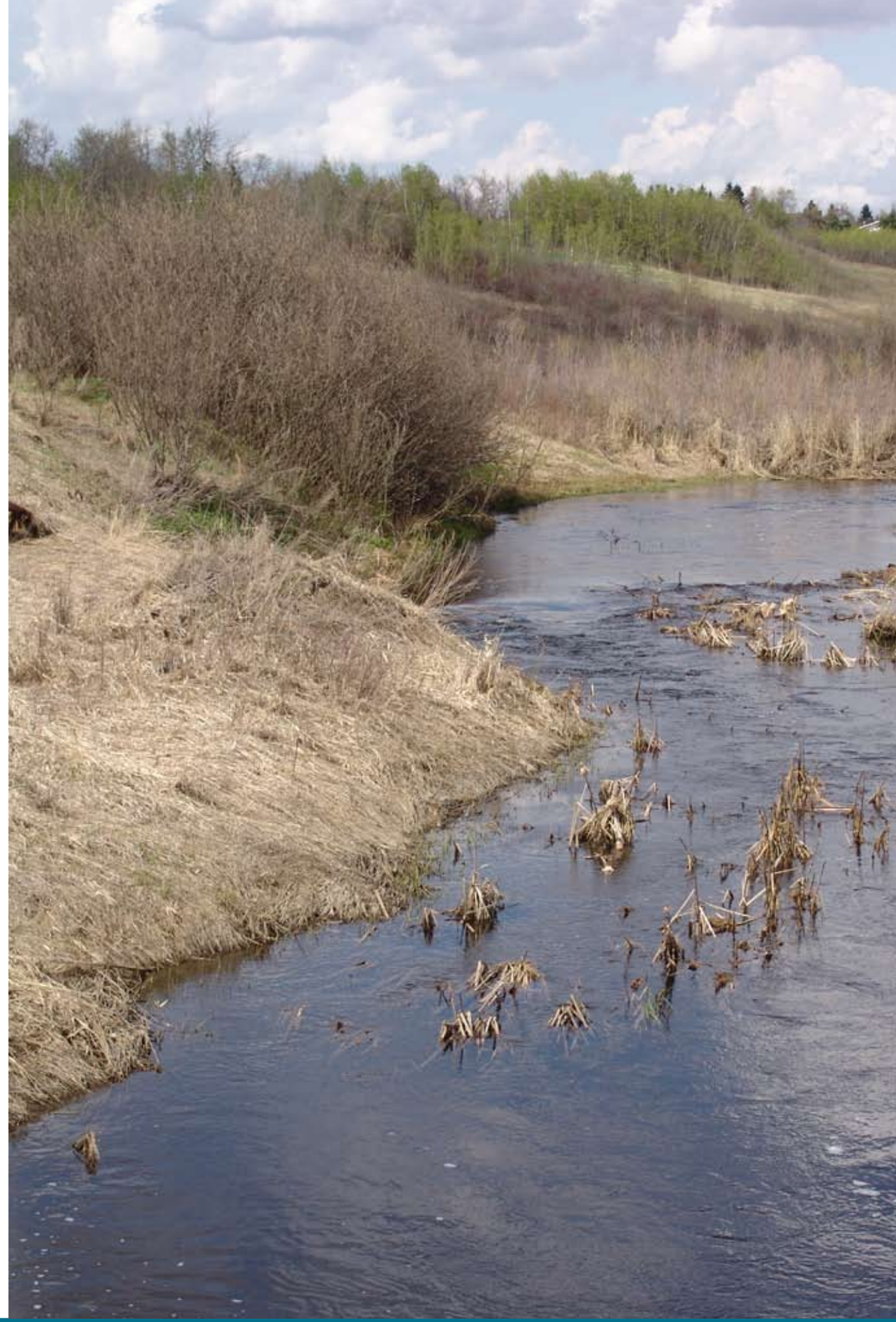
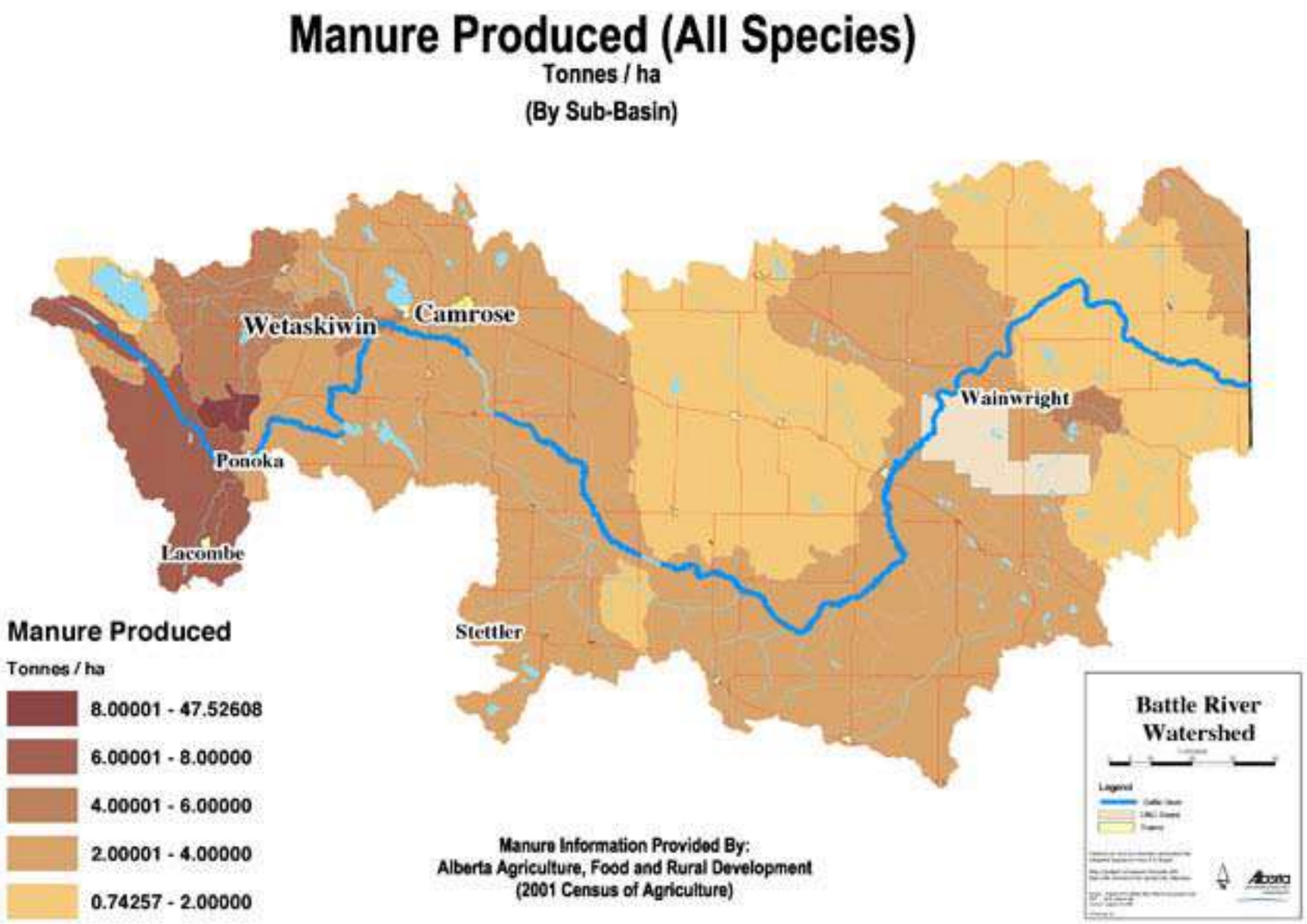
Road Program put on by the organization Trout Unlimited. Yellow Fishes are painted in front of each storm drain to remind us that whatever goes into our drains goes directly to our waters.

Another program devoted to water conservation and riparian areas is the Cows and Fish program. Since 1998 Cows and Fish have worked with the city of Camrose by helping the city parks manage beaver activity, conduct wildlife inventories in the area and providing educational programs to increase awareness. They work directly with farmers, ranchers, and landowners, educating them on the benefits of healthy riparian areas and practices to ensure the health of riparian areas associated with their land. A simple way to monitor riparian health is to take pictures of your area year after year to see how it has been affected by use. Riparian assessment booklets are also available from their offices so that you may make your own assessment of your area which will let you know the degree of health the riparian area is at, and if any changes should be made.



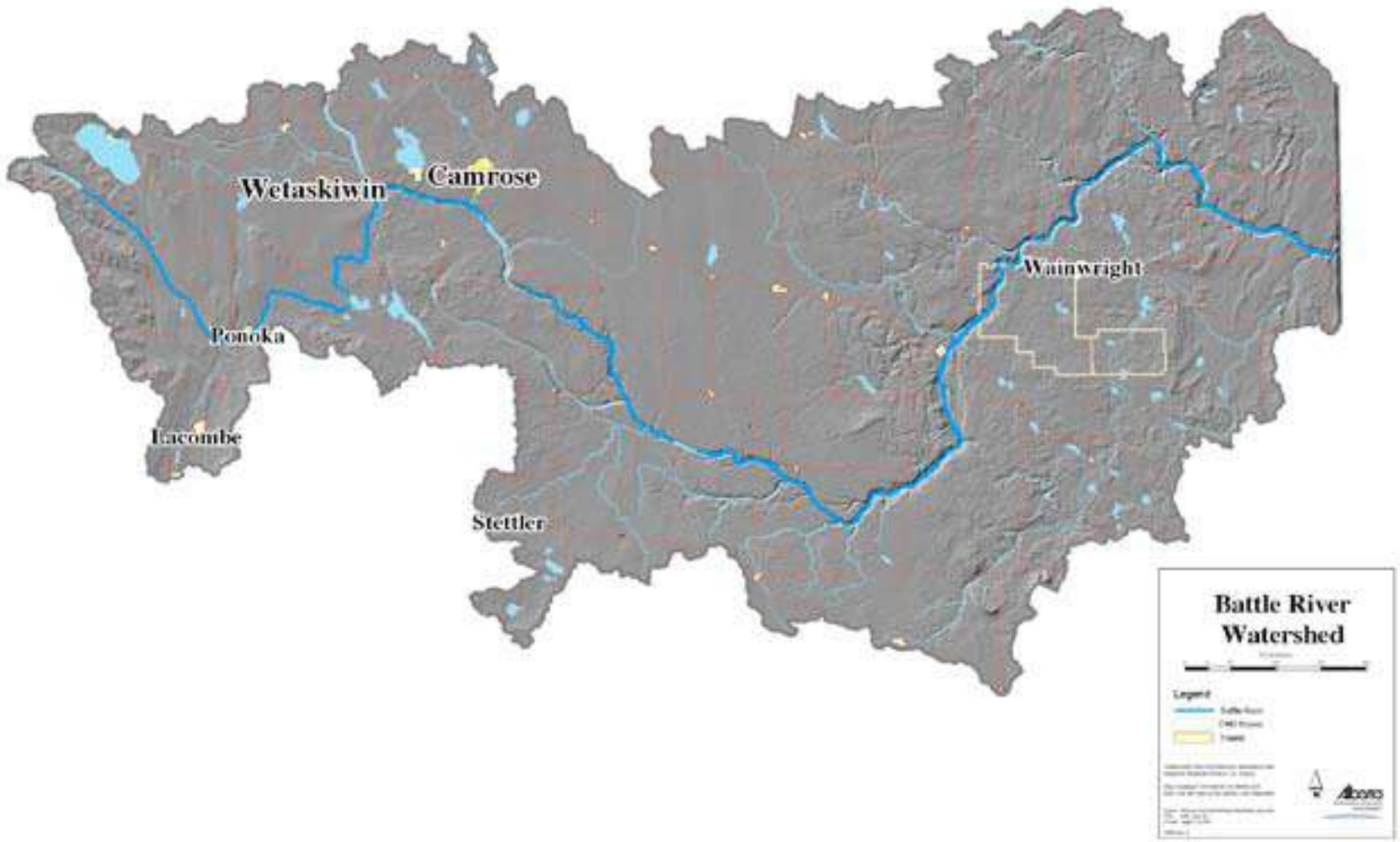

Manure Produced (All Species)
Tonnes / ha
(By Sub-Basin)
Wetaskiwin
Camrose
Ponoka
Lacombe
Wainwright
Stettler
Manure Produced
Tonnes / ha
8.00001 - 47.52608
6.00001 - 8.00000
4.00001 - 6.00000
2.00001 - 4.00000
0.74257 - 2.00000
Manure Information Provided By:
Alberta Agriculture, Food and Rural Development
(2001 Census of Agriculture)
Battle River Watershed

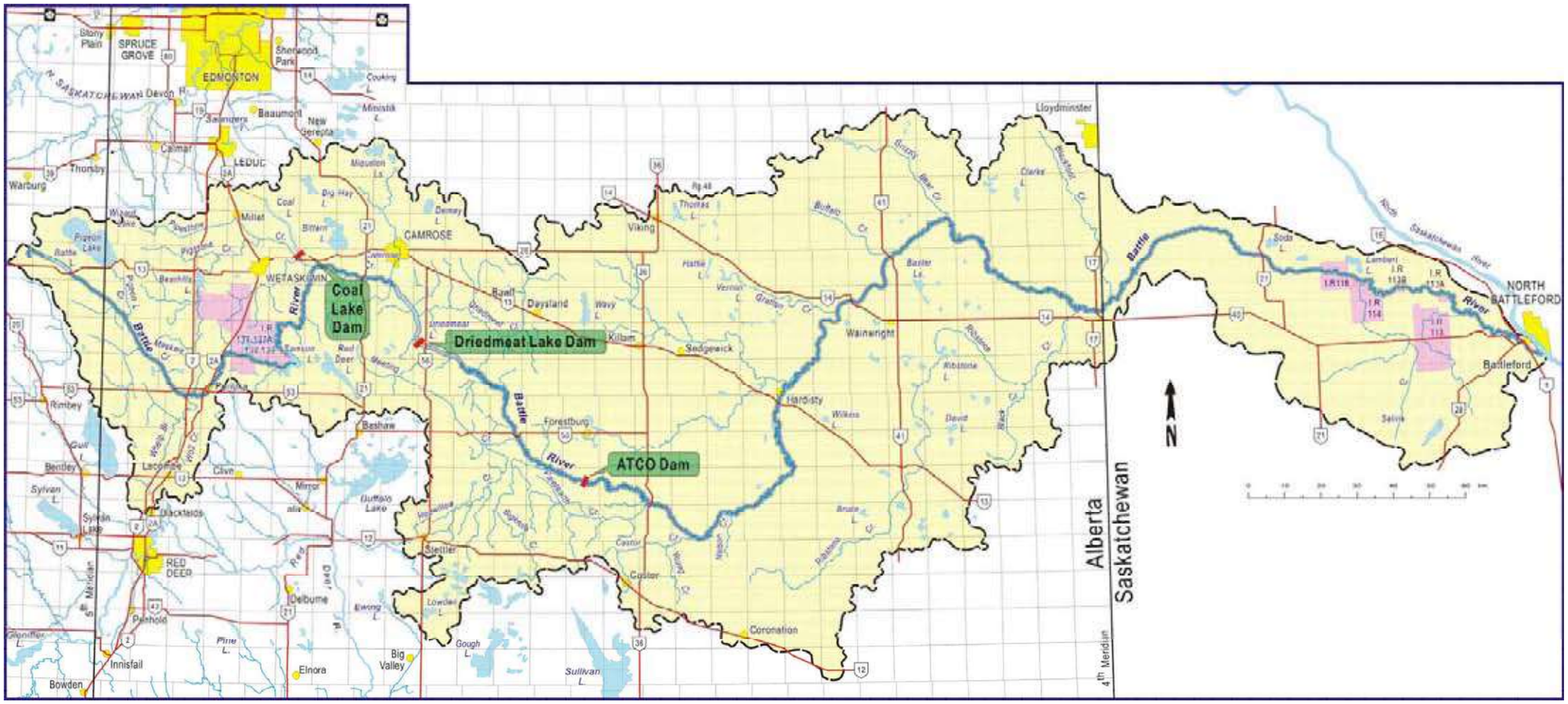
Landforms

Camrose Region Landforms

Lake Edmonton was a glacial lake that existed during the Wisconsin ice age[1]. The glacial waters of Lake Edmonton played an important part in the creation of the many landforms that can be found in the Camrose area, including the Battle River Valley, the hoodoos of the valley, the hummocky terrain of the Edmonton area and one can even assume the Stoney Creek Valley which passes through Camrose[1].

Topography


Wetaskiwin
Camrose
Wainwright
Ponoka
Lacombe
Stettler
Battle River
Watershed
Legend


SPRUCE GROVE
EDMONTON
Sherwood Park
Stony Plain
N SASKATCHEWAN R
Devon
Beaumont
New Sarepta
Calmar
LEDUC
Thorsby
Warburg
Millet
Coal L.
Big Hay L.
Pigeon Lake
Battle R.
CAMROSE
WETASKIWIN
Coal Lake Dam
Driedmeat Lake Dam
Ryalt
Daysland
Wavy L.
Killam
Sedgewick
Viking
Thomas L.
Lloydminster
Clarks L.
Battle River
North Saskatchewan River
NORTH BATTLEFORD
Battleford
Wainwright
Hardisty
Wilkes L.
David L.
Rimbey
Bentley
Lacombe
Clive
Sylvan L.
Blacktalons
Bashaw
Forestburg
ATCO Dam
Buffalo Lake
Stettler
Castor
Coronation
RED DEER
Delburne
Penhold
Innisfail
Bowden
Elnora
Big Valley
Sullivan L.
Gough L.
Alberta
Saskatchewan
4th Meridian
N

The Gwynne Outlet Channel & the Battle River

During the Wisconsin ice age it is believed that Lake Edmonton became dammed by stagnant ice on the divide between the modern North Saskachetwan River basin and the Battle River basin[1]. As a result of the pressure there was a sudden release and rapid incision of the glacial waters, eroding the area which is occupied today by the Saunders Lake in the south and Blackmud creek in the north. Thus the Gwynne outlet channel was create[2]. This channel is a deep broad valley with steep slopes which at the town of Gwynne becomes occupied by the Battle River[1].

Hoodoos

Hoodoos can be found along the Battle River Valley. These formations are often created through the simultaneous process of wind and water erosion on glacial till deposits[1]. The initial formation of the hoodoos is believed to have occurred during the retreat of the Laurentide ice sheet during the Wisconsin ice age about 12-14 000 years BP[2]. With the retreat of the ice sheet the underlying bedrock was ground into till, a debris consisting in this area of sandstone and claystone, and was deposited. It can be assumed that the concentrated discharge of the glacial waters of Lake Edmonton exposed these highly erodible soils of the Battle River Valley instigating the process of hoodoo formation[2]. Badland type areas are generally areas of high erosion, therefore it is easy to see the constant process of erosion in the Battle river valley and the constant formation of hoodoos[2].

Hummocky terrain

Another landform that is affected by glacial till deposit can be found in the surrounding area of Camrose, the hummocky terrain[1]. Indeed hummocky terrain is a part of the Cooking Lake Moraine and extends to Elk Island National Park, includes the five municipalities of Beaver, Camrose, Lamont, Leduc and Strathcona and includes several provincial protected areas and parks, including Ministik bird sanctuary, Blackfoot/ Cooking Lake Reacreational area and Miquelon Lake Provincial Park (Beaver Hills Initiative, 2006).

The hummocky terrain, also known as 'knob and kettle terrain' was initiated by the retreat of the glaciers through the process by which the underlying bedrock was ground into glacial till, a debris that was pushed into mounds and ridges as the glacier moved forward[1]. The subsequent formations remained and were eventually flooded with the waters of glacial Lake Edmonton when it burst out of its confines into the surrounding area, creating the Gwynne Valley Outlet, and filling the area between the mounds with glacial water that froze into ice[1]. As the time passed, the ice melted leaving a hummocky terrain, or a knob and kettle appearance[1].

Miquelon Lake and Stoney Creek Valley

Miquelon Lake was created by the retreat of the Laurentide ice sheet and the subsequent flooding of the area by the glacial waters of Lake Edmonton (Miquelon Lake, n.d.). At one point it used to be part of a larger lake, which over time receded leaving three isolated basins, Miquelon Lake being the largest (Miquelon Lake, n.d.). It is believed that the surface outflow from Miquelon Lake either drained toward the North Saskatchewan River through the moraine, or according to geological evidence, drained south towards the Battle River (Miquelon Lake, n.d.). Since the Stoney Creek is a part of the Battle river drainage system and is connected to Miquelon Lake, it can be assumed that the surface outflow occurred through Stoney Creek (Scheelar, 1973). However, since the 1920s there has been no surface outflow from Miquelon lake through the Stoney Creek, with the exception of human intervention, when a diversion ditch was deepened to divert water for the Camrose water supply (Miquelon Lake, n.d.).

Soils & Bedrock

Soil and Bedrock

Soil is often an under-appreciated aspect of our natural environment. It is from soil that all life emerges and is sustained. Therefore, by understanding soil we understand an important aspect of life.

Formation of Soil (soil development)

Soil is the mineral or organic layer that occurs naturally on the earth's surface and is generally thicker than four inches 1. It is often seen by pedologists, scientist who study soil, as the "unconsolidated material" 2 of the bedrocks of the earth. In other words soil is the debris of the earth's mantle

2. Soil development depends on the climate, vegetation, topography, living organisms and the parent material of the region 1. The process of soil development occurs over a long period of time changing the chemical and physical composition of the soil. These changes can be observed by pedologists in the sequence of horizons in a soil sample 1. There are four horizons of soil development; the O sequence, the A sequence, the B sequence, and the C sequence 1.

The O sequence is the uppermost layer and is the organic layer. It is typically associated with organic soils and is quite fertile 1. Soils with a thick O sequence are often found in and around agricultural communities. However, it is not present in all soils and in some instances it is nonexistent, depending on the soil's stage of development 1.

The A layer is a mineral layer where there is an accumulation of organic matter, which is decomposing and will eventually create an organic O sequence, but as of yet has not reached the O level status. Thus, the A sequence can consist of the leached components of humus or clay 1.

The B layer is another mineral layer, however there is not an accumulation of organic matter 1. Within this layer there is a change in structure and color from the O and A layers. There may be an accumulation of clays or gleysols and gleyed intergrades, soils that contain excessive water and lack aeration 1 3.

The C layer is another mineral layer that occurs below the B horizon and is unaffected by the soil formation process with the exception of the accumulation of salts carbonates. It is mottled or gleyed in Gleysols and gleyed intergrades 1.

By understanding the sequences or layers of the soils the pedologists can identify the developmental stage of the soil formation. Once a soil has a slight layer of decomposed organic material then it is in the final development of soil formation 1.

Classification of Soil (Soil orders)

Although the classification of soils is extensive there are six orders of soils under which all types of soils can be classified 3. The six orders are Chernozemic order, Solonetzic order, Podzolic order, Brunisolic order, Regosolic order, and Gleysolic order 3. Each order defines the different parent materials of the soils and enables the classification of soils that occur in different ecosystems, such as the soils of wetlands, forest areas or open plains 3.

Chernozemic order

Many of the soils classified under this order can be found in the grassland and parkland ecosystems 3. The soils of this order consist of a calcareous parent material and often portrays a dark colored, mineral rich top layer 3.

Solonetzic Order

The soils classified under this order are often found in the grassland areas of Western Canada but they do extend beyond into the forested areas as well 3. The soils of this order have been influenced by saline, or salt conditions, in their development. Either the parent material was saline or the process of development was influenced by saline waters 3. The mud B horizon of these soils is quite characteristic and makes classification easier. The B horizon can be broken into blocks or columns that contain organic matter 3.

Podzolic Order

These soils can be identified by a grey layer at the surface with a darker layer of clay or organic matter underneath 3. These soils are well drained and found in forested areas south of the permafrost. Two different parent materials occur in this order; the calcareous parent material and an acidic parent material 3. Each parent material develops different kinds of soil 3. An acidic soil is most often fond in a pine forest as the decomposition of pine needles creates an acid, therefore the top layer tends to be acidic.

Brunisolic Order

These soils are well drained soils that occur in the forest region yet unlike the podzolic soils they do not have the leached grey horizon 3. This could be attributed to climate, the age of the soil and its stage of development, and/or the parent material from which its formation started 3. As is indicated by the name, brunsolic soils are dominantly brown. The soils under this order have developed from a high basic calcareous parent material, a low basic non-calcareous parent material or a parent material that contains "magnetic ferruginous concretions" 3. However, all the soils classified under this order are considered to be in early stages of development 3.

Regosolic Order

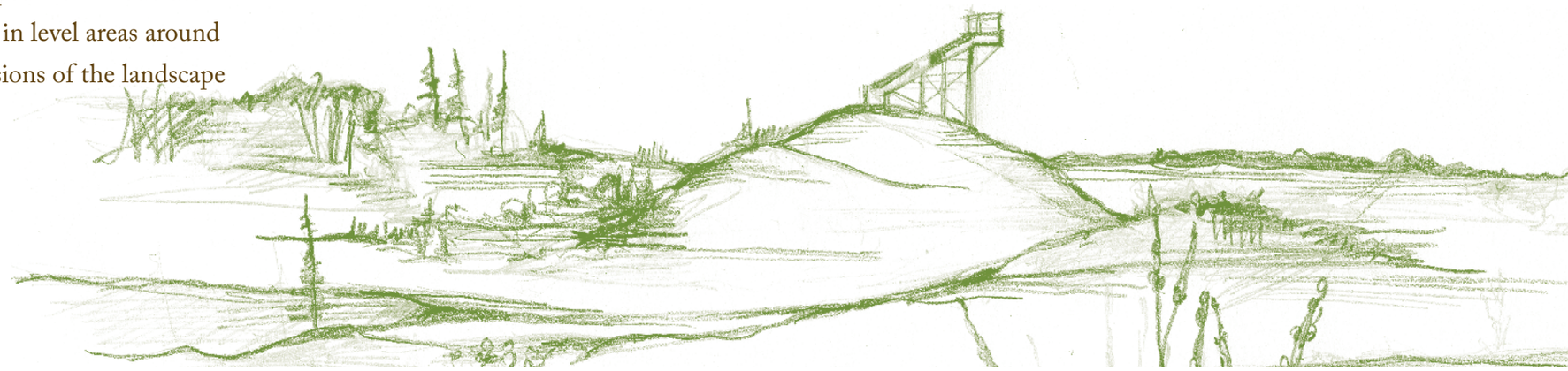
The soils classified under this order are well drained and lack a noticeable horizon development with the exception of a mineral-organic layer at the surface 3. Therefore many of these soils are only slightly or weakly developed from the parent material, or are not developed at all from the parent material 3.
Gleysolic Order

The soils in this order are poorly drained which subsequently restricts the development of the soil as there is a prevention of

aeration. As a result many of these soils can be identified by dull colored or mottled subsoil 3. Unlike the other orders many of the soils under the gleysolic order portray aspects of the other orders in their profile characteristics 3. For instance the Meadow and Dark Grey Gleysolic soils have a dark colored mineral-organic surface horizon, while the Eluviated Gleysols contain podzolic features 3.
Soil Orders found in Camrose

According to the 1973 soil survey of Camrose the soils that can be found in the Camrose area are Black Chernozemic soil, Black Solonetzic soil, Alkaline Solonetz soils, Gleysolic soils, and Regosolic soils 1.

The Black Chernozemic soils of Camrose were developed from glacial till and sands that were deposited by a river, also known as alluvial sands. These can be found all around areas of Camrose on undulating topography 1. The Black Solonetzic soils developed from weakly to moderate saline till and can be found throughout the Camrose region on undulating topography as well 1. Alkaline Solonetz soils were developed from moderate to strongly saline deposit which often occur in level areas around Camrose 1. Gleysolic soils occur in depressions of the landscape



in the Northern area of Camrose and were developed from alluvial gravels 1. Regosolic soils developed from the recent alluvium found along the southern part of the Stoney Creek 1.

Bedrock of Camrose

The bedrock from which many of the parent materials of the soils of Camrose developed is from the underlying Cretaceous sedimentary bedrock.

The cretaceous bedrock of Alberta consists of grey, feldspathic, clay-like sandstone, grey bentonitic mudstone and carbonaceous shale, as well as limestone, which was deposited about 144 to 65 million years ago by the Colorado Sea, the largest of the North American Mesozoic Seas which covered most of North America.

As the Colorado Sea withdrew there was a region left that consisted of bogs and marshes that became valuable deposits for coal. Since there is an abundant amount of coal in the Camrose region it could be evidence that at one time, many million years ago, the Camrose region consisted of bogs and marshes, and a hot climate.

Weather

Climate versus Weather

Climate is a compilation of the prevailing weather of an area 1. In other words climate is described by the long term averages of temperature, wind speed, wind direction, precipitation from both snow and rain, and hours of sunshine (Gadd, 1995; Gullett and Skinner, 1992). Weather on the other hand is the status of these elements at a given time 2.

By knowing the climate of an area a person will expect a certain temperature to fall within certain parameters at a given time of year. This enables such activities as agriculture and settlement 1. However, climate is variable and a single location's climate may very over time, especially if there have been substantial changes to local conditions through such things as urban growth 1. As a result climate averages over the last three decades of the area, are called "climate normals" and are the determining factor of the 'normal' climate of the area 1.

Climate normals of Camrose

Due to the presence of a weather station in Camrose scientists have been able to calculate climate normals for the area. The last climate normal for Camrose included the years 1971-2000. According to these normals Camrose has short but moderately warm summers, yet the winters are long and cold 3. Specifically, Camrose has its hottest month of the year in July with an average daily maximum temperature of 22.2 C and the coldest month is January with an average daily minimum temperature of –18.8 C 3.

The prevailing winds of Camrose are westerly, which blow from the west and northwest. The rainiest time of year for Camrose tends to occur in July with an average 87.9mm of rain, while the month that receives the most snow is January with an average of 25.8cm of snow 3.

Extreme Weather of Camrose

Although climate normals enable a prediction of certain weather at a certain time of year there are cases of extreme weather that elude both the predictions of meteorologist and farmer alike. There are such cases in Camrose, as there are around the world. The hottest day to occur in Camrose was on July 14, 1960 with a temperature of 36.7 °C. The coldest day to occur was February 1, 1947 with a temperature of -47.8 °C 3.

On average Camrose receives 22.6cm of snow in the month of March. However, on March 27, 1988 alone Camrose received 40.8cm of snow 3. The deepest snow that Camrose ever experienced occurred in February of 1994 with a measurement of 87cm 3.

On June 24, 1973 there was an extreme daily rainfall of 91.2mm. Generally, the rainfall for the whole month of June is 87.3mm 3

Warming trends in Camrose

According to last three climate normals of the Camrose area (1951-1980, 1961-1990, 1971-2000), there is a gradual warming of the yearly average daily maximum temperature from 7.7 ˚C to 8.0 ˚C to 8.35 ˚C. Furthermore, there is a gradual warming of the yearly average daily minimum temperature from –3.9 ˚C to –3.2 ˚C to –3.0 ˚C. These gradual increases in temperature could indicate global warming and gradual climate change in the Camrose area 3. According to the Intergovernmental Panel on Climate Change (IPCC, 2007) there is a definite warming of the climate system. Measurements have ranked the last eleven of the twelve years the warmest years since 1850, when an instrumental record of global surface temperature began. Furthermore, there is an increased amount of water vapour in the atmosphere, which has been increasing since the 1980s and which scientists attribute to warmer air. Air with a higher temperature can hold larger amounts of water vapour than cooler air. Also since 1961 average global ocean temperature has increased to a depth of 3000m which has caused the water to expand and subsequently ocean levels to rise.

The IPCC report for 2007 claims a "very high confidence" (3) that the human impacts on climate change since 1750 has been one of warming. Since the industrial era there has been increases in carbon dioxide, methane, and nitrous oxide in the atmosphere. Scientists believe that there is a high probablility that the rate of increase for these atmospheric gases is unprecedented compared to the 10,000 years before the industrial era (IPCC, 2007).
Individual Actions to reduce impacts on climate change

It is easy to reduce one's contribution to the rising carbon dioxide levels within the atmosphere. In the winter by turning the thermostat to a lower temperature and reducing the heat loss from windows and doors there is an approximate 500-pound, or 226.24 kg, reduction of carbon dioxide for every two-degree adjustment 4. Also by keeping the water heater temperature at the recommended temperature and washing clothes in cold water there is also a reduction in carbon dioxide 4.

By buying energy star label appliances and energy efficient light bulbs, not only does it save a person money in the long run but it also reduces the amount of carbon dioxide annual emissions 4. The easiest way to reduce one's impact is to turn off lights and appliances when not in use and to recycle. Also, if possible, walk or ride a bike and limit the use of the car to long distances 4. This not only is healthy for the individual but for the environment as well.

In order to see your individual impact on the environment go to http://reference.aol.com/planet-earth/global-warming/calculator to calculate how your lifestyle contributes to global warming.

Wildflowers

Habitats

According to the Riparian Health Inventory Report of the Stoney Creek and Mirror Lake Area, by Cows and Fish, (2005) there are about 80 species of forbs, a broad leaved, non-woody plant, found in Camrose. There was also documented about 29 species of grasses and grasslikes found in the area, of which some are mentioned below. These species have been divided into the habitats, "marshes and swamps," "cultivated fields/pastures, roadsides and disturbed areas," "moist woods and meadows," "streambank," "open woods," and "dry open areas and grassy areas". For a complete list and abundance of the forb and grass/grasslike species found in the Camrose area see the January 2005 Riparian Health Inventory Report of the Stoney Creek and Mirror Lake Project Area by Cows and Fish. Also for more information on the identification of these species see Plants of the Western Boreal Forest and Aspen Parkland by Johnson et al. (1995), or Wildflowers of Alberta by Kathleen Wilkinson. For more information on the legends and stories associated with the plants see Old Man's Garden by Annora Brown (2000).

Although there is a limited documentation of the abundance and type of plants found in the Camrose area, there is a probability that the plants found in this area are similar to the plants found in the Cooking Lake recreation region. For a complete list of the plants found in the Cooking Lake Recreation area see the Cooking Lake-Blackfoot Recreation, Wildlife and Grazing Area Plant Checklist brochure created by the Alberta Recreation and Parks, and the Heritage Fund.

For a list of the species found in each habitat, click on the following:

Marshes, Swamps

Giant bur-reed
*Common cattail
Water parsnip
Water smartweed
Nodding beggarsticks
*Water hemlock
Seaside arrow grass
Common horsetail
Western dock
Arum leaved arrowhead
Marsh hedge nettle
Woolly sedge
Small bottle sedge
*Awned Sedge
*Wire rush
Water sedge
Common great bulrush
Creeping spike rush

Cultivated fields/pastures, roadsides, disturbed areas

Knotweed
*Canada thistle
Perennial sow thistle
*Red clover
Yellow sweet clover
Alsike clover
Shepherd's purse
Golden bean
White sweet clover
Common dandelion
*Goat's beard
Butter-and-eggs/ toadflax
Stinkweed
Scentless chamomile
*Common yarrow
Common plantain
Graceful cinquefoil
Prairie sagewort
Common burdock
Common horsetail

Moist woods and meadows

Canada anemone
Canada goldenrod
Fringed loosestrife
Cut leaved ragwort
Macoun s buttercup
*Yellow avens
Smooth fleabane
Heart leved Alexanders
Common nettle Stiff goldenrod
Tufted white prairie aster
Felwort
Cow parsnip
Common horsetail
Wild strawberry
Common blue lettuce
Veiny meadow rue
*Wild mint
Common nettle
Marsh hedge nettle
Star-flowered Solomon s seal

Tufted vetch
*Red clover
Wild licorice
Silverweed
*Rough cinquefoil
Annual hawk s beard
Agrimony
Creeping Spike Rush
Water sedge
*Awned sedge
*Wire rush
Alfalfa
Pinappleweed
Gumweed saline spots
Hemp nettle
Lamb s quarters
Wormseed mustard
Fixweed
Common tansy
Common blue lettuce
Narrow leaved hawkweed
Northern bedstraw
Wild licorice

Streambanks

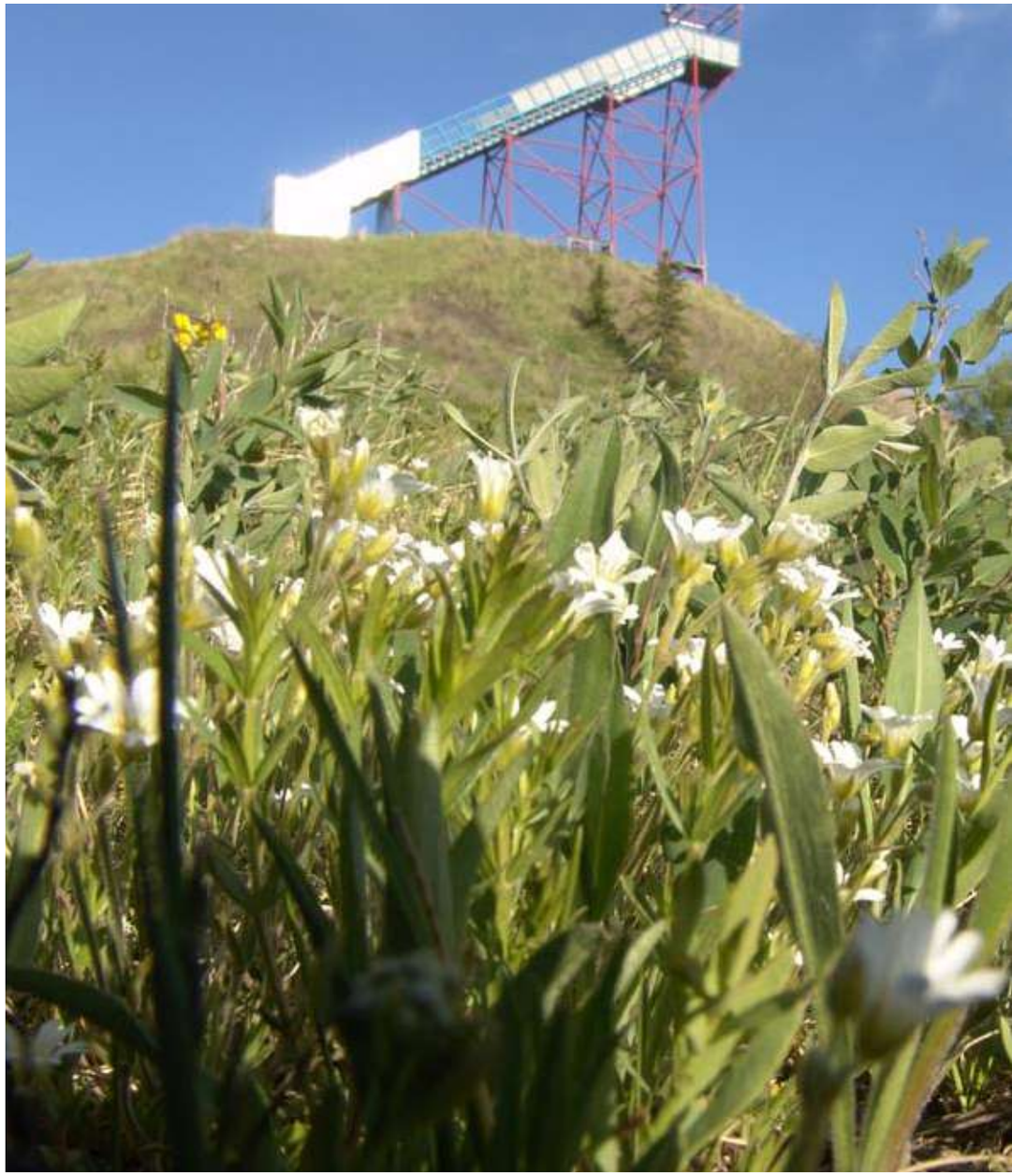
*Rough cinquefoil
Western willow aster
Wild licorice
* Silverweed
Heart-leaved Alexander s
Cow parsnip
Marsh hedge nettle
Plains wormword
*Yellow avens
*Wild mint
Cow parsnip
Fringed looseleaf
Star flowered Solomon s seal
Absinthe wormwood
Wormseed mustard
Common nettle
Awned sedge
Small bottle sedge
*Wire rush
Water sedge
Creeping spike rush
Woolly sedge

Open woods

Narrow leaved hawkweed
Wild vetch
Northern bedstraw
*Yellow avens
Canada goldenrod
Graceful cinquefoil
*Fireweed
Tufted vetch
Many flowered yarrow
Hemp nettle

Dry open areas, grassy areas

Yellow evening primrose
Golden bean
Harebell
Tufted white prairie aster
Smooth aster
Graceful cinquefoil
*Fireweed
Pasture sagewort
Prairie sagewort
*Goat s beard
Many flowered yarrow
Gumweed



Common Cattail

The common cattail can be found around the world in such habitats as marshes, ponds and wet ditches[1]. It is easily identified by the brown, flower spike at the stem of the plant[1]. It is from this flower spike that the plant derives its name, the resemblance of it being much like that of a house cat[1].

The cattail is an edible plant, its root stalk containing about 57% charbohydrates[1]. Many natives used to dry the root stalks for flour, or would serve the root stalks roasted or raw. The pollen of the plant would also be added to enrich the flour[1]. Furthermore the natives would use the broad leaves of the plant to weave platters or mats[2].

Canada Thistle

Despite its name the Canada thistle did not originate in Canada but rather is an import from Eurasia[1]. It now can be found throughout Canada in meadows, roadsides, waste places, and cultivated fields. Its purple, sometimes white flower and the spines along the leaves, make its identification easy [1,4]. The Canada thistle is different from other thistles in that the female and male flowers are borne in separate heads and usually are on a different plant altogether[4].

The Canadian Thistle was used by Native Americans as a form of food in times of famine, using the stalks of thistles as greens and boiling the young leaves of the plant much like people today would boil spinach[4]. Furthermore, the Canada thistle yields a high quality honey[4].

Water hemlock

Water hemlock is a plant that grows by streams and rivers, or within marshes, and can be identified by the umbrella like clusters of its white flowers[5]. This plant is considered one of the most poisonous plants of North America which is often reflected in some its common names; children's bane, beaver poison, death-of-man[5].

Red Clover

Red clover is not only a wildflower but can also be an agricultural crop grown to produce animal feed, and used to fix nitrogen. In other words, red clover, as well as alsike clover and white clover, can take nitrogen from the air and transform it into compounds to enrich the soil[5]. As a result of this nitrogen fixing quality, red clover can be found in areas where soils have been disturbed.

Red clover is an edible plant with a high protein content, although large amounts of the plant eaten raw may cause indigestion[5]. Therefore it is advised that consumption should just include an herb tea using the flowers of the plant. This was a common remedy of the Native Americans to treat coughs, gas or bad nerves[5]. Further medicinal purposes included the use of the leaves, which when crushed and placed on a cut, would stop the bleeding[5].

Goat's beard

Goat's beard, also known as Meadow Salsify, can be found in fields, along roads and in disturbed areas[5]. It has a flower similar to that of a dandelion but the plant itself is taller than a dandelion plant[5]. Furthermore the flower of the plant is very sensitive to the elements. In the morning the blooms will all be facing towards the sun but in the intense sun of the afternoon the blooms close, waiting for the morning. If it is raining or foggy, the blooms will remain closed[4].

Goat's beard is not a native plant of Canada but was imported from Europe by settlers as a root vegetable, which resembles that of a parsnip but tastes like oysters[1].

Despite the fact that Goat's beard is not a native plant of Canada, the Native Americans still used the plant as a form of food, using both the root and the young shoots of the plant[1]. There is also a milky juice created by the plant that congeals into a gum. This gum was chewed to relieve indigestion[1].

Common Yarrow

Yarrow is a common weed that can be found in pastures or fields [5]. It is easily identified by the strong smell of the plant, which is the result of oils contained within the soft, woolly leaves[5].
Yarrow was used by Native Americans as an astringent on cuts, reducing the clotting time of cuts, due to an alkaloid present in the leaves[5]. Further medicinal uses included a tea that was made from the leaves and flowers which would treat stomach trouble, headache, and sore eyes. An extract from the leaves treated liver ailments, sore throats and even pain during childbirth[5].

The scientific name of the yarrow plant, Achillea, originates from the Greek hero Achilles. The plant was named in honour of him when he used the plant as an ointment to heal the wounds of his soldiers during the Battle of Troy[2].

Wild Mint

Wild mint is an aromatic plant making its identification easy[1]. Its flowers are pink to pale purple or white and grow in whorled clusters near where the leaf joins the stem[1]. Wild mint is an extremely aggressive plant and once established it is almost impossible to eliminate, so although it is a legitimate garden plant it can also be considered a weed[4]. Outside of the garden, wild mint can be found along streambanks and ditches[1].

Many Native Americans used wild mint to alleviate bad breath, to cure hiccups, upset stomach, colds, relieve headaches and fevers, and to clean infected areas[4]. Today mint and spearmint alike are still being used in dental hygiene products[4].

The name Mint originates from the greek word Minthe[1]. According to an ancient Greek myth, Minthe was a beautiful water nymph who attracted the attentions of the God Hades. Unfortunately, Hades was the husband of the goddess Persephone, who in a fit of jealousy began to step on and beat Minthe[6].

However, Minthe turned into the mint plant and with each step Persephone took, Minthe released the beautiful, aromatic smell of mint[6].

Rough Cinquefoil

This plant can easily be identified by its pale yellow flower, which grows in dense leafy clusters[1]. It is often found in moist meadows, on the shores of streams and lakes, roadsides and recently disturbed areas. It is a pioneer species on recently disturbed soils and in many cases is considered a troublesome weed as a result of this growth habit[1].

Many Native Americans used rough cinquefoil as a medicinal tea to remedy stomach cramps and sore throats. Also the plant was burned to soothe aching heads, eyes and bones[1].

Silverweed/ Silvery Cinquefoil

Silverweed can be identified by its silvery-grey leaf underside, from which it obtains its name, as well as its bright yellow flower[5]. Also the leaves are divided into five sections, from which the plant obtained the name Cinquefoil. Cinquefoil is a corruption of the French cinque feuilles, which means five leaves[2]. Silverweed is often found in moist meadows, and by rivers or lakes[5].

Silverweed is an edible plant, the root of which was eaten by natives, either boiled or roasted, or even raw[7]. The root is not very large and was often eaten in times of famine as the effort it took to dig the root did not justify the amount of food the root provided[7].

Yellow avens

As the name of this plant indicates the flower is of a pale yellow color, which grows in leafy clusters and bends downwards[1]. The leaves are hairy and toothed, grow alternate to one another, and are broadest at the tip. The stem of the plant is erect, and usually hairy throughout[1]. The roots of this plant were boiled by the Woods Cree to make a medicinal tea that would relieve sore teeth or sore throats and was also used as a treatment to illnesses associated with teething[1].

Fireweed

It is from the tendency of the plant fireweed to grow from seeds and rhizomes on burned sites that it received its common name fireweed[5]. Fireweed is often found in clearings, roadsides, shaded riverine woods, disturbed areas but most often in areas that have recently had a fire[5]. It is a tall plant that has long pink flowers and which can be found growing in colonies[5].

One Native American legend of the fireweed claims that the creation of fireweed was a result of a Native maiden's efforts to save her lover from an enemy tribe[2].

"To rescue her lover from an enemy tribe which was preparing to torture him, she set fire to the forest about their camp. While they fled before the flames, she lifted the wounded man and carried him off through the woods. Some of the tribe, unfortunately, saw what she was doing and followed her. With her heavy burden she could not travel fast enough to escape but wherever she touched her moccasined feet to the black ashes of the forest floor a flame sprang up in her wake and drove the enemy backward. When at last they gave up the chase, flames continued to leap about her but they took the form of a brilliant flower that blazed through the blackened skeleton of the forest long after she had passed"[2].

Awned Sedge

Awned sedge is a large tufted plant that resembles grass but has a reddish tinge[1]. It is often found in wet meadows, by streams or in shallow ponds and ditches[1]. The young shoots of awned sedge are edible once cooked. Also the lower portion of the plant, which tends to be fleshier, can be eaten raw[1].

Wire Rush

Wire Rush is a long plant that has a greenish flower cluster and is often found in wet meadows, on the banks of rivers or lakes, or in wetlands[1]. When the flowers of the wire rush are chopped and boiled slowly for two hours, a pinkish dye is created. If cream of tartar is added, then the color changes from pink to a green color[1]. The stems, when boiled, produce a green or brown colored dye[1].

Crocus

The lovely Prairie Crocus (which is also called “prairie smoke” and “wind flower”) is a very early flowering plant that warms parts of the prairies as early as March. The whole plant is covered with tiny white hair, purple-tinted petals and has a warm golden yellow inside. These flowers open up in the sun and close again during the evening or cloudy weather.

Its name is deceiving since the Prairie Crocus is actually not a crocus (which is in the Lily family,) but is part of the Buttercup family. It is said that it got its name from early settlers because it reminded them of crocuses found in Europe. Prairie Crocuses grow in northern latitudes more or less all around the world. In Canada, it is common in the Yukon and the Northwest Territories as well as the prairies, but its prairie population has greatly declined since pioneer days.

Prairie Crocuses are generally limited to unbroken prairie, but also grow well in a grazed habitat since the deep roots of the plant live for many years and are hardly affected by the hooves of animals. Being that it is a hairy plant, animals generally ignore it. Even though it is mildly poisonous and can cause inflammation and blistering if eaten, First Nations Peoples used the Prairie Crocus to treat muscular pains, nosebleeds and to draw out infections in cuts.

Many people enjoy the beautiful Prairie Crocus and want to have it in their own gardens, but growing this plant can be tricky. It should not be transplanted from the wild to a garden because transplantation usually fails and contributes to the loss of our biodiversity, yet it can be started from wild seeds or purchased from growers who specialize in wild plants.

Settlers were relieved when they saw the Prairie Crocus after enduring their long and harsh prairie winters because it signalled that spring was coming. Nowadays, people still see the Prairie Crocus as a sign of hope but also as a sign that a new beginning is near and with it will come better times.

Trees & Shrubs

In the Camrose region there are about 11 species of trees and 28 species of shrubs. These species have been divided into the habitats of "meadows," "eroded slopes, disturbed areas and roadsides," "hillsides," "swamps and floodplains," "streambanks," and open woods." For a complete list and abundance of these species found in the Camrose area see the January 2005 Riparian Health Inventory Report of the Camrose Creek and Mirror Lake Project Area by Cows and Fish. Also for more information on the identification of these species see Plants of the Western Boreal Forest and Aspen Parkland by Johnson et al. (1995), or Trees and Shrubs of Alberta by Kathleen Wilkinson (1990). For more information on the legends and stories associated with the trees and shrubs see Old Man's Garden by Annora Brown (2000).

For a list of species found in each habitat, click on the following:

The Habitats

Meadows

Beaked willow

*Red osier dogwood

*Saskatoon

Chokecherry

Flat leaved willow

Wild red currant

Beaked hazelnut

Low bush cranberry

*Narrow leaved meadowsweet

High bush cranberry

*Aspen

White spruce

Western Mountain Ash

Eroded Slopes, Disturbed areas, Roadsides

Common caragana

*Narrow leaved meadowsweet

Nuttalls atriplex

Hillsides

*Saskatoon

Chokecherry

Thorny buffaloberry

Western Mountain Ash

Swamps, Flood plains

*Sandbar willow

Basket willow

Wild red currant

Lowbush cranberry

*Narrow leaved meadowsweet

Round leaved hawthorn

Nuttall's atriplex

*Balsam poplar

Manitoba Maple

Dry woods

Twining honeysuckle

Western mountain ash

*White birch

Oak

Jack pine

Open Woods

*Common wild rose
Wild red raspberry
Buckbrush/snowberry
Prickly rose
Common caragana
Northern Gooseberry
Flat leaved willow
*Canada buffaloberry
Thorny buffaloberry
Round leaved hawthorn

Streambanks

Silverberry
*Common wild rose
Beaked willow
*Red osier dogwood
Buckbrush/snowberry
Yellow willow
Prickly rose
Basket willow
Flat leaved willow

Low bush cranberry

Thorny buffaloberry
High bush cranberry
*Balsam poplar
Manitoba maple
Ash
Green ash
*White birch

Narrow leaved Meadowsweet

Narrow leaved meadowsweet is a slender, erect shrub with white flowers that grow in clusters[1]. This shrub can be found in moist meadows, on the edges of marshes and on roadsides[1]. The blooms of this shrub contains acetylsalicylic acid, which is the main ingredient in aspirin. Apparently, the name aspirin originates from a for "acetyl" and spir for Spiraea blooms, which is a part of the scientific name for this shrub, as the pain relieving component of aspirin is present in the blooms of this shrub[1]. Therefore, a tea made from these flowers should help reduce fever and relieve pain[1].

Red osier dogwood

Red osier dogwood is a shrub that has tiny white flowers, and broad clusters of whitish to greenish blue berries[1]. It is easily identified by its bright red branches, from which it derives its common name[1].

In the past the inner bark of the red osier dogwood was used as a tobacco, broken into tiny pieces after drying in the sun or over a fire[2,3.] Native Americans also ate the berries of the shrub[2,3].

According to a Native American legend that Old man, who is a mythical being of all native tribes of the prairie, laid his freshly cooked meat on the branches of the red osier dogwood in order to cool it [3]. As a result the branches of the dogwood absorbed the grease from the meat. Since then the red osier dogwood oozes grease whenever it is held over a flame[3].

Canada Buffaloberry

Canada Buffaloberry is a spreading to erect shrub that has smooth, grey bark and female and male flowers on separate plants[4]. The female flowers are reddish-yellow, while the male flowers are brown. This shrub is found on riverbanks or dry, pine or spruce woods[4].

It is believed that the name of this shrub was derived from the Native American practice of using the berries of this shrub to flavour buffalo meat[4]. Another name for this shrub is soapberry which originates from the word Soopolallie, a Chinook Indian word meaning soapberry, due to the fact that the berries of this shrub have a tendency to foam when beaten with water[4]. These berries are iron rich and were used by many Native American tribes to treat blood disorders[4]

Sandbar Willow

This willow is a spreading shrub or a small tree that only grows to a height of about 3m. The branches of a young sandbar willow will be reddish or yellow brown, turning grey or grayish red when mature. This willow can be found in gravelly or sandy floodplains. Like all willows, due to their flexible nature, this willow was used by native Americans for the making of fish nets, ropes and woven bags, mats, and saddle blankets. The inner bark was also shredded and used as diaper linings and wound dressings. Willow roots were also used, together with grease from animal kidneys, to treat scalp sores and dandruff[4].

Aspen

The Aspen is a small to medium sized deciduous tree that has a greenish white bark that becomes black and rough near the bottom of the trunk and around the branches. Aspen trees can be found on dry ridges or in well-drained soils[4]. There is a parent tree that sends out an underground shoot from which there emerges suckers and other aspens grow, a clone of the parent tree. It is easy to identify a cluster of genetically identical aspen trees in the autumn as the cluster of trees looses its leaves at the same time[1].

The aspen tree was an invaluable tree for the Cree natives [1]. The buds, inner bark and leaves were used for medicine. A tea was brewed from the inner bark that was considered good for treating rheumatism, as well as a cough. A tea made from the outer bark was drank to teat venereal diseases[1]. The leaves were used to draw out the venom of insect bites and the white powder from the bark was used to stop bleeding. The young children also ate the sweet pulpy material just under the bark as a treat[1]. Aspen tree branches also were used to make bowls, canoe paddles, tipi frames and toy whistles[1].

Aspen

Common Wild Rose

The common wild rose is a shrub that can grow from three to ten feet tall. It has red-brown, prickly, branched stems and a whitish to pink flower[1,2,4]. The common wild rose is found in meadows, on riverbanks, on hillsides, or anywhere with moist soil[1,2,4]. Although the bloom of the rose has captured the attention of many poets and writers, it is the rose hip which was considered the most important part of the plant by both native Americans and explorers of the new country [2]. The rose hip is an edible part of the plant and contains high amounts of vitamin C, A, B, E, K, iron and calcium[1]. Indeed only 5-6 rose hips provide an individual's daily necessity of vitamin C[2]. However the rose hips should be eaten in moderation as they can cause diharrea and the small seeds in the rose hip can cause irritation in the digestive tract[1,2,4]. During WWII rose hips were collected in Britain and made into a syrop, which was called National Rose Hip Syrop. This syrop was administered to children to ensure that they received enough vitamins, especially vitamin C [2].

Some Native American tribes used the rose hips for decorations on clothing and necklaces and indeed some tribes believed that the rose provided protection from evil spirits and ghosts[4].

Common Wild Rose

Saskatoon

The Saskatoon bush grows in thickets and either remains a low, spreading shrub or grows erect to about 5m[4]. It can be found in open woods, in valleys, or on hillsides[4]. The berries of the bush are a red-purple to a deep purple colour and were a favorite of the Native Americans, who used the berry in the making of pemmican[3,4]. The Saskatoon berry is high in iron and copper and was used by some native tribes to remedy stomachache and liver trouble [4].

The Saskatoon berry and flower played a leading role in Native American ceremonies. During the celebration of the Sun Dance, the Saskatoon berries were used on the sacred alter in ceremonies[3]. Another ceremony included the burying of a saskatoon berry in the soil after holding it aloft towards the sun. It was a simple native custom of returning thanks to the earth for the bounty it provided the tribe[3].

Saskatoon

White Birch

The white birch is a slender, long branched tree that grows to the height of about 30m[4]. The mature bark of the tree is either white or reddish brown and has a tendency to peel off in papery strips. In fact the Latin papyrifera, which is found in the scientific name of the tree, means paper bearing [4]. These strips of bark were used by early explorers to write letters and notes (Brown, 2000). White birch is found along streams and lakes in areas with sandy or silty soil[4].

White birch is a hard wood and was used by Native Americans to build snowshoes, baskets, bowls and canoes[4]. Also the bark was boiled to extract an oil that contains methyl salicylate. This oil would be used to treat bruises, burns and wounds[4].

It is said in a Native American legend that the appearance of the white birch, with its peeling bark, is a result of the anger of Old Man, a mythical being of the plains Indian tribes[3]. Due to the strong roots of the white birch, the tree prevented Old Man from being blown around by the wind, which he was enjoying. Since his fun was interrupted Old Man became angry at the white birch for having strong roots, which prevented it from being pulled up by the force of the wind when he grabbed onto it. As a result he flew into a rage and cut the white birch repeatedly with his knife, leaving the bark in papery shreds[3].

White Birch

Balsam Poplar/ Black Poplar

Balsam poplar is a 25m tall, straight-trunked tree with ascending branches that can be found in the moist low-lying ground of forests, riverbanks and floodplains[2]. The bark of the young Balsam poplar is smooth and green, however, when it matures it becomes dark grey, thick and deeply furrowed[4].

The bark of the balsam poplar was used by Native Americans to treat rheumatism, stomach problems, coughs and kidney ailments[4]. The buds was used to treat congestion and to prevent scurvy. Also the resin from the buds were applied to the eyes to cure snow blindness[4]. The buds and the flowers together would be used to brew a tea to purify the blood. The entire tree itself would be used to make canoes and for fueling the fire, the ashes of which would be used as a kind of soap[4]. The roots of the tree could be split and used as rope[4].

Balsam Poplar/ Black Poplar

Invertebrates

Introduction

The invertebrates of Alberta and Camrose are an underappreciated natural wonder. Invertebrates are important to the ecosystem, as predators, prey and pollinators. They are also an easily accessible source for anyone who wants to explore the diversity of our area. All one has to do is take a close look in their own back yard. Although you have to look closer, once you know where to look, you will believe that these tiny critters are part of the most diverse group of organisms on the planet.

In the Camrose creek valley, the riparian areas of the stream offer vast habitats for insects and other invertebrates. A drop of pond water will contain zooplankton, a jar of water may host larval forms of dragonflies or diving beetles, and along the shores you may encounter butterflies and other larger insects. The number of habitats is endless, so keep an eye open and you may be amazed with what you find.

More information on Invertebrates

Of all animals described by science, only 5% are vertebrates, or those that possess a backbone. The other 95% are invertebrates, or those that do not have a backbone. Invertebrates are a very diverse group, containing members from the Rotifera (Rotifers), Mollusca (Snails, clams and slugs) , Annelida (earthworms and leeches) and Arthropoda (spiders, insects and shrimp)[1], many of which can be found in the Camrose area. (LISTS).

We don't know how many invertebrates are found in the diverse habitats of Alberta. Due to their size and the overshadowing of larger organisms, these relatively small creatures are often overlooked. Many have yet to be studied thoroughly enough to determine accurate ranges, number of species and their ecological significance. In Alberta alone, there are approximately 20,000 insect species alone, making them the best documented class. There are also close to 80 mollusk species, 5 families of annelids, and countless other invertebrates. We can separate these invertebrate classes based on their size, large ones being macroinvertebrates (those that are visible to the naked eye) and microinverterates (those that require magnification to see).

Approximately 500 species of invertebrates can be found in the aspen parkland region of Alberta, there are here, but because of the lack of research done on this group in this area, this number is likely much larger. Publications such as Butterflies of Alberta suggest that about 100 species of butterflies might be encountered in this area. Other publications, such as the Damselflies of Alberta, Tiger Beetles of Alberta, and Bugs of Alberta, show that 17 Damselfly species, 10 Tiger Beetle species, and 76 other bug species can be found in the aspen parkland region that is home to Camrose.

In Stoney Creek, a few species of microinvertebrates may be found which originate from Driedmeat Lake. These representatives are the Rotifers (Zooplankton), Copepods, and Cladocerans (water fleas). The macroinvertebrates are much more diverse and easier to view and study. A sample of them includes the Giant Diving Beetle, the Six-Spotted Fishing spider, the Four Spotted Skimmer and the Canadian Tiger Swallowtail.

To view the microinvertebrates of the area, you need a microscope, or at least a magnifying glass to view the large representatives. Therefore, identification and viewing of these invertebrates is reserved for

midge

the dedicated observer. Macroinvertebrates are much larger which makes them easier to find and identify. A magnifying glass is still a useful tool to see details of an invertebrate's body. The majority of the macroinvertebrates are arthropods, so it is valuable to know the general characteristics of this diverse phylum.

All arthropods have a segmented, hard exoskeleton with jointed appendages. Insects all have three pairs of legs, while spiders have four and crustaceans can have three or more, with centipedes and millipedes having up to 200+ legs. The arthropods can be terrestrial or aquatic, or both, so their habitats vary, but this also means that you can find them just about anywhere. To give you an idea of a few of the invertebrates that are found in our area, we'll describe some general characteristics, their habitats and how you can find them.

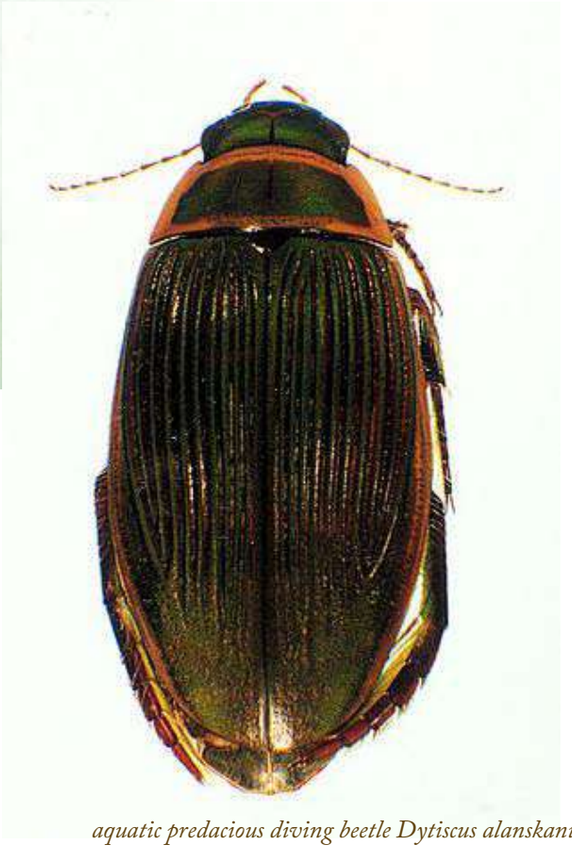
The Macroinvertebrates

The majority of these invertebrates are from the class Insecta, the first belonging to the true fly order, Dipterans, and family Chironomidae, the midge. These are small two-winged flies, closely related to mosquitoes, but these flies don't bite. Their larvae look like long, skinny maggots, but this changes as they develop into their pupal stage, which resembles mosquitoes. They are long brownish tubes with white frilled gills that draw oxygen from the atmosphere above the waters surface. The adults are much like mosquitoes with feathery antennae. These flies are hearty individuals and can tolerate a vast array of conditions and environments. As long as there is an adequate food supply, they can survive in clean or polluted waters, on rocky, muddy, or sandy bottoms, in rivers or ponds. They are mostly found close to shore on or near shoals where blue-green algae, their primary food source, is most abundant[2].

The next arthropod is among the fastest and oldest species of insects. With a wingspan of up to 50mm, the Four Spotted Skimmer Dragonfly, Libellula quadrimaculata is one of the most fascinating insects in both of its life stages. The Four Spotted Skimmer can be found throughout Alberta, but is common to slow moving streams, ponds, or bogs. The larval and adult stages are both very active predators. The larvae are large, stout ambush predators that rely on camouflage to creep up on prey. Then they grasp their prey with their lightning fast extendable labium[3]. This modified lower lip is used for grasping prey such as other aquatic invertebrates and even small fish. The larvae will shed their exoskeleton 10 or more times before climbing up onto vegetation to emerge as an adult[4]. The adult skimmer is a surface hunter, hence its name. It flies close to the water's surface, then skims for prey on or just above the surface. The skimmers have long flattened bodies and are grayish green in color. The four spotted skimmer actually has ten black spots in total on its wings, but the four on the tips of its wings provide the characteristics for its name.

The next fascinating arthropod comes from the most diverse order of insects: Coleoptera, the beetles, which alone boasts about 250,000 described species. The aquatic predacious diving beetle Dytiscus alanskanus can measure between 20 and 40mm and can be found throughout Alberta among vegetation in ponds, sloughs and slow moving streams[4]. Its larval stage, known as the water tiger is as vicious a predator as the adult form; both are known to take small fish as well as other invertebrates. Both the larvae and the adult must surface to breathe atmospheric air. When they come up to the surface, their rear end breaks the surface tension of the water and a cavity underneath their wing covers trap air which they take down with them when they dive to search for

Four Spotted Skimmer Dragonfly, Libellula



aquatic predacious diving beetle Dytiscus alanskanus

prey. As the bubble gets smaller, the concentration of oxygen actually increases as carbon dioxide and nitrogen diffuse out, increasing the foraging time for the beetle[5]. Large hairs (setae) and well-developed rear legs make the predacious diving beetle a very quick swimmer, which is a must for evading predators and catching prey such as small minnows and tadpoles. These beetles can be caught in a pond net, but you have to be quick or else they can disappear in the muddy bottom of the pond. They can also be found in Camrose far away from water in the late fall as they fly around looking for places to overwinter.

The next arthropod, the Canadian Tiger Swallowtail, Papilio canadensis, is one of the prettiest specimens present in our area, belonging to the order Lepidoptera, the butterflies. With its large black and yellow wings and the hint of blue and orange on its tail, it looks like it belongs in the tropics, although it can be found all across Canada. This Alberta native can have a wingspan up to 10 cm[3], and it also has a small fragile tail that extends from the rear of each wing. These tails fall off easily when grabbed, which saves the rest of the wing and the butterfly when a predator is after it[3]. This insect has a long proboscis that it uses to feed on nectar. Hairs on its body also collect pollen while feeding that helps to pollinate the flowers from which it feeds. The swallowtails are the only butterflies that flutter their wings while they feed, perhaps to confuse predators into thinking it is just part of a plant, moving in the wind. They can be found around poplar bluffs where they first emerge and where they will mate and lay eggs at the end of their flight season, which lasts

Canadian Tiger Swallowtail, Papilio canadensis

from May to August[3]. Males of this species like to gather and patrol streams, forest edges and hilltops in search of a mate, and will often form groups around puddles where they can drink mineral rich water. Their caterpillar stage is large and green with a fake snake head to ward off predators. In order to catch one of these, a good bug net is needed and care must be taken when handling the butterfly because the colors on the wing are actually tiny scales and can rub off when handled, disabling the butterfly's flight.

The next arthropod is not an insect. From the order Aranea, spiders differ from all the above insects by having eight legs. A common spider found in riparian areas such as the Stoney Creek valley is the Six Spotted Fishing spider, Dolomedes triton. These spiders hunt on and below the water's surface. They can walk on top of the water like a water strider, as well as climb down vegetation and hunt underwater while breathing air trapped on the hairs of their body[3] The females of this species are larger than the males[4]. They can usually be found along the edge of ponds and streams around vegetation where they prefer to hunt. They usually eat other invertebrates, but will also take small fish[3], 2000). These spiders are part of the nursery-web family, that is they don't use their webs for trapping food. Before spiderlings begin to emerge from the egg sac that the female carries, she fastens it to terrestrial vegetation where they can safely develop until they emerge[4]. Like most spiders, mating is a sad story for the male, as he is usually used as a post copulatory meal.

Six Spotted Fishing spider, Dolomedes triton.

freshwater shrimp, Gammarus lacustris

The Microinvertebrates

Despite their small size, microinvertebrates are crucial to ecosystems, both as primary consumers, and prey for both invertebrates and vertebrates. With their small size (between 1-5mm), you would need a microscope to see anything more than just a tiny brown speck, but if you fill a jar with pond or creek water, you are bound to come across several different kinds of microinvertebrates. Collectively all the aquatic invertebrates between 2 and 15 mm are classified as zooplankton.

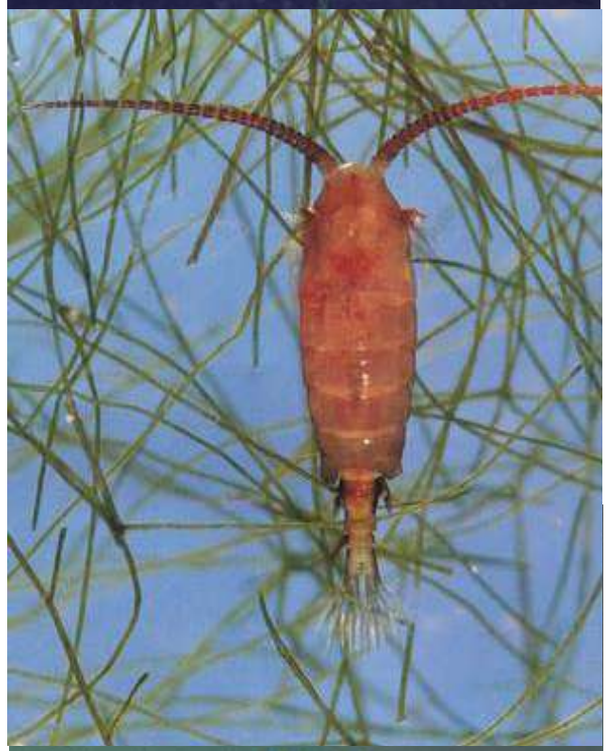
The first and largest member of our local zooplankton community is a small crustacean, the freshwater shrimp, Gammarus lacustris. These shrimp measure around 15 mm and can sometimes be found in large numbers in clean standing waters or shallow areas of ponds, lakes and slow streams[4]. Their bodies are laterally compressed, taller than they are wide, and they have 11 pairs of legs: 2 for grasping, 5 for walking, 3 for swimming and 1 for eating. They are semi transparent, so their color depends on what they have been eating[2]. They are bottom feeders that will scavenge on anything from dead animal matter to leaf litter, but their primary food is plant material and algae, so they usually have a slight greenish tinge. They can also be brown to red depending on the mud in which their food particles are ingested. They may also appear orange when they are carrying eggs[2]. These tiny crustaceans can be easily caught with a pond net and viewed in a glass jar.

The next microinvertebrate is much smaller, measuring only 2mm, which is still on the large side. The water fleas, Daphnia pulicaria, are tiny transparent filter feeders found in small still water bodies. Like most zooplankton, they strain out mostly plant matter and detritus. They have an interesting life cycle. Starting in the spring, only females in the population will reproduce by a process known as parthenogenesis, which means the eggs don't need to be fertilized in order to develop. Once this cycle repeats several times and when the population is large enough, usually by mid summer, a different type of egg is produced, that when not fertilized, will develop into a male (Clifford, 1992).

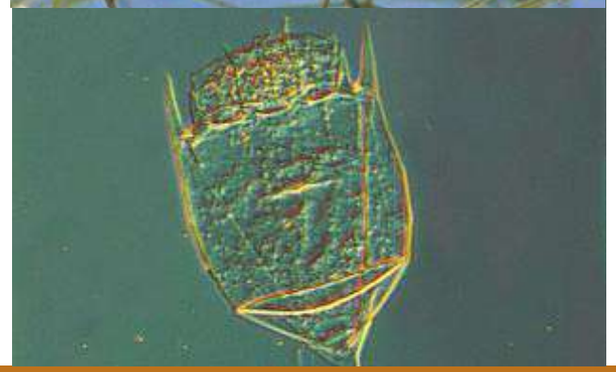
Copepods are the next largest species of zooplankton. The species Diaptomus sicilus are most abundant in Driedmeat Lake, and may also be found in Stoney Creek. Like the water fleas, they are filter feeders that feed on plant matter and detritus[4].

The smallest zooplankton are the Rotifers, Hexarthra spp. These are also called wheel animals because of the way they feed. At the top of their body, there is a ring of hairs that beat in a wavelike pattern, making the effect of a turning wheel. These hairs strain out microscopic plant matter, bacteria and plankton[4].

water fleas, Daphnia pulicaria



Diaptomus sicilus



Rotifers, Hexarthra spp

History and Developments

In the past, mosquitoes and flies were deemed to be pests. Camrose was the first municipality to use an insecticidal fog control system. Composed of 5 parts diesel fuel to one part chlorane DDT, the mixture was heated up and the smoke worked to keep the pests down. Since then the use of DDT has been linked to detrimental effects on the ecosystem, multiplying its effect as it works its way up the food chain. There have been numerous studies that show that raptor and waterfowl breeding success is greatly affected by organochlorines and DDT and their use has been banned since 1970 [6].

Insecticides can have a number of effects; the most noticeable ones are the direct effects, where the insecticide directly affects the species in question, either poisoned, or impairing their reproductive capabilities[7]. The other larg effect is indirect, where habitats or food resources are affected, depleting a productive environment. This commonly happens when invertebrates are removed from an ecosystem that depends on them as a primary food source[6]. Animals such as fish, and amphibians are largely affected, as they prey, to some degree, on invertebrates for food.

There are a number of insect control methods that are not harmful to the environment, such as integrated pest management (IPM) and biological control. IPM involves limiting the loss of a crop, while minimizing the effects on the surrounding environment and those organisms that depend on it[5]. This means that a deep knowledge of the particular pest is needed. Their breeding times and habits, natural predators, and their ecological role are all factors that must be considered in IPM. Biological control is controlling a pest with the introduction of a natural predator, or a predator that will target only the pest, and not harm the crops[5]. This also involves a deep knowledge of both insects because the introduction of a new species may work to rid a crop of a particular pest, but can also lead to outbreaks of the introduced insect in other environments where it could become invasive to native species.

An advanced mosquito-fly control program is carried out each summer by the public works department. Above is the "fogging machine" in operation. The 45-gallon capacity combustion equipment has been mounted on a jeep. The mixture used, made up of five parts diesel fuel to one part Chlordane DDT, is put through a heating unit and distributed from the back of the machine in the form of a heavy fog over lanes, parks and the Victoria Park golf course.

Bugs of the Aspen Parkland

Scientific	Common
Antheraea polyphemus	Polyphemus Moth (Lepidoptera)
Hyalophora comlumbia	Columbian Silk Moth
Smerinthus cerysii	One Eyed Sphinx
Pachysphinx modesta	Big Poplar Sphinx
Hemaris diffinis	Snowberry Clearwing
Hyles gallii	Galium Sphinx
Arctica caja	Garden tiger moth
Lophocampa maculata	Spotted Tassock Moth
Gnophaela vermiculata	Police Car Moth
Ctenucha virginica	Virginia Ctenucha
Malacosoma disstria	Forest Tent Catarpillar Moth
Catocala relicta	White Underwing
Catocala unijaga	Once Married Underwing
Campaea perlata	Pale Beauty
Carabus nemoralis	Purple Rimmed Carabus (Coleoptera)
Calosoma caliderm	Fiery Hunter
Pterostichus menaricus	Sidewalk Carabid
Nicrophorus sp.	Burrying Beetle
Creophilus maxillosus	Hairy Rove Beetle

Phyllophaga spp.	May Beetle
Ctenicera resplendens	Resplendant Click Beetle
Ctenicera aeripennis	Sapphire Winged Click Beetle
Glischrochilus quadrisignatus	Beer Beetle
Lytta nuttali	Nuttal's Blister Beetle
Coccinella septempunctata	Seven Spot Ladybug
Adalia bipunctata	Two Spot Ladybug
Hippodamia tredecimpunctata	Thirteen Spot Ladybug
Otiorhynchus ovatus	Strawberry Root Weevil
Formica spp.	Wood Ant (Hymenoptera)
Camponatus spp.	Carpenter Ant
Bombus nevadensis	Nevada Bumblebee
Sirex cyaneus	Blue Horntail
Vespula maculata	Bald Faced Hornet
Vespula spp.	Yellow Jacket
Ammophila spp.	Threadwaisted Wasp
Family Pompliidae	Spider Wasp
Family Syrphidae	Hover Fly (Diptera)
Hybomitra spp.	Horse Fly
Laphria spp.	Robber Fly
Tipula spp.	Giant Crane Fly
Chrysopa spp.	Green Lacewing (Neuroptera)
Brachynemurus abdominalus	Snap Trap Antlion
Chlorochroa sayi	Big Green Stinkbug (Hemiptera)
Callicorixa audeni	Auden's Water Boatman
Limnoporus dissortis	Kayak Pond Skater
Notonecta undulata	Common Backswimmer
Lethocerus americanus	Giant Water Bug
Cosmopepla bimaculata	Wee Harlequin Bug
Dissosteira carolina	Road Duster Orthoptera
Arphia conspersa	Red Winged Grasshopper
Pteronarcys californica	Giant Stonefly Plecoptera

Aeshna interrupta	Variable Darner Odonata
Ophigonphus severus	Pale Snaketail
Leucorrhinia hudsonica	Hudsonian Whiteface
Libellula quadrimaculata	Four Spotted Skimmer
Sympetrum internum	Cherryfaced Meadowhawk
Sympetrum danae	Black Meadowhawk
Family Isotomuridae	Snow Flea (Siphonaptura)
Acilius spp.	Acilius Diving Beetle (Coleoptera)
Colymbetes sculptilis	Mid Sized Diving Beetle
Dytiscus spp.	Giant Diving Beetle
Gyrinus spp.	Whirligig Beetle
Hudrochara obtusa	Obtuse Water Scavenger (Beetle)
Lithobius spp.	Garden Centipede (Myriapoda)
Order Julida	Garden Millipede
Phalangiun opiloi	Harvestman (Aranea)
Pardosa spp.	This Legged Wolf Spider
Phidippus borealis	Boreal Jumping Spider
Aranaeus spp.	Orb Weaver
Tetragnatha spp.	Long Jawed Orb Weaver
Dolomedes triton	Six Spotted Fishing Spider
Misumena vatia	Goldenrod Crab Spider

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Dolomedes triton Six Spotted Fishing Spider

Butterflies of the Aspen Parkland

Scientific Name	Common Name
Amblyscirtes vialis	Roadside Skipper
Hesperia comma assiniboia	Common branded skipper
Hesperia nevada	Nevada skipper
Hesperia uncas	Uncas Skipper
Oarisma garita	Garita skipper
Polites draco	Draco skipper
Polites mystic	Long Dash Skipper
Polites peckius	Peck's skipper
Polites themistocles	Tawny edged skipper
Thymelicus lineola	European skipper
Carterocephalus palaemon	arctic skipper
Epargyreus clarus	Silverspotted skipper
Erynis afranius	Afranius duskywing
Erynnis icelus	Dreamy duskywing
Erynnis persius	Persius duskywing
Pyrgus centaureae	Grizzled skipper
Pyrgus communis	Chackered skipper
Thorybes pylades	Northern cloudywing
parnassius smintheus	Smintheus parnassian
Papilio machaon dodi	Old world swallotail
Papilio zelicaon	Anise swallotail
Papilio pteroursus canadensis	Canadian tiger swallotail
Pieris oleracea	Mustard white

Pieris rapae	Cabbage butterfly
Poutia occidentalis	Western white
Pontia protodice	Checkered white
Euchloe ausonides	Large marble
Euchloe creusa	Northern marble
Euchloe olympia	Olympia marble
Colias christina	Christina sulphur
Colias eurytheme	alfalfa butterfly
Colias gigantea	Giant sulphur
Colius interior	Pink edged sulphur
Colias philodice	Clouded sulphur
Zerene cesonia	Dogface
Lycaena Epidemia darcas	Dorcas copper
Lycaena Epidemia helloides	Purplish copper
Lycaena Epidemia mariposa	Mariposa copper
Lycaena gaeides dione	Great gray copper
Lycaena Hyllolycaena hyllus	Bronze copper
Lycaena Lycaena phlaeas	Little copper
Harkenclenus titus	Coral hairstreak
Incisalia Deciduphagus augistinus	Brown elfin
Incisalia Deciduphagus polia	Hoary elfin
Incisalia Incisalia eryphon	White pine elfin
Incisalia Incisalia niphon	Eastern pine elfin
Mitoura spinetorum	Thicket hairstreak

Satyrium liparops	Striped hairstreak
Celastrina ladon lucia	Spring azure
Everes amyntula	Western tailed blue
Glaucopsyche lygdamus	Silvery blue
Lycaeides idas	Northern bue
Lycaeides melissa	Melissa blue
Plebejus Agriades risticus	Rustic blue
Plebejus Icaricia acmon	Acron blue
Plebejus Icaricia icarioides	Icarioides blue
Plebejus Plebejus saepiolus	Greenish blue
Plebejs Vacciniina optilete	Cranberry blue
Aglais milberti	Milbert's tortoise shell
Nymphalis antiopa	Mourning cloak
Nymphalis californica	California tortoise shell
Nymphalis vanalbum	Compton's tortoise shell
Polygonia faunus	Green comma
Polugonia gracilis	Hoary comma
Polygonia interrogationis	Question mark
Polygonia progne	Gray comma
Polugonia satyrus	Satyr anglewing
Polugonia zephyrus	Zephyr
Vanessa annabella	Westcoast lady
Vanessa atalanta	Red admiral
Vanessa cardui	Painted lady

vanessa virginiensis	American painted lady
Boloria astorte	Astarte fritillary
Boloria bellona	Meadow fritillary
Boloria chariclea	Purple fritillary
Boloria eunomia	Bog fritillary
Boloria freija	Freija fritillary
Boloria frigga	Frigga fritillary
Boloria selene	Silver boardered fritillary
Euptoieta claudia	Variegated fritillary
Speyeria aphrodite manitoba	Aphrodite fritillary
Speyeria atlantis hollandi	Altantas fritillary
Speyeria electa lais	Northwestern fritillary
Speyeria callippe	Callippe fritillary
Speyeria cybele	Great spangled fritillary
Speyeria edwardsii	Edward's fritillary
Speyeria hydaspe	Hydaspe fritillary
Speyeria mormonia	Mormon fritillary
Speyeria zerene	Zerene fritillary
Choridryus acastus	Acastus checkerspot
Choridryus gorgone	Gorgone checkerspot
Choridryus palla	Northern checkerspot
Euphydryus anicia	Anicia checkerspot
Euphydryus gilletti	Gillett's checkerspot
Phycoides batesii	Tawny crescent
Phycoides cocyta	Northern pearl crescent
Phycoides pulchella	Feild crescent
Phycoides tharos	Pearl crescent
Limenitis Basilarchia archippus	Viceroy
Limenitis Basilarchia arthemis	White admiral
Satyrodes eurydice	Eyed brown
Cercyonis oetus	Dark wood nymph
Cercyonis peyla	Common wood nymph
Coenonympha incarnata	Incarnate ringlet
Erebia disa	Disa alpine
Erebia discodalis	Red disked alpine
Erebia episodea	Common alpine
Oeneis alberta	Alberta arctic
Oeneis chryxus	Chryxus arctic
Oeneis jutta	Jutta arctic
Oeneis macounii	Mavoun's arctic
Oeneis uhleri	Uhler's arctic
Danaus plexippus	Monarch

Damselflies of Alberta

Scientific Name	Common Name
Lestes dryas	Emerald Spreadwing
Lestes disjunctus	Common Spreadwing
Lestes unguiculatus	Lyre-tipped Spreadwing
Lestes congener	Spotted Spreadwing
Coenagrion angulatum	Prairie Bluet
Coenagrion resolutum	Taiga Bluet
Coenagrion interrogatum	Subarctic Bluet
Enallagma boreale	Boreal Bluet
Enallagma cyathigerum	Northern Bluet
Enallagma hageni	Hagens Bluet
Enallagma ebrium	Marsh Bluet
Enallagma clausum	Alkali Bluet
Enallagma caranculatum	Tule Bluet
Ischnura damula	Plains Forktail
Amphiagrion abbreviatum	Western Red Damsel
Nahelennia irese	Sedge Sprite

Tiger Beetles (tb) of the Aspen Parkland

Scientific	Common
Cicindela nebraskana	Black Bellied tb
Cicindela longilabris	Long Lipped tb
Cicindela repanda	Bronzed tb
Cicindela duodecimguttata	Twelve-spot tb
Cicindela hirticollis	Beach tb
Cicindela limata	Sandy tb
Cicindela limbalis	Claybank tb
Cicindela purpurea	Cowpath tb
Cicindela lengi	Blowout tb
Cicindela tranquebarica	Oblique tb

Fish

Fish are important for many people, as food, sport and pleasure. The fish found in the Battle River area have provided us in the past with important commercial fisheries and still provide sport to this day. You may think that the size of Stoney Creek means it's inhospitable to fish, but if you keep your eyes open you may be surprised. Large species, such as the Northern Pike and White Sucker, can be found in the southernmost reaches of the Camrose Creek where it meets Driedmeat Lake. Other smaller species, such as the Brook Stickleback, Fathead Minnow and Lake Chub, occupy the shallow reaches of the creek that extend right into the city. To view these minnow species it is important to know their spawning time as that will be when they are most abundant and most active. It may also be important to bring a net and a jar to view them closely before putting them back from where they came.

Fishing at driedmeat lake in 1912…all these fish were caught in 3 hours of fishing…largest one is 30 inches

Fish are fully aquatic vertebrates that occupy the rivers, lakes, streams, creeks and bogs of Alberta. Fish are used by commercial fishermen, sport fishermen, and nature observers. Fish also play a valuable role in their ecosystem as food for humans and native wildlife species. They can also be voracious predators, feeding on invertebrates, other fish, amphibians, and even small mammals. There are 51 native species of fish in Alberta, and about 8 introduced species[1]. Of these, 31 species may be found in the Aspen Parkland region, 19 of which are found in the Battle River basin. Five species are found in stretches of the Stoney Creek will be profiled.

Fish Management

Fisheries management has played an important role in regulating fish stocks and populations to ensure the preservation of gamefish and non-gamefish species. Some of the limitations put on fishing include: time of year, how big and how many fish one may keep, as well as how you are allowed to catch fish. There are also stocking initiatives to take pressure off of native fish populations, which by introducing greater diversity and opportunity, expand fishing grounds rather than concentrate them on limited sources. Although this practice does take pressure off native populations and offers recreational and sport fishers the ability to catch more, hatcheries are not the answer to preserving our native species. The lack of genetic variety in hatchery populations can potentially wipe out wild gene pools, making them more susceptible to disease, which is a common problem in hatcheries [2].

Common Fish of the Battle River Region

There are several categories of fish found in Alberta, but they can be divided into two simple groups: game fish and non-game fish. Game fish include most of the Salmoniformes (eg. salmon and trout), sturgeon, goldeye, mooneye, lake whitefish, burbot, walleye, perch and northern pike. Non-game-fish make up the majority of the fish species of Alberta. These include the minnows (small fish, not young fish), suckers, carp, and sculpins.

Northern Pike, Exos lucius

Northern Pike

The first species is the Northern Pike, Exos lucius, an exciting game fish that can be caught in Driedmeat Lake. They are usually large and slender fish with green backs that spot down to a white belly. Their dorsal fin is on the tail end of their body, rather than in the center as with most other game fish. These 'slough sharks' can grow up to 133 cm and weigh up to 50 lbs., but most are a lot smaller depending on the environment. The Northern Pike is the most widely distributed game fish, found all across Canada and the Northern Hemisphere extending into Europe and Asia. They are vicious predators that prefer relatively shallow, weedy and clear waters in which to ambush their prey. They feed on crustaceans, fish, insects, frogs, and sometimes ducklings, mice and muskrats.[1]. They spawn in the early spring in shallow marshes with lush vegetation. They remain attached to vegetation for roughly three weeks, and when released, measure around 1 cm, but at the end of their first year can measure up to 28 cm[1]. These fish can tolerate fairly low oxygen levels, which accounts for their wide distribution and large populations, as this usually allows them to survive in places where winterkill will usually cause a die off of other species.

In the past, there used to be a well established spawning run of Northern Pike in Stoney Creek, but this has been eliminated since the Mirror Lake Spillway in Camrose has blocked upstream access[3]. Farley (1932) also notes that Driedmeat Lake used to be a productive sport fishery that was actively fished. One could bring in up to 12 good catches in a day, but in 1972, the pike numbers had reached an all time low due to winter oxygen depletion. Today, pike numbers fluctuate greatly.

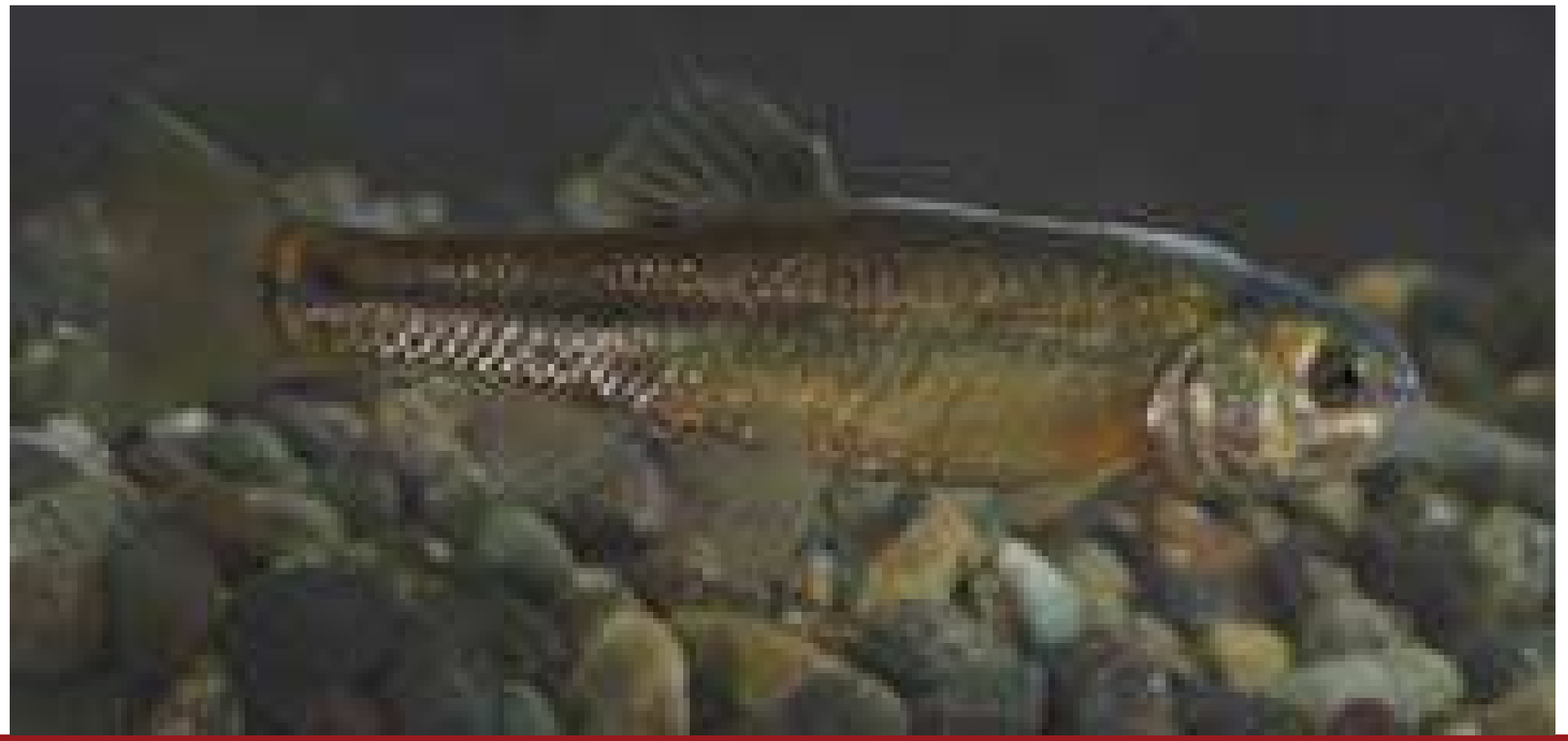
White Sucker

The most abundant fish in the Battle River watershed is the White Sucker, Catostomus commersoni. The White Sucker has a brownish black back that fades into a white belly with brown fins. Their face is smooth and their mouth is a small tube on the bottom of their head. They can grow up to 76cm and weigh 17.5 kg and can be found across Canada down to New Mexico and Georgia[1]. They are found in a variety of habitats, from deep lakes to shallow rivers, and are tolerant to a variety of conditions. Much like the Northern Pike, it can be found all over Alberta except in the mountains. The spawning season begins in mid-May and lasts until early July and is usually done in creeks, but in many lakes in Alberta they will spawn on the beach when necessary. The white sucker is a bottom feeder, eating crustaceans, insect larvae and eggs, molluscs and algae. As young, they feed mostly on plankton[1]. These fish are even more tolerant to low oxygen levels so they will occur even where pike do not, and the only other fish are small minnow and stickleback species[3]. They have the capability to quickly occupy newly formed water bodies, and can often be found far up a tributary a great distance from their source, where rapid eutrophication eliminates competition and predators, which leads to a dramatic dominance of the white sucker populations.

Northern Pike, Exos lucius

Fathead Minnow

The smaller Fathead Minnow, Pimephales promelus is olive to straw yellow in color, and the breeding males have a pronounced head with little hard tubercles on the front of their face. Their maximum length is estimated at 9 cm and they are found in central Alberta to Quebec, to northeast Mexico. Although they are likely introduced into the central Alberta locations, their native range being the Rocky mountains[1].
They can often be found in large numbers in muddy creeks, ponds and lakes and usually accompany Brook Sticklebacks. They spawn from June until August, in quiet, shallow waters, where they feed on algae, zooplankton, insect larvae and crustaceans[1]. These minnows are an important component of the diet of many piscivorous (fish eating) fish and birds. These fish are common throughout Alberta in small water bodies where other fish species are absent, and are even found in small intermittent tributaries and isolated stretches of water. The fathead minnow and Brook stickleback can indicate declining water quality if their populations increase while other populations decrease (meaning that oxygen content is declining).



Lake Chub

Another minnow species is the Lake Chub, Couesius plumbeus. It has a dark green back that blends into silver sides and belly, and mature males will often have a distinct orange patch behind their first fin. This minnow can reach a maximum length of 22cm, but the average size is between 5 and 6 cm. They are found throughout Alberta and across Canada in lakes, rivers and small creeks where they are usually fairly abundant[1]. The spawning season begins in June and lasts until mid-August. Like most minnows, they feed on insect larvae, zooplankton, crustaceans and algae and are a key component to the diet of larger fishes and birds. Unlike the other fish mentioned, the Lake Chub is usually found in cleaner reaches of streams and lakes, having a lower tolerance for oxygen-depleted waters than the Fathead minnow or the Brook Stickleback. Creation of migration barriers can potentially decrease the populations of these fish due to low water situations and oxygen depletion.

Lake Chub

Brook Stickleback

The final small species is the Brook Stickleback, Culea inconstans, and although it may look like a minnow species, it is actually from a different family, the Sticklebacks. They are a dark olive color with small pale patches and unlike the minnow species, the stickleback lacks scales. In front of their rear top fin is a row of 5 or 6 small spines, which are likely used as a predatory deterrent. Like minnows, their maximum size is around 9cm, with an average length of 5 cm. They can be found throughout all of Alberta, and right across Canada and the northern United States. They are frequently the most abundant fish in lakes and streams and can be found virtually anywhere. They are a very tolerant fish that is usually associated with the Fathead Minnow, and can occupy small creeks, bogs, beaver ponds and even small prairie pools[1]. There is record of these fish being caught up in tornado winds and being deposited in pools in farmers fields, and other reports have found them surviving in underground streams[1]. The spawning season occurs between late spring and early summer and is interesting to observe. The males build nests out of grasses and other pond debris in which the female lays her eggs. He then guards the eggs until they begin to hatch into young fingerlings (young fish). They feed mostly on small aquatic insects and their larvae as well as crustaceans, but are a common food source for larger aquatic invertebrates such as the diving beetle and dragonfly larvae, as well as birds, muskrats and water shrews[1].

*Brook Stickleback, Culea inconstan*s,

Threats to Fish

There are many factors that may limit population growth or distribution of fish in the Battle River basis, but by far the largest limiting factor is water depth and oxygen availability. As we've seen in four of the five species of fish found around here, they are all adapted to low levels of oxygen, so nature has found a way to cope with the stresses of oxygen depletion for these species. There are a number of other threats to the fish as well, including sport and commercial fishing, pollution, flow regulation, and siltation.

Commercial and sport fishing does not have a large impact on the Stoney Creek because there is very little opportunity to catch game fish, but in Driedmeat Lake, there have been productive sport fisheries in the past focussed largely on Northern Pike. Christiansen (1977) noted that the fishing centered around the weir in the spring of the year and notes from Farley (1932) indicate that there would be around 35 boats there on the weekend, and a single fisherman could bring in 12 large pike in a single day. This location is producing some fish.

Pollution in the Stoney Creek and Battle River has increased over time as the human population grew. Influenced by industrial and agricultural development, the aquatic habitat is receiving greater amounts of nutrient inflow by runoff or effluents, and the effects are compounded by low flows in the area which leave the wastes concentrated and their effects potentially more lethal.

Flow regulation and alteration poses a risk because it may alter or block spawning and migration runs, which cuts off population sources, creating isolated environments. Structures such as weirs and dams can separate populations and alter the depth of water. These areas are more susceptible to oxygen depletion during the winter and concentration of nutrients that lead to aquatic plant proliferation, which in turn depletes oxygen. These types of environments favor species such as the Fathead Minnow and Brook Stickleback which are adapted to living with vegetation and low oxygen levels, but the larger species require larger amounts, and their worst enemy in the past has been winterkill. Winterkill is the depletion of oxygen in the winter that occurs when the lake is not deep enough to cycle the available oxygen and it becomes a lethal environment. Christiansen (1977) noted that this has been a serious problem in the past in Driedmeat Lake where thousands of Northern Pike and White Suckers have been found dead in the spring. Weir placement in the Stoney Creek has eliminated upstream spawning access to northern pike and white suckers, and the same has been noted for the Driedmeat Lake weir, but only at certain water levels[3].

Siltation is a product of land clearing and cultivation along the water's edge. Coupled with livestock grazing and other agricultural activities near the water, the stability of the riverbank decreases, and during peak flow season, much of the riverbank is eroded and washed away into the river drastically increasing the turbidity. This causes problems for species in the lower reach of the Battle River that rely on rocky environments such as the Iowa Darter and Longnose Dace. It also poses threats to spawning fish as their exposed eggs could become suffocated by settling silt.

Protection and Awareness

Fish conservation has been an issue in Alberta for quite some time. There has been plenty of effort in preserving fish stocks by creating and operating hatcheries throughout Alberta that stocked areas with trout, walleye, and other desirable game fish, but the lack of genetic diversity emphasized the importance of taking care of wild populations. New efforts to conserve this great resource are necessary. Since the second half of the century, Alberta Fish and Wildlife has expanded its conservation practices to deal with modern problems. Other organizations such as Cows and Fish operate to involve the public in education on riparian areas, or those areas associated with streams and rivers. They work on educating agricultural and livestock producers about ecological processes and functions of a healthy riparian area[4], which is a healthy environment for fish. There are also other programs such as the yellow fish road project that educates children about a town's local waterways, emphasizing the effects of dumping waste down drains. This project involves painting of yellow fishes on sewer drains to remind others where the waste water goes (City of Camrose Website). The best way to get involved is to pick up a copy of the fishing regulations, learn the limits and rules, and go enjoy the experience of fishing. Once you get hooked, you will find that the catch is always worth the wait.

Species lists

Fish of the Battle River Basin (Christiansen, 1977)

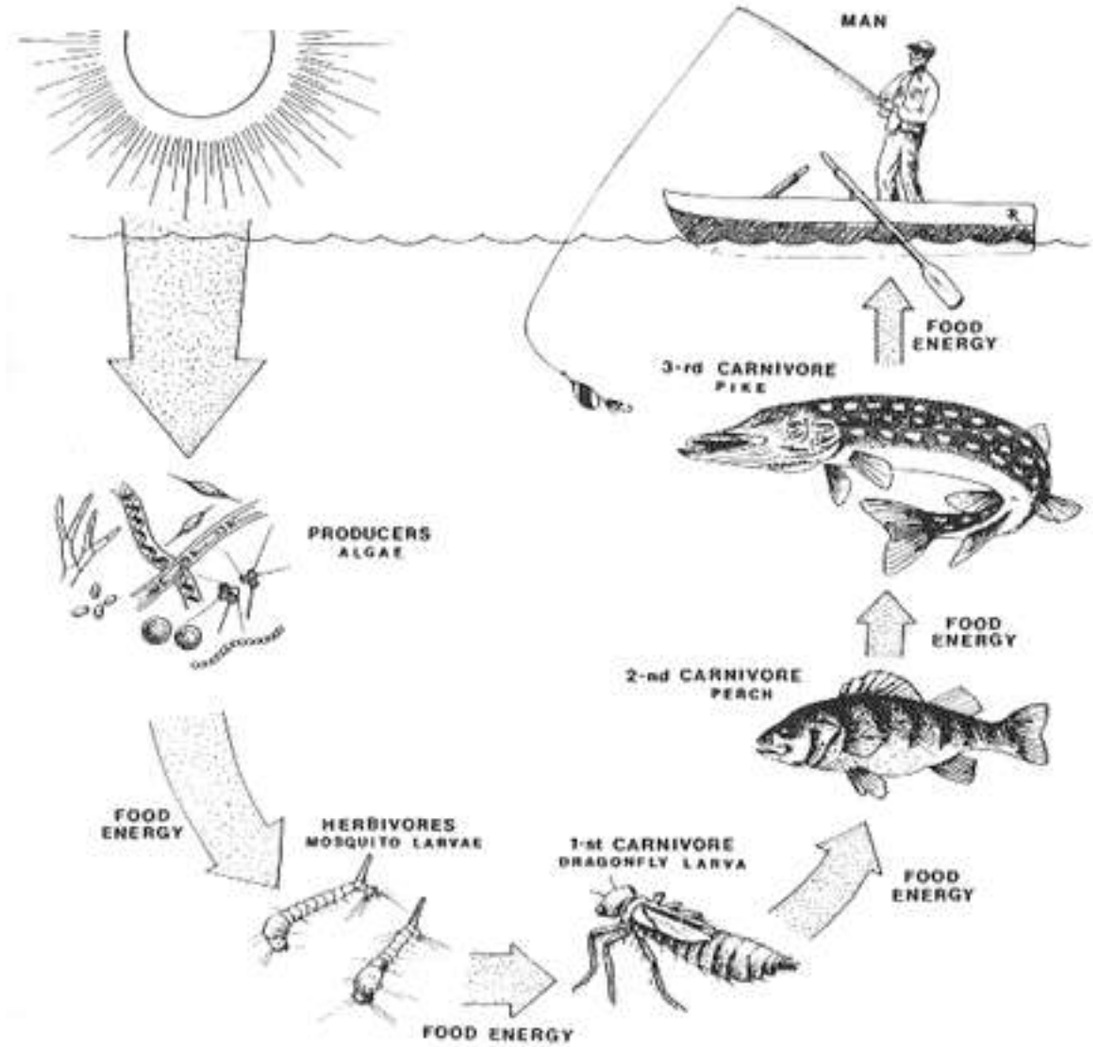
lake whitefish
northern pike
goldeye
mooneye
longnose dace
lake chub
fathead minnow
emerald shiner
spottail shiner
quillback
shorthead redhorse sucker
longnose sucker
white sucker
burbot
trout-perch
brook stickleback
iowa darter
yellow perch
walleye

Fish of the Aspen Parkland

Joynt, A., Sullivan, M. G. 2003. Fish of Alberta. Lone Pine Publishing.
Edmonton AB

Scientific Name	Common Name
Acipenser falvescens	Lake Sturgeon
Hoidon alosoides	Goldeye
Hoidon tergisus	Mooneye
Notropis atherinoides	Emerald Shiner
Pimephales promelus	Fathead Minnow
Phoxinus neogdeus	Finescale Dace
Platygobio gracilis	Flathead Chub
Conesius plumbeus	Lake Chub
Rhinichthys cataractae	Longnose dace
Phoxinus eos	Northern red-belly dace
Margariscus margarita	Pearl Dace
Notropis blennius	River Shiner
Notropis hudsonius	Spot-tail Shiner
Salvelinus fontinalis	Brook Trout
Coregonis artedi	Cisco
Coregonis clupeaformis	Lake Whitefish
Oncorhynchus mykiss	Rainbow Trout

Salmo trutta	Brown trout
Salvelinus confluentus	Bull Trout
Percopsis omiscomaycus	Trout-Perch
Lota lota	Burbot
Culaea incostans	Brook Stickleback
Pungitius pungitius	Nine-Spined Stickleback
Gasterosteus aculeatus	Three-Spined Stickleback
Cottus ricei	Spoonhead Sculpin
Etheostoma exile	Iowa Darter
Stizostedion canadense	Sauger
Stizostedion vitreum	Walleye
Perca flavescens	Yellow Perch
Exos lucius	Northern Pike
Carpiodes cyprinus	Quillback
Catostomus catostomus	Longnose sucker
Catostomus commersoni	White sucker
Catostomus platyrhynchus	Mountain sucker
Moxostoma anisurum	Silver redhorse
Moxostoma macrolepidotum	Shorthead redhorse



Reptiles and Amphibians

Herptiles

The herptiles, or herpetofauna, is the group of vertebrates that include all the reptiles and amphibians. Herptiles are found in a variety of habitats, from deserts to rainforest, even into temperate mountainous regions. The most important features in determining range and habitable biomes for reptiles and amphibians are temperature and water availability[1]. These animals are ectothermic, meaning that they produce little body heat of their own, relying on the external environment to provide thermoregulation. Behaviours such as basking and seeking shade are critical to allow warming or cooling, and aids in maintaining moisture levels.

Differences between Amphibians and Reptiles

There are many differences between amphibians and reptiles. Amphibians have a more porous, membrane-like skin while reptiles have developed more keratinized and scaly skin which retains moisture. All reptiles have tails while salamanders are the only amphibian with tails. Frogs and toads are part of the order called anurans, which means “no tail”. Reproduction is also different between the two groups. Fertilization is external for amphibians, while it is internal in reptiles. The female amphibian lays a clutch of membranous eggs and the nearby male immediately fertilizes the eggs once they are laid. Reptiles also lay eggs, however, unlike amphibian eggs, reptile eggs are cleidoic (shelled) which create a stable environment for the developing embryo by protecting it from desiccation and physical damage. These eggs do not rely on water or moist environments to develop, as amphibian eggs do. Some species of snakes, such as garter snakes, retain the eggs until they hatch. These species are classified as “live-bearers” [1]. These characteristics have allowed reptiles to utilize a larger variety of habitats than amphibians.

In Alberta, only 18 species of amphibians and reptiles are native to the province, made up of two species of salamander, three toads, four frogs, one turtle, one lizard, and six snakes[1]. Though they are modest compared to some exotic species, within these few species, there is a great diversity. No only are there representatives from the turtles, snakes, lizards, toads, frogs, and salamanders, but there is a great range in the type of habitats these species utilize. Most of these organisms are at the most northerly extent of their range, thus they must be able to tolerate our climate of extremes. Overwintering in extreme environments, such as Alberta winters, requires some special adaptations. Some species of amphibians and reptiles have behavioural adaptations, such as overwintering in large numbers or burrows that extend beyond the frost line. Physiologically, some are capable of supercooling and even freeze-tolerance.

In the Camrose area, we have 6 species of reptiles and amphibians: two species of snake, two species of frogs, one species of salamander, and one species of toad. The reptiles are represented by two species of garter snake, the plains garter snake Thamnophis radix, and the red-sided garter snake Thamnophis sirtali parietalis. The amphibians include the tiger salamander Ambystoma tigrinum, Canadian toad Bufo hemiophrys, wood frog Rana sylvatica, and the boreal chorus frog Pseudacris maculate.

Reptiles

The two species of garter snake, representing reptiles in this area of Alberta, overlap in their range in this region of the province, which can make differentiation between the two species difficult as they may appear similar and are found in similar habitats. They also are very similar in their natural history and behaviour. In this area of the province, a few mammalian and avian predators feed on snakes.

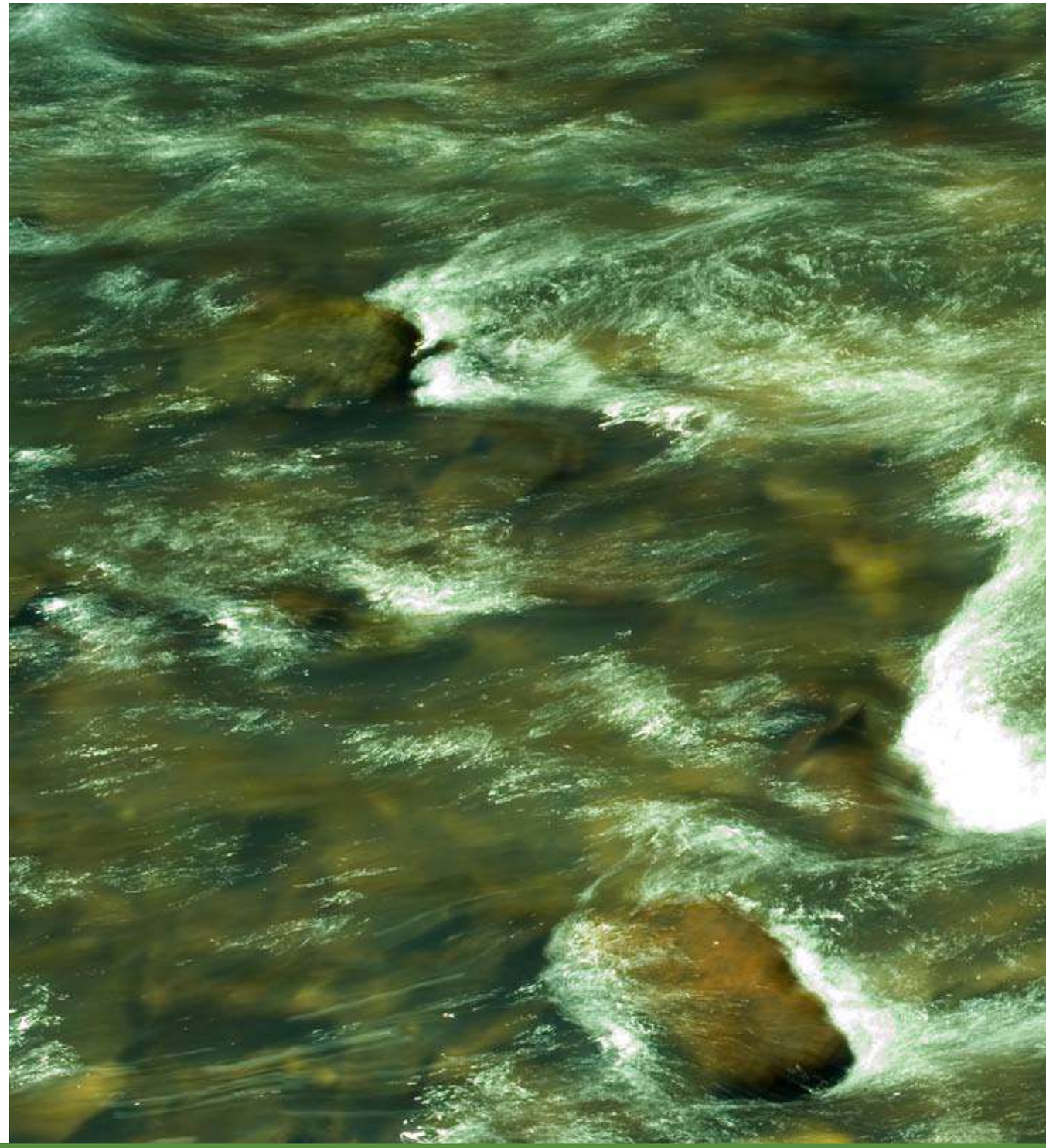
Plains Garter Snake Thamnophis radix

The plains garter snake Thamnophis radix is common in southeastern Alberta except in heavily urbanized areas. T. radix inhabits the short grasses of the prairies, aspen parkland, and somewhat in the boreal forest[1]. Studies suggest that T. radix prefers areas with vegetation that is older (3-5 years) and not recently used as conventional crop land[2]. In the province, they emerge from hibernation about mid-April until around mid-October if it remains somewhat mild. Adults reach 500-1000 mm, with ventral stripes variable in colour (from yellow, orangeish, greenish, or bluish) with black spots, yellow lateral stripes and dorsal stripes that range from orange to yellow. These snakes often live near ponds, marshes, ditches, dugouts and streams. This snake eats small invertebrates, such as snails, slugs, and worms, and also small birds and mammals, fish, amphibians and carrion. When T. radix is threatened, it may bite and/or smear the attacker with its foul-smelling secretions. T. radix is mildly venomous to order to immobilize prey. The venom may not affect humans, but the bites of garter snakes do hurt. Like most herptiles, T. radix uses mammal burrows, rock piles, and natural sink holes for hibernacula in the winter[1]).

Red-sided Garter Snake Thamnophis sirtali

The red-sided garter snake Thamnophis sirtali (possibly of the subspecies parietalis) is common throughout the province, preferring the boreal forest and the aspen parkland. It is identified by the dark spots on the back and red to orange bars on the side. Vertebral and lateral stripes are variable in colour, from yellow, orangeish, greenish, or blueish. Adults range in size from 460 to 1300 mm. Like T. radix, T. sirtali emerge from hibernation about mid-April and head back to hibernacula around mid-October. This species often lives near ponds, marshes, ditches, dugouts and streams, eating invertebrates, such as snails and slugs, worms, but also small birds and mammals, fish, amphibians and other reptiles. They too are slightly venomous for prey immobilization, but, like T. radix, this venom poses no harm to humans. Like the plains garter snake, when the red-sided garter snake is threatened, it may bite and/or smear attacker with foul-smelling secretions. It may also flee to the water if harassed. T.

sirtali often travels great distances between the hibernacula and summer foraging areas, sometimes up to nine kilometers[3]. Such "migrations" in snakes is unheard of. T. sirtali over-winters in hibernacula in large numbers in the more northern limits of its range, often with thousands of animals[3]. In more extreme environments, such as in Manitoba (Alberta as well), snakes grow as much in three months as snakes in Montana do in five months[3]. This is due to the reduced growing season in the northern limits of range of T. sirtali[3]. Large numbers of reproductive adult snakes in hibernacula is a reproductive strategy: in a short growing season, not much time can be afforded to finding a mate. The males emerge first and sit in wait of the females. The females leave in small groups, and are mated as they leave. A similar strategy is employed by T. radix[1]. Then the females disperse to summer habitat. They must often travel great distance to find a site available and suitable for hibernacula, which requires great energy expenditure. The immature, non-reproducing snakes over-winter in summer habitat to conserve energy[1].



Amphibians

The amphibians of Camrose are represented by four species. As is true with all amphibians, they rely on water for laying eggs and larval development. Some are able to reproduce in ephemeral water sources, and may prefer these sites. However, permanent water sources are the most reliable breeding areas[4]. Amphibians are primarily insectivorous, while some tadpoles may eat other tadpole[1]. A variety of predators eat amphibians. Fish, some insect larvae, and some birds, prey on tadpoles and juveniles, while birds and some mammalian carnivores feed on adults[1].

Toads and frogs differ from other orders of amphibians in a few ways. They have no tails and are stouter. Their physiology is specialized for optimal locomotion in the form of hopping. They also have webbed hindlimbs (to varying degrees) for swimming in water. Amphibians have developed a voice box and an external tympanum (ear drum) located behind the eye. Males also usually have an air sac to amplify calls used in mating. Vocalizing is primarily done in mating season, in the spring. In some species there is a sexual dimorphism.

Though frogs and toads look similar in overall body morphology, there are some distinguishing characteristics that can be used to distinguish frogs from the toads. Toads are relatively stout, and have rougher, "warty" skin. Cranial crests are also present to some degree in toads, with parotoid glands that hold poison on either side of the head. Hindlimbs of toads are less webbed[1]. Frogs generally are more slender with smoother skin with more webbing on the hindlimbs.

Tiger Salamander Ambystoma tigrinum

The tiger salamander, Ambystoma tigrinum, is one of the two species of salamander present in Alberta, but is the only one found outside the mountainous regions. It is found in the short-grass prairie, aspen parkland, boreal forest, and the sub-alpine regions. It is common in suitable habitats, though its range has been fragmented. This may have disrupted the natural range of this salamander[1]. Tiger salamanders tend to prefer more mature vegetation that has not recently been used for cropland[2]. Only a couple were found in surveys at Beaverhill Lake 1998-2000[5]Adults grow up to 140-180mm, rarely reaching up to 200 mm. It had a large and robust body with unwebbed feet. This salamander gets it name from its blotched/barred coloration with yellow-white and black (or grey, dark brown or olive green). A. tigrinum is active from early spring to early fall, especially active in the spring rains. Though it can tolerate dry conditions, it is usually associated with pond, small lakes, and dugouts. A. tigrinum overwinters in subterranean burrows the salamander excavates. It eats a diet of invertebrates: insects, molluscs, mites, and earthworms. This amphibian is also primarily nocturnal, spending days in burrows or other sheltered spaces[1].

Canadian Toad Bufo hemiophrys

The only toad found in the Camrose area is the Canadian Toad, Bufo hemiophrys. It is found in the eastern half of the province except for the very arid areas of the southeast. B. hemiophrys occurs primarily in the boreal forest and aspen parkland. Numbers have declined in recent years due to habitat destruction, with no sign of recovery[1] In 1992, no Canadian Toads were found in any of the study sites, including sites northeast of Camrose[1]. Two years later in 1994, no specimens were found in a survey conducted in the surrounding area[2]. None were found nearby in Beaverhill Lake in 1998-2000 (Wilkinson & Hanus, 2003). In 1998, one was found in a survey at Lesser Slave Lake[5]. The toad has a short body (37-75mm) with its skin covered with small irregular warts. The colouration is grey-green to brown with a whitish vertebral stripe, and dark spots. This species of toad is diurnal, burrowing at night[1].

B. hemiophrys is more aquatic than other species of toads, spending about two months in and around water around breeding season. The call is a short trill repeated about every 30 seconds. After breeding season, individuals move upland[4]. This species overwinters in large numbers in burrowing sites[4]. In Alberta, adults move to hibernation sites around mid-September, with juveniles following shortly after. Spring emergence is around late April or early May. Adult males emerge first, followed shortly by the adult females. Juveniles emerge after the adults (Hamilton et al, 1998). Throughout Alberta, the size of the toads varies between populations. Toads in the southern part of the province are larger than frogs in more northern populations[4].

Wood Frog Rana sylvatica

The wood frog, Rana sylvatica is widespread and abundant in most areas of the province with no evidence of decline. This species has been recorded in many studies done at Beaverhill Lake from the early 1990s to the present[2,5]. It is the only North American amphibian whose range crosses the Arctic Circle. Adult frogs are 30-60mm in length. R. sylvatica is brownish with two light-coloured dorsal stripes and may also have a whitish vertebral stripe, with dark lateral spots. It also has a prominent dark brown or black facial mask bordered by white. This species is primarily diurnal, meaning it is active during the day, as opposed to many other species of amphibians. The call is made up of a series of higher frequency "grunts', "chuckles" and "snores"[1]. Adult R. sylvatica will also produce an escape scream if molested by a predator. During the mating season, it is found in open ponds, but largely terrestrial in the non-breeding season, preferring wooded areas[1]. Males overwinter closer to the water, while females are further upland in wooded areas.

Wood frogs are very cold-tolerant and hibernate on land beneath plant litter. This species of frog employs freeze tolerance. This physiological adaptation is accomplished by the presence of cryptoprotectants, carbohydrates that lower the freezing point of the cellular fluids. Other frogs may use glycerol in the same way. These cryptoprotectants prevent the fluid from freezing at temperatures down to -6°C, and allow the frog to survive even with ice formation in two-thirds of the body (Russell & Bauer, 2000).

Boreal Chorus Frog Pseudacris maculata

The boreal chorus frog Pseudacris maculata (sometimes referred to as Pseudacris triseriata maculata) is abundant in all regions of the province. Boreal chorus frogs have shown no preference to vegetation maturity[2]. Adults range in size from 20-40 mm. Colour ranges from grey to brown to green with three dark longitudinal stripes along the back. It frequents ponds, grassy pools, lakes, marshes and any other body of water, but may also climb into low vegetation. It breeds between April and June. The call is a short inflected trill, often a few together in a phrase. It sounds similar to the sound produced by a finger running down a plastic comb. It eats ground-dwelling insects, snails, millipedes, and other small invertebrates. This species overwinters in relatively dry conditions. P. maculata overwinters by employing freeze-tolerance (as similar to the wood frog, Rana sylvatica).

History and Conservation

Information on the historical range and population of amphibians and reptiles is scarce. Though changes in herpetofauna numbers were gradual, any significant changes were difficult to notice until recently for a couple reasons. The lack of historical knowledge, along with difficulties in distinguishing between the species, and the current abundance of a number of these species has made changes less obvious[1].

Despite the fact that some of the species of reptiles and amphibians found locally seem fairly common, there is a decline in herpetofauna numbers in Alberta and around the world[1]. Due of their larger dependence on water, amphibians seem to be disappearing more substantially[6]; however, reptiles are also affected. No single issue is the cause of this decline, but is a result of a number of compounding factors.

All these species are habitat specific. Though they are widespread, they require specialized habitat. Most these species are abundant in the habitats left, but as habitat is changed, disturbed, and altered, this may change[1].

Loss of wetlands in Alberta due agricultural practices, development, or drought has had a substantial impact on amphibians that rely on water for reproduction and the first couple life stages[2]. Loss of breeding habitat may be particularliy damaging to a population as some species exhibit breeding site fidelity [2]. Loss of important shoreline habitat is also an

issue. This can occur due to cattle ranching and recreational activities [7]. By allowing native vegetation to remain around wetlands, an appropriate microclimate for amphibians, notably wood and boreal chorus frogs, could be established[2].

Protection of hibernacula is also critical[7]. Destruction or disruption of hibernacula could result in whole populations being wiped out[7]. Some reptiles and amphibians cannot dig their own burrows, so they rely on burrows made from small mammals[1]. Those with limited burrowing capabilities rely on muddy or moist soils. Thus, the conservation of the animals that burrow, or maintenance of the burrows, is vital in hibernacula protection. Some reptiles and amphibians, such as the red-sided garter snake, require large hibernacula to accommodate large numbers of reproductive adults[1]. Some herptiles exhibit site fidelity to specific hibernacula[1], which means that any disruption could be lethal. Decreases in burrow availability due to agricultural disruption have been attributed to some possible population declines in amphibians [2].Some species utilize different habitats in the non-breeding and overwintering seasons. The impact of upland forest loss near wood frog breeding pools differs by season[9]. Habitat destruction near breeding ponds between November and March (in this region) might kill large numbers of wintering wood frogs, whereas similar activities at other times of year would not. This would primarily affect females as they overwinter further upland from the males. Upland habitat loss during summer would still compromise the females who hibernate in wooded area. Habitat degradation, such as the removal of trees and vegetation, would eliminate the insulating layer of vegetation that some species use in overwintering[2]. Garter snakes are currently common in the river valley in Camrose. However, if possible hibernacula sites are destroyed or disturbed, fewer snakes with be able to survive overwintering and numbers could decline.

Fragmentation of habitat is also a problem for some species. Not only do populations get cut off by agricultural habitat destruction, but infrastructure such as highways and roads are problematic. Though individuals can attempt to cross these barriers, if it is along a migration route to or from breeding habitats, large numbers may be killed[8].

Environmental degradation directly affects the reproduction of amphibians. Decreased water quality, through the input of hormone mimics, pesticides, and herbicides, affects the development of eggs and larvae. Hormone mimics disrupt developmental processes and metamorphosis[1,2,3,4]. Due to the porous nature of the integument of amphibians, even adults are susceptible to water pollutants. Pollutants interfere with reproductive cycles and cell growth[1]. Increased levels

of ultraviolet (UV) light from the sun, caused by the depletion of the ozone layer, also affects amphibians in all life history stages. Three species of amphibians in Alberta, one of which is the Canadian Toad Bufo hemiophrys, have demonstrated to be the most susceptible to UV radiation[4]. Runoff from livestock agricultural lands can introduce disease into the water system or wetland, which could decimate herpetofauna populations [7].

Critical habitat for the reptiles and amphibians varies on the time the time of year. Work is being done to conserve and re-establish some of these habitats that have been lost due to agriculture, development, and climate change. Work done by Ducks Unlimited and the North American Waterfowl Management Plan to restore wetlands has also helped to restore vital habitat for amphibians and reptiles[2]. However, most species of local herptiles preferred older vegetation, with boreal chorus frogs being abundant in all ages of vegetation[2].

A recent article by Stevens et al (2007) indicates that beaver ponds are important in creating wetland habitat for amphibians. There was an increase in juvenile recruitment and the number of calling males in a couple species of frogs when compared to unobstructed streams. Beaver ponds, especially older ones, provide good breeding habitats with warm and well-oxygenated water, enhancing growth. Beaver ponds may also decrease the number of predatory fish. Information of dam-building patterns could be integrated into forest management strategies to aid amphibian conservation.

Lack of information on previous populations and ranges is a large factor in not detecting declines in amphibians and reptiles earlier[6]. Accurately monitoring populations of herpetofauna is the only way to tack population cycles and any long-term changes to populations [6,7]. New methods are being employed as a means of counting amphibians. Previously, most surveys were conducted using pitfall traps[6]. Though this method is still useful for reptiles and other less vocal amphibians, amphibian calls are also being used to determine species and abundance[7]. Due to the visually cryptic nature of many amphibians, call surveys may be less invasive and may be more accurate when combined with other methods. Researching Amphibian Numbers in Alberta (RANA) conducted surveys at a number of designated locations around the province every few years.

Getting Involved with Herptiles

Alberta Conservation Association – Alberta Volunteer Amphibian Monitoring Program (AVAMP)

http://www.ab-conservation.com/frog/monitoring

http://www.srd.gov.ab.ca/fw/amphib/index.html

Kris Kendell e-mail: kris.kendell@gov.ab.ca

ACA

7th Floor, 6909-116 Street

Edmonton, Alberta

T6H 4P2

Researching Amphibian Numbers in Alberta (RANA)

http://www.srd.gov.ab.ca/fw/amphib/RANA.html

Birds

Birds of the Camrose Area

The Camrose area is contained within the aspen parkland ecoregion of Alberta, the province's most diverse region for birds. This region hosts a wide variety of habitats including wetlands, riparian areas, aspen forests, shrublands, native prairie, cropland, and urban areas. Each habitat, and combination of habitats, offers a unique set of characteristics desired by birds. In addition, Alberta lies along a major migration route for birds. Unfortunately, little of the aspen parkland remains in a natural condition, thus changing species composition, abundance, distribution, and location within the forests[1].

From hummingbirds to eagles, and grebes to finches, the diversity of birds in this area is significant. Most birds visit here during their summer nesting season, such as sparrows and warblers. A few species visit only during the winter season, such as Snowy Owls and Bohemian Waxwings. A few hardy species stay all winter, including the Black-capped Chickadee and Blue Jay. Enjoying birds is easy; you can set up a bird feeder, or go for a walk with binoculars and a bird field guide.

Despite our richness of avifauna, there are a number of species that are extinct, extirpated (no longer present in Alberta), and at risk. Though active programs are providing aid for some species, others are still struggling, mostly due to habitat degradation due to human expansion. Some species of birds are able to adapt more readily to agricultural development and urbanization than others. Alberta has some birds that stay here year-round and many more that visit over the summer months.

Bird Watching

What to look for when birding
When you're trying to identify a bird through your binoculars, there are a few key features to look for[2]:

Overall shape & type of bird

All "types" or groupings of birds have a similar body form. Though there are many forms, ducks, birds of prey, shorebirds, woodpeckers, sparrows, hummingbirds, and many other groups have identifiable shapes. These are sometimes included in bird pamphlets and field guides.

Colour

General colouration of birds is a good way to narrow your search. Be careful, as breeding plumage is different than non-breeding plumage, and juveniles are often colored differently. Coloration, stripes, and banding on the head and chest are important, as is rump colouration.

Wings

Noticing the shape of the wings (pointed or rounded ends, broad or slender) is also very important, and when you learn to identify different kinds, can tell you about their lifestyle. Another characteristic of the wings to notice is the colouration, banding patterns, and any coloured bars or patches on the wing. Some of these colourations are only visible when the bird flies.

Shape of Tail

The shape and length of the tail can help distinguish between very similar species. Tails can be rounded, V-shaped, or straight across. How the tail is held while flying is important, and some splay the tail, while others keep it in tight.

Habitat & Range

As is true with animals, birds prefer a certain type of habitat. As birds rarely leave their preferred habitat if it is available, it is easier to identify what species of birds you are seeing in a particular area. Range maps in field guides can help you identify if that bird occurs in the area you are located.

Size

Some closely related birds are very similar in colour and shape, but vary in size. There may be a size difference between males and females. Body length (and general girth) is the primary measurement. Wingspan is more important for the birds of prey (eagles, hawks, etc), vultures, herons and cranes, and to some extent in ducks.

Behaviour

The visibility (openness) of the species, the way it walks, and the way it flies can all be used as identifiers. Where and how the bird feeds (treetops, ground, on the wing) are also good clues. As well, how it holds itself while flying, and where and how the legs and neck are held is also important.

Song/call

Birds can also be identified by their song or call. This is harder for some birds, while it is easier for some of the very distinct calls. However, calls change from breeding to non-breeding season, and some birds are mimics, such as the Blue Jay and the Grey Catbird [3].

If you can see there the nest is located (if it nests in Alberta) that may be an indicator as well. If you walk through the forest without a trail, watch out underfoot. Some birds nest on the ground, like the Short-eared Owl.

History and Conservation

In the Camrose area in the early 1900s, the greatest asset to recording the natural history was Frank Farley. He lived at Driedmeat Lake from 1907 onward, made daily recordings and worked with other orthnithologists in east-central Alberta. He conducted numerous banding studies on gulls on Bittern Lake[4]. In his book The Birds of the Battle River Region, Farley documents all the birds he saw and their natural history, as well as other animals in the area at that time.

Extinct Species

Passenger Pigeon(Ectopistes migratorius)
Up until about 1875, it was quite plentiful in the Camrose area. They started to suddenly disappear, and were extinct shortly after due to over-hunting[4].

Exirpated Species

Greater Prairie Chicken (Tympanuchus cupido americanus)
In the Camrose area, it was a rare resident, but individuals were shots on a number of occasions in the area and now no longer present here. It was never very abundant, but was common in Manitoba[4].

Whooping Crane (Grus americana)

The Whooping Crane (Grus americana) was once very abundant over all the prairies and locally as well, with the concentration in eastern Alberta and central Saskatchewan[4]. At the beginning of the 1900s, wildlife specialists became greatly concerned about the possible extinction of the whooping crane and it was given full protection by the law. As of 1928, the last record of a breeding pair of whopping cranes in Alberta was 1905, though numerous small flocks were seen in 1927[4]. In the 1940s, the population was estimated at 15. Now, through intensive conservation programs, there are over 200 individuals. The Whooping Crane is classified under the Red List as "At Risk" in Alberta and under the Alberta Wildlife Act and COSEWIC as "Endangered" [5]. The only known current breeding area of the whooping crane is in Wood Buffalo National Park, but rarely may be seen flying on its migration route[3]. It is no longer nests in the Camrose area.

Upland Sandpiper (Bartramis longicauda)

The Upland Sandpiper (Bartramis longicauda) used to be a common nesting summer resident, very abundant around 1892, but declined in numbers very quickly with increased settlement[4]

White-winged Scoter (Melanitta fusca)

The White-winged Scoter (Melanitta fusca) used to have a widespread distribution. However, it no longer breeds commonly in the southern third of Alberta and is in decline elsewhere in the province. It has been extirpated from parts of the states[6] It was common in the Camrose area[4] before its decline noticed early last century, around the 1940s. In Alberta, it is classified as sensitive[6].

American White Pelican (Pelecanus erythtorhynchos)

The American White Pelican (Pelecanus erythtorhynchos) used to be a common summer residents in the Camrose area around 1908. After the area was homesteaded, they went to more remote places[4]. It may still be found, but has almost entirely disappeared from this area. A few have been found recently in the Camrose area.

Introduction of non-native bird species from other countries and continents can be damaging to the native species by causing competition for resources, whether they be nesting areas or food.

Changes and Conservation

As with some herptiles and many mammals, habitat destruction and fragmentation are the significant contributors to the loss of bird species. The challenge for ornithologists (scientists who study birds) and conservation biologists is that some birds require different habitat for feeding and for breeding.

As noted by Fisher & Acorn (1998) and Frank Farley (1932), many birds have become rarer since settlement across Alberta and in the Camrose area. This can be due a number of reasons. Though negative attitudes towards birds have been a cause of problems in the past, issues regarding habitat are more important to the long-term survival of species.

Loss of wetlands for agricultural purposes has been a contributor to decreasing abundance of any of the waterfowl and other water-related birds. Organizations like Ducks Unlimited and North American Waterfowl Management Plan have helped to protect wetlands, as well as re-establish new wetlands in the Camrose area. Loss of wetlands is still occurring, but now, it is due to drier-than-average conditions over the last few years. Beaverhill Lake, an important bird sanctuary and migration stop-over northeast of Camrose, has become much in size. Beaverhill Lake used to be home to important colonies of American White Pelican and Double-Crested Cormorants, both of which are "priority one species" (emergency listings for species facing a significant risk to their well-being)[7]. The loss of this wetland would be detrimental to these species. Management of water use has been a part of wetland conservation for many years, though in drought years, stricter measures may need to be taken.

Another significant conservation issue relates to changing habitat use of birds throughout the year. For birds that remain year-round in Alberta, they often change habitats and food sources from

breeding season to the rest of the year. This can make conservation of critical habitat more difficult. The other major component of this issue is the migratory nature of many species of birds. For birds migrating out of province, either to other provinces or territories, or to other countries, different conservation issues may affect the birds. Birds traveling to other countries, such as the Swainson's hawk, may encounter threats that are not present in Alberta, such as harmful pesticides. Different protection status or lack of laws enforcing conservation leave birds open to persecution. Different environmental concerns also exist in foreign wintering grounds. In early February 2007, 18 whooping cranes were killed in a flood in Florida, their wintering grounds.

Conservation strategies for woodland bird species should revolve around maintaining optimal patch size and wooded corridors to maintain species diversity. The area of a patch can serve as an indicator of the presence and quantity of bird species[1]. In larger patches of aspen forest, there is greater species diversity. The smaller the patches of habitat, the more edge effects influence species composition and quantity of those species[1]. The patch size affects the abundance of species that prefer the forest interior the most, such as grouse and hairy woodpecker, that prefer to be further from the edge of the forest [1]. Other birds, like some sparrows, prefer the edge, so with larger patches, these species would be less abundant. However, to provide an accurate measure, specific requirements for each species must be investigated.

In the urban landscape, patches separated by development can be connected through the use of natural corridors, parks, as well as wooded streets[9]. This would help to reduce the problem of habitat fragmentation for some species of birds. Though the tolerance of human disturbance would vary in bird species, alternate feeding and breeding sites may encourage the populations of those birds. Generalists would be more adept to utilizing a broader range of resources found in the wooded street corridors. Specific life-history traits of species would be a factor in their use of wooded corridors [9].

The use of the street corridors as connections between patches could be an effective management tool. However, specialist species require higher connectivity between patches than generalist species to provide increased safety and survival probability[9].

The Camrose area has a number of non-native species. The House Sparrow (Passer domesticus), Rock Pigeon (Columba livia), European Starling (Sturnus vulgaris), Ring-necked Pheasant (Phasianus colchicus), and Gray Partridge (Perdix perdix) were all introduced, some from Europe, others from Eurasia. The reasons for introducing the birds vary, from wanting to increase game hunting to a fanatical Shakespeare club wanting to locally release starlings as it was mentioned in the author's plays. Some have not caused any noticeable harm, while others, like starlings, negatively impact native cavity-nesting birds[3].

Getting Involved with Birds!

Federation of Alberta Naturalists (FAN), Alberta Conservation Association, and other volunteer bird programs:

Alberta Bird Atlas Update Project (FAN)

Alberta Birdlist Program (FAN)

Alberta May Species Counts

Christmas Bird Count

Important Bird Areas Program (FAN)

Living By Water Project (FAN)

Nocturnal Owl Monitoring

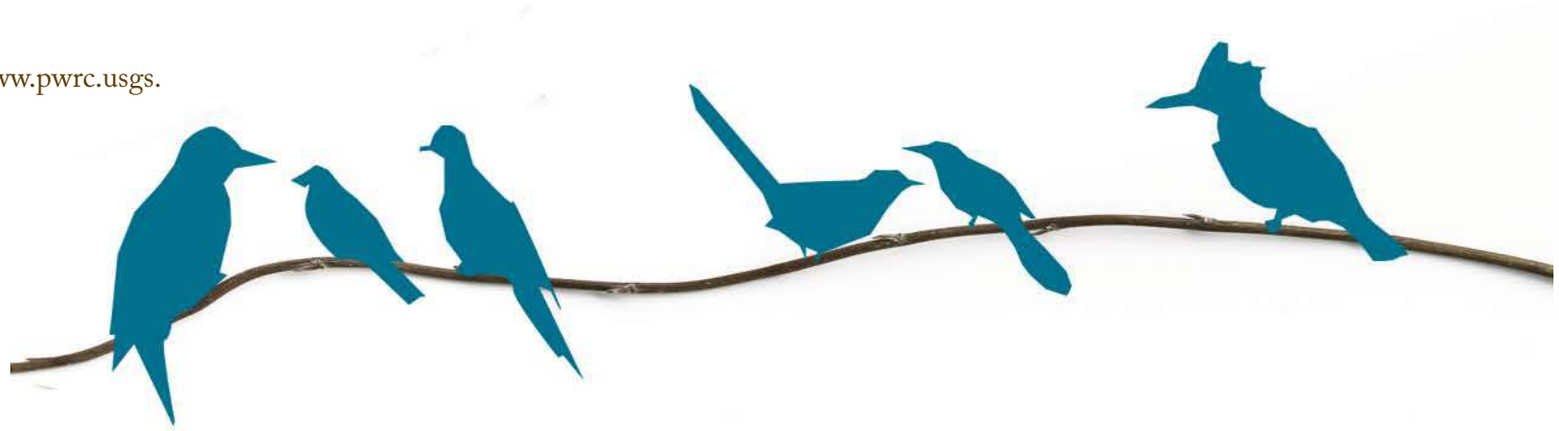
North American Breeding Bird Surveys (http://www.pwrc.usgs.gov)

Opportunities for Birders

Prairie Nest Records Scheme

Provincial Bird Species List (FAN)

Annual Beaverhill Snow Goose Festival Tofield
http://www.tofieldalberta.ca/snowgoos.htm



Project FeederWatch and other programs

http://www.bsc.eoc.org (go to National Programs)

Become a member and volunteer with Ducks Unlimited Canada

Join the Wildrose Outdoor Club (meets at the Camrose Railway Station)

Help protect all birds! If you have large windows at your work, business, or residence, place black bird decals on the windows to help prevent birds from hitting the windows. Though most birds that hit a window are just stunned, many birds are killed each year.

Hang up bird feeders! A variety of birds will visit feeders. Different birds prefer different seed or food, so read up on their favorites. It is important to remember that if you feed birds during the winter, have a few feeders still available during the summer.

Attracting hummingbirds to your garden! Hummingbird feeders are available at many garden stores, in which you put a sugary mix, simulating flower nectar. Instructions come with the feeders. To attract hummingbirds naturally, plant flowers in your garden that they like. Take a walk to see our hummingbird and butterfly garden to see the selection to add to your own garden.

Waterfowl and other water-related birds

(* breed in the Camrose area)

The waterfowl and other water-related birds form a diverse group in Alberta and the Camrose area. Cranes, grebes, plovers, ducks, geese, and herons are all represented in the Camrose area during the summer months. Even within the ducks, there is a great variety. All species of waterfowl and water-related birds are either summer residents or migrants. As they are restricted by open water, occurrences in winter are exceptions due to abnormal circumstances.

With many of the waterfowl, primarily ducks, females are plain mottled brown to camouflage with nesting habitat. Males are typically more colourful for attracting mates. Some birds are similar in colouration between the sexes. The male ducks are also generally larger than the females.

Loons and Grebes

Common Loon (Gavia immer)
Featured on the old Canadian $20 bill.

Pied-billed Grebe (Podilymbus podiceps) *

Horned Grebe (Podiceps auritus) *

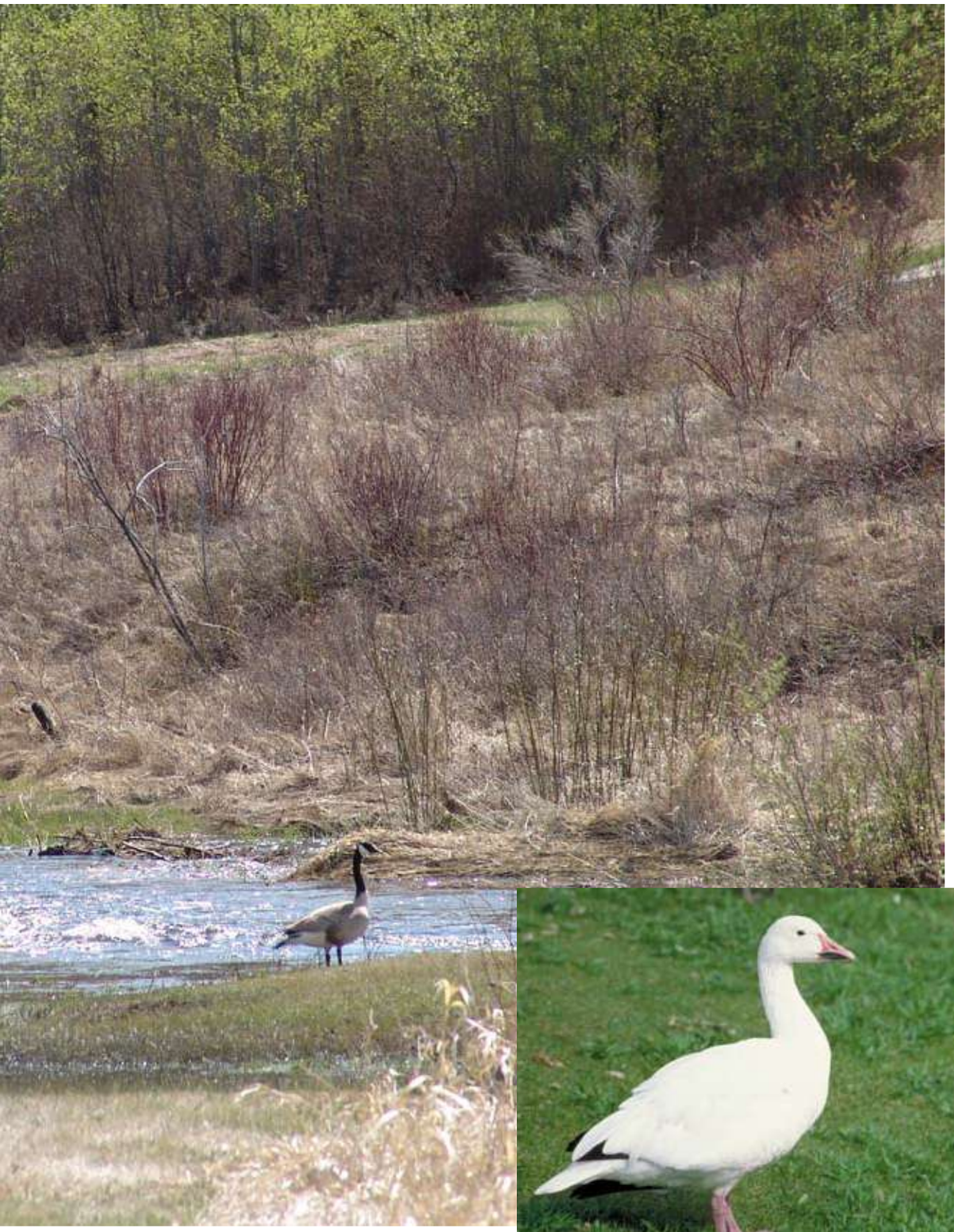
Red-necked Grebe (Podiceps grisegena)

Eared Grebe (Podiceps nigricollis) *

Western Grebe (Aechmorphus occidentalis)

The Western Grebe (Aechmorphus occidentalis) is listed as "sensitive" in Alberta[10]. This grebe is very rare in this area, but has been documented in recent years at Driedmeat Lake[10]. This grebe has a long neck, with dark upperparts and white underparts, and a yellow bill. It dives to feed on small fish and aquatic invertebrates[3].

The Western grebe is sensitive to human disturbance. Increases in corvid numbers and water recreation sports cause disturbances forcing grebes to temporarily leave the nest. Destruction of nesting habitat for lakeside property and beach access has also impacted the Western Grebe[10].



Geese, Swans, and Ducks

Greater White-fronted Goose (Anser albifrons)

Snow Goose (Chen caerulescens)

In the Camrose area, the Snow Goose (Chen caerulescens) is a familiar name due to the annual Snow Goose festival in Tofield, at Beaverhill Lake. These geese stop over on their migration north to their breeding grounds in the Arctic. In their spring and fall migrations, they are very abundant[4]. They are all white except for their black wing tips and orange beak and legs. They feed on aquatic vegetation, grass, roots, and waste grain[3]. In their breeding grounds in the Arctic, adults eat a lot of roots and rhizomes, as well as fresh shoots in spring. Both goslings and adults browse heavily on leaves of sedges and grasses[11].

These geese are so abundant that they are causing a great deal of habitat degradation from overgrazing[11]. The population has been increasing at a rate of around 7% per year; in 1996, the population was thought to be about 3 million birds. This increase is attributed to a number of factors. The increase in agriculture has provided more food for them on their migrations. Increased protected areas and management areas have given they safe refuges. At the same time there has also been an overall decrease in the number of waterfowl hunters[12].

The Snow Goose is a keystone herbivore species. The absence or presence of this goose significantly affects the diversity on the Arctic plants[11].

Snow Goose (Chen caerulescens)

Ross's Goose (Chen rossii)

Canada Goose (Branta canadensis) *

Our national bird, the Canada Goose (Branta canadensis) is fairly large (55-122 cm). It is a common summer resident in Camrose and surrounding area, easily found in lakes, rives, farmland, and in parks. They usually fly in the characteristic V formation to decrease drag in flight[4].

Like swans, the Canada goose forms life-long mating pairs. They feed on grasses, roots, and aquatic vegetation. They have become the subject of much concern as they have increased significantly since 1970. This large population of geese has caused a considerable damage to crops in the United States and in the aspen parkland regions of Manitoba, Saskatchewan, and Alberta Specific management issues are being discussed to control the population and to minimize crop damage.

The Canada Goose was featured on the old Canadian $100 bill.

Tundra Swan (Cygnus columbianus)

Trumpeter Swan (Cygnus buccinator) *

The Trumpeter Swan (Cygnus buccinator) is a threatened species in Alberta, federally listed as vulnerable[13]. Though Camrose has its resident trumpeter swans, few of the wild swans stop here. Small flocks stop over on the way to Elk Island or father north, and may be seen on various lakes. A re-introduction program was initiated at Elk Island to re-establish an extirpated population. Over hunting and habitat destruction in the early 1900s led to the near extinction of these birds[13]. They feed on tubers and roots of aquatic plants in shallow, stable, unpolluted fresh water. The also require high abundances of aquatic invertebrates. Trumpeter swans form life-long mated pairs. For breeding, they require areas of low disturbance and a muskrat or beaver house or island on which to build nests[13].

*Trumpeter Swan (Cygnus buccinator) **

Wood Duck (Aix sponsa)

Gadwall (Anas strepera) *

Eurasian Widgeon (Anas penelope)

American Wigeon (Anas americana) *

Mallard (Anas platyrhynchos) *

Blue-winged Teal (Anas discors) *

Green-winged Teal (Anas crecca) *

Cinnamon Teal (Anas cyanoptera)

Northern Shoveler (Anas clypeata) *

Northern Pintail (Anas acuta) *

The Northern Pintail (Anas acuta) has always been a common summer resident in Alberta and the Camrose area[4]. The population has fluctuated greatly, and overall trends point to a decline of the pintail [3]. This species appears very elegant. The male has a chocolate brown head with a long slender, white-fronted neck. The back is dusty grey with a black patch under the wing. The tail is black. The female is mottled brown. The name of this duck comes from the long tapering tail feathers[3].

Canvasback (Aythya valisineria) *

Redhead (Aythya americana) *

Bufflehead (Bucephala albeola)

Ring-necked Duck (Aythya collaris)

Greater Scaup (Aythya marila)

Lesser Scaup (Aythya affinis) *

Surf Scoter (Melanitta perspiecilata)

Common Goldeneye (Bucephala clangula) *

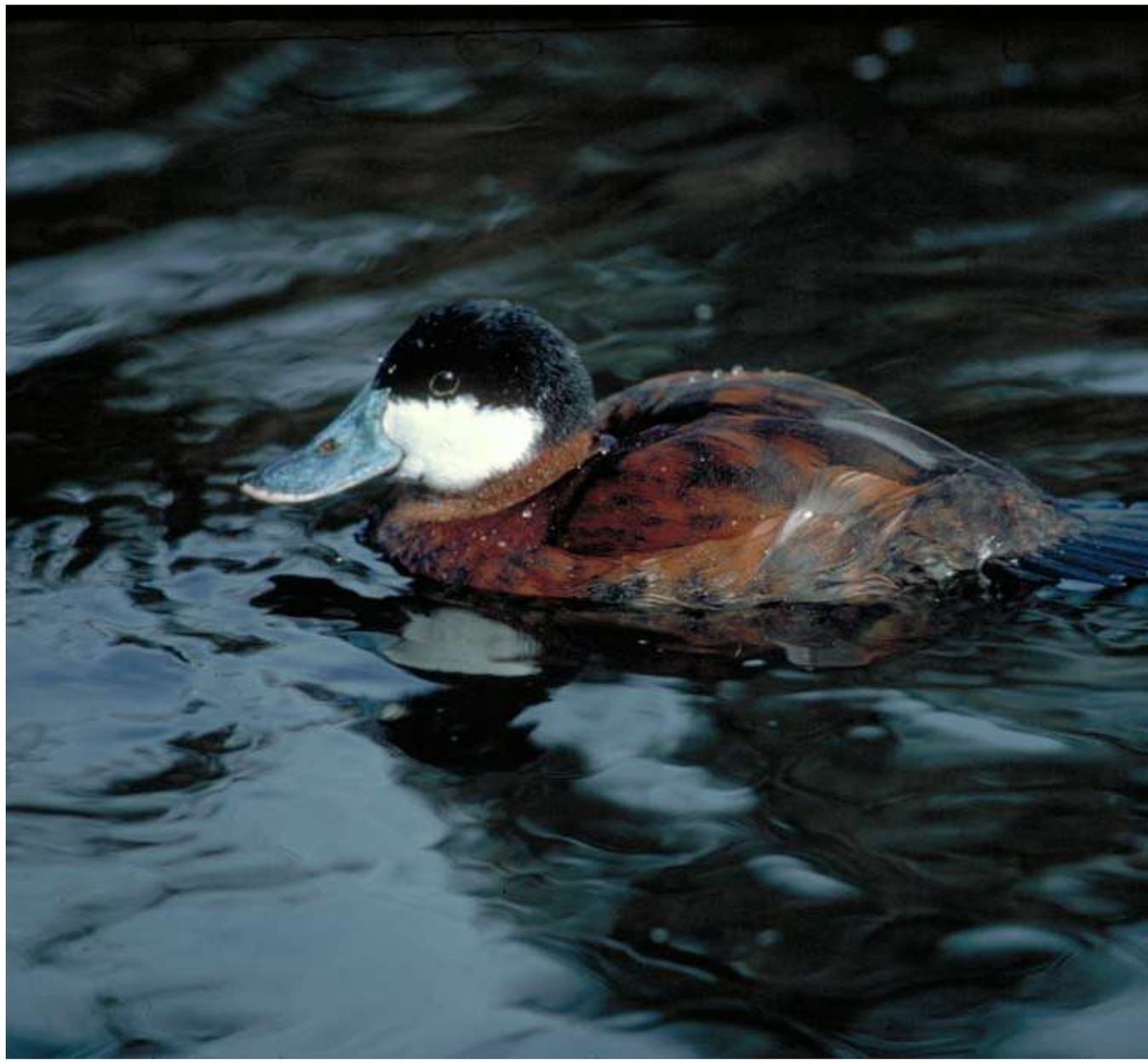
Hooded Merganser (Lophodytes cucullatus)

Red-breasted Merganser (Mergus serrator)

Common Merganser (Mergus merganser)

Ruddy Duck (Oxyura jamaicensis) *

The Ruddy Duck (Oxyura jamaicensis) is common in Alberta, and in Camrose[4]. It is quite distinct with the blue bill on the males. They have very energetic courtship displays. It is also the only member of the stiff-tailed ducks in Alberta, a group that commonly holds the tail at an upward angle[3]



Ruddy Duck (Oxyura jamaicensis)

Rails and Coots

Virginia Rail (Rallus limicola)

Sora (Porzana carolina) *

American Coot (Fulica americana) *

Large Colonial Birds

American White Pelican (Pelecanus erythtorhynchos)
Double-crested Cormorant (Palacrorax auritus)
American Bittern (Botaurus lentiginosus) *

Great Blue Heron (Ardea herodias) *

In the past, the Great Blue Heron (Ardea herodias) was an uncommon summer resident in the Camrose area[4]. Today it is regular summer visitor, often seen in the cattails along Camrose Creek and the edges of other water bodies[3]. The Great Blue Heron is a large, blue-grey bird, with a long curved neck and long dark legs. It stands and waits for its prey to swim along within the grasp of its long yellow beak. The head has slightly dark plumes out the back. Unlike cranes, herons hold their neck folded over their backs when they fly with their legs trailing behind[3].

They feed on small fish and mammals, as well as amphibians and reptiles. For their large size, you would not think these birds nest in trees…but they do! They often form breeding colonies, or rookeries. These colonies are sensitive to human disturbance, so if you discover one, watch from a distance[3].

Black-crowned Night Heron (Nycticorax nycticorax)

Cranes

Sandhill Crane (Grus canadensis)

Whooping Crane (Grus americana)

The Whooping Crane (Grus americana) was once very abundant over all the prairies and locally as well, with the concentration in eastern Alberta and central Saskatchewan[3]. At the beginning of the 1900s, wildlife specialists became greatly concerned about the possible extinction of the whooping crane and it was given full protection by the law. As of 1928, the last record of a breeding pair of whopping cranes in Alberta was 1905, though numerous small flocks were seen in 1927[4]. In the 1940s, the population was estimated at 15. Now, through intensive conservation programs, there are over 200 and classified under the Red List as “At Risk” in Alberta and under the Alberta Wildlife Act and COSEWIC is “Endangered”[5]. The only known current breeding area of the whooping crane is in Wood Buffalo National Park, but rarely may be seen flying on its migration route[3]. It is no longer nests in the Camrose area.

Shorebirds

Killdeer (Charadrius vociferus) *

Black-bellied Plover (Pluvialis squatarola)

American Golden-plover (Pluvialis dominica)

Semipalmated Plover (Charadrius semipalmatus)

Pipling Plover (Charadrius melodus)

Black-necked Stilt (Himantopus mexicanus) *

American Avocet (Recurvirostra americanus) *

Greater Yellowlegs (Tringa melanoleuca)

Lesser Yellowlegs (Tringa flavipes)

Solitary Sandpiper (Tringa solitaria) *

Spotted Sandpiper (Actitis macularia) *

Least Sandpiper (Calidris minutilla)

Baird's Sandpiper (Calidris bairdii)

Pectoral Sandpiper (Calidris melanotos)

Stilt Sandpiper (Calidris himantopus)

Buff-breasted Sandpiper (Tryngites subruficollis)

Short-billed Sandpiper (Limnodromus griseus)

Long-billed Sandpiper (Limnodromus scolopaceus)

Willet (Catoptrophorus semipalmatus) *
Whimbrel (Numenius phaeopus)

Hudsonian Godwit (Limosa haemastica)

Marbled Godwit (Limosa fedoa)

Common Snipe (Gallinago gallinago) *

Wilson's Phalarope (Phalaropus tricolor) *

Wilson's Phalarope (Phalaropus tricolor) is the only breeding phalarope in Alberta. Though they are uncommon through most of Alberta, they are common in the Camrose area[3]. In the past, they were less frequently seen[4]. Like sandpipers, they prefer shallow water areas. They eat aquatic invertebrates while swimming, and poke for food with their long, narrow bill[3].

Unlike most other waterfowl discussed, these birds exhibit polyandry, meaning females mate with more than one male in breeding season, and leave the males to care for the eggs and young. In this case, the males are plain-coloured for camouflage. The females have more vivid colours. They have a grey cap with a black eye line and white eyebrow. The chin is white, with a rust-coloured throat. The belly is white to grey, and the brownish-black back and wings[3].

Red-necked Phalarope (Phalaropus lobatus)

Gulls and Terns

Franklin's Gull (Larus pipixcan)

Bonaparte's Gull (Larus philadelphia)

Ring-billed Gull (Larus delawarensis)

California Gull (Larus californicus)

Herring Gull (Larus argentatus)

Common Tern (Sterna hirundo)

Forster's Tern (Sterna foreseri)

Black Tern (Chilidonias niger) *

History & Conservation

The loss of wetlands has been detrimental to many species of waterfowl and other water-related species of birds. There have been many efforts over the years to monitor and protect waterfowl and provide appropriate management. Farley (1932) did much banding research on Ring-billed and California Gulls at Bittern Lake.
In 1916, the Treaty to Protect Migratory Birds was enacted in the federal governments of the United States and Great Britain (incl. Canada) to equalize the protection given to waterfowl (and other migratory birds). Along with that treaty, the Migratory Birds Convention Act in Canada closed the hunting season on migratory waterfowl from March 1 to September 1, and was later revised for additions in 1995[14]. These policies initiated population monitoring, banding projects, and the establishment of bird sanctuaries. Bird sanctuaries were established at Miquelon Lake and Oliver Lake (near Miquelon Lake) in 1917. Beaverhill Lake Natural Area was designated in 1987[14].

Organizations such as Ducks Unlimited and the North American Waterfowl Management Plan (NAWMP) were set up as some as the primary monitors. Ducks Unlimited was established in Alberta in 1938 and NAWMP in 1986[14].

Get Involved with Waterfowl!

Ducks Unlimited- become a member or volunteer!

Tofield Annual Snow Goose Festival at Beaverhill Lake

Birds of Prey

(* breeds in the Camrose area)

In Alberta, there are a wide variety of raptors, or birds of prey. There are 17 species of eagles, osprey, falcons, hawks, and related birds, and 12 species of owl[3]. Many of these species are at risk or may be at risk[6].

In the Camrose area, all species of hawks, eagles, falcons, osprey and related birds in Alberta have been seen at one time in the Camrose area[15] Seven species of owls have been seen in the in the Camrose area (Olson, 2004). In almost every species of eagle, hawk, falcon, osprey, and associated birds, females are larger that males. In owls, females are often larger, but are regularly the same size (Fisher & Acorn, 1998). Most of the species of raptors are only summer residents. However, some are only here for the winter (eg. Snowy Owl), and others remain for the entire year (Great Horned Owl). Many species of hawks have both a light phase and a dark phase. Some have classified these phases as subspecies, but others just cite them as variations.

Osprey and Eagles

Osprey (Pandion haliaetus)

Osprey (Pandion haliaetus) are very rarely seen in Camrose, but rare migrants stop at Miquelon[15]. They have historically been uncommon around Camrose, This large (56-64 cm, wingspan: 137-183 cm) raptor is dark brown on the upper parts, with mostly white underparts. While inflight, the tail and wing feathers are banded with white and dark bands, with dark wrist patches. As these raptors only eat fish, they require lakes and streams that provide a steady population of fish. Watching them fish is quite spectacular. They do a headfirst dive into the water, slightly bending in the wings. Just before they hit the water, they extend their talons forward. As their feathers are water-repellant, a slight submersion is easily handled. Ospreys are neither an eagle nor a hawk. Though they are a bird of prey, ospreys are in their own family[3].

The osprey was featured on the old Canadian $10 bill.

Bald Eagle (Haliacetus leucocephalus)

The Bald Eagle (Haliacetus leucocephalus) is uncommon in the southern part of Alberta[3], but there has been sightings in Edmonton, and are rarely seen at Miquelon. Adults have a white head and tail, dark brown body, yellow beak and feet. Immature bald eagles can resemble golden eagle, as yearlings are brown with a dark bill and some white on underwings. Two-year old have a wide white band at base of tail with a light belly and underwings. Females tend to be slightly larger than males[3].

Bald eagles are also present at the Forestburg*** hydro dam for most of the year. The open water of the cooling ponds keep ducks present, which the eagles pry on. As the ducks get weaker, it is easier for the eagles to prey on them, but when the ducks are gone, the eagles leave.

Golden Eagle (Aquila chrysaetos) *

The Golden Eagle (Aquila chrysaetos) is uncommon throughout Alberta and in the Camrose area, but does breed in the area [4]. This large raptor (76-102 cm; wingspan 2-2.3 m) is dark, with gold around the head and neck, and the rest of the body being dark brown. The large beak is used to hunt ground squirrels and other rodents, rabbits, and grouse[3].

Harrier and Hawks

Northern Harrier (Circus cyaneus) *

The Northern Harrier (Circus cyaneus) is a common summer resident (March-October) in the Camrose area, at Miquelon, and over most of central and southern Alberta (Fisher & Acorn, 1998; Olson, 2004). Historically, they have always been quite common in this area[4]. Harriers are about 41-61 cm in length, and have a wingspan of 112-119 cm. They have a white rump, with the back colours varying from grey (males) or brownish (females) to reddish (immature). All have a streaked breast, flanks, and sides with dark tail bands and black wing tips. Harriers hunt over marshes, meadows, and fields. The wings are held slightly above horizontal, unlike most hawks and eagles. It is easy to distinguish by its unique flying. It tends to fly quite low, skimming over the grasses looking for prey, such as small mammals, birds, amphibians, reptiles, and some invertebrates[3].

Sharp-shinned Hawk (Accipiter striatus)

The Sharp-shinned Hawk (Accipiter striatus) is common in the area[3]. Historically, it has been a regular summer resident[4]. This small hawk (25-30 cm; wingspan 51-61 cm) is found in dense to open forests. As a woodland hawk, the short, rounded wings give it agility to move through trees to pursue its small avian prey. The Sharp-shinned hawk is blue-grey, and a white chest with red horizontal lines. The tail is long and straight, with a straight end[3].

Cooper's Hawk (Accipiter cooperii) *

This woodland hawk is uncommon in the area, found in mixed and riparian woodlands, as well as suburban areas[4].

Northern Goshawk (Accipiter gentilis)

The Northern Goshawk (Accipiter gentilis) is an irresgualr to rare summer or year-round resident in Camrose and area[3,4,15]. Depending on the time of year, it can be found in forests and woodlands, or parks and farmland. It is failry large, with a blue-grey back. The chest is lightly barred, and the head has a dark crown and eye stripe[3].

Broad-winged Hawk (Buteo paltypterus)

The Broad-winged Hawk (Buteo paltypterus) is very rare in this area and an uncommon summer resident in the past[4,15]. Prefers deciduous trees near water. This hawk has mottled brown upperparts with russet barring on the chest. The tail is broad with black and white bars. It feeds on small mammals, young birds, as well as amphibians and insects[4].

Swainson's Hawk (Buteo swainsoni) *

Swainson's Hawk (Buteo swainsoni) is a common summer resident in the Camrose area, preferring the open agricultural areas surround the city[3]. However, there is evidence of a decline in their numbers since 1990[16]. In 1931, they were uncommon summer resident, not even six pairs in the area. They used to be more plentiful in about 1910's, but were slaughtered for no reason. Helpful is agricultural areas as they are fond of gophers. With

*Swainson's Hawk (Buteo swainsoni) **

the decrease of these hawks, gopher numbers increased. One pair can eat about 350 gophers in a summer[4]. They primarily eat small rodents, but will eat snakes and large insects. These hawks make the longest migration of all raptors, traveling to the southern tip of South American[3].

These soaring raptors have long, pointed wings and a tail that is narrowly banded. There are two colour phases of this hawk. The light-coloured phase is more common. In this phase, they have a dark bib and white underparts and wing lining with dark flight feathers. In the dark phase, the entire chest, back and wings are dark brown[4].

Red-tailed Hawk (Buteo jamaicensis) *

The Red-tailed Hawk (Buteo jamaicensis) is very common in the open country fields, in mixed forests, and by roads in Alberta's aspen parkland and in the Camrose area[4,15]. It primarily eats Richardson's ground squirrels, but eats a variety of small mammals, rabbits, birds and herptiles.

According to Farley (1932) and Fisher &Acorn (1998), there are many colour phases, often classified as separate subspecies ("Harlan's Hawk"-dark; Krider's Hawk"-light). The main colouring is light mottling on the back, darker wings, and rusty-red tail feathers (Fisher &Acorn, 1998).

*Red-tailed Hawk (Buteo jamaicensis) **

Ferruginous Hawk (Buteo regalis)

The Ferruginous Hawk (Buteo regalis) is very rare in this area, preferring the open areas, grasslands, and badlands surrounding Red Deer and south[3,4,15]. The abundance of this hawk appears to be limited by availability of open grassland habitat[16]. It has rust shoulders and back with dark wing tips. The underparts are light, and the tail is tipped with rusty red. It preys primarily on ground squirrels, rabbits, but will also eat snakes and small birds (Fisher & Acorn, 1998).

Rough-legged Hawk (Buteo laopus)

The Rough-legged Hawk (Buteo laopus) is common in the open plains during migrations in fall and spring, as it nests in the Arctic and usually overwinters in southern Alberta, though records from been made of it here in winter[3,4]. It primarily eats rodent, but will take small birds, amphibians, and large insects (Fisher & Acorn, 1998).

The head, back, and top half of the chest are light reddish-brown. Dark tail, and bottom half of chest and wings. Its legs are feathered right to the feet, giving this hawk its name[4]

Turkey vulture (Cathartes aura)

Falcons

American Kestrel (Falco sparverius) *

As the smallest falcon (19 cm; wingspan 51-60 cm), the American Kestrel (Falco sparverius) is the only raptor that perches on power lines. They used to a common summer resident[4], but now is locally considered irregular[15], though throughout Alberta is it considered common[4]. They are found in open fields and agricultural areas, as well as in forests and at forest edges. They eat primarily insects and small vertebrates[3].

The American Kestrel is one of the most colourful of our raptors. Its head has two sideburn markings on each side, with a blue and rusty cap and a small beak. It has a plain, light chest with a few dark to rusty spots. The male is more colourful, with rusty and blue backs, and a rusty tail with a black end and white terminal tip. The females have rusty to brown backs with a barred tail with a black end and white terminal tip[4].

Merlin (Falco columbarius) *

The Merlin (Falco columbarius) is a common summer resident in the Camrose area, though it used to be uncommon[3], though throughout Alberta, it overwinters in larger cities (Fisher & Acorn, 1998). Found in suburban areas and mixed forests. It feeds on nestlings, small flying birds (eg. waxwings), and some large insects. Both sexes have streaked underparts. Males have blue-grey head caps, backs, and tail with dark bands. Females have brown head caps, backs, and tails[3].

Prairie Falcon (Falco mexicanus)

The Prairie Falcon (Falco mexicanus) is very rare in the Camrose area, and has always been uncommon here[3,4]. It has been found at Beaverhill Lake regularly. Currently, they are labeled as sensitive in Alberta. They are found in open areas, but breed in river valleys. It is brown on the upper parts, with a light face with a dark sideburn under the eye. The underparts are light with brown spotting[3].

*Merlin (Falco columbarius) **

Peregrine Falcon (Falco peregrinus)

The Peregrine Falcon (Falco peregrinus) is quite rare or uncommon, and is currently listed in Alberta as threatened. In the early 1900s, they were failry common in central Alberta. They arrive in late March/early April and stay until October. Females are larger than males, with females 43-48 cm long and a wingspan of 109-117cm. Males are 38-43 cm long with a wingspan of 94-109 cm. Adults are blue-grey, with dark sideburns and hood, and light underparts with dark spots. Flying, peregrine falcons have pointed wings with long narrow dark-banded tail[3].

Though typically found in a variety of habitats, critical habitat is unknown as these animals did not decline because of habitat loss (Corrigan, 2002). Peregrines are found in meadows and other open areas, as well as near lakes and streams, and increasingly in urban areas. Peregrine falcons take a variety of avian prey, as well as arthropods and mammals. To catch their avian prey (primarily pigeons) they can dive at speeds about 360 km/h, making it one the fastest raptor[3].

The story of the peregrine falcon is somewhat complicated. This bird was used originally for traditional falconry practices. However, population numbers were decimated by DDT in the 1950's and 60's. In 1971, was listed as endangered. By 1973, there were no known breeding pairs in Alberta.

Much work has been over the past number of years to re-establish peregrine falcons in the central region of Alberta by re-introduction using a captive-breeding program using wild birds caught. By 1992, pesticide levels had dropped enough not to interfere with reproduction. In 2001, 12 wild breeding pairs (24 adult birds) plus offspring were banded. The Alberta Peregrine Falcon Recovery Team (2005) wants to reach 70 territorial pairs by 2010 and have at least a replacement rate greater than1.25 young/pair/year.

Locally, Camrose resident Dr. R.Wayne Nelson raised peregrine falcons for reintroduction into the populations in British Columbia and Kananaskis.

Gyrfalcon (Falco rusticolus)

The Gyrfalcon (Falco rusticolus) is a very rare winter resident in the Camrose area (Farley, 1932; Olson, 2004). This large falcon is found in open areas and around marshes. It eats other birds, such as the Rock Dove (pigeons) and waterfowl. The upperparts are usually a dark grey-brown with light, slightly streaked underparts[3].

Owls:

Most owls are nocturnal, preferring to do hunting at night, though some may be seen hunting in the day as well. They are excellent night-hunters, as they have keen hearing and big eyes to see in the dark. They all have talons, and eat primarily rodents, but some will other prey.

Great Horned Owl (Bubo virginianus)

Our provincial bird, the Great Horned Owl (Bubo virginianus), is one of our most common owls. The population of central Alberta in 2003 was 137; in 2004 there was 273 (Beaverhill Bird Observatory, 2004). It has always been a common year-round resident in the Camrose area[4]. Mixed forests, riparian woodlands, shrubland, and agricultural areas are all good habitat to find the great horned owl. The best place to find them in deciduous forests along rivers of creeks. Great horned owls are large birds (46-64 cm long; wingspan 91-152 cm), the second largest owl, next to the Snowy Owl. Great horned owls are light grey and dark brown, with mottled backs and horizontal barring on the chest. Of course, the "horns" are ear tufts. Most great horned owls are the typical light grey and dark brown, some have been recorded that are very light; almost white[4]. They are rare, and have been classified as a subspecies B.v. subarcticus[4]. It eats a variety of rodents, waterfowl (even geese!), some fish, and skunks[4].

Great Horned Owl

Long-Eared Owl (Asio otus)

The Long-Eared Owl (Asio otus) primarily here during the summer, but a few stay through the winter. They are rare/uncommon; in central Alberta; there were nine in 2003, and 28 in 2004[17]. Around 1932, the Long-Eared Owl seemed to be increasing in numbers on account of increased cultivated area causing an increase in mice, the primary food of this owl[4]. Today, they are considered infrequent in the Camrose area, and across Alberta[3].

Short-eared Owl (Asio flammeus)

In the past, they were common summer residents, occasionally overwintering in the Camrose area[4]. In central Alberta there were two survey in 2003, and zero in 2004[17]. Today, they are infrequent, still often overwintering in Alberta, and likely nests here[18]. The size of the population revolves around the vole populations[3], though it also eats shrews and mice[18]. This species of owl may be at risk, but are fairly common in grassland & parkland areas[18]. Around Beaverhill Lake in 2005, there was a population eruption, with hundreds in the area. It is the only owl besides the burrowing owl

that nests on the ground.

Northern Saw-whet Owl (Aegolius acadicus)

The Northern Saw-whet Owl (Aegolius acadicus) is an uncommon year-round resident of the Camrose area, preferring spruce woods but can be found in deciduous forests[4]. In central Alberta, there were 111 in 2003, and in 2004, there were 269[17].

These small owls (18-23 cm) are the second smallest owl found in Alberta, and the smallest found in this area. It feeds primarily on mice and voles, but also on large insects, songbirds, and shrews. It caches its prey in its hole in trees, allowing it to freeze, and then thaw it out when it is needed. It has a rounded head with brown upperparts spotted with white, and a rusty-striped chest[4].

Boreal Owl (Aegolius funereus)

The Boreal Owl (Aegolius funereus) is an uncommon or rare year-round resident in the Camrose area, preferring mixed forests near open meadows[3]. In central Alberta in 2003, there were 36; in 2004, there were 45[17]. This small owl eats small rodents, and, like the saw-whet owl, caches some of the prey[3]. This owl has a rounded head with a spotted forehead. The upperparts are brown spotted with white, while the underparts are light with rusty streaks[3]

Snowy Owl (Nyctea scandiaca)

The Snowy Owl (Nyctea scandiaca) is the largest owl found in Alberta. Snowy owls come south from their Arctic breeding ranges. This bird has been described as common some years, and very rare other years[3,4]. The frequency of snowy owls is largely linked to the abundance of meadow voles and deer mice, though it also eats weasels, hares, grouse, and lemmings[3]. They can be found in open country November to April. Males are almost entirely white with very little black marking. The larger females have dark barring on breast and upper parts[3].

The Snowy Owl was featured on the old Canadian $50 bill.

Northern Hawk Owl (Surnia ulula)

The Northern Hawk Owl (Surnia ulula) in an irregular winter visitor from the north, but have been know to reside year-round [3,4]. They used to be more frequent in the Camrose area, back in the late 1890s[4]. This owl has a long tail, and has a finely barred chest. It eats small rodents and birds[3].

History and Conservation

As mentioned earlier, a number of species of raptors and owls are on provincial and federal lists of species as risk. The causes of these declines come from a number of factors. Loss of habitat, pesticides, and destruction out of ignorance have all played a role in population declines.

Many species of raptors, most notably the Peregrine Falcon, have encountered issues with the use of pesticides (such as DDT) in the mid 1900s that reduced reproduction rates. Though use of these types of pesticides was banned in Canada and United States, some places where the raptors migrate to (ie. South America) still use bioaccumulative (build up in the ecosystem and take a long time to break down) toxic pesticides that many be influencing some species, such the Swainson's Hawk[16]. Some of the North American species, such as the peregrine falcon, are still recovering.

Other species have been victims of human ignorance in the past, and many were killed, such as the Golden Eagle and the Swainson's Hawk because they were viewed as destructive[4].Owls, because of their primarily nocturnal habits, have been largely unknown.

Extirpated Species

The Burrowing Owl (Athene cunicularia) is listed on the "Endangered" list federally, and has "Threatened" status in Albert. The range of this owl used to extend to include the Camrose area, though there are no confirmed reports of it ever being in the area.

Get Involved with Raptors!

Central Alberta Nocturnal Owl Survey

Watch on your drive! Look on the tops of power poles, fence posts, and in trees on your drives around the city. On warm days, look in the sky to watch for raptors soaring on the thermals.

Birds of Prey
Year-round

Northern Goshawk (Accipiter gentilis)
Merlin (Falco columbarius)
Great Horned Owl (Bubo virginianus)
Long-Eared Owl (Asio otus)
Short-eared Owl (Asio flammeus)
Northern Saw-whet Owl (Aegolius acadicus)
Boreal Owl (Aegolius funereus)
Northern Hawk Owl (Surnia ulula)

Seasonal

(S=summer, W-winter, M=migratory occurrence)

Osprey (Pandion haliaetus)	S
Bald Eagle (Haliacetus leucocephalus)	S/M
Northern Harrier (Circus cyaneus)	S
Sharp-shinned Hawk (Accipiter striatus)	S
Cooper's Hawk (Accipiter cooperii)	S
Northern Goshawk (Accipiter gentilis)	W
Broad-winged Hawk (Buteo paltypterus)	M
Swainson's Hawk (Buteo swainsoni)	S
Red-tailed Hawk (Buteo jamaicensis)	S
Ferruginous Hawk (Buteo regalis)	S
Rough-legged Hawk (Buteo laopus)	M
Golden Eagle (Aquila chrysaetos)	S
American Kestrel (Falco sparverius)	S
Merlin (Falco columbarius)	S
Prairie Falcon (Falco mexicanus)	S
Peregrine Falcon (Falco peregrinus)	S/M
Gyrfalcon (Falco rusticolus)	W
Long-Eared Owl (Asio otus)	S
Boreal Owl (Aegolius funereus)	W
Snowy Owl (Nyctea scandiaca)	W
Northern Hawk Owl (Surnia ulula)	W

Songbirds or Perching Birds (Passerines)

Passerines, though commonly referred to as songbirds or perching birds, include birds that are indeed great singers and are commonly seen perched on a branch or wire. However, some non-passerines also exhibit some of these characteristics. Passerines are defined by morphological characteristics, most notably that their feet have three toes going forward and one backward, and none have webbed feet. They also have a special tendon running up the back of the knee which locks into place when the bird perches[3]. This gives the bird a very firm grip, allowing the bird to sleep with out worrying about falling.

Corvids

Common Raven (Corvus corax)

American Crow (Corvus brachyrhynchos) *

Blue Jay (Cyanocitta cristata) *

The Blue Jay (Cyanocitta cristata) is common year round, found in cities, deciduous forests, and agriculture areas (Fisher & Acorn, 1998). However, historically, it was uncommon in this area and seldom seen on the open plain[4]. The blue jay is 28 cm, and as its name implies, it has blue upperparts and feather crest. The underparts are white, and there is white on the wings and small black bands on wings and tail. It eats a variety of foods, from berries to baby birds[4].

*Blue Jay (Cyanocitta cristata) **

Black-billed Magpie (Pica pica) *

Though currently the magpie is very common in the area year round[3], this has not always been the case. The magpie was very common around the time the bison were present in the area. When the bison disappeared from the area, so did the magpies. The magpies did not come north of Red Deer. It was not until 1911 that they reappeared in the Camrose area[4]. It can be found in many habitats, including open agriculture areas, cities, riparian thickets, and open forests[3].

The black-billed magpie is a very attractive bird. It has a black back, breast, and tail. The wings are black and white, and the belly is white. It forages primarily of garbage, carrions and insects. It picks ticks off of the large ungulates[3].

*Black-billed Magpie (Pica pica) **

Flycatchers

Olive-sided Flycatcher (Contopus cooperi) *

Western Wood-pewee (Contopus sordidulus) *

Alder Flycatcher (Empidonax alnorum)

Least Flycatcher (Empidonax minimus) *

Eastern Phoebe (Sayornis phoebe) *

Say's Phoebe (Sayornis saya)

Western Kingbird (Tyrannus verticalis)

Eastern Kingbird (Tyrannus tyrannus) *

The Eastern Kingbird (Tyrannus tyrannus) is a common nesting summer resident of Alberta and the Camrose area, found often in the parkland of Alberta[3,4] The kingbird is named for its red crown (not often visible), but it is no less a tyrant. It is fearless, attacking crows, hawks, and even humans that enter its territory. Both males and females have black upperparts and white lower parts, with a white tip on the tail. The red to orange on the small crest is usually only seen in breeding season. They are insectivorous, catching insects in mid-air[3].

Shrikes & Vireos

Northern Shrike (Lanius excubitor)

Loggerhead Shrike (Lanius ludovicianus)

Blue-headed Vireo (Vireo solitarius)

Warbling Vireo (Vireo gilvus) *

Red-eyed Vireo (Vireo olivaceus)

Philadelphia Vireo (Vireo philadelphicus)

Larks and Swallows

Horned Lark (Eremophila alpestris)

Purple Martin (Progne subis) *

Purple Martins (Progne subis) are one of the biggest birding attractions in Camrose. It is generally uncommon as a summer resident in Alberta, but has been increasing since the early 1900s [4]. Nests are usually near open water, and properly placed condos should be placed appropriately.

The purple martin is the largest member of the swallow family, and as such is insectivorous. They eat dragonflies, bugs, flies and mosquitoes in mid-flight. The males are the most brilliantly coloured, having glossy blue upper and lower parts with black wings and tail tip. Females have blue on the back, but have brown on the wings and tail, with a light grey chest. The wings are pointed and there is a slight fork in the tail (Fisher & Acorn, 1998).
In the river valley and in private property near the creek, purple martin condos have attracted these colorful and useful birds to Camrose. Condos are best for purple martins as they are colonial nesters. Annual surveys are done of the condos.

As part of the Camrose Wildlife and Greenspace Stewardship project, Purple Martins have emerged as a flagship species for the city. Beginning in 2002, the project's main goals are to provide education and management advice related to wildlife and greenspace in the city. To this end, the project has hired a stewardship coordinator, coordinated interpretive events, enhanced habitat, monitored species and habitats, involved the public, and evaluated management options. The project has emphasized Purple Martins because of their interest to people, amazing flying abilities, dependence on nesting cavities, and ready use of nesting structures.

Several partners are working on the project, including the City of Camrose, Camrose and District Fish and Game Association, Augustana Faculty – University of Alberta, Camrose Ski Club, Ducks Unlimited Canada, Alberta fish and Wildlife, and the Wildrose Outdoor Club. We thank Dan Olofson for serving as a catalyst for Purple Martin and the many other volunteers who are involved.

First, the project is taking on many educational initiatives. Weekly educational events focus on various wildlife and greenspace topics. A purple martin event in each of the past 2 years has been well-attended by the public. Newspaper articles have highlighted martin behaviors, nesting possibilities, and conservation issues.

Second, the project has enhanced purple martin nesting by erecting state-of-the art nesting structures in the most suitable city habitats. These new nest houses are much more effective than previous versions. An earlier bird monitoring project assessed current use and highlighted potential nesting sites. With funding from the Fish and Game Association and Canadian Tire, and with support from the City, we erected 7 structures in 2003 and hope to add another 3-4 by the end of 2005.

Third, beginning in 2002, the project has begun an annual purple martin monitoring program. All martin houses have been monitored for nesting species, location, and habitat characteristics. Since then, about 70-89 purple martin houses were noted each year. Of these, 19 were host to martins. About 30 were occupied by house sparrows, and a few houses are shared between species. The new nesting structures have been most successful in attracting martins, increasing the number of martin pairs from 8 in 2003 to 68 in 2006.

*Purple Martin (Progne subis) **

Fourth, the project encourages local involvement in encouraging martins. Each of the new nesting structures has a "martin-keeper" who is responsible for maintaining and monitoring a nearby box, which involves removing House Sparrow nests. These people also record the spring arrival time, nesting success, and fall departure times. The "martin-keepers" have developed into an energetic and active conservation group. In addition, the stewardship coordinator provides information to other residents with martin nesting structures to provide advice on how to improve the chances of attracting martins.

Purple Martins have captured the attention of residents and visitors of Camrose. They ignite interest in both dedicated and casual wildlife watchers. Hopefully, such interest will translate into conservation efforts for all wildlife and their required habitats.

Tree Swallow (Tachycineta bicolor) *

Bank Swallow (Riparia riparia) *

Barn Swallow (Hirundo rustica) *

Cliff Swallow (Petrochelidon pyrrhonota) *

Chickadees, Nuthatches, Creepers, and Dippers

Black-capped Chickadee (Poecile atricapillus) *

The Black-capped Chickadee (Poecile atricapillus) is one of four species of chickadee found in Alberta. The black-capped prefers the mixed forests, birdfeeders, and aspen forests found in Camrose and surrounding area. It is very common here, and has been across the prairies for some time[4].

As their name suggests, they have a black cap and bib with white cheeks. Their back is grey with white underparts. It eats insects and spiders, conifer seeds, and is a regular at birdfeeders[4], preferring small sunflower seeds.

For a hands-on experience with chickadees, visit Chickadee Trail near Gwynne in winter time! Feeding chickadees, both boreal and black-capped, as well as nuthatches, is a great way to interact with the birds. Remember your birdseed!

Boreal Chickadee (Poecile hudonicus)

Red-breasted Nuthatch (Sitta canadensis)

*Black-capped Chickadee (Poecile atricapillus) **

White-breasted Nuthatch (Sitta carolinensis)

Brown Creeper (Certhia americana)

Kinglets, Wrens, Bluebirds, and Thrushes

Mountain Bluebirds (Sialia currucoides) are common summer residents of the Camrose area, especially in agricultural areas, though are found in forests and at the forest's edge[4]. Though they nest in natural cavities, such as woodpecker nests, they also like nest boxes, especially as these are able to protect their nests from Starlings. These boxes can be seen along agricultural fences. The abundance of bluebirds can vary greatly from year to year[4].

The male is entirely a brilliant blue with a dark beak. The female is mostly greyish-brown, with blue wings and a blue-grey back. This bluebird insectivorous, meaning it eats just insects[3].

Townsend's Solitaire (Myadestes townsendi)

Veery (Catharus fuscescens)

Gray-cheeked Thrush (Catharus minimus)

Swainson's Thrush (Catharus ustulatus)

Hermit Thrush (Catharus guttatus)

*American Robin (Turdus migratorius) **

American Robin (Turdus migratorius) *

The American Robin (Turdus migratorius) is a cheerful-sounding bird, welcoming the day with its cheerful song, and singing happily after a rain. It is a common summer resident found in forests, on ranches, and in cities[3]. They have become more common since the land was settled[4].

As a type of thrush, the robin eats berries, insects, and invertebrates[3]. You can often find them running along the ground, listening for the movements of earthworms. They are about 25 cm long. The upperparts are dark, with a bright red chest, and a white throat streaked with black. Males are darker than females, and young robins have speckled chests[3].

The Robin was featured on the old Canadian $2 bill.

Varied Thrush (Ixoreus naevius)

House Wren (Troglodytes aedon) *

Marsh Wren (Cistothorus palustris)

Golden-crowned Kinglet (Regulus satrapa)

Ruby-crowned Kinglet (Regulus calendula)

The Ruby-crowned Kinglet (Regulus calendula) is a common migrant though Camrose and surrounding area[3,4]. It has been seen at Mirror Lake and in the valley in mid-April. They are small (10 cm) and olive green with dark wings and short tail. The wings have white bars and the underparts are light. The males have a red crown[3].

Mockingbirds and Thrashers

Gray Catbird (Dumetella carolinensis) *

Brown Thrasher (Toxostoma rufum)

Starlings, Pipits & waxwings

European Starling (Sturnus vulgaris) *

American Pipit (Anthus rubescens)

Sprague's Pipit (Anthus spraugeii) *

Bohemian Waxwing (Bombycilla garrulus)

Though we get both waxwing species in the Camrose area, the Bohemian Waxwing (Bombycilla garrulus) is the species abundant here throughout the winter. In town sites, they very common during the winter, and are uncommon throughout the summer in coniferous forests to the north (Fisher & Acorn, 1998). They are always found in large flocks that move in fluid, synchronized waves. These flocks may also have a couple of Cedar Waxwings[3]. It was "an irregular visitor" [4] in winters in the past. With increased urbanization, they likely found more winter food, encouraging their numbers.

The Bohemian Waxwing is about 20 cm long, with a yellow tip at the end of the tail, and a cinnamon-colored head crest. The head is cinnamon with black mask and chin, and a grey-brown body. Yellow and white patches are found on the wing. The tail is rusty-red underneath. Wherever there is a mountain ash tree, you will eventually see the waxwings. They depend on berries in winter. The tree will be covered with waxwings, and shortly, the tree will be stripped of all the berries[3].

Cedar Waxwing (Bombycilla cedrorum) *

Warblers and Tanagers
Tennessee Warbler (Vermivora peregrine)

Orange-crowned Warbler (Vermivora celata)

Nashville Warbler (Vermivora ruficapilla)

Yellow Warbler (Dendroica petechia) *

Being one of Alberta's most common wood warblers[3,4], it is easily recognized. It is found in the Camrose valley and around Mirror Lake in summer. The male is slightly more brilliant canary yellow than the female. Both have greenish wings and tail with black. In the breeding season, the male has red streaks, while the female is either plain or has faint streaks. It is the average size of wood-warblers, about 13 cm^3.

Magnolia Warbler (Dendroica magnolia)

Cape May Warbler (Dendroica tigrina)

Yellow-rumped Warbler (Dendroica coronata)

Townsend's Warbler (Dendroica townsendi)

Cedar Waxwing (Bombycilla cedrorum)

Black-throated Green Warbler (Dendroica virens)

Palm Warbler (Dendroica palmarum)

Bay-breasted Warbler (Dendroica castanea)

Blackpoll Warbler (Dendroica striata)

Black-and-white Warbler (Mniotilta varia)

American Redstart (Setophaga ruticilla)

Ovenbird (Seiurus aurocapillus)

Northern Waterthrush (Seiurus noveboracensis)

Mourning Wabler (Oporornis philadelphia)

Common Yellowthroat (Geothlypis trichas)

Wilson's Warbler (Wilsonia pusilla)

Canada Warbler (Wilsonia canadensis)

Western Tanager (Piranga ludoviciana)

Sparrows
American Tree Sparrow (Spizella arborea)

Chipping Sparrow (Spizella passerine) *

The Chipping Sparrow (Spizella passerine) is a common summer resident in the Camrose area, preferring deciduous forests and forest edges [3,4]. Smaller than the House Sparrow (which is not closely related) at around 13-15 cm, the Chipping Sparrow occasionally visits feeders. It has a rusty-brown head cap, dark beak with a black eye line. The underparts are light grey with a white throat. The back is mottled brown[3].

Clay-colored Sparrow (Spizella pallida) *

Vesper Sparrow (Pooecetes gramineus) *

Lark Sparrow (Chondestes grammacus)

Lark Bunting (Calamospiza melanocorys)

Savannah Sparrow (Passerculus sandwichensis) *

Baird's Sparrow (Ammodramus bairdii)

Le Conte's Sparrow (Ammodramus leconteii)

Nelson's Sharp-tailed Sparrow (Ammodramus nelsoni)

Fox Sparrow (Passerella iliaca)

Song Sparrow (Melospiza melodia) *

Lincoln's Sparrow (Melospiza lincolnii) *

Swamp Sparrow (Melospiza georgiana) *

White-throated Sparrow (Zonotrichia albicollis)

Harris's Sparrow (Zonotrichia querula)

White-crowned Sparrow (Zonotrichia leucophrys)

House Sparrow (Passer domesticus) *

Dark-eyed Junco (Junco hyemalis) primarily the "slate-colored" variety

Lapland Longspur (Calcarius lappinicus)

Snow Bunting (Plectrophenax nivalis)

Rose-breasted Grosbeak (Pheucticus ludovicianus)

Finches
Purple Finch (Carpodacus purpureus)

House Finch (Carpodacus mexicanus)

Red Crossbill (Loxia curvirostra) *

White Crossbill (Loxia leucopters)

Common Redpoll (Carduelis flammea)

Hoary Redpoll (Carduelis hornemanni)

American Goldfinch (Carduelis tristis) *

The American Goldfinch (Carduelis tristis) is a common summer resident throughout Alberta and Camrose, commonly seen at feeders[3,4]. The breeding plumage of the male is bright yellow over most of the body, with a black forehead, wings, and tail. Wing bars and tail base are white. Females are yellow-green, lacking black forehead[3].

*American Goldfinch (Carduelis tristis) **

Pine Siskin (Carduelis pinus)

Pine Grosbeak (Pinicola enucleator)
Featured on the old Canadian $1000 bill.

Evening Grosbeak (Coccothtraustes vespertinus)

Blackbirds

Bobolink (Dolichonyx oryzivorus)

Western Meadowlark (Sturnella neglecta)

Rusty Blackbird (Euphagus carolinus)

Brewer's blackbird (Euphagus cyanocephalus) *

Red-winged Blackbird (Agelaius phoeniceus) *

The Red-winged Blackbird (Agelaius phoeniceus) is a very common bird in Camrose and surrounding area, seen throughout the summer along the creek and Mirror Lake. It has been common for quite some time[4]. This bird prefers wetlands with cattails and bulrushes[4].

The name for the bird comes from the male's coloration, which is primarily black with red shoulders and a yellow band beneath the red. The females are heavily streaked with mottled brown. This enables the female to hide in the cattails while on the nest[4].

Yellow-headed Blackbird (Xanthocephalus xanthocephalus) *

Common Grackle (Quiscalus quiscula) *

Brown-headed Cowbird (Molothrus ater) *

Baltimore Oriole (Icterus galbula) *

Bullock's Oriole (Icterus bullockii)

Songbirds

Other Birds (Non-passerines)

Seasonal

(S=summer, W-winter, M=migratory occurrence)

Pine Siskin (Carduelis pinus)	S
Pine Grosbeak (Pinicola enucleator)	W
Evening Grosbeak (Coccothtraustes vespertinus)	W
American Goldfinch (Carduelis tristis)	S
Bobolink (Dolichonyx oryzivorus)	S
Western Meadowlark (Sturnella neglecta)	S
Rusty Blackbird (Euphagus carolinus)	M
Brewer's blackbird (Euphagus cyanocephalus)	S
Red-winged Blackbird (Agelaius phoeniceus)	S
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)	S
Common Grackle (Quiscalus quiscula)	S
Brown-headed Cowbird (Molothrus ater)	S
Baltimore Oriole (Icterus galbula)	S
Bullock's Oriole (Icterus bullockii)	S

Woodpeckers

Hairy woodpecker (Picoides villosus) *

Downy Woodpecker (Picoides pubescens) *

The Downy Woodpecker (Picoides pubescens) is a common sight at suet feeders year-round. It is the most common woodpecker in Alberta (Farley, 1932; Fisher & Acorn, 1998; Olsen, 2004). The soft tapping of this woodpecker can be heard in most aspen forest. The Downy has black and white wings, with a white back and belly. The white head has a black crown and eye line. The male Downy has a red patch on the back of the head (Fisher & Acorn, 1998). Like other woodpeckers, the Downy pecks for insects in various life-stages. It also eats seed and nuts. Have you ever wondered if a woodpecker gets a sore head? They skulls are flexible and reinforced, and their brain is tightly packed it so little movement can occur. The Large bills along with large neck and skull muscles help to cushion the head as well. To prevent sawdust from entering their nose, they have feathers over the nostrils (Fisher & Acorn, 1998).

*Downy Woodpecker (Picoides pubescens) **

Seasonal

(S=summer, W-winter, M=migratory occurrence)

Yellow Warbler (Dendroica petechia)	S
Magnolia Warbler (Dendroica magnolia)	M
Cape May Warbler (Dendroica tigrina)	M
Yellow-rumped Warbler (Dendroica coronata)	M
Townsend's Warbler (Dendroica townsendi)	M
Black-throated Green Warbler (Dendroica virens)	M
Palm Warbler (Dendroica palmarum)	M
Bay-breasted Warbler (Dendroica castanea)	M
Blackpoll Warbler (Dendroica striata)	M
Black-and-white Warbler (Mniotilta varia)	M
American Redstart (Setophaga ruticilla)	M
Ovenbird (Seiurus aurocapillus)	M
Northern Waterthrush (Seiurus noveboracensis)	M
Mourning Wabler (Oporornis philadelphia)	M
Common Yellowthroat (Geothlypis trichas)	S
Wilson's Warbler (Wilsonia pusilla)	M
Canada Warbler (Wilsonia canadensis)	M
Western Tanager (Piranga ludoviciana)	M
American Tree Sparrow (Spizella arborea)	M
Chipping Sparrow (Spizella passerine)	S
Clay-colored Sparrow (Spizella pallida)	S
Vesper Sparrow (Pooecetes gramineus)	S
Lark Sparrow (Chondestes grammacus)	S
Lark Bunting (Calamospiza melanocorys)	S
Savannah Sparrow (Passerculus sandwichensis)	S
Baird's Sparrow (Ammodramus bairdii)	S
Le Conte's Sparrow (Ammodramus leconteii)	S
Nelson's Sharp-tailed Sparrow (Ammodramus nelsoni)	S
Fox Sparrow (Passerella iliaca)	M
Song Sparrow (Melospiza melodia)	S
Lincoln's Sparrow (Melospiza lincolnii)	S
Swamp Sparrow (Melospiza georgiana)	M
White-throated Sparrow (Zonotrichia albicollis)	S
Harris's Sparrow (Zonotrichia querula)	M
White-crowned Sparrow (Zonotrichia leucophrys)	M
Dark-eyed Junco (Junco hyemalis)	M/S
Lapland Longspur (Calcarius lappinicus)	M
Snow Bunting (Plectrophenax nivalis)	W
Rose-breasted Grosbeak (Pheucticus ludovicianus)	S
Common Redpoll (Carduelis flammea)	W
Hoary Redpoll (Carduelis hornemanni)	W
Purple Finch (Carpodacus purpureus)	S/W
House Finch (Carpodacus mexicanus)	W
Red Crossbill (Loxia curvirostra)	W
White Crossbill (Loxia leucopters)	W

Seasonal

(S=summer, W-winter, M=migratory occurrence)

Pine Siskin (Carduelis pinus)	S
Pine Grosbeak (Pinicola enucleator)	W
Evening Grosbeak (Coccothtraustes vespertinus)	W
American Goldfinch (Carduelis tristis)	S
Bobolink (Dolichonyx oryzivorus)	S
Western Meadowlark (Sturnella neglecta)	S
Rusty Blackbird (Euphagus carolinus)	M
Brewer's blackbird (Euphagus cyanocephalus)	S
Red-winged Blackbird (Agelaius phoeniceus)	S
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)	S
Common Grackle (Quiscalus quiscula)	S
Brown-headed Cowbird (Molothrus ater)	S
Baltimore Oriole (Icterus galbula)	S
Bullock's Oriole (Icterus bullockii)	S

Hummingbirds

Ruby-throated hummingbird (Archilochus colubris) *

This hummingbird is the only species in Alberta that is regularly seen outside the mountains. It is also the largest of the Alberta hummingbirds[3]. The Ruby-throated hummingbird (Archilochus colubris) is a common summer breeder of the open aspen parkland in and around Camrose[3,4].

Though it is the largest hummingbird in Alberta, it is still only 9-9.5 cm long, and weighs about as much as a quarter. Their wings beat 75 times per second, and can reach speeds up to 100km/h. For its size, the Ruby-throated hummingbird has one of the longest migrations of any bird, traveling to the Gulf of Mexico, which is a 1030 km trip[3]! Hummingbirds are master fliers, capable of hovering and going backwards. No other bird is capable of flying backwards.

The Ruby-throated hummingbird is named for the reddish-pink colouration of the male's throat. Both sexes have iridescent green upperparts with white underparts, and a white tipped tail. Like all hummingbirds, they feed on nectar from flowers or hummingbird feeders using a long beak and tongue to suck up the nectar[34].

Calliope hummingbird (Stellula calliope)

Ruby-throated hummingbird

Doves & Pigeons

Rock Dove (Columba livia) *

Mourning Dove (Zenaida macroura) *

Grouse & Pheasants
Grey Partridge (Perdix perdix) *

Ring-necked Pheasant (Phasianus colchicus) *

Ruffed Grouse (Bonasa umbellus) *

Sharp-tailed Grouse (Centrocerus urophasianus)

Nightjars

Common Nighthawk (Chordeiles minor)

Kingfisher

Belted Kingfisher (Ceryle alcyon)

The Belted Kingfisher (Ceryle alcyon) is an uncommon to rare summer resident of Alberta and Camrose[4] As they dive for small fish and small aquatic invertebrates, these birds are always near lakes or rivers. Their long bills are not only used in fishing, but to dig their burrow when they nest. They are an interesting bird, as they superficially resemble a Blue Jay. Kingfishes have blueish upperparts and head with a large, "shaggy" crest[3]. They have a white collar and underparts. Unlike most birds, the female has the extra coloration, with a rusty-coloured "belt"[4].

The Belted Kingfisher was the star of the old Canadian $5 bill.

Other Birds

The Swan Program of Camrose

The Camrose swan program is a unique contribution to our parks and waterways. The Parks Section of Camrose Leisure Services, headed by Chris Clarkson, Parks Director, work year-round to keep our swans healthy, happy, and safe.

The program began with a gift of two Polish mute swans (Cygnus olor), Hally and Faxy, from Halifax, Nova Scotia. Around the mid 1980s, trumpeter swans (Cygnus buccinator) were brought to Camrose. The city was involved in a program with Elk Island National Park to increase the breeding range of the trumpeter swan in Alberta. Under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in that time, the trumpeter swan was labeled (nationally) as "Special Concern" until 1996 (COSEWIC, 2007) and provincially considered "Threatened" since 1987. The swans and some eggs were brought from Elk Island National Park. Some of the eggs were placed in the nest of the mute swans to increase numbers.

Currently, there are four trumpeter swans and 3 mute swans. Unlike the trumpeter, the mute swan in not native to North America. It originated in Europe. Originally there was an equal number of mute to trumpeter swans, but one mute male was taken by a predator around 2004-5. Special permits are required to keep the swans, which are granted by Alberta Agriculture.

The swans are prevented from flying away by a process of pinioning. This is where a bone is taken out of the wing when the bird is young. This makes the bird off-centre, preventing it from taking off. The process of clipping wings was previously used, but posed a problem as the clipped portions grew back. The bird would have to be caught repeatedly to clip the wings again. This process is stressful on the bird and is also dangerous for the workers.

Swans are brought out onto the water as soon as there is a ring of open water around the waterway. The trumpeter swans are located on Mirror Lake. Mute swans are located by the golf course, and on the Duggan Park pond.

The mute swans have had several successful reproductive years. Their young (when they were grown) were sold to the Saskatoon Zoo. However, the trumpeter swans have not been successful in recent years. This may be a result of a couple factors. One may be increased disturbances and activity in close proximity to the lake and nesting habitat. In the wild, swans prefer a more secluded place to make a nest. A second factor may be predation, both on young cygnets and eggs. Such predators include foxes, domestic dogs, and potentially other species of birds. If a mother sitting on a nest is disturbed, she might leave the nest, leaving it open to predators.

Few wild swans migrating through stop on the waterways already populated by our resident swans. This is primarily because the swans, especially the male trumpeters, are territorial. Fights usually occur more frequently in the mating season, and more often between males. However, they can occur throughout the summer.

In the fall, the swans are rounded up just before the ice forms on the water. Boats are used to corral the birds onto land, where they tire more easily when chased. The birds are then transported to the winter holding facility behind the Max McLean arena. Here, there are eight pens, each with a small pool containing around 200 gallons. Pairs are kept together. They are fed food pellets containing a variety of nutritious ingredients. During the summer months, this food is also provided for them to keep them accustomed to the food. However, the swans primarily eat their natural food in the summer.

As expected with most wild animals living in an urban environment, conflicts can arise. In these situations, one or both parties are disturbed and react negatively. With the swans, a few incidents happen each year. Sometimes, the swans at the golf course are accidentally hit with stray balls. The trumpeter swans are the more wild of the two species, and can be more aggressive, especially during mating season. If people intentionally harass the swans, get too close to them or their nesting area, they may attack. The birds are merely acting out of instinct and protection of young and mates. They use their wings to protect themselves, and use aggressive moves such as hissing, biting, and chasing. Some people have been run down by them and badly bruised, but such extreme instances are rare. Increased use of areas used both by the swans and humans can lead to conflicts. If people just leave the swans alone and respect their space, such incidents can be minimized.

The winter facilities for the swans have been used to house a variety of birds over the years. A few years back, there were some African geese (Anser cygnoides) (which actually originated from China) in the lake with the fountain. However, there were troubles with them wandering onto the road eating pebbles, causing near-collisions. They were transferred to the golf course, but there were problems with their droppings on the greens. They were given away. Other more local birds have been brought to the Camrose facilities from Elk Island National Park and the Strathcona Raptor Centre. Any wounded or weather-trapped birds needing a place to stay for the winter or to be rehabilitated are often able to find a temporary home in Camrose, including pelicans and other water-related birds.

Mammals

Introduction

In Alberta, 91 species of mammals have been reported. These include representatives from many families of rodents, deer (Cervidae), cat (Felidae), dog (Canidae), weasel (Mustelidae), bear (Ursidae), rabbit (Leporidae), and evening bat (Vespertilonidae). Alberta's provincial mammal is the Bighorn Sheep (Ovis canadensis).

In Camrose and area, 51 of the 91 species of mammals in Alberta have been or are currently found in the area. Some prefer the open areas surrounding Camrose, areas of heavier tree cover, or the areas surrounding the creek. Some species have done well in more urban parts of Camrose.

Rodents (Order Rodentia)

Of the 51 species currently in the Camrose area, rodents make up the largest percentage, with 19 species. They make up the base of the food chain, being primary consumers. They feed the majority of the carnivores, such as foxes, coyotes, badgers, and other members of the weasel family.

All rodents found in this area are here all year around, employing a variety of strategies. A number are hibernators, using a den, burrow, or nest to overwinter. Others are active year round, and some are in between.

Historical information on the small rodents is negligible. Few surveys were conducted and few records, if any, were kept. Thus, historical range is hard to determine. However, as many rely on grasslands, some species may have been more widespread before agricultural practices expanded.

Though some rodents, such as the Richardson's ground squirrel or beaver, are high profile and easily noticed, the smaller members are the most successful order in the province in terms of sheer numbers[1]. Rustles in the bush or small holes in snow mounds with tiny tracks are evidence of the activities of some of these mammals throughout the year.

Richardson's Ground Squirrel (Spermophilus richardsonii)

Commonly know as the gopher, the Richardson's Ground Squirrel (Spermophilus richardsonii) is very common in prairies, meadows and pastures. This species is common in the Camrose river valley and surrounding area, including Driedmeat Lake. In rural and agricultural areas, it is viewed as a pest as it conflicts with agricultural practices and endangers cattle. Due to population control in some areas, numbers may be low [2]. It hibernates from around September to late February or March. Individuals can be seen until October, but these are the young males. As with most ground squirrels, the Richardson's live in underground colonies which consist of many burrows and tunnels (in which they hibernate), with a primary entrance and numerous secondary entrances [1].

S. richardsonii has buffy grey to cinnamon mottled upperparts, with pale yellowish, pinkish, or greyish underparts. The buffy-brown tail is one-third (6-8 cm) the length of the body (28-32 cm) and is fringed with short black, white-tipped hairs. One distinguishing character of S. richardsonii is that it stands erect on its hindlegs to survey the surroundings [1]. A high-pitched alarm call warns the rest of the colony to any approaching danger.

This ground squirrel feeds on flowers, grasses, seeds, fruits, green vegetation, some insects, an possibly some carrion. It fills the cheek pouches with seed and carries it back to store in the burrow [1].

Thirteen-lined Ground Squirrel (Spermophilus tridecemlineatus)

Found throughout the aspen parkland, the Thirteen-lined Ground Squirrel (Spermophilus tridecemlineatus) varies in abundance, from common to sporadic, absent, or scarce [2]. S. tridecemlineatus prefers tallgrass prairie [1]. It has been recorded in the Camrose area including Driedmeat Lake [2,3], preferring nesting cover of two to three years old [3].

On the back there are 13 alternating solid and dotted lines separated by dark-brown. The sides are grey, with a buffy colouration for the head and tail [1]. The squirrel is 21-30 cm long. The alarm call is a shrill seek-seek or a high-pitched trill. Unlike the extensive colonies and burrow system of S. richardsonii, S. tridecemlineatus may be in small, loosely-associated colonies, or may be solitary [1].

Of all the squirrels, S. tridecemlineatus eats the most meat. Its diet changes, eating mostly vegetation just after emerging from hibernation, to a summer diet of meat. Seeds are the staple diet, with native fruits, berries, and some peas, bean, and strawberries, which can make them a garden pest in some areas [1]. In the summer, a diet consisting of insects, slugs, invertebrates, young birds, mice, and carrion is sought [1].

Thirteen-lined Ground Squirrel (Spermophilus tridecemlineatus)

Franklin's Ground Squirrel (Spermophilus franklini)

The Franklin's Ground Squirrel (Spermophilus franklini) is uncommon, but has been documented in the Camrose area, especially at Driedmeat Lake [3]. It is primarily found in the aspen parkland belt at forest edges, though tends to be inconspicuous [2]. Unlike other ground squirrels, it is almost always close to trees, and is an active climber. S. franklini prefers to spend much time underground and in deep vegetation. It is often mistaken for a member of the tree squirrel family. Its overall colouration is grey, darker on the back. It is larger than the other two species of ground squirrel found in this area. The most striking characteristic of S. franklini is its tail (12-16 cm) which is one-third the total body length (33-43 cm). The tail is bushier than all other ground squirrels; it resembles a tree squirrel tail [1].

Like S. tridecemlineatus, S. franklini is largely solitary, but may have small, loosely-associated colonies in areas of high food abundance with well-concealed burrow entrances. The diet consists of a great mixture of food sources. A herbivorous diet of grasses, berries, seeds, and green vegetation is complemented by a variety of meat sources. Mice, young birds, eggs, frogs, toads, small rabbits and ducks, other ground squirrels, and all kinds of carrion are eaten [1].

Franklin's Ground Squirrel (Spermophilus franklini)

American Red Squirrel (Tamiasciurus hudsonicus)

The Red Squirrel (Tamiasciurus hudsonicus) is common throughout the coniferous and mixed wood forests of the province, including Camrose and surrounding area [2,3]. Towns with trees that are more than 40 years old can also support populations [1]. In anecdotal evidence, some individuals have been seen in Camrose in areas near the river valley. Lack of appropriate spruce habitat in the Camrose area may restrict this species. However, with more spruce used in landscaping, urban habitat for T. hudsonicus may increase. Total length is 28-35 cm. Overall, the summer coat of T. hudsonicus is shiny, clove brown with greyish white underparts. The tail (11-15cm), commonly held along its back while sitting, is the same colour but fringed with long black hairs. In winter, all parts darken slightly. Unlike the other squirrels, T. hudsonicus remains active for most the winter, except during the coldest days [1]. It can be rather rambunctious, with breeding commencing with long chases, and often engaging in disputes with neighbouring red squirrels, accompanied by chattering. Dens are in tree cavities, logs, or burrows. Each den has an expanded cavity with a nest ball [1].

The staple of the red squirrel's diet consists of the seeds from conifer cones, cutting the cones and storing seeds for the winter. Sometimes, bark can even be eaten. Other components of the diet include flowers, mushrooms, birds, berries, eggs, mice, insects, and even chipmunks [1].

Northern Flying Squirrel (Glaucomys sabrinus)

The Northern Flying Squirrel (Glaucomys sabrinus) (25-37 cm) is common in suitable habitat, which includes coniferous and mixed wood forests, as well as aspen and cottonwood forests [2]. Records have been made in the Camrose area, all the way to the Battle River [2]. Due to its nocturnal habits, it is difficult to determine overall status [2]. With greyish brown colouration on the back with smoky grey underparts, G. sabrinus has folds of skin, called patagium, that are spread tightly between the front and rear legs during flight. The tail, 11-18 cm, is flattened to aid in the aerial glides between trees. Such "flights" can be up to 100 m. Due to its nocturnal and aerial habits, G. sabrinus has larger eyes for better vision[1].

These squirrels make nests in tree cavities lined with lichens and grass, or make a "leaf nest" in a tree fork near the trunk of the tree. They are quite gregarious. Often, many individuals can be found in a tree or at a feeding site. They also often nest together. This behaviour is likely a strategy to keep warm, as G. sabrinus seems to have a tendency to chill easier than other squirrels [1].

Most of the diet of the northern flying squirrel consists of lichens and fungi, though it does cache cones and nuts. It also eats bubs, berries, some seeds, some arthropods, bird eggs and nestlings [1].

Least Chipmunk (Tamis minimus)

The Least Chipmunk (Tamis minimus) is the most widely distributed chipmunk in the province, inhabiting a variety of areas, including open coniferous and aspen forests, alpine meadows, and sagebrush flats, mostly seen in the understory. It is common throughout the province as well as in Camrose and surrounding area [1,3]. As with all chipmunks, T. minimus (though slightly lighter) has the typical stripe colouration: 3 dark stripes and two light stripes on the face and five dark and four light stripes on its greyish body (18-24 cm). The central stripe goes to the end of its relatively long tail (7.5-11 cm)[1,3].

Though some individuals live in tree cavities or make leaf nests, most Least Chipmunks live in burrows underground, where they hibernate. Though seeds, nuts, and grasses make up the staple of the diet, T. minimus enjoys ripe native fruits (chokecherries, blueberries, raspberries, strawberries), as well as mushrooms, and some insects [1].

Woodchuck/Groundhog (Marmota monax)*

Though there are no confirmed accounts of the Woodchuck or Groundhog (Marmota monax) in the Camrose area recently, reports from in the Battle River Valley have been made [2]. Although they are present in the northern two-thirds of the province, they are far from common. M. monax is present in the Edmonton River Valley [1]. Their preferred habitat includes river valleys, meadows, pastures, rock piles, and old fields close to wooded areas. Usually solitary, woodchucks dig long burrows, 3-15 m long underground, with their long, powerful claws, where they spend most of the year. A large ground squirrel (46-65 cm; 1.8-5.4 kg), the woodchuck has short legs and a chunky body. It is brownish, with a grizzled appearance with a bushy, slightly flattened dark tail and small ears[1,3]

The woodchuck eats primarily green grasses and vegetation, as occasionally bark. While it is hibernating, like with most rodents, the metabolism slows allows them to survive the winter. In this torpor, the woodchuck may breathe once every six minutes [1].

Least Chipmunk (Tamis minimus)

Southern Red-backed Vole (Clethrionomys gapperi)

Common in poplar and spruce forests, the Southern Red-backed Vole (Clethrionomys gapperi) is found in a variety of habitats, preferring vegetation that is at least two years old [3]. They are also found in damp, bog areas [1]. Surveys have noted this species is very abundant in Camrose and surrounding area, including Miquelon Lake; it is likely the most abundant vole in this area[2,3]. This vole has reddish dorsal stripes that give it its name, and makes it easy to recognize. They grow up to 12-16 cm. The sides and underparts are greyish to greyish white. The tail (3-5.7 cm) is short and slender with short hair, and the ears are rounded [1].

Strictly herbivorous, the diet is comprised of green vegetables, berries, seeds, grasses, lichens, and fungi. Unlike some other rodents, C. gapperi never caches food for the winter. They forage under the snow for food [1]. C. gapperi lives out the winter between the snowpack and the ground in a typical subnivean lifestyle. Subnivean means living beneath the snowpack and above the ground in the space created by the heat released by the ground. They make summer nests and winter nests. Summer nests are made in rotten logs or rock crevices. Winter nests are subnivean [1].

Meadow Vole (Microtus pennsylvanicus)

The ecologically important Meadow Vole (Microtus pennsylvanicus) serves as that main food source for raptors, owls, as well as terrestrial predators on the prairies. Six species of owls in Alberta feed extensively on meadow voles [2]. Like Clethrionomys gapperi, M. pennsylvanicus has a subnivean lifestyle during the winter. Though it is present in a variety of habitats, the best place to find it is in ungrazed pastures and prairies throughout the province, especially in moist areas like marshes near dense shrubbery [1,2]. Studies reveal that meadow voles, along with deer mice (Peromyscus maniculatus) and red-back voles (Clethrionomys gapperi), were the most abundant small mammals in the aspen parkland study area [3]. M. pennsylvanicus preferred nesting cover at least 2 years old [3]. In and around Camrose, including Driedmeat Lake and Miquelon Lake, meadow voles are common [3]

A relatively large vole (50 g; 13-19cm), the body of M. pennsylvanicus is reddish-brown to blackish, being darker above, and greyish underneath. The tail is relatively long (3.3-4.6 cm), being twice as long as the hindfoot [1,3].

Like some other species, the population of meadow voles fluctuates cyclically [3]. The summer diet of M. pennsylvanicus consists largely of green parts of shrubs, grasses, and buds. In the winter, copious amounts of seeds, insects, and bark are consumed. These diets may be supplemented by beans, grains, roots, and bulbs [1]. Nesting behaviour is similar to that of C. gapperi.

Prairie Vole (Microtus ochrogaster)*

Though the range for the prairie vole (in Alberta) is limited to the aspen parkland of the east-central region, few individuals have been documented [1,3]. It is considered rare and sporadic, with its population undergoing cyclic fluctuations [1,3]. Microtus ochrogaster prefers undisturbed arid grasslands and upland prairies surrounded by aspen forest [1,3].

This medium-sized vole (12-17 cm) has a grizzled appearance due to a mixture of brown and buffy hairs. It has short legs, small rounded ears, and a short, well-furred, bicoloured tail (2.5-4 cm), dark on top and light on the bottom[1,3]. Like other voles, the diet of the prairie vole varies from summer to winter. In the summer, the diet consists of green shoots of grasses, and flowers and leaves of bulbs. In winter, ripened fruits, bulbs, roots, seeds, and the inner bark of corns and shrubs constitute the diet [1].

Meadow Jumping Mouse (Zapus hudsonius)

The Meadow Jumping Mouse (Zapus hudsonius) tends to small (19-22 cm) with a long tail (11-14 cm) [1,3]. It is common in the northern three-quarters of Alberta primarily in moist meadows, but also in marshes, bush, and even thick vegetation [3]. The body is brown with yellowish sides and a whitish belly, with small ears. The naked tail is bicoloured (dark on top, light on the bottom). The distinguishing characteristic of jumping mice is the greatly elongated hindfeet [1,3]

As its name suggests, this mouse hops, jumping much like a frog when startled. The elongated hindfeet are designed for this purpose. Insects make up about half of the diet in the spring, supplemented with seeds and buds [1].

Western Jumping Mouse (Zapus princeps)

The Western Jumping Mouse (Zapus princeps) is similar to the meadow jumping mouse, though it is slightly larger (22-26 cm), but with an equally long tail (12-15 cm). Because these two species are so similar, determining the accurate range is difficult; Z. princeps tends to have a more southern distribution. Z. princeps prefers moist meadows bordered by brush, nearby a stream, or in tall grasses. It appears to be a good swimmer, as it frequently enters the water and dives as deep as 1 m. Like Z. hudsonius, the side of mouse is yellowish. Z. princeps has broad dark band down the back. Both species of jumping mice are long hibernators, creating burrows lined with vegetation [1,3].

Like Z. hudsonius, Z. princpes hops and jumps using elongated hindfeet. This mode of locomotion in both species of jumping mice, is an easy identification technique, though to tell which species it is will more challenging. It eats berries, tender vegetation, insects, other invertebrates, grass seeds, and fruits. A favorite is subterranean fungi [1].

House Mouse (Mus musculus)

The House Mouse (Mus musculus), an introduced species, is common, mostly occurring wherever there is human habitation. Typical habitats include barns, hay stacks, and other associated buildings. In summer, mice may disperse into shrubby areas on open prairie and into fields with relatively young vegetation [3], rarely straying far from buildings. If a mouse is found in a house in the summer, it is a deer mouse (Peromyscus maniculatus). M. musculus (13-20 cm) is uniformly yellowish brown to grey with large hairless ears. The tail is long (6.5-10 cm), hairless and scaly, with a pinkish colour[1,3].

The bulk of their diet consists of stems, seeds, and leaves, but insects, carrion, and human food are readily eaten. Unlike many introduced species, House Mice appear to have had negligible negative impacts on native species. This may be due to the fact that they cannot tolerate temperatures below -10ºC [1].

Deer Mouse (Peromyscus maniculatus)

Deer mice (Peromyscus maniculatus) are common, found in almost all habitats throughout the province. They are one of the most abundant small mammals in the aspen parkland [1,3]. In the wild, they are found in groundcover ranging from deadfall to thick grass. According to Skinner et al. (1995), deer mice preferred younger vegetation, and comprised 32% of the small mammals captured in surveys. The deer mouse is also very common in human buildings. This mouse is about 14-21 cm. It has large ears and a pointed nose with long whiskers. Colouration can be quite variable, from yellowish buff, tawny brown, or greyish- to black-brown. Underparts are white. The tail is sharply bicoloured with a dark top and light bottom [1].

Nests are made in a variety of places. Burrows are made in prairie and meadow areas or on elevated ground; in wooded areas, nests are made in hollow logs or under debris. Nests are also made in rock crevices [1]. Their cheek pouches are used to transport food to burrows or nests. Seeds from grasses and grains, and other weeds, as well as from chokecherries are the mainstay of their diet. They may also feed on insects [1].

In close proximity to humans in buildings, they pose a health risk. The deadly Hanta virus is associated with the faeces and urine of deer mice, and caution should be used when removing any mouse waste [1].

Norway Rat (Rattus norvegicus)*

Deer Mouse (Peromyscus maniculatus)

Though not common due to strict border control and monitoring, the Norway Rat (Rattus norvegicus) has been sporadically found in Camrose, and still may occur occasionally. It is an introduced species, about 32-46 cm long, with a long, round, scaly tail about 12-22 cm. It is grizzly brown in colouration, varying from red-brown to black, with a pale belly. R. norvegicus is omnivorous, eating grains, vegetables, shoots, insects, garbage, carrion, and even attacking young chickens, ducks, and piglets [1].

Northern Pocket Gopher (Thomomys talpoides)

The Northern Pocket Gopher (Thomomys talpoides) is common in parkland region, and in Camrose and surrounding area [1,3]. It is a burrowing rodent present in native grasslands, meadows, roadside ditches and gardens [2]; it avoids densely forested areas and areas that have shallow or wet soil [1]. T. talpoides prefers nesting cover vegetation that is around 2 years old, but is found in both young and older vegetation [3]. It lives the majority of the time in its intricate network of tunnels, with sections for various uses, such as food storage or latrines. It has a stout, bullet-shaped body (19-26 cm) with a large head, and a short (4.1-7.7 cm), largely hairless tail [1,3]. Colouration matches the soil, ranging from black, grey, brown, to light grey, with the underparts being slightly lighter. Long front claws explicate its role as an adept burrower. The pocket gopher had cheek pockets, similar to its relatives the pocket mice, which are used to transport food [1].

This rodent has gotten its reputation as being a garden pest from its taste for the succulent underground parts of plants that make up the staple of its diet. However, during the summer, it sometimes emerges during the night to collect green vegetation [1].

Porcupine (Erethizon dorsatum)

The porcupine (Erethizon dorsatum) is quite common throughout the province, especially in the Camrose area [3]. It prefers mixed forest, wooded riparian areas, and willow-edged wetlands, but can be seen feeding in agricultural fields. As its claim to fame, the porcupine uses quills, numbering up to 30,000, as defense against predators. Quills are modified hairs, and are very effective weapons. Quills are not thrown, but are easily detached from the tail when the animal attacks. Quills expand when they come in contact with body heat, and become buried deep in the attackers flesh, causing festering, and may cause serious injury or sometimes death depending where the quills strike. Despite the formidable quills, the porcupine is a relatively docile, solitary animal. It is also a common victim of collisions on the highway [2,3].

It is the second largest rodent in Alberta, second only to the beaver. It is quite large, weighing up to 12 kg, and reach a length of 53-94 cm. The undercoat is dark, with long white-tipped guard hairs with dark-tipped white to yellowish quills. The tail is thick and powerful [1].

Though the porcupine is a nocturnal animal, it is commonly seen during the day. It moves relatively slow. It is strictly herbivorous, and particularly likes the tender bark of young trees. Like the beaver, the porcupine has large incisor teeth to strip the bark. It is an adept climber, using their sharp claws and thick padded feet with rough, sandpaper-like soles. Often, it is seen venturing far onto thin branches. It will often remain in one tree, even sleeping there, until it has finished stripping all the bark on that tree (either coniferous or deciduous). It also eats leaves, buds, and twigs [1].

Porcupine (Erethizon dorsatum)

Beaver (Castor canadensis)

The Beaver (Castor canadensis) is common, and are present throughout the province. They are very common in the Battle River and its tributaries (including Camrose Creek). They are a common sight in Mirror Lake, as well as in the river Valley. In some places they are so common they are considered pests [2]. They require freshwater environments with surrounding suitable woody vegetation. They are present in lakes, but are more commonly associated with flowing water bodies, such as rivers and streams [1,2]. The beaver, our national icon, is the largest rodent in Canada, weighing in at 8-45 kg, and 89-120 cm in length. The fur of the beaver is dark brown with a reddish hue, with short ears and small eyes on its broad head. Only the hindfeet are webbed, the source of propulsion underwater. Large incisor teeth that continuously grow are used to cut vegetation and strip off bark. The broad, black, scaly tail (29-53 cm) is used to stabilize the beaver while cutting trees, for thermoregulation, as a fat storage are, and are slapped on the ground or water surface as an alarm signal [1]

Beaver (Castor canadensis)

Beavers, like porcupines, eat the bark of trees, preferring aspen, birch, and willow. Aquatic pond vegetation is also eaten in the summer. They may even come ashore in search of grains and grasses. Trees are also cut for other purposes. Beavers use branches and logs to build their dams and lodges. Beavers usually have a series of dams, one main one and

several serial ones. Lodges are built so that the entrance is underwater to evade predators and maintain access trees stored under the ice during the winter [1]. The lodges are also used to protect beavers from extreme cold and heat. Lodges usually contain three generations of beavers: the parent pair, yearlings, and the current year's kits (baby beavers). Once the youngsters reach two years old, they leave the lodge to find their own territory, often downstream of their parents [1].

The beaver a keystone species, meaning that it plays a key role in the ecosystem. These species affect many other species, and whose presence or absence would have great impacts on the existence of these other species. Beavers affect not only animal life, but because of their need for trees and its ability to change its environment means they also greatly impact the vegetation in the vicinity [1].

Abundance of moose (Martell et al., 2006), waterfowl (Brown et al., 1996; McCall et al., 1996; McKinstry et al., 2001), herpetofauna (Metts et al., 2001; Stevens et al., 2007), fish (Collen & Gibson, 2000; Pollock et al., 2003), and invertebrates (Margolis et al., 2001) are all affected by beavers. Beaver dams have been found to alter the invertebrate assemblages in streams. Biodiversity was not altered, though changes in dominance and differences in taxonomic groups present were found[4]. Standing water created by beaver dams also helps wetland birds and waterfowl by creating more suitable feeding and breeding habitat [5].

The physical structure of the dam itself (as well as beaver lodges) can also serve as breeding structures [6]. In terms herpetopfauna, it appears that beaver ponds are able to affect biodiversity and numbers of a variety of species. Overall, beaver ponds tend to increase the abundance of anurans (frogs and toads), but salamanders tend to decrease in abundance. Variation in species depends on life histories. Reptiles associated with water may increase in abundance, and life history characteristics may be affected by the warmer water and the resulting warmer air surrounding beaver ponds. Local species, such as the wood frog and the boreal chorus frog were found to be present in beaver ponds, but not in unobstructed streams [7]. In both studies, the beaver dams created appropriate breeding habitat[7].

The beaver dams also influence fish populations, which can affect amphibian populations as predatory fish species eat amphibian eggs and larvae. Some species of amphibians appear to be more vulnerable to fish predation, such as salamanders [8]. The way the beaver dams affect fish populations depends on the species and its physiological and behavioural needs. The changes in hydrology and stream bottom morphology can increase some species, such as trout [9,10]. However, depending on the chemical composition of water, pH, temperature, and oxygen content, as well depth (important for overwintering) beaver ponds may decrease certain species but increase others, such as smaller species becoming

more abundant and larger species less abundant [9]. Beaver dams also create obstacles for migrating fish (like salmon) [9]. Beaver dams also create refuges "from high or low water flows, low oxygen or high temperatures" [9] are provided in the presence of adverse conditions in any season.

As previously mentioned, hydrology is altered by beavers, dramatically altering the dynamics of stream systems [10]. Dams alter sedimentation, allowing sediment to settle on previous spawning areas [9] and otherwise change the overall morphology of the stream floor [10]. Temperature and chemical composition of the water is affected to varying degrees depending on where the dams are placed [10].

Beavers alter not only the aquatic ecosystem, but also the surround terrestrial ecosystem. Beavers set back succession, altering the landscape considerably by their activities and new ecosystems are created [1]. Their preferred food is aspen (Populus tremuloides) and beavers will typically only colonize areas where aspen is within 60 m from the water. However, trees may be harvested from several hundred feet away [3]. When aspen becomes less abundant beavers will move to less preferred species, such as willow, birch, and/or broadleaf plants. Few coniferous trees are harvested as the higher levels of resin make them less palatable. In high quality habitats, beavers select fewer trees, but take the larger trees. In lower quality habitats, beavers are less selective [11]. For the size of the trees seen cut down each year, it would appear the Camrose valley is a higher quality habitat. Due to their selective feeing, beavers significantly impact riparian ecosystems, affecting the diversity and structure of plant communities).

As previously mentioned, beavers were extirpated through much of their range in Alberta through trapping in the 1800s and 1900s. The removal of the beavers without any inclination to re-establish beavers in some areas may aggravate the effects of land use on the groundwater levels [10].

Due to the impacts beavers have on a riparian ecosystem and biodiversity, forest managers and county governments should carefully manage beaver populations. Biodiversity would be affected by both the presence and absence of beavers. Management practices should be determined by location[9].

Common Muskrat (Ondatra zibethicus)

Though it looks like a small beaver, the Common Muskrat (Ondatra zibethicus) is in a different order. It is actually an aquatic vole, and the largest vole in Alberta. It occupies a similar habitat to the beaver: permanent or long-standing sloughs, lakes, marshes, streams, preferring ones with cattails or rushes [1,2]. It is common in most areas of the province, and is quite common in Camrose, being found in Mirror Lake, as well as in the surrounding area, including Driedmeat Lake and Miquelon Lake (Kelsall et al., 1973; Skinner et al., 1995; Smith, 1993; Pattie & Fisher, 1999). As many as 18 muskrats were recorded in surveys at Driedmeat Lake in October 1973. The muskrat is 46-62 cm long (0.8-1.6 kg), with long, shiny, reddish to black guard hairs with a brownish-grey undercoat. The tail is long (20-28 cm), hairless with black scales, and somewhat laterally compressed, though is more whip-like than that of the beaver. The hindfeet are webbed, and claws are long and strong [1,2]. As their name suggests, muskrats emit a bit of a musky smell during breeding season [1]

The muskrat houses are built entirely out of herbaceous vegetation (such as cattails and rushes, unlike the branches used by beavers) with underwater entrances. Burrows may also be dug out from river banks. Sometimes, numerous muskrats may use abandoned beaver lodges [12]. Muskrat homes are important not only to the muskrats, but because they rise out of shallow water, they make great nesting platforms for a variety of waterfowl. Muskrats, like beavers have large incisor teeth for eating various types of vegetation such as cattails, rushes, water lilies, and pondweeds. They will also eat snails, fish, and frogs [1].

The winter is spent like beavers, swimming under the ice to retrieve food. Their dives can last as much as 15 minutes, and can swim the length of a football field in that time. In spring, young muskrats travel over land in search of new territories, which puts them at risk by crossing highways and other roadways [1].

In the past, like beavers, it was hunted for its fur. In 1972-73, muskrat pelts made up 82% of all furbearers caught in the region [2].

Common Muskrat (Ondatra zibethicus)

Snowshoe Hare (Lepus americanus)

Hares and Rabbits:

Only two species of lagomorphs (members of the rabbit family) live in the Camrose. Both are quite common, but utilize slightly different habitat.

Snowshoe Hare (Lepus americanus)

The Snowshoe Hare (Lepus americanus) is very common in almost any forested and shrubby area throughout Alberta, and across most of Canada [1]. It is rarely seen in open areas [2]. Studies show that L. americanus prefers cover that is at least two years of age [3]. The hare has been seen at Driedmeat Lake, in Camrose and surrounding area. They weigh 1-1.5 kg, with a length of 39-53cm [1].

Summer colouration is rusty brown over the majority of the back with black ear tips. Adult feet are white, while juvenile feet are grey. In the winter, the outer parts of the fur turns white (around mid-October), with the ear tips and the hair bases remaining black. As suggested by their name, their large hindfeet allow these hares to easily cross over soft snow [1].

In the summer, these hares eat grasses, herbaceous plants, and brush. Winter diet consists of mostly buds, twigs, and bark of woody trees and shrubs, specializing on young aspen saplings [1].

A long-studied phenomenon occurs in snowshoe hare populations. Over ten years, there is a cyclic fluctuation in the abundance of snowshoe hare. These fluctuations are connected to the delayed mirrored cycles of the hare's main predators, the Canadian lynx and coyote [13].

White-tailed Jackrabbit (Lepus townsendii)

The White-tailed Jackrabbit (Lepus townsendii) is common in the southeastern portion of the province, and quite common around Camrose, with anecdotal evidence of its presence in the river valley. It is the largest and most commonly encountered hare in this region on the province [1]. This species also fluctuates, though no evidence of a cyclic pattern is evident. These rabbits prefer open grassland and open meadows [2]. They will enter open woodlands in search of shelter in winter [1]. Usually solitary, they often use the same rest areas from day to day, so if you spook one, you can go back, cautiously, the next day and look for it in the same area. In winter, up to 50 can be found gathered together [1].

L. townsendii is larger than L. americanus, getting as big as 54-63 cm and 3-5 kg. When it runs it holds it white tail rigid. In the summer, the coat is light greyish-brown with a belly that is nearly white. Unlike the snowshoe hare, the bases of the hairs of the jackrabbit are creamy-white. In winter, the entire coat is white except for the black ear tips and the greyish forehead. The eyes of the jackrabbit protrude slightly, and the limbs are more sinuous that other rabbits [1].

Grasses and herbs are the staples in the jackrabbit's diet, but they also enjoy alfalfa and clover where they are available in agricultural areas. Common to all hares, the jackrabbit eats its own fecal pellets to pass the bacteria and matter through the digestive system again to absorb more of the nutrients [1].

The claim to fame for the jackrabbit is its incredible speed. It outruns most land predators. Ambush in the open grasslands is difficult. Air ambush, as employed by Golden Eagles, has moderate success [1].

White-tailed Jackrabbit (Lepus townsendii)

Shrews

All shrews are insectivores, eating a variety of invertebrates. They are food for a variety of predators, such as foxes, coyotes, weasels, owls, and hawks

Masked Shrew (Sorex cinereus)

The Masked Shrew (Sorex cinereus) is likely the most common shrew in Alberta, utilizing many habitats. In is common at Miquelon Lake, Driedmeat Lake, as well as in and around Camrose [1]. It favours coniferous and deciduous forests, and sometimes in areas of tallgrass prairie (at least 3 years old) and shrubby wooded areas [1].

S. cinereus is a medium-sized shrew (7.1-11 cm; tail 2.5-5 cm). It has a dark brown back with a lighter belly. Like most shrews, it has a long flexible snout and long whiskers for foraging through detritus in search searching for insects. It has tiny eyes and small feet. It eats insects primarily, but also eats plenty of slugs, snails, young mice, and carrion. It even eats some vegetation [1].

Arctic Shrew (Sorex arcticus)

The Arctic Shrew (Sorex arcticus) is relatively common in Alberta, as well as Camrose and surrounding area [1,2,3]. It is reported as being common in central Alberta from 1894-95 [2]. In some studies, numbers at Driedmeat Lake exceeded those of the masked shrew. This shrew seems to prefer moist habitats with tree and shrub cover in willow-sedge, poplar forest, and grasslands, preferring areas with vegetation two years or older [1,3].

The Arctic Shrew (10-12 cm; 6-14 g) is the only shrew that is distinctly tricoloured, and changes colouration during winter. In summer, the back is a chocolate brown or dark grey-brown, with the sides being a light grey-brown. The belly is ash-white. In the winter, the coat becomes longer and denser. The back becomes a glossy black or very dark brown, with greyish sides and a silvery-white belly. The tail (3.8-4.5 cm) remains cinnamon colour throughout the year [1,2]. It eats larval and adult insects primarily, preferring caterpillars, centipedes, and beetles, but also eats plenty of earthworms, slugs, snails, and carrion [1].

Prairie (Hayden's) Shrew (Sorex haydeni)

In Alberta, Prairie (Hayden's) Shrew (Sorex haydeni) is only found in southeastern to east central portion of the province. It is uncommon over most of its range, but has been found in the Camrose area [3], and can be quite common in the central parklands [1]. It inhabits open native grasslands, as well as shrubby areas, open fields and pastures, preferring vegetation older than three years [1,2,3] This mid-sized shrew (7.4-8.8 cm; tail 2.5-3.3 cm) has a cinnamon brown back. Like other shrews, it has a long flexible snout and long whiskers and tiny eyes. It eats insects primarily, but also eats plenty of slugs, snails, young mice, and carrion. It even eats some vegetation [1].

Dusky Shrew (Sorex monticolus)

Common in most of the province, the Dusky Shrew (Sorex monticolus) inhabits wet meadows, bogs, and among willows along streams, preferring older, dense vegetation [1,2,3]. A small to mid-size shrew (8.6-13 cm; tail 3.6-5.1 cm), S. monticolus has a pale greyish brown colouration with a bicoloured tail. Like shrews, it has a long flexible snout and long whiskers and tiny eyes. It eats a variety of insects, adults and larvae, as well as earthworms, spiders, slugs, snails, carrion, and even some vegetation [1].

Pygmy Shrew (Sorex hoyi)*

The Pygmy Shrew (Sorex hoyi) is the smallest shrew in Alberta, measuring 5.5-6.1 cm (2.5-6.3 g – no more than a penny!). Though range maps indicate its range extends south to Camrose and to the Battle River, it has not been recorded in this area. Unlike other shrews, Sorex hoyi does not have a continuous distribution, and is considered uncommon [1,3]. Moist, dry, forested or open areas are all good habitats to find this shrew. It eats larval and adult insects primarily, preferring caterpillars, centipedes, and beetles, but also eats plenty of earthworms, slugs, snails, and carrion [1].

Water Shrew (Sorex palustris)

Considered uncommon, the Water Shrew (Sorex palustris) is usually found near creeks, ponds, and lakes with nearby cover [1,2]. It is most abundant in the aspen parkland [1], and has been found at Driedmeat Lake. In 1972, five were caught in Camrose[2].

It is the largest long-tailed shrew in Alberta, growing up to 14-17 cm (tail 6-8.5 cm) and weighing up to 20 g. It has a velvety black back and silver to light brown underparts. Among shrews, it has some very interesting characteristics. A few of the toes on the hindfeet are slightly webbed, with stiff hairs around the hindfeet, both of which aid in swimming. Its diet is also different, adapted to its aquatic lifestyle. It eats aquatic insects, insect nymphs, spiders, snails, small fish like sticklebacks, and may even attack fish half its size [1].

Bats:

Bats are common in many ecosystems around the world. Only the Arctic and Antarctic do not have any bats. They also utilize a variety of food sources. There are fruit bats, insectivores, frog-eating bats, and famous vampire bats that drink blood. The bats are classified into the Old World bats and the New World bats, referring to the bat species of the eastern and western hemispheres, respectively. The famous Old World bats are

bats commonly referred to as “flying foxes”, which live in the neotropics of Asia, Africa, Australia, and other Pacific islands. They are frugivorous (fruit-eating). There are also some frugivorous bats in the New World, but they only live in the tropics [14].

In Alberta, there are nine species of bat, all of which are in the evening bat family. These bats are active are active at dusk and often again just before dawn [1]. Most of the species in Alberta eat flying insects, mosquitoes, moths, beetles, flies, and true bugs [1]. Some species specialize on specific types, while others eat any and all types. In the Battle River valley and Camrose area, there are five species of bats [15].

Most bats prefer forested areas with nearby open patches for foraging. However, due to deforestation for agricultural use and urbanization, most species of bats in Alberta have adapted to using old buildings, parks, and any other unnatural, yet appropriate habitats.
Bats are often limited in the habitats they can inhabit by their wing morphology, if there are large differences in the wing size. Small differences may affect which insect prey species are utilized[16].

Little Brown bat (Myotis lucifugus)

The Little Brown Bat (Myotis lucifugus) is very common, and is the most encountered bat in Alberta. It is dark brown to reddish brown to pale brown with dark-brown to black flight membranes. Adults are 6-10 cm weighing up to 12g. Ears reach to the nose, but no longer. M. lucifugus specializes on night-flying insects [1].

Little Brown bat (Myotis lucifugus)

In this part of Alberta, where trees do not grow very large, M. lucifugus uses old buildings near trees and water primary areas for nursery colonies and roosts. Caves, if available, are used for hibernating, but old buildings are more common in the Camrose area [1]. They can roost in large numbers, small numbers, or on their own. Many stay and hibernate in large colonies; however, it is believed that some may migrate south [1].

Northern long-eared bat (Myotis septentrionalis)*

The Northern Long-eared Bat (Myotis septentrionalis) is uncommon, but likely lives in the Camrose area. This bat gets its name from its ears which are unusually long for bats. Ears can be up to 19 mm long. It is smoky brown on the back, and light brown on the belly, 8-10 cm in length, and weigh up to 9 g [1,2].

M. septentrionalis is a solitary species, roosting in trees or buildings, though it prefers tight holes and crevices. A mother bat will care for her young on her own, or in much smaller groups than others Myotis species. It hibernates in caves. Mixed and coniferous forests near water are its preferred habitats. These bats hibernate in buildings or any other appropriate location [1].

M. septentrionalis may be present in Camrose, however by be confused with M. lucifugus (Audet, personal communication). As mentioned earlier, differentiating bat species is done primarily by listening to their echolocation frequency and pattern. M. septentrionalis and M. lucifugus have similar "calls" so the only way to determine if both species are present is by catching them [17].

Big Brown bat (Eptesicus fuscus)

The Big Brown Bat (Eptesicus fuscus) is relatively common, but susceptible to habitat loss through destruction of old buildings (principle habitat) in the urban environment. In the wild, it prefers forested areas. It can also be found in crevices and caves. E. fuscus grows up to 12-29g and 9.3-14 cm. It is Alberta's largest brown bat (Pattie & fisher, 1999). It is pale brown to reddish brown with black flight membranes and ears. They have relatively large ears, but do not reach to its nose [1,2].

E. fuscus is a faster flyer compared to some of the other bats. This allows it to feed on plant hoppers and beetles. It also feeds heavily on agricultural pests [1].

Sometimes, on a warm winter day, these bats may rouse and seek another roost. If a bat is seen in the winter, it can only be the big brown bat [1].

Hoary Bat (Lasiurus cinereus)*

The Hoary Bat (Lasiurus cinereus) is common throughout Alberta, especially during spring and fall migration. It has been noted at Beaverhill Lake [2], and may also occur in Camrose. It is a solitary species, roosting in trees in coniferous and deciduous forests (Pattie & fisher, 1999; Audet, pers. comm.). It has black round ears. General colouration is brown with numerous white/gray hairs, giving this bat its name. There are cream-coloured patches at its thumbs and ruff around neck. As Alberta's largest bat, they can weigh up to 35g, and grow to up to 15 cm long [1,2].

Hoary bats are a migratory species, just spending the summer in Alberta.

Silver-haired bat (Lasionycteris noctivagans)

The Silver-haired Bat (Lasionycteris noctivagans) is considered common in southern Alberta, especially as spring and fall migrants [2]. They prefer woodland habitat, but has adapted to parks and cities. It roosts in woodpecker holes and behind loose bark. Though previously thought to rarely enter buildings, they do use old buildings for hibernating [1,2]. Some individuals migrate.

L. noctivagans can weigh up to17g and be 9-11 cm long. It is characterized by dark brown to black fur with white/silver-tipped hairs. The short, round ears are black, as are the flight membranes. It is easy to recognize while it is flying as it is one of the slowest flying bats in North America [1].

Carnivores:
Striped Skunk (Mephitis mephitis)

The Striped Skunk (Mephitis mephitis) is famous, or rather, infamous for its spray of foul-smelling liquid when threatened. This omnivore is common throughout the province, preferring streamside woodlands, hardwood groves, open grasslands, and valleys. Skunks are highly adaptable to human habitats, cultivated areas, farmsteads, and even cities are suitable, where it eats garbage and gardens [1,2]. Aspen parkland, including the area around Camrose, including Driedmeat Lake, is one of the best places to observe the striped skunk [1,2,3]. This cat-sized mammal (54-79 cm; 1.9-4.2 kg) is mostly active at night when it usually forages. Though primarily solitary, skunks often form nesting groups in the winter. It is slow, and its taste for highway carrion often leads to fatalities on roadways. The distinctive white and black colouration is widely

recognized, with a black body with a thin white stripe from the forehead to the nose, and two stripes around the back of the skunk, reaching down the bushy tail. The front claws of the skunk are long from digging for food, while the rear claws are short [1].

As mentioned earlier, the skunk is omnivorous, eating a combination of animal products and vegetation. Insects, including bees and grasshoppers, make up a large proportion (40%) of the diet in the spring and summer. Carrion, small mammals and birds, bird eggs, herptiles, green vegetation, fruits and berries make up the rest of the diet. The only regular predator of the skunk is the Great Horned Owl [1].

Short-tailed Weasel or Ermine (Mustela erminea)

The Short-tailed Weasel (Mustela erminea), or the Ermine as it is commonly called, is common in the north, but is less common or even scarce in the parklands and grovelands of the southern part of the province. The ermine is Alberta's most common weasel, and may possibly be the most common carnivore in the province [1]. It is most abundant in coniferous or mixed forests, as well as in streamside woodlands [1,2]. It is common in the Camrose area, though not documented at Driedmeat Lake (though it likely does exist there) [3]. The common name "ermine" came from the Europeans for the name of the white winter pelage (coat). As three species of weasels in Alberta change to a white pelage, the preferred common name for Mustela erminea is the short-tailed weasel.

As with the least weasel (M. nivalis) and the long-tailed weasel (M. frenata), the colouration of the short-tailed weasel changes seasonally. In the summer, the coat of M. erminea is light brown on the back with creamy white underparts with some yellow. Paws are white. The majority of the tail is the same colour as the back, but the last third is black. In winter, the animal becomes completely white except for the black tip on the tail, though the underparts still have a hint of yellow. This medium-sized weasel (22-32 cm; 35-106 g) has short oval ears, but larger than that of the least weasel. The tail is relatively short, only 4-9 cm [1]. M. erminea is also a skilled hunter. They are very quick and agile, both of which are important for predators. They eat all varieties of shrews and rodents, as well as pikas, rabbits, baby birds and bird eggs, amphibians, and insects. Almost every part of the prey is consumed, except the stomach. In mice, M. erminea cuts out the stomach with great surgical skill, and it is left on a rock. They are also very relentless in the pursuit of any prey. If the short-tailed weasel seizes prey larger that itself, it will take the prey by the neck and strangle it [1].

Striped Skunk (Mephitis mephitis)

Least Weasel (Mustela nivalis)

Being the smallest member of the Weasel family in Alberta, the Least Weasel (Mustela nivalis) (15-22 cm; 25-73 g) can sneak into small mouse holes (anything about the size of a loonie), and find shelter anywhere. It is in fact the smallest member of the carnivore order in the world [1]! As prey availability is the dominant factor in determining the range of the least weasel, it is found in a number of habitats, such as shortgrass prairies, coniferous and mixedwood forests, marshes, tundra, and parkland [1,2]. It ranges from common to uncommon, depending on the area. In the Camrose area, it is common in tall grass vegetation more than two years of age, and was also found at Driedmeat Lake [3]. As with the short-tailed weasel (M. erminea) and the long-tailed weasel (M. frenata), the colouration of the least weasel changes seasonally. In the summer, it is walnut brown on the back and tail, and the belly and feet are white. In the winter, the entire weasel is white, except for a few black hairs on the end of its short tail (2.2-4.2 cm). Ears are short [1].

It is a voracious hunter, almost eating its own weight in meat each day, or 1 g of meat an hour! Small rodents, such as voles and mice, along with insects make up most of the diet, though amphibians, birds, and eggs are eaten as well. Frozen mice found in winter are often dragged back its nest to thaw. Like most other members of its family, the least weasel is a solitary animal and mostly nocturnal, though can be seen during the day [1].

Long-tailed Weasel (Mustela frenata)

The Long-tailed Weasel (Mustela frenata) is only found in North America, and prefers native grasslands in the bottom two-thirds of the province. As much of the native habitat has been converted, populations have declined, and in Alberta is a species of concern [1,2]. On the plains and in the grasslands, they are still fairly common, foraging in aspen parkland and open forests, and have been found around Camrose [3].

This weasel is quite long (34-49 cm) and slim with a relatively long tail (12-19 cm). As with the short-tailed weasel (M. erminea) and the least weasel (M. nivalis), the colouration of the long-tailed weasel changes seasonally. In the summer, the back is a cinnamon or reddish-brown, with a dull orange underneath and on the feet. Most of the tail is cinnamon, but the last quarter is black. In winter, the body turns white, except the black tip of the tail. The underneath often has an orange hue.

Like other weasels, it is an efficient hunter. Though voles and mice make up the bulk of its diet, M. frenata also eats insects, snakes, squirrels, shrews, eggs and young birds, and rabbits. Unlike its smaller relatives, the long-tailed weasel can tackle larger prey. In trying to subdue larger prey, M. frenata grabs the prey by the neck and wrestles it to the ground, and wraps its body around the prey. It then tries to kill the prey by biting it on the head and neck [1].

Mink (Mustela vison)

In Alberta, the Mink (Mustela vison) has an interesting history. Currently, the mink is common in Edmonton and throughout the province, but seen occasionally in the Camrose area [2,3]. It is always seen near water with coniferous and hardwood forests. Like the skunk, this weasel produces a musky, stinky liquid when threatened, but does not spray it as skunks do. The mink's sleek, reddish- or dark-brown to black fur has been highly prized for garments for many years. Unlike other weasels, its coat remains the same colour year round. There are often white spots on the chin. They are 42-62 cm long with a 13-21 cm tail [1,2].

Unlike most other members of the weasel family, the mink is highly aquatic, making dives of several meters. Only the otter is more aquatic. It eats fish, aquatic invertebrates, frogs, snakes, waterfowl and their eggs, voles, mice, and rabbits. Mustela vison seldom passes up a hunting possibility. It stores extra kills in its den [1].

American Badger (Taxidea taxus)

The American Badger (Taxidea taxus) is the largest member of the weasel family in the Camrose area, growing up to 78-85 cm [1]. Badgers are found in the aspen parklands and open grasslands, and avoid forests. Badgers can be found at Driedmeat Lake and other areas close to Camrose with ground squirrels. They have also been seen traveling through Camrose. The large burrows left by badgers are important den sites for many other species, such as coyotes. Badgers are perceived as a pest by farmers due to their burrows being hazardous for farm animals, and are often eradicated [18]. Loss of badgers in specific areas coincides with decreases in these other species that depend on the badger's burrows [1,18].

The badger is squat, with long hair on the sides. It is grizzled with yellow-grey hair. There is a prominent, thin stripe running from the nose back over the head to the shoulders. The cheeks are white; black "badges" are placed between the whitish cheeks and the short, rounded furry ears. The bristled tail (13-16 cm) is more yellow than the rest of the body. The

short legs and feet are dark-brown to blackish. The front claws have long claws which the badger uses for digging [1,2].

The primary component of the badger's diet is burrowing animals. It feeds almost exclusively on Richardson's Ground Squirrels and Northern Pocket Gophers [18], but is also eats eggs, mice, retiles, amphibians, fish, invertebrates, carrion, and even some plant material[1]. Badgers are often found near ground squirrel colonies, and have been found to cache ground squirrels after they have entered hibernation [19]. Badgers eat the ground squirrels in the order in which they were caught [19].

With such a close dependence to the population of Richardson's Ground Squirrels and Northern Pocket Gophers, eradication of this food source by farmers will force badgers out of that area [18].

American Badger (Taxidea taxus)

Red Fox (Vulpes vulpes)

Until recently, the Red Fox (Vulpes vulpes) was considered uncommon. However, recently it has made a comeback. It now commonly found throughout the province, especially in southern Alberta [2]. In the Camrose river valley, the Red Fox is well established. It is also found in the surrounding area, including Driedmeat Lake and Beaverhill Lake [3]. The preferred habitat for the red fox is open habitats such as grasslands interspersed with bushed areas, but can be found in a variety of habitats [1,2]. During summer, red foxes are largely nocturnal, and are harder to see. Winter is the best time to view these animals as they hunt openly during the day for mice is fields[1]. Red foxes often occur in closer proximity of humans than other members of the dog family, usually due to interspecific interactions with coyotes [6].

Red foxes are fairly small (90-113 cm), about the size of a smaller dog. The fur is a vivid rusty or reddish orange with a white chest and belly. The back of the ears as well as front of the legs are black. The long tail (38-41 cm) of the red fox is exceptionally bushy. It is the same colour as the body but with a white tip [1,2]. Variations, known as a "cross fox" and the "silver fox"[1] can be found. The cross fox has darker hairs along the back and over the shoulders. The silver fox is almost entirely black with silver-tipped hairs [1].

The red fox is an opportunistic feeder, eating small rodents, birds, rabbits, invertebrates, and eggs. Though primarily a carnivore, dried and fresh berries and fruit are also eaten [1].

In 1952, the province engaged in a rabies control campaign. Targets for this campaign were skunks, porcupine, wolves, coyotes, and foxes [6]. Though wolves and coyotes are smarter and did not take the bait as readily, foxes were more easily coerced. This campaign decimated the population of red foxes in the Camrose area. Even up to ten years ago there were not a lot of foxes in the Camrose valley (Frank, pers. comm.). The red foxes are now common in the Camrose valley and surrounding area. A survey conducted last summer indicated that there were approximately 10 dens in the Camrose greenspace corridor. The coyote is a natural predator of foxes, but (in Camrose) coyotes will not enter into

the city. Thus, the foxes are safe from predators within the city's corridor [6,20]. Though foxes are wild animals, they are easily habituated to the human presence.

Coyote (Canis latrans)

The Coyote (Canis latrans) is common throughout the province. Its range expanded when the coyote filled the niche once occupied by the grey wolf when it was extirpated by humans [1,2]. Coyotes are generally more wary of humans than foxes. Though coyotes do not occur directly in Camrose, they are present just outside of the city and in the surrounding area, preferring areas of older vegetation [3,6]. Despite this, coyotes have been noted as being able to successfully utilize corridor habitat [21], as found in cities. This may explain their increasing presence in places such as Edmonton, wandering the streets. Foraging and traveling habitat is critical for their movement into such areas [21]. The coyote is the fastest

runner in the dog family, reaching speeds of 40-50 km/h [1]. Canis latrans is about the size of a medium-sized dog (1.1-1.3 m long; shoulder height 58-66 cm; 8-34 kg). The fur colour varies greatly, ranging from yellowish-grey, reddish-grey, to dark brown, with the back being darker than the sides. The underparts are light to whitish. The nose is pointed with a tawny patch on the snout. The long tail (30-40 cm) is bushy with a black tip, and is held down when running [1,2].

Coyotes usually only attack young ungulates, as well as the old and the disabled. Otherwise, it eats a variety of carrion of ungulates, small mammals, ground-nesting birds, and utilizes berries, seeds, and insects[1]. Since the removal of wolves in the majority of the province, some coyotes in Alberta have altered their social structure to be a more wolf-like strategy for hunting by having larger packs. This enables them to kill larger ungulates [1].

Coyote (Canis latrans)

Gray Wolf (Canis lupus)*

The Gray Wolf was common in the prairies, including around Camrose, in the times of the buffalo. In 1872, seven were taken at Driedmeat Lake [6]. More recently, wolves are not normally found in southeastern Alberta, but some sightings have been reported around Edmonton [2]. Anecdotal sightings around Driedmeat Lake have been made in recent years. In the last number of years, the gray wolf has been recovering its numbers. Smith (1993) places the population around 4500 in Alberta, and is primarily found in the mountains, foothills, and the northern half of the province. As the largest member of the dog family in Alberta, the gray wolf is the only animal that limits the range of coyotes. The grey wolf can resemble a German Shepherd with long legs and large paws, growing up to 1-2 m long and 66-97 cm at shoulder height (26-79 kg). The colour of the grey wolf ranges in colour, usually depending on the habitat in which

it is found. Though typically thought of as a grizzly dark grey, the colour ranges from coal black to whitish. The tail is the same colour as the body and is held straight out when running [1,2].

Wolves primarily eat members of the deer family and Bighorn Sheep, which makes up about 80% of the diet. The rest is comprised of smaller mammals, nesting birds, and carrion, as well as unguarded livestock [1]. This has made the wolf disliked by farmers, and has lead to their extirpation.

Canadian Lynx (Lynx canadensis)

The Canadian Lynx (Lynx canadensis) was common in the area up until about 1930 (Farley, 1932). Around Edmonton, in 1972-3, 104 lynx pelts were recorded [2]. More recent sightings around Camrose have been recorded [2]. The lynx is classified as common, but its numbers are closely tied to the population size of its prey, the Snowshoe Hare (Smith, 1993; Krebs et al., 2001). Primary habitat for the lynx is forested areas, either coniferous or mixed wood. It is also rarely found in streamside forest and bushy badlands, and is primarily solitary [1,2]. The lynx is more than twice the size of a house cat, standing 46-58 cm at the shoulder, with a total length of 78-101 cm (6.8-18 kg). The long legs (the hindlegs are longer

than the forelegs) and large paws are used for the pursuit and ambush of prey. The long silvery-grey fur with hints of darker stripes throughout covers the entire cat, with a long black ruff around the neck. The short stubby tail (9-12 cm) is tipped with black [1,2].

The primary food of the lynx is the Snowshoe Hare [1], though it can be sustained on squirrels, grouse, other rodents, and occasionally domestic animals [1].

Black Bear (Ursus americanus)

The Black Bear is the smaller of the two bear species found in Alberta. The shoulder height is 91-107 cm with a total length of 1.3-1.9 m. The fur is generally black with a white blaze across the chest. However, it is highly variable ranging to reddish-brown, to tan and honey coloured. The famous Spirit bear of the West Coast with white to cream-coloured fur is a variety of black bear [1,2].

Black bears are omnivores, meaning they eat meat and plants. Up to 95% of their diet is plant material, consisting of leaves, buds, flowers, berries, fruit, and roots. The other 5% of their diet is insects, bees & honey, and the odd young hoofed mammal, and carrion. Bears use a den for winter hibernation. This can be made from a cave, hollow tree, beneath a fallen log, or under roots of a windthrown tree, even a haystack. They prefer forested habitat, foraging in clearings.

Black bears were common in this area up until about 1930 (Farley, 1932). Up to the early 1900s, numerous accounts were reported in rural areas around Camrose (Lions Club of Camrose, 1955; Armena Local History Committee, 1982; Nordin & Wylied, 1983). A number of sightings have been reported around Edmonton and Miquelon Provincial Park (Smith, 1979; Smith, 1993). In the 1960s, one was spotted at Driedmeat Lake (Kelsall et al., 1973), though is still considered rare in this area.

Hoofed Mammals:

Members of the deer family are plentiful in Alberta, and are the focus of many management issues, as the primary predator of the cervids, the grey wolf, had been greatly reduced in numbers. There are five species of the deer family in Alberta: elk, mule deer, white-tailed deer, moose, and caribou.

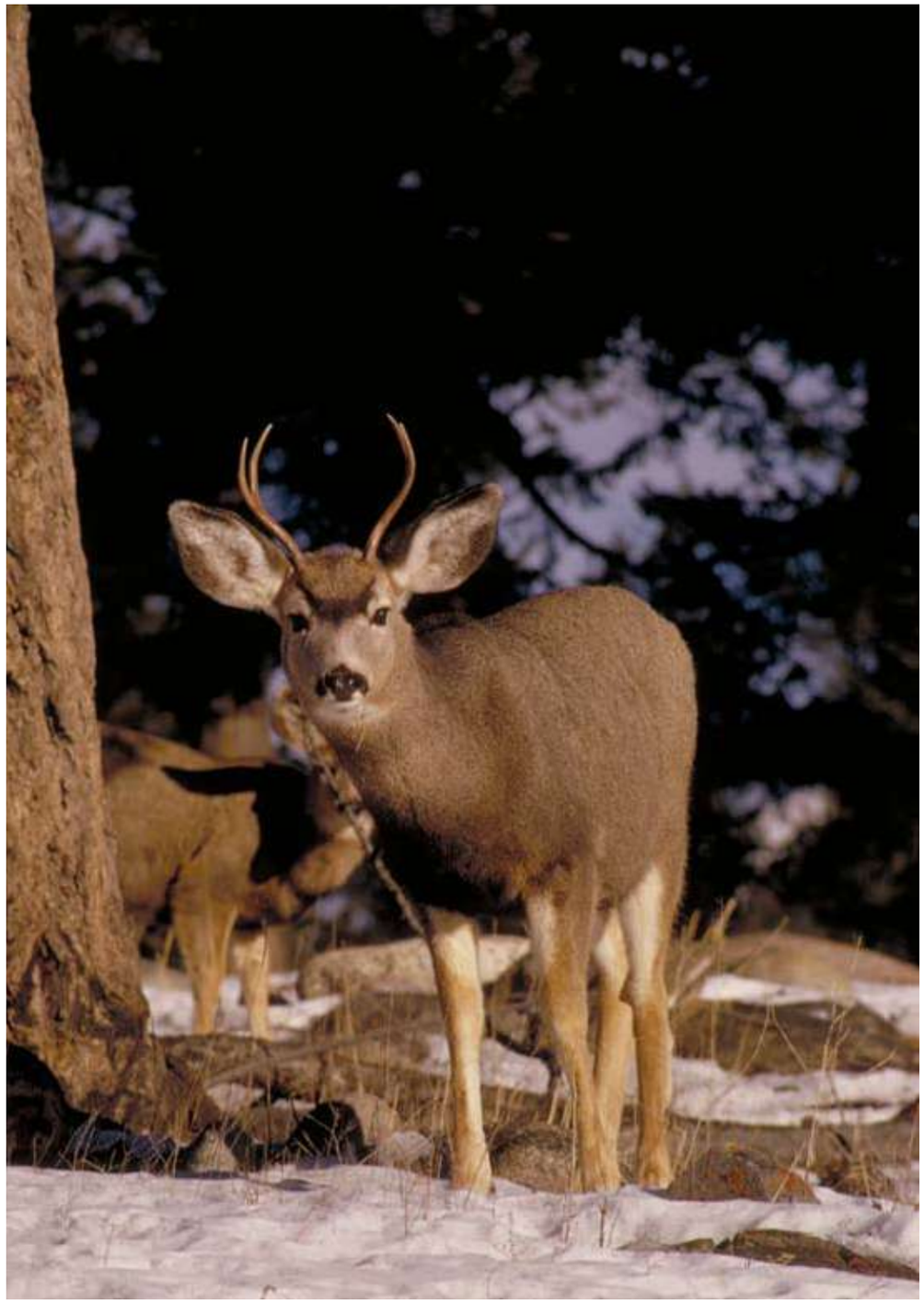
In Camrose and area, there are three species from the deer family present. Wapiti or elk, have been extirpated from the area. Though the mule deer is common in the river valley, white-tailed deer and moose are found in the direct vicinity of Camrose.

Mule Deer (Black-tailed Deer) (Odocoileus hemionus)

Mule Deer (Odocoileus hemionus) are very common throughout the province, and a regular sight in Camrose and surrounding area [3,6]. Provincially, it is outnumbered by white-tailed deer, but seems more numerous as it frequents open areas, and can be bold and conspicuous [1]. Mule deer, often referred to as black-tailed deer, are 90-105 cm (35-41 in) at the shoulder, with a total length of 1.3-1.9 m (4.5-6 ft). The summer diet consists of grasses and herbaceous plants. In the winter, the diet is made up of twigs and woody vegetation, grazing in nearby hayfields [1]. It takes roughly a month for the deer to switch over to different food sources (altering enzymes and other digestion processes) [6]

The mule deer gets it name from the large ears. It has a white rump with black-tipped tail. Overall, the colouring is tan in summer and dark grey in winter. Males develop heavy upswept antlers that are equally branched.

Their bouncing gait ("stotting" or "pronking") allows mule deer to move quickly and safely across many obstructions (Bauer & Bauer, 1995; Pattie & Fisher, 1999). White-tailed deer run in a graceful gallop [22].



Mule Deer (Black-tailed Deer)
(Odocoileus hemionus)

In the late 1800's, numbers were low in Alberta, as they were hunted extensively after the buffalo all but disappeared, as well a series of harsh winters. In the 1900's, their numbers recovered, and gradually increased, fluctuating with harsh winter conditions, drought, harvest amounts, and while they adapted to the changes in their habitat [23] O. hemionus continues to do well in fragmented and broken landscapes, and in the mountains, thriving in early successional stages of a forest [1], preferring stands of trees around three years of age [3].

White-tailed deer (Odocoileus virginianus)

The White-tailed deer (Odocoileus virginianus) is likely the most abundant member of the deer family in Alberta, found primarily in the south. Optimum habitat is deciduous forests with rolling country nearby. They prefer patches of vegetation around three years of age on the open prairie and parkland [1,2,3]. Though not seen in Camrose proper, white-tailed deer Odocoileus virginianus is in the surrounding area, often seen briefly bounding through the valley or on the ridgetop[6] It also frequents Driedmeat Lake (Kelsall et al., 1973). It appears similar to mule deer O. hemionus, though it does not have the larger white rump patch and smaller ears. O. virginianus has reddish brown colouration in the summer and greyish brown in the winter. White-tails are roughly the same size as mule deer, but can get a bit larger, get to 68-114 cm (27-45 in) tall, and getting 1.3-2.2 m (4-7 ft) long. They get their name from the white tails they hold up when they flee. Antlers are unbranched [1].

As with mule deer, diet changes with the season. During the summer, the white-tailed deer eat buds, grasses, and mushrooms. In the winter, the diet changes to a more woody diet, eating leaves and twigs of evergreens and deciduous trees and bushes [1].

Moose (Alces alces)

The Moose (Alces alces) is common throughout its range [2]. They were locally quite abundant and around Driedmeat Lake but were extirpated for quite some time [6]. Now, they have come back somewhat, and are found in the area [3]. There are no moose in the Camrose corridor at this time, though there are a number in the surrounding area (about 78 outside the city; Frank, 2007). In the late 1990s, a mother and calf wandered through the school yard of Camrose Composite High School (Frank, 2007). The moose is the largest of the deer family in Alberta.

White-tailed deer (Odocoileus virginianus)

Shoulder height of the moose is 1.9-2.2 m (6-7 ft) with long legs. The total length is 2.1-2.8 m (7-9 ft). The moose has a short neck, large bulbous nose, humped shoulders with shovel-like antlers on males, emerging laterally. The fur is dark-brown to black. In winter, a long mane develops over the hump and nape of neck; "bell" or "dewlap" from the chin [1].

The moose's diet consists of wood, twigs, buds, bark, branches, especially from deciduous tree and shrubs. In summer, it sometimes feeds on submerged aquatic plants. Moose are invading riverine valleys far into the prairies. They are particularly numerous in early successional stages of willow, balsam, and aspen forests. Moose frequent streamsides and bushy areas with abundant deciduous woody plants.

Ticks, especially the winter tick Dermacantor albipictus, have caused large die-offs of the moose in recent years in areas like Elk Island National Park and Miquelon Provincial Park. A single moose can have 30,000 to 50,000 ticks [24]. Loss of winter coat guard hairs due to extensive grooming to remove parasites can increase the moose's susceptibility to hypothermia and pneumonia. Excessive grooming also increases extra energy expenditure and less time feeding. The tick is attributed to muscle loss, weight loss due to decreased fat stores, reduced weight gains, and

Moose (Alces alces)

possible decreased metabolism. These all cause a weakening in the body's response to the ticks, and thus compromise the ability of the moose/host to survive the winter.

Ticks also infect other deer species (Mule Deer, White-Tailed Deer, Wapiti, Elk), but they aren't as affected. Denser coats prevent most ticks from penetrating to the skin [25]. Fur loss was therefore, not as extensive as found in moose [26]. Ticks can be removed by some birds of the Corvidae family (crows, etc).

Chronic wasting disease, a prion-based disease, has become a major concern involving a variety of cervids. Mule deer, white-tailed deer, and elk are known victims of the disease. Spreading vectors or symptoms are still not understood. In Alberta, there have been 17 cases in wild deer. This disease also has had devastating effects on game farms [23]. None has been found in Camrose or surrounding area as of yet, though the disease appears to be moving slightly inwards from the Alberta-Saskatchewan border.

Bison (Bison bison)

Bison (Plains Bison Bison bison bison) were present in this area and common, until the 1800's when it was hunted extensively and extirpated [1,2,3,6]. Historically, it was quite common in Battle River until 1875, with Driedmeat Lake as a favorite local hunting ground [6].

Pronghorn Antelope (Antilocapra americana)

Though now common in southeastern Alberta, the Pronghorn Antelope once ranged between the Battle River and the North Saskatchewan River until about 1880. The last specimens seen in the Camrose area were near Driedmeat in 1903 [6]. Some have recently been seen sporadically wintering in the Camrose area.

Wapiti/Elk (Cervus elaphus)

Wapiti once occurred in large herds around Edmonton (Smith, 1979; Smith 1993). Many wapiti occurred in the Camrose area until 1880 [6]. Currently, there are just small remnant populations, some seen as far south as Miquelon Lake [2]. These records east southeast of Edmonton are

likely introduced animals (Smith, 1993, Pattie & Fisher, 1999). Today, they are more common in the Rocky Mountains and other wooded habitat.

During the summer, the fur is golden brown, but in the winter grows longer and turns to a greyish browns. Head, neck, and legs are darker brown, and there is a whitish-orangish rump patch. Males have a dark throat mane. Shoulder height is 1.2-1.5 m (4-5ft), with a total length of 1.8-2.8 m (6-9ft). Elk currently prefer mixed wood forests, but used to prefer uplands and prairies [1].

Swift Fox (Prairie Kit Fox) (Vulpes velox)*

The Swift Fox (Prairie Kit Fox) (Vulpes velox) was once very common on the southern plains, but now extirpated, though attempts have been made to reintroduce is several areas [2]. It is thought to have ranged up north of the Battle River, though there is no confirmation of it being present in Camrose area.

Grizzly Bear (Brown Bear) (Ursus arctos)

The Grizzly Bear is the largest carnivore in Alberta. The height at the shoulder is 0.9-1.2 m (3-4 ft). The total length is 1.8-2.6 m (6-8.5 ft). Grizzly bears have brown to yellowish colour fur with white/grey tipped guard hairs. It typically has a large shoulder hump. Grizzly bears are very strong, and will attack if it is surprised, feels threatened, or a human comes between a mother and a cub. Angry bears often get up on their hind feet in an impressive, frightening display. Despite the terrible, yet rare, encounters with some bears, bears try to avoid humans.

Grizzly bears are primarily omnivores, though they do eat more meat than their relatives, the black bears. As omnivores, they eat leaves, stems, flowers, roots, berries, and fruits. Grizzlies also dig insects, ground squirrels, marmots, and mice out of ground. Young cervids (members of the deer family) are more commonly taken that adults, but weak adult cervids and big-horn sheep may be prey. Carrion is also eaten. In B.C. and in Alaska, fish are also eaten [1].

Current habitat is primarily forest, preferring to forage in the open spaces of clearings or roadsides. Grizzles used to be found on the prairies where they used their claws to dig up roots, bulbs, and burrowing rodents [1]. There was a sighting in 1829 at Fort Edmonton [2]. Grizzlies were found around Driedmeat Lake, and three were killed in the Battle River between 1870 and 1880 [6].

Conservation and Management Issues

History and Changes:

Many of the larger mammals, such the bison, the various species in the deer family, as well as the "furbearers" (wolf, beaver, coyote, fox, weasel family, etc) were heavily harvested in the late 1800s and early 1900s [6] to the extent that some of these species were extirpated from this area. A number of these species, such as the deer, coyotes, and foxes, have naturally recovered more quickly than others. Wolves are recovering, but at a slower rate. Some have never come back. Mink were farmed extensively for their furs, with a number in the Camrose-Wetaskiwin area. Some animals invariably escaped, so this may be a reason mink are common in this area.

Conservation

Conservation in the urban and cultivated landscape poses a lot of challenges. Not only does the loss of some animals lead to declining populations of other animals, but the loss of some animals as cause an "ecological release" of others, allowing them to flourish. For some mammals, especially some of the smaller species, little is known about their population and their habits. Lack of knowledge makes it hard to protect them, or monitor changes in their abundance. Populated areas, as well as some agricultural areas, such as in and around Camrose, do not favour some of the more gregarious mammals.

One factor in the lack of recovery of some species may be habitat destruction through urbanization and agricultural development. Some species, such as the large ungulates, and large carnivores, such as cougars, wolves, and lynx, are more sensitive to habitat fragmentation [27]. Habitat fragmentation affects large carnivores more as they have often have large hunting territories and ranges, low numbers, and are heavily persecuted by humans. This can lead to local extinctions of these species [27]. Animals such as the ground squirrels are particularly vulnerable for human persecution and habitat loss due to the overlap in land use.

Another factor is the perception that some of these species, such as the larger carnivores (lynx, bears, wolves, etc), are threats and/or pests, especially in regards to livestock. Others, like the rodents, foxes, bats, and members of the weasel family are sometimes regarded as pests.

Urbanization

Some of the animals still present, as well as a couple re-emerging species, such as the deer, coyote, skunk, raccoon, and fox, are becoming highly urbanized. For some species, urbanization can open up new resources to be exploited, as well as release from larger predators (Crooks, 2002; DeStefano & DeGraaf, 2003). Some species are sensitive to habitat fragmentation, some benefit from fragmentation, while others are neutral [27]. Badgers, lynx, and long-tailed weasels are sensitive to habitat fragmentation, declining as habitat patch size decreases and patches become more isolated, while the abundance of foxes increases with greater fragmentation and greater isolation of the fragments [27]. Fragmentation appears to have little effect on abundance and distribution of striped skunks [27]. Generalist predators (such as skunks, coyotes, and foxes) benefit from supplemental food sources, allowing them to proliferate. As well, the loss of larger predators enables smaller carnivores to be ecologically free to expand in distribution and abundance [27]. Another part of the issue, as seen locally with mule deer, beavers, and crows, is that some other animals can increase to the point to where they can become a pest, and even a safety issue [6,27]. Part of the solution is to educate people about the natural world around them and how to treat it. The other issue is proper management, which can be challenging [6,27]

Education & Involvement

The most important piece of wildlife conservation is education about the animals. People need to know how wildlife operates, what they eat, and appreciate them for the exquisite creatures they are. We need to understand that it is us who first invaded their land, not the other way around. This may foster most respect for animals. Visiting nearby provincial and national parks, going on long walks in the river valley and learning about mammals on your own are great ways to understand animals.

Management

Managing animals in an urban setting can be hard balancing act between maintaining biodiversity and habitat, and "overabundant" and "problem" wildlife [6]. Within Alberta, this is the job of Alberta Fish and Wildlife, wildlife biologists, and other governmental bodies. Within Camrose and the surrounding area, the City, and the local Fish and Wildlife officer monitor and manage populations of some of the animals, such as deer, foxes, and beavers. Problem animals are rare, but there are other public concerns. These challenges can also serve as a great educational opportunity to help people's understanding of the natural world, and how people fit in the natural world. People need to know that having greenspaces and corridors is not just about having trees and some birds, but that a host of animals call those spaces home.

Getting Involved

Build a Bat House! Attract the furry mosquito-munching mammals to your park of backyard by building a cozy bat home!
Go to http://www.srd.gov.ab.ca/fw/bats/bathouse.html or pick a copy of the building plans at the centre.
Check out the bat houses on the outside of the nature centre *

Go mammal tracking! An animal tracks guide from your local library or bookstore on local mammals and a walk in the river valley in the winter can help you learn to identify animals active during the winter. If you encounter any animals, remember to watch from a respectable distance.

Have you found a sick or hurt mammal? Call Camrose City or Fish & Wildlife.

In the species list, the asterisk (*) denotes a species whose range includes Camrose and area, but no confirmed or official documentation of sightings in the area exist. Also may include animals that were once here in great abundance and only a few having been seen since their numbers were depleted.

Frank Farley

An Early Camrose Naturalist

Francis (Frank) LeGrange Farley was born in St. Thomas, Ontario on Feb 24, 1870. He was the son of the late John Farley, K.C. He was one of six children, two sons and four daughters [1].

Mr. Farley was slotted for a career in the public schools of his home town. After graduating from Collegiate Institute in 1889, he then became involved in the banking business for two years. The new developing regions of Western Canada started to attract him. In March of 1892, he decided to move to Red Deer, as it was the most northern point of the Canadian Pacific Railroad between Calgary and Edmonton. In those early days, the only banks in the territory were in Edmonton and Calgary. Mr. Farley arrived at Red Deer with a working capital of only fifty dollars. He chose a homestead in the southeast section of Red Deer, where he would farm for the next fifteen years. He then proceeded to walk to Innisfail to buy a horse. It did not take Mr. Farley long to start exploring the region. His travels took him the coalfields near Ardley, Buffalo Lake country, as well as to the foothills near Rocky Mountain House, where he was fortunate enough to discover some unusual caves [2]. Farley came to love the land, and he would forever identify himself with this country.

In 1896 Frank Farley married Ethel. It was not without troubles, as he had to look for three days to find an official who could issue the license, as license officials were quite scarce in this time [3]. They had one daughter, Georgi, who eventually married A.R. Knox of Edmonton. While in Red Deer, Frank entered the real estate and insurance business. In 1902, he also worked for Bell Telephone Company as the local agent [2]. He sold his farm and in 1907 moved to Camrose, at the age of 37. They settled onto a farm at Dried Meat Lake.

When Mr. Farley first came to Camrose, he was associated with Frank P. Layton in the real estate and brokerage business. Later, he joined Dennis Towmey in the firm of Farley and Twomey in real estate, brokerage, and the Camrose Collieries. Farley was also a member of City Council. One of his projects, with a fellow group of men, was a Camrose publicity campaign. They chartered a train and traveled down east as well as to the United States to raise the profile of Camrose abroad [3].

Mr. Farley was heavily involved with the Camrose community from the time he moved. Not only was he part of town council, but also of the school board, and the Rotary Club [2,3]). He was also a member of the United Church. He became the president of the Camrose Historical Society for many years, and was a dedicated supporter of the Boy Scouts [3]. Frank Farley was an ardent liberal in politics, and he would fly to Ottawa in the summer to attend the National Liberal Convention. He was a progressive, public-spirited citizen and a man who carried the prestige.

Frank Farley continued to be a great traveler. He explored northern Alberta, and journeyed to Hudson's Bay, all around Canada, the U.S., the Caribbean, the Arctic Circle, and to Europe [2,3].

However, it was in the worlds of natural history and ornithology that Mr. Farley found great interest and satisfaction. Even before he moved from Ontario he became interested in the study of birds, where he had made

a survey for the Ontario Government of bird life in Western Ontario [3]. He was recognized as an international authority on North American bird life. He wrote many articles for the local newspaper, and wrote 36 papers in peer-reviewed journals [2]. The information of those journals is summarized in his book, ¬Birds of the Battle River Region, published in 1932. He also regularly wrote reports for the U. S. Bureau of Agriculture and started a conservation program for hawks [2]. In 1921, a bird sanctuary was established at Miquelon Lake was one of the first in Alberta. Frank Farley served as the first warden, from 1921 to 1931 [4]. His wage while working there was $10.00 a month [5]. He helped to organize and run the Christmas Bird Count (CBC) in Camrose for many years as a member of the Camrose Bird Club.

He prized among his acquaintances many authorities on bird life whom he had met on various pilgrimages, such as Percy Taverner. He also became a mentor to the authors of the first Birds of Alberta, especially Albert Wilk [2]. Frank Farley inspired a number of locals in the interest of ornithology. Dr. Arthur Twomey was inspired to enter ornithology and became the Curator of the Ornithology Division in the Pittsburg-Carnegie Museum. Roland Hawkins, son on James N. Hawkins of Camrose, entered into the same field, and went to the National Museum in Ottawa, and then on to be the Avi-culturalist at the Pittsburgh Aviary-Conservatory [1]

Frank Farley died in October 22 of 1949. His nephew is Farley Mowat. The Camrose Canadian wrote, “He was a prime example of how to grow old gracefully.” His name continues on, however, with his famous nephew, Farley Mowat.

Wildlife Management

There is substantial and growing human appreciation for the presence and role of wildlife in Camrose. Depending on your perspective, these species are beneficial, harmless, or cause damage. On occasion, conflicts arise between people and some wildlife, which are called “nuisance” species. These include beavers flooding trails, crows causing noise, and mule deer eating backyard plants.

Red Foxes

In 1952, a province-wide rabies control campaign targeted skunks, porcupine, and canines like wolves, coyotes, and foxes. Though wolves and coyotes are smarter and did not take the bait as readily, foxes were more easily coerced. This campaign decimated the population of red foxes in the Camrose area. Even up to ten years ago there were not a lot of foxes in the Camrose valley.

The red foxes are now common in the Camrose valley and surrounding area. A survey conducted last summer indicated that there were approximately 10 dens in the Camrose greenspace corridor. The coyote is a natural predator of foxes, but (in Camrose) will not enter into the city. Thus, the foxes are safe from predators within the city's corridor. Though there is not an overabundance of these mammals, some of the interactions between humans and foxes have caused some grievance in the community.

Foxes are very good at what they do. They are tolerant, smart, and very versatile. These qualities make them good hunters and scavengers. They eat mostly smaller mammals such as the Richardson Ground Squirrel (and other related species commonly known as gophers). However, when they adapt to the urban environment, this can lead to problems. They will scavenge in garbage, and may even make off with small dogs and cats. Domesticated animals no longer possess the knowledge to fight wild animals.

Fox dens are often located in inopportune places as well. A den near a roadway can be a problem, for both the foxes as well as humans. As foxes cross roadways in search of food, accidents occur. Non-lethal, but often disabling accidents means animals must be

euthanized. However, should a vixen feel that she and her litter of kits are threatened, she will move them to a different place. A male dog or fox (or human) leaving a mark or territory on or near the den site is one of the main initiators of this response. Human intervention is also possible through trapping and relocating them to another area.

Though foxes are wild animals, they are easily habituated to human presence. On the other hand, fear of the foxes is almost an irrational fear. Being quite a bit larger than the foxes, humans could, under most circumstances, easily spook or scare off any seemingly troublesome fox. It is a small dog, and responds in much the same way [1].

As foxes are scavengers, readily available sources of food encourage their presence. To discourage foxes from using on human food, pick up after picnics and other outdoor eating events, store garbage in appropriate containers, and do not place excess pet food outside [2].

Most of the management issues surrounding foxes in Camrose revolve around the intolerance of people toward the wildlife. Some people do not like having wildlife wander around their house, live under their deck, or eat their garbage. Secondly, they don't understand the animal. This breeds fear. Having a greenspace is not just about having a nice pond with ducks. With it comes the wildlife looking for homes and spaces to rear their young [1].

Mule Deer

Around 10 years ago, there were not too many deer wandering the valley. However, in recent years, the population has increased. The main factor involved in this increase is the number of consecutive mild winters. This enables the deer to live longer and to have more fawns; most of the does here are having twins, instead of the usual single fawn. Lack of limiting factors, such as predators and harsher weather conditions allow the population to increase. Deer from the surrounding area also move in, further increasing the population.

In the deer society, males are only around for the rutting season. Otherwise, they take off on their own, and the does and young band together, in family groups, or larger herds. It is a matriarchal society where the does teach the younger deer.

The deer found in the Camrose valley are mule deer (Odocoileus hemionus). White-tailed deer (O. virginianus) are present outside of the valley and prefer the open. White-tailed deer tend to be wilier, making them a bit harder to manage. There also seems to be some sort of territory established by the mule deer in town. The nature corridor through Camrose would be a good habitat for the moose and white-tailed deer, but the mule deer appear to be keeping some sort of dominance in the valley [1]. Wild mule deer are naturally more docile, but even more so when more habituated to humans. Does like to habituate with people, and start to not pay humans much heed.

The issues in deer management are many. Two main issues in Camrose are "problem deer" and safety concerns. Increased deer populations mean an increased likelihood of collisions involving deer. No human fatalities have yet occurred in town due to the slower speeds. As well, deer pose less danger in collisions, unlike with larger species, such as moose. Deer involved in vehicle accidents don't often die, but are severely injured, meaning those animals will be euthanized, or they manage to limp off somewhere in the bush and die. To decrease the local population, a managed cull (killing a selected group of animals) of some of the older does was conducted in 2005.

"Problem deer" complaints are caused by a number of issues. First, with a larger population, deer search to find new food sources. These "sources" often end up being people's gardens and flowerbeds. This is especially true in spring, before the wild grasses have started growing. Tulips and other early bloomers look like prime food to the deer. Another cause of "problem deer" is the intentional feeding of deer, especially in the urban environment like backyards. One person may enjoy having deer around does not mean that their neighbours do. Plus, these deer may also cause additional problems, such as garden and property damage.

Reports of "problem deer", more often than not, are the result of intolerance of and lack of knowledge about the ungulates [1].

To minimize intrusion and damage done by deer, developers and citizens could use plants deer dislike, such as conifers, as well as a variety of perennials and annuals [2].

American Crows

A couple years ago, the city began a crow nest removal program, asking citizens to report any observed crow nests. Not only were crows becoming too numerous, but often hazardous, by dive-bombing people [1].This is because urban crows are habituated to people and do not fear us, which makes them more aggressive [2]. The city and Fish & Wildlife officers actively destroy crow nests in town as well as just outside of town. A flock of about 20 birds was culled in the summer, under controlled circumstances, in the river valley [1]. Other methods, such as scaring with pyrotechnics and electronic devices are also possible, but may not be as effective. Citizens can help minimize crow disturbance in an area by limiting the anthropogenic food sources. AS well, citizens can make sure garbage is stored in garbage cans with tight-fitting lids, and do not leave pet food out [2].

Beaver

Beavers in the area were completely wiped out during the trapping era. In that period of time a beaver pelt was worth $75, which was a whole month's wages. However in the 50's and 60's, they were re-introduced. Beavers were protected until about the 80's. During this time, prices (and demand) for beaver pelts fell to roughly $20, barely worth the time it took to prepare the pelt. Now, there are beaver hunting licenses available, but are not very valuable.

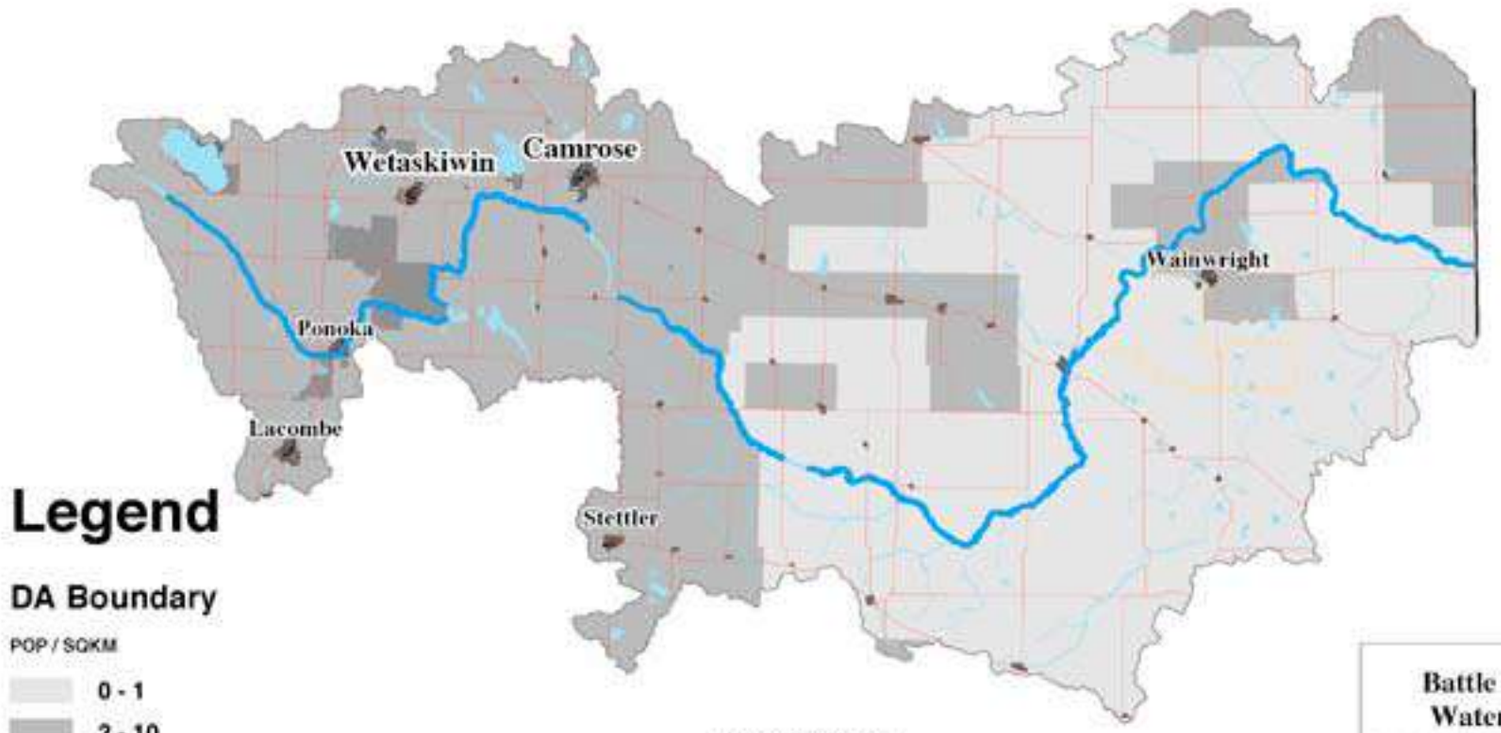
The main source of beavers (in our case, the Battle River) is the young beavers looking for territory. A pair, a male and female, finds some flowing water, builds the dams and a lodge. There is the main dam, but there are a series of other dams downstream put up as secondary dams. Not only do beavers need trees for all these dams, but also for the lodge and food. This requires a lot of trees

Today, beaver are viewed as agricultural pests as their dams flood fields and de-forest river banks and riverfront property. Any trees that are sweet, such as crabapple and some exotic trees are favorites, though they naturally prefer poplars and willow. Efforts are made through use of backhoes and dynamite to get ride of the dams. Some trapping and shooting of beavers also takes place to temporarily remove the perceived problem. But, more will move in.

In the Camrose Creek system, from the Lyseng Reservoir to the Battle River, a number of habitats exist. North of the city, agricultural land tilled to the banks of the creek leave tall rushes and grasses. Further down, the creek passes through aspen forests. In the city, some trees are available. South of city, the creek runs through the aspen forest before entering the Battle River. Areas where aspen forests border the creek, significantly more dams and food caches are found [3]. In the aspen forest, there are around 2.6 active dams per kilometer and 1.0 food caches (representing one colony of beavers) per kilometer [3]. Lodges were also more abundant in aspen forest habitat, around 1.2 per kilometer [3]. In one lodge, there can be up to six beavers: parental pair, yearlings, and new kits.

The county of Camrose and private landowners use various forms of beaver management. The two most common methods are dam removal and harvesting [3]. Within the city limits, dam removal is done either manually or through the use of back hoes. Further south along the creek, the County uses dynamite to remove dams more quickly [4]. Harvesting of the beavers is done either through controlled shooting or trapping. City or county officials, as well as individual landowners are all able to harvest [4]. Live trapping using "suit case" traps is also used by the city. This form of management is limited as there are a limited number of places to relocate the beavers. The beavers' territoriality would prevent the relocated beavers from integrating into other colonies [1,4]. Camrose has also placed PVC piping through dams to allow continuous water flow to help avoid flooding of areas and to increase water flow. The technique is only temporarily effective as the pipes are quickly dammed by beavers [1,4]. The city has also used the beavers' dislike of conifers as a management method. Planting of coniferous trees along the banks may force the beavers out of the area [4].

Population Density *
People /Square Kilometre



Legend

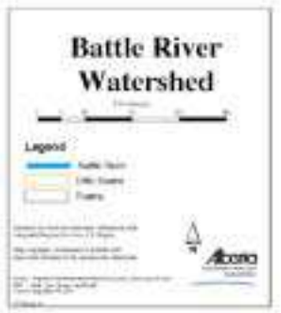
DA Boundary

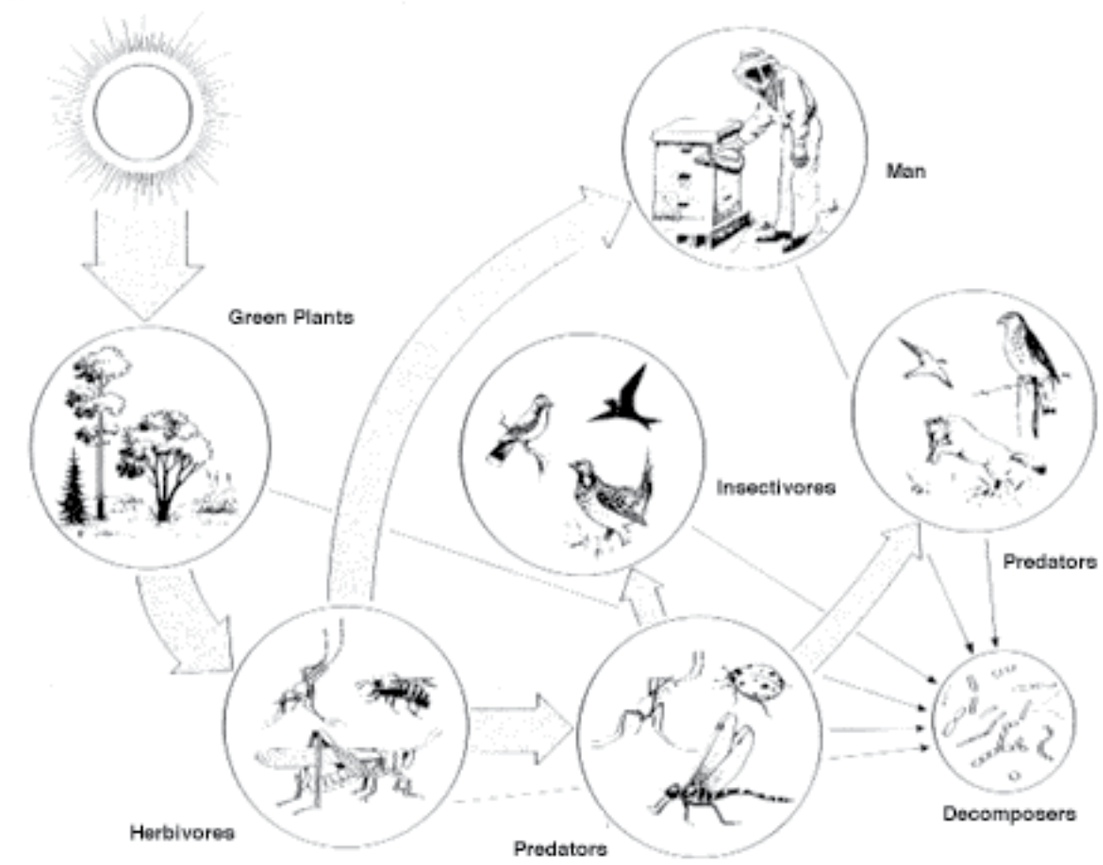
POP / SQKM

- 0 - 1
- 2 - 10
- 11 - 100
- 101 - 500
- 501 - 1000
- 1001 - 4000
- 4001 - 7077

Data Provided By:
Statistics Canada, GeoSuite, 2001 Census

* Note: The population for the Ermineskin Reserve was taken from population data provided by AlbertaFirst.com and is based on a 2003 census.




Man
Green Plants
Insectivores
Predators
Herbivores
Predators
Decomposers

Skiing

History

In 1893 the first settlers of Norwegian origin moved into the New Norway area , later other Scandinavians settled in the Nordo district east of Donalda. These immigrants, coming either directly from Sweden and Norway or from Scandinavian settlements in the Dakotas and Minnesota, brought with them their Lutheran faith and their love of ski jumping and cross country skiing. Organized Nordic skiing in Canada was pioneered by these Camrose area settlers.

Fast start

Peter Boutiler takes off fast during cross-country skiing competition at the Camrose Ski Classic last weekend. Boutiler competed in the citizen Racers event and was one of 245 skiers entered in the Alberta Cup meet. Camrose was well represented at the finish line as they recorded first in several races.
—Photo by Murray Green

Ski Classic is a hit

More than 245 nordic skiers converged in the Rose City for the Camrose Ski Classic '86 on the weekend.

"We had many compliments regarding the course," said local ski coach Gary Gibson. "Several coaches were of the opinion we are now ready to host a national or international-calibre races in the sport."

Ken Nowosaid of Edmonton captured the senior men's 30-km event with a time of 94:47.1 while John Gibson, a former Camrose Lutheran College Viking, took fourth place.

In the senior women's division, Kelly Bruce of Banff recorded the fastest time of 69:39.8 to win the title. Kim Grattidge of CLC climbed two minutes closer to Ingrid Otto of Edmonton in the Alberta Cup standings. Grattidge came in fourth.

Clarence Servold of Camrose entered his first race and took fourth in the master 30-km event. Frank McNamara crossed the line first.

Anki Ravold, representing the Vikings while attending Camrose Composite high school, improved her provincial ranking. She came in third to move from sixth to third spot in the second leg of the Alberta Cup. Susi Gomez crossed the line in fourth place.

Scott Rogers placed fourth in the junior boys 10-km event. Rod McNeill of Grande Prairie won with a time of 33:35.8.

Kevin Milliken of CLC won the Citizens Racers event. He won the men's 10-km with a time of 33.7 while teammate Paul Hansen came in second. Ken Rayment Sr.

On October 2 , 1911 the Fram Ski Club (Fram is Norwegian for 'forward') was formed by the three Engebretson brothers and P Middlesen , Adolph Maland and Lars Marland. That year a ski jump was built and a tournament was held .In 1914 the ski jump was replaced .In 1922 a 95 foot scaffold was erected and this lasted until 1928 when it was blown over by strong winds. In 1930 a new jump scaffold was built but unfortunately was destroyed by fire. Later a new ski jump was built and an addition was built in 1932 in preparation for the Western Canadian Championships. Again in 1954 a larger jump was built and in 1990 for the Alberta Winter Games extensive improvements were made to the ski jump.
The first ski tournament was held on January 31,1911. It was held at the club's slide one mile south of town on Coal Mine Road. Admission was twenty five cents.

The Camrose Canadian described it as follows:
A little glimpse of the land of the Midnight Sun was given the large crowd of enthusiastic supporters who gathered on Wednesday afternoon to witness the first exhibition of skiing given under the auspices of the Fram Ski Club of Camrose. The event was presented like a Norwegian holiday and the scene presented to the visitor had a truly Norwegian setting. Towering above the ravine in the rear of Ed Thompson's farm was the 'slide' from the summit of which waved the Norwegian flag. The slide itself had an elevation of fifty feet and from the base of it was taken the flying leap on the length of which the contest depended. Down in the ravine was a large gathering of mostly Scandinavian people who had comes from miles around to witness an exhibition of their national sport.

There were seven who vied with one another. The preliminary trials were not very successful but after the contest was opened the sport was thrilling to say the least. “I wouldn’t come down there on a hand sleigh” said one who had no desire to be a bird man. Each contestant took three trials and no jump was less than 50 feet. Great skill was shown by A. Maland who won a round of cheers for his leap of seventy four feet. This was the highest score and entitled Mr. Maland to take the honors of the day. Second place was taken by Carl Sando whose longest leap was sixty six feet . L. Maland won third place and O. Engebretson took fourth. The exhibition closed with a daring twin jump by Lars and Adolph Maland who together took a leap of sixty feet.

The object of the exhibition was to introduce the sport to Camrose people and to raise enough funds to pay for the cost of scaffolding for the slide. The hat was passed around and approximately $50.00 was subscribed. This in addition to a donation of $5.00 made by Carl Levang , R. Price and others. It is possible that the slide will be lengthened by thirty feet before the close of the season.

In February 1912 another ski meet was held with skiers from Edmonton and Camrose competing. Over a thousand people watched the event and skiing in Camrose had come to stay. After this tournament an association was formed to govern the sport through the provinces west of Winnipeg. It was called the National Ski Association of Western Canada. The first president and secretary were from Camrose. In the ensuing years Camrose was known across Canada for the fine performances of its skiers. Names such as Nels Willman, S. Sandboe and the Maland brothers dominated the winner’s lists. In 1914 Ole Eivandsen won a seven mile race at Revelstoke. In 1917 Lars Maland won the Sons of Norway trophy in Banff. Also in 1917 Adolph Maland set a new Canadian record with a ski jump of 128 feet.

In 1922 the Ski Club organized a cross country race over a nine mile course beginning at the first block on Main Street and ending at the south end of Camrose. Mr. Y. Gotaas of Camrose won in a time of 1 hour and 20 seconds. Around this time the name of the club was changed to the Camrose Ski Club.

In 1928 Nels Willman, who had recently moved from Camrose to Edmonton , jumped 131 feet to win the long standing jump at the Edmonton Ski Tournament. Justein Nordmo of Camrose was second. In the B class Irvin Larson of Camrose was first and his 14 year old brother Harold came second. Ray Saunders of Camrose took third place

In 1929 Justein Nordmo became the Canadian Nordic Combined champion. In 1930 Paul Gotaas ,also from Camrose, claimed this honour. Both Mr. Nordmoe and Paul Gotaas dominated the Canadian and Western provincial championships from 1927 until 1934. G.Aasen, P. Bjornson and M. Sjolie kept the championships in Camrose until 1945. The first ever recorded triple ski jump was performed at Connor's ski jump in Edmonton by Camrose ski jumpers, Harold Larson, Peter Bjornson and Gunner Aasen. In 1947 The Camrose Ski Club reported flooding at the bottom of the ski jump and a grass fire on a hilly parking area .

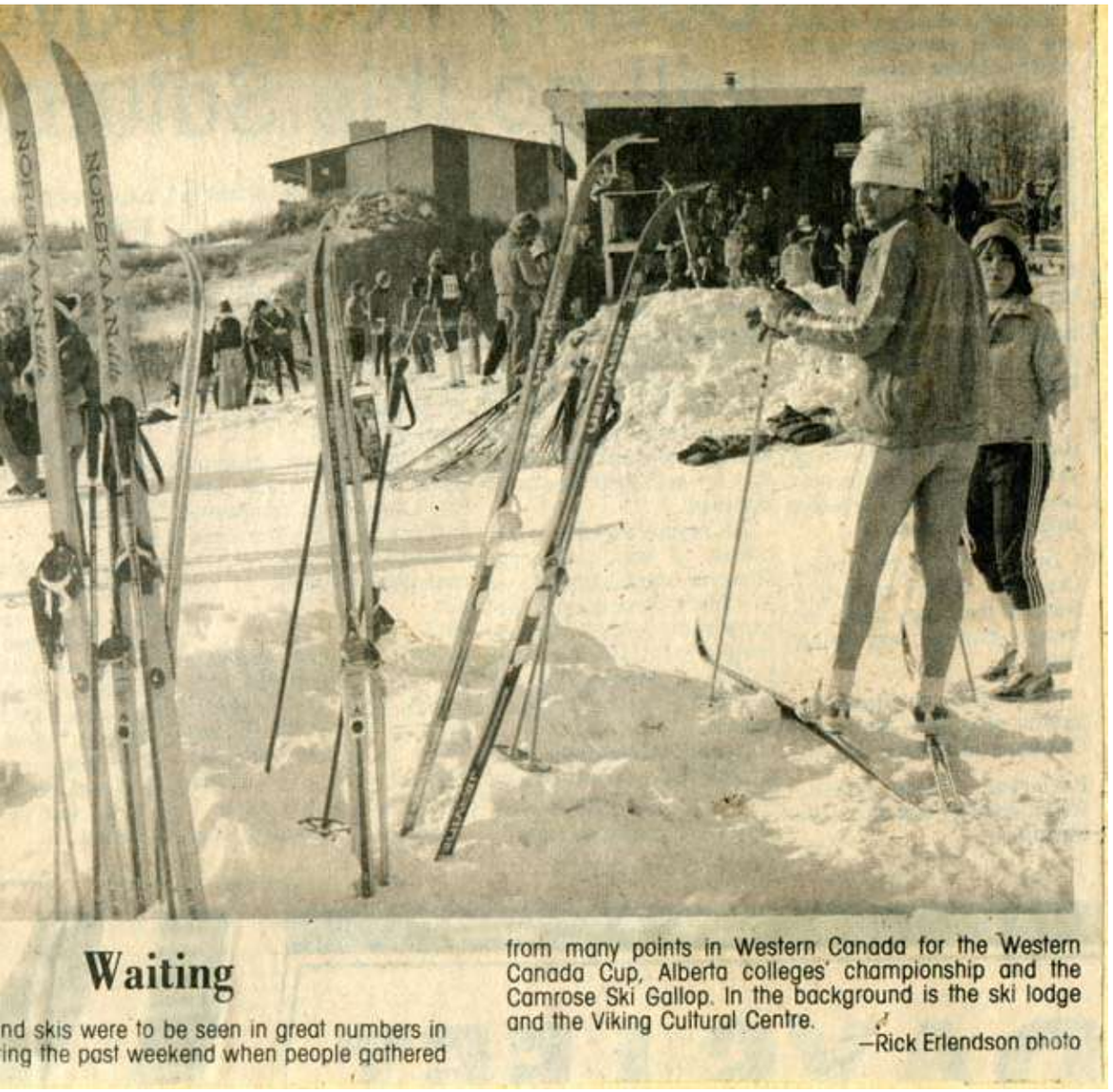
Until 1947 skiing in Camrose had been strictly a competitive sport for men and even more so for mostly Scandinavian men . However in 1947 girls began to cross country ski in competitions. In 1948 a former Swedish cross country star named Gostaf Lindgren came to Camrose. He began to work with Carl and Paul Gotaas jr. and also the Servold brothers who would later represent Canada in the Olympic games. During the 1950's the Camrose Ski Club was very well represented in championship skiing throughout Western Canada. In 1953 the Camrose delegation took all the top honours in the Provincial championships. The Sons of Norway trophy for the most points in a single jump went to Irvin Servold. This kind of performance was common for Camrose skiers during the 1950's . The average membership in the 1950's was between 75 and 100 skiers. Also around 1950 Rolph Lund developed a small hill southwest of Camrose Lutheran College so that he could begin to teach small children how to ski. A small jump was built and on

average 60 children would come out each week for instruction. In 1960 the president of the club, Rolph Lund ,applied for a grant from the provincial government. To everyones surprise the grant money was awarded in the sum of $11,000. The money was used to clear brush and reroute the creek west of the present jump, build a new club house, equip the area with floodlights and put in rope tows. Prior to this the ski house comprised a small hut with a stove in it. The new ski house had over 2,800 square feet of space with lockers , showers and a kitchen. In 1962 Gordon Lund was selected to be a member of the Alberta ski team and was awarded the Sons of Norway trophy as the best combined junior skier in Alberta. In 1963 Gordon Lund won the provincial ski championships and later won the Canadian junior combined ski title. Up to 1964 the membership fees for the Ski Club were $1:00 and children did not pay a fee.

In 1964 the membership fees were $25.00 for families , $15.00 for adults and $5.00 for children under 12. In 1965 the Alberta Junior Ski Championships were held in Camrose.

In 1966 the Ski club started to develop a new area 3 miles southwest of Camrose to accommodate the increasing number of skiers in the area. By 1969 the ski club had 63 adult members, 52 students and 79 children for a total of 194 members. During the late sixties Bob Osness of Camrose was twice the Canadian Nordic Combined champion.

In 1969 Camrose organized the Canadian Senior Cross-country Ski Championships for the first time. In March of 1969 three Camrose skiers brought home gold medals from the Provincial Championships-they were Joan and Bob Osness and Eva Williams.



Waiting

nd skis were to be seen in great numbers in
ing the past weekend when people gathered from many points in Western Canada for the Western Canada Cup, Alberta colleges' championship and the Camrose Ski Gallop. In the background is the ski lodge and the Viking Cultural Centre.

—Rick Erlendson photo

The 1970 Alberta Ski Championships were held in Camrose. Several Camrose skiers took medals including Bob Osness, Shelly Servold, Norm Osness ,Claire Rolf and Joan Osness.
The 60th anniversary of the Camrose Ski Club was celebrated in 1972 and the Provincial Championships were also held in Camrose that year with the Osness siblings taking gold.

In 1974 Irvin Servold delivered 100 complete sets of cross country skis to be used by Camrose Composite high school and Camrose Lutheran College. This equipment was a donation from the Camrose Rotary Club, mainly due to the efforts of Judge Norman Rolf. Dr Garry Gibson had begun an intensive ski program at the college and was fortunate to have amongst his students one of Canada's best junior skiers ,Joan Osness.

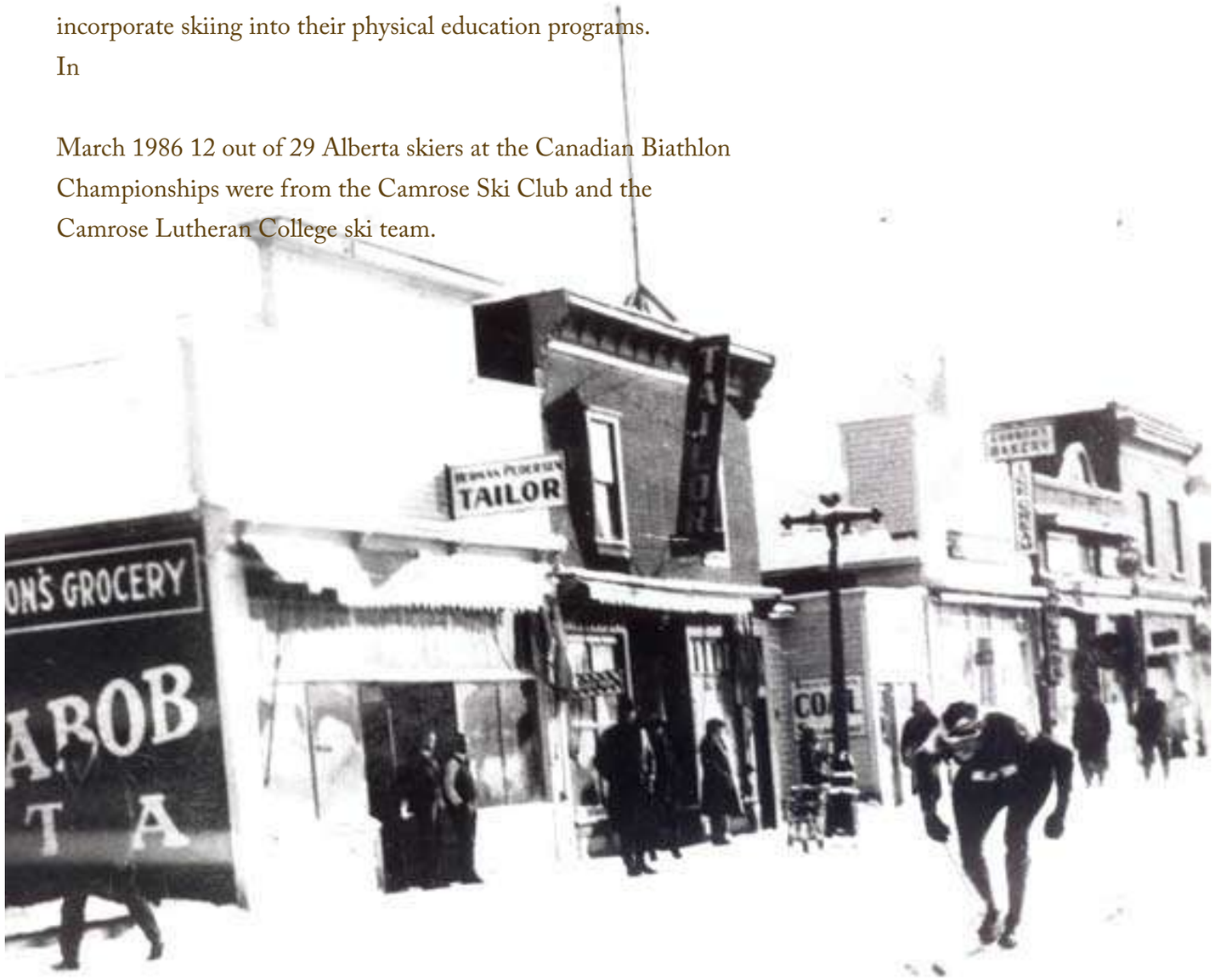
In 1977 the Camrose Ski Club held its annual meet which 90 skiers attended . Skiers from Camrose and Camrose Lutheran College dominated the medals. The first citizens ski race was initiated in 1977 and was called the Camrose Cross Country Ski Gallop. It was open to participants age 10 years and older. The race began at the Ski Lodge and proceeded up the Stoney Creek valley , through Jubilee Park and onto the golf course.

In 1979 at the Junior National Championships in Sudbury, Ontario Camrosians Carol Gibson, Steven Hansen, David Ingebergson and Reuben Hansen represented Alberta.

In 1981 26,000 cubic feet of dirt was put on the ski hill. The club was awarded $65,000 from the city and $5,800 from the Provincial Parks and Recreation department for trail development.

In 1982 five Camrose skiers, coached by Clarence Servold, went to the Canadian Biathlon Championships in Val Cartier, Quebec. They were Ingrid Servold, Susan Stewart, Ken Rayment,Jn. Steve Hanson and Glen Rupertus. In February 1986 the Alberta Sports Council presented a cheque for $17 ,271 to City officials as the first of 4 payments designed to make Camrose a Nordic training area. Over a period of years during the eighties the Camrose Rotary Club donated skis, bindings,poles and boots to various schools in Camrose so that schools could incorporate skiing into their physical education programs.
In

March 1986 12 out of 29 Alberta skiers at the Canadian Biathlon Championships were from the Camrose Ski Club and the Camrose Lutheran College ski team.



During the 86-87 season the Ski club hosted 3 Biathlon and 2 Cross country ski races, a jumping and Nordic combined competition and a Loppet. After the 1990 Winter Games this Loppet or Ski Gallop became known as the Ole Uffda Loppet. The ski trails at Camrose Nordic centre have been consistently up upgraded over the years and at present comprise the following trails:

Camrose Golf Course Access from the Club house at 5105 66 Street.
Easy 4 km loop for recreational skiing.

Camrose Nordic Centre Access from 39 Avenue and Parkview Drive.
Cross country outside loop 18km.
Easy 1.25 km. 2.25 km. (with lights)
Intermediate 3.75 km, 5 km, 7.5 km,
Biathlon Trail
Easy 1.25 km, 2 km,
Intermediate /Advanced 2.5 km, 3.75 km, 5 km, 10 km,

Biathlon Range Access from Camrose Drive and 50 Street.
32 shooting lanes for small bore rifles only.

Rotary Trail ---- Bi-directional trail linking cross country and biathlon systems.

Luge Track Access from Camrose Nordic Centre
473 metres of ice track for natural luge.

The Camrose Winter Games.

The move for Alberta Games began in 1974 as a provincial movement for amateur sport, giving all Albertans an opportunity to participate at a grass roots level. In 1978 the Alberta Games Council became a non-profit Crown Corporation responsible to the Minister of Alberta Recreation and Parks . This organization became the Alberta Sport Council. The concept of the Games is to give all Alberta athletes who have the ability and interest the opportunity to develop their skills and attain their maximum potential. It is also to promote participation and competition. The annual Winter and Summer Games are four day events. There are zone play-offs in which thousands of Albertans compete for the chance to advance to the Provincial Games. In June, 1987 the City of Camrose was invited to bid for the opportunity to host the 1990 Alberta Winter Games. A bid was submitted and in January , 1988 the Alberta Sports Council named Camrose as the site of the 1990 games. The dates of February 22-25 1990 were confirmed.

The original games budget was to be approximately $690,000 and of that amount roughly half was to be spent on equipment and improvements which would remain in Camrose for future

recreational use by the citizens of Camrose and Camrose county. In addition to this money the Camrose Ski Club installed $250,000 worth of snow making equipment. Although a large proportion of the costs were to be paid by the Alberta Sports Council it remained up to the City of Camrose to supply at least $150,000. By February, 1990 the cost had reached over one million dollars in total with the budget for the Camrose Games Society at $800,000 plus.

The city expected in excess of 2500 athletes to participate in 25 competitive events. As well as the traditional winter sports of skating, skiing and curling many indoor sports such as bowling racquetball, table tennis and wrestling were included.
The Scandinavian heritage of the area was to be highlighted during the games through a variety of cultural events.
The games mascot, Ole Uffda, was created by Camrose artist Jim Brager . He was approached by the Camrose Games society in 1989 and eventually came up with aViking to reflect the local Scandinavian heritage. The mascot was named by Daniel Watts after a school contest was held to come up with the best name. Uffda seems to be a Norwegian slang expression of frustration or exclamation. His likeness appeared on advertisements, tee-shirts, mugs and decals all over the province to spread the word about the Camrose Winter Games.

Central Ski Area Facilities

It was proposed that a 30 meter ski jump be constructed for the Games and a 15 meter jump be built adjacent to it for warm up and training purposes. A 50 foot high tower was required to complete the top start platform . Preliminary designs estimated that the cost of the jump would be approximately $40,000. Since the Camrose Ski club had consistently upgraded its facilities very little was required to improve cross country ski locale other than new lighting and a timing shack. Snow making equipment was required due to the lack of snow pack during the winter in this area and costs were estimated at $150,000 .By February 20 the total cost of improvements to the skiing facilities had reached $500,000.

Team Parkland from Zone 4 (which includes Red Deer, Wetaskiwin, Camrose and Coronation) had the largest contingent of athletes including 45 from the Camrose area. The Camrose ski jumpers coached by David Servold took first, second, third and fourth in the boy's juvenile novice event. Grant Harder took first place with a jump of 36.5 meters. Jeff Hagen received the silver medal and George Watts the bronze.Camrose area athletes also competed successfully in the biathlon events with Laryssa Ross ,Shaun Musgrave, Rhonda Trapp and Krysta Stoilen receiving medals. In the cross country ski events Neil Musgrave, Jennifer Plishke, Cathy Bertram, Shelley Brink and Karsten Mundel were among local athletes who received medals. Out of 8 zones competing in the games Zone 4 was third in the medal standing with 22 gold, 36 silver and 19 bronze for a total of 77 medals. Zone 3 (the city of Calgary) was top with 125 medals. A total of 472 medals were awarded during the games .

Camrose Games Society directors and staff :
Dale Toogood, Bill Fowler, Dana Andreassen, Greg Scott, Roly Melin, Bernie Boser, Dennis Johnson, Don Hutchinson, Marion Williams, Terry Ofrim, Fran Bowlan, Al Rostad, Errol Moen, Cheryl Stewart, Cheryl Galenza, Wendy Schielke, Eileen Wallis, Jim Cook, Marion Marler, Grant Skippen and Linda Mazurenko.

Outstanding Coaches and Skiers in the Camrose Region

Kaare Engstad was born on January 1 , 1899 in Norway. Moved to Camrose. In 1932 he moved to Burns Lake BC.
Olympic Games 1932 Lake Placid
Cross Country 50K Rank 16

Mr Engstad died in Ottawa , January 10 , 1981.
Jostein Nordmo won the all round Dominion amateur skiing championship in Montreal in 1929. In 1930 Mr. Nordmo won the Clark Cup for the third time in ski-jumping events in Banff. In 1932 he represented Canada at the Lake Placid Olympic Games.

Mr Nordmo was very lucky to have obtained the funds to go to the games from the Canadian Ski Association as other skiers such as Paul Gotaas were unable to compete because of lack of funding.

Irvin Servold, born on Camrose in 1932, now residing in Devon, Alberta.(2007) He first started competing at the age of 7
Canadian Nordic Combined championships First place :1955,1958, 196, 1964, 1965, 1966 and 1968 .
North American Nordic Combined :First place 1967.
Olympic Games 1956 Cortina , Italy .
Classic Combined:Rank 27
Olympic Games 1960 Squaw Valley , USA.
Nordic combined Ind. Rank 25 Cross Country 15K Rank 47
30K Rank 40
National chairman of the cross country C.A.S.A. In 1969
National cross country ski coach. A member of the Canadian Olympic association and the Coaching Association of Canada .In 1980 his outstanding contribution to sport was recognized with his induction into the Alberta Hall of Fame. In 1985 he was inducted into the Canadian Ski Hall of Fame. In a media release in 2005 the Canadian Birkebeiner Society made known the fact that Mr. Servold would be skiing the event with his two sons, a daughter and three grandchildren. He has now been skiing for over seventy years. After the Birkebeiner Mr. Servold was to travel to Russia to compete in the World Masters Championships and then on to ski competitions in Norway. Clarence Servold, born in Camrose in 1927, now residing in Camrose (2007)
After several years of local competitions he gained national prominence in 1948 when he became Canada's Junior Nordic

Combined Champion.

At the 1955 Canadian Championships Mr. Servold took first place in the 15K and the 30K cross country and first place in the Nordic combined event.

In 1956 he won the 15 K cross country at the Canadian championship and the North American championship races .He attended the University of Denver from 1956 to 1958 where the Denver Pst referred to him as “the best cross country man in college history”.

Olympic Games 1956 Cortina , Italy

Cross Country 30K Rank 37 15K Rank 19 50K Rank 22

Olympic Games 1960 Squaw Valley , USA

Nordic Combined Rank 28 Cross Country 15K Rank 35

30K Rank 36

In 1960 he came back to Canada to coach the Canadian Nordic ski team at the World ski championships in Poland.

In 1962 and 1964 he took first place in the 15K race at the Canadian championships. In 1966 he coached the Canadian cross country team to first place in the world championships in Norway. In 1967 Mr. Servold became the first veteran’s 15K cross country North American champion. He was active as a team member in the development of several ski facilities, among them the site of the 1971 Canada Winter Games in Saskatchewan. He was a consultant in the design of the 1975 Canada Games site in Lethbridge in 1975 and acted as an official for the games. He was active in the design and construction of the ski facilities for the Alberta Winter Games in Camrose.

Claire Rolf was born in Edmonton and was raised in Camrose. She took Grade 12 and the first two years of university at Camrose

Lutheran College and then left to complete her degree in Outdoor Education at the University of Alberta in Edmonton. Worked at the University of Calgary in Educational Psychology. Spent 6 years with the Community of L'Arche in Calgary and India. L'Arche is a community founded by Jean Vanier to take care of people with developmental disabilities. She represented Alberta at the junior National Championships in 1969, 1970, 1971, 1972 and 1973. In 1973 she was selected to the Can-Am team. In 1976 she won a gold medal in the first Alberta Winter Games. In 1978 she was a coach for the Canada Winter Games in Manitoba. She entered the Dominican Order in 1980 and was the coordinator on the International Committee of Dominicans. She is now Sister Claire Marie of Jesus of the Dominican Order. Until recently (2007) she resided in France as the Prioress of the International Community of Prouilhe. After taking some time for a sabbatical Sister Claire hopes to found a Dominican Monastery in the Vancouver area.

Carol Gibson was born in Camrose, Alberta on 15th of December, 1964. Now lives in Canmore, Alberta.
Olympic Games 1988 Calgary Canada.
Cross Country 10 K Classic rank 33 5K Classic Rank 33 20K Free Rank 26 4X5K Relay Rank 9
1990 Canadian National Championships National Senior Champion
15K. free Rank 1 10K. classic Rank 1 30K. free Rank 2
1987 World Cup Canmore, Alberta. Skied second leg of Relay. Team placed second .The highest result ever for a Canadian team
1986 Canadian Championships 4th place overall
1986 Canada Cup Silver Star Overall title
1984 Canadian National Championships Kamloops BC. National Junior Champion.
1983 North American Junior Champion. Competes in World Championships in Finland and Student Games in Bulgaria, Sweden

and Finland.
1982 National Championships, Manitoba. Wins Shell Cup and takes National crown. Qualifies to World Juniors in Austria.
1981 National Championships in Whitehorse Wins Shell Cup on points. Third in Nationals.
1980 National Championships Second in 5 km Classic.
1979 Qualifies for Canada Winter Games in Brandon , Manitoba.

Glen Rupertus was born in 1964 in Wetaskiwin, Alberta. Now lives in Courtney, BC.
He joined the Camrose Ski Club in 1978 .Dr. Garry Gibson was his first coach. In one of his early races in the 1979 provincial championships he came third in the junior boys category. Among his many accomplishments are 14 years on the National Biathlon team , 10 National titles as a senior and one as a junior and 3 Olympic Winter Games. After moving to British Columbia he was head coach of the local ski club, the Strathcona Nordics, for three seasons. They have a world class cross country and biathlon facility at Mount Washington Alpine resort. In 2003 he was the head wax coach for the Senior and Junior National Biathlon teams and went to Finland in 2004 with the National Biathlon Junior team. Also in 2004 he was involved in the Spirit of 2010 committee .Mr. Rupertus is a Level 4 Biathlon and a Level 3 Cross country coach. In 2006-2007 he focused on helping children in the Bunny ski class and guided blind skiers in competition for the Para Olympic events at Mount Washington. He credits Dr. Gibson with much of his success as well as Hans and Joan Skinstad who prepared him for his first Olympics in 1988 . He is a lifetime member of the Camrose Ski Club . Mr. Rupertus has 2 children ,

Stephanie born in Camrose in 1998 and Orion born in Comox in 2001.

Olympic games 1988 Calgary ,Canada
Biathlon Sprint 10K Rank 34 20K Rank 34 4X7. 5K Relay Rank 15
Olympic Games 1992 Albertville
Biathlon Sprint 10K Rank 52 20K IND. Rank 20 4X7. 5K Relay Rank 10
Olympic Games 1994 Lillehammer
Biathlon Sprint 10K Rank 62 20K IND. Rank 49
1991 Canadian Biathlon Championships Relay Rank 1
1991 World Cup Italy 10 km. Rank 25 1989 Canada Cup Race Series Champion. 1989 Canada Biathlon Champion.1988-1990 Polar Cup Finland 20 km. Rank 3 10 km. Rank 20 1988 Olympic Games Canada Canadian Biathlon Champion 1987 Raced 8 World Cups 1986 Raced 10 World Cups. 1985 - 1993 Raced 7 World Championships.
1985 Canadian Biathlon Championships 20 km. Rank 3. 10 km. Rank 1 Relay Rank 1 1984-1994 Member of National Biathlon Team. 1984 Canadian Junior Biathlon Champion. 1984 Junior World Championships 15 km. Rank 27 10 km. Rank 38 1979 Alberta Provincial Championships Junior Boys 3rd. place.

David Leoni was born in Liverpool , England on September 8 , 1982. He began downhill skiing at age 5 while living in Edmonton. When his family moved to Camrose he was encouraged to start cross country ski racing because of a lack of suitable downhill facilities. David joined the Camrose Ski Club and later found the addition of target shooting motivated him to train for Biathlon. Joining the Augustana University Junior Vikings program when he was eleven David became more focused on a career in Biathlon. At age thirteen he joined the Rocky Mountain Racers. He was the North American Junior Champion four times and six times the Canadian Junior

Champion. Mr. Leoni lives in Canmore , Alberta (2007). He hopes to compete in the 2010 Winter Olympics in Vancouver.
2006 Winter Olympic Games Turin Italy 12.4K Pursuit Rank 49 10K Sprint Rank 43 20K Ind. Rank 65
2006 North American Biathlon Championships 1 Gold, I Silver Overall Champion Biathlon Canada Athlete of the Year 2000 and 2006 2005 Biathlon World Championships Austria Relay Rank 15 2005 World Championships Russia Mixed Relay Rank 14 2004 World Cup USA Sprint Rank 52 2004 World Championship Germany Ind. Rank 67 2004 Europa Cup Italy Sprint Rank 18 2004 Canadian Championships Quebec Sprint Rank 2 2003 World Junior Championships Poland Rank 16 2002 World Cup Biathlon Germany Sprint Rank 95 2001 World Junior Championships Russia Ind. Rank 18 Sprint Rank 19 2000 World Junior Championships Austria Rank 27 World Junior Championships 3 top 20 placements 2000-2003 1996 Alberta Biathlon Top Gun Award.

Paul Gotaas was born in Trondhjem ,Norway on June 2 , 1901. He emmigrated to Camrose in 1926 where he worked as a mechanic. Mr. Gotaas remembers skiing from early childhood and competed in cross country race as a boy in Norway . He was also an accomplished cyclist and set the Norwegian record in 1922 in a 1500 meter race. Mr. Gotaas first competed in Camrose in 1926 when he won ski races in Camrose Banff, Jasper ,Edmonton and Prince George. He won the Jasper 32 mile race in 1928 1929 and 1930. In 1929 he also won the 10 mile and 40 mile marathon races in Banff. He was picked for the 1932 Canadian Olympic team but was unable to compete at Lake Placid because he could not afford to go. In those days competitors paid their own way. To train for his races Mr. Gotaas would begin running a distance of 10-12 miles from his home to the Battle river valley at least 3 to 4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times every week. Mr .Gotaas trained many of the great Camrose skiers including Irvin Servold ,Bob Hurlburt, Ken Rayment, Gordon Lund, Bob Osness, Claire Rolf and his own sons Carl and Paul Gotaas, Jn. He was the first Western Canadian official to be named an Official Canadian Ski jumping judge. Mr. Gotaas helped rebuild the Camrose ski jump in 1930 and again in 1965. Mr Gotaas died in Camrose on August 9, 1989 at the age of 88 .
Gord Lund was selected to be a member of the Alberta Ski team in 1962 and was awarded the Sons of Norway trophy for the best combined junior skier in Alberta. In March 1963 he won the Canadian junior combined ski title and in 1964 he won the ski jumping competition representing Camrose Lutheran College in the Interprovincial High School Tournament. In 1964 he won gold in the National championships in ski jumping and bronze in the nordic combined.

Joan Osness was born in Camrose on March 2 , 1955. She began racing at the age of nine after downhill skiing from age four and in 1968 won the Open midget cross country event at the BC Nordic championships. At the 1970 Canadian Junior Nationals Joan finished seventh in the ladies 5K cross country event. At the Alberta Ski Championships held in Camrose in February Joan was second behind Claire Rolf. In 1976 Joan was given a berth on the Olympic ski team, unfortunately she was not given a chance to compete because she lost to Sue Holloway in the last qualifying race in Germany. Joan Osness married Hans Skinstad and is now the Cross country ski coach at the Augustana faculty of the University of Alberta in Camrose (2007). Her husband Hans coached the Canadian Biathlon team in 1987 and coached Cross Country Canada's team from 1973 to 1978. He was a member of Canada's cross country team at the Olympics in Innsbruck. He coached the Canadian Olympic team in Calgary in 1988.

Athletic Achievements 21 times Canadian Championship medalist Member of both Canadian Cross Country and Biathlon Sr. National teams World Championship Team 1974, 1984 and 1985 Canada Winter Games relay silver medalist Swiss National Biathlon Champion 1985 Relay Western and Canadian Masters Champion

Dr. William G. Gibson was born in Vancouver in 1931. He obtained a degree in physical education at U.B.C. He has a master's degree in physiology and a PhD. Dr. Gibson, known by his athletes as 'Gibber', came to Camrose Lutheran College in 1964 to teach outdoor education. He became the cross country ski coach in 1973 and in the mid seventies decided that cross country skiing needed a higher profile at the college and began to build on this dream by using the talents of Norwegians living in the area such as Paul Gotaas and the Servold brothers. The Rotary club donated $5000 worth of cross country ski equipment and the dream became a reality. In 1977 he went as the manager of the Alberta team to the Canadian Nationals in BC.In 1980 as well as winning many skiing championships Dr. Gibson was elected Technical Chairman for Alberta and capped the year by organizing the winning bid for the Western Canada Cup for Camrose. By 1981/82 a team from Camrose dominated the Alberta Winter Games and the Provincial championships as well as taking the College Championships for the fourth consecutive year. Augustana College had the largest team of junior cross country and biathlon athletes in Western Canada by 1983. Dr. Gibson was instrumental in developing the facilities in Camrose to provide the area with a first class Nordic Ski Centre. Among the many athletes coached by Dr. Gibson are his daughter Carol Gibson and Glen Rupertus ,both of whom represented Canada in the Winter Olympic games. Dr Gibson worked as a volunteer in the Olympic Stadium in Calgary. Mrs

Dorothy Gibson was the Camrose club manager for eight years and has been involved with the athletes in various ways for many decades. “We have been called the mother and father of modern day skiing” said Dr. Gibson. In May 1990 Dr. and Mrs Gibson were inducted into the Alberta Cross Country Hall of Fame. In 2001 Dorothy Gibson was given a Citation Award for a ‘ significant contribution to the life of Augustana’. In 2005 Dr. Gibson received the same award.In 2003 Dr. Gibson received a Queen’s Golden Jubilee award for outstanding contributions to his community ,the country and internationally. Still residing in Camrose (2007) they have three children all of whom were involved in competitive skiing. Dr. Gibson remains active as a skier and is involved in organizing many of the Camrose Ski Club activities.

Other notable ski personalities from Camrose include Kim Grattidge ,Ken Rayment Jn., Neil Servold, Ingrid Servold, John Gibson, Bob Osness, Norm Osness. People such as Don Rogers, Darryl Phillips, Bob Hurlburt and Franco Leoni have all contributed to the sport as coaches and builders. Where money to develop the ski area was in short supply these people put in time and effort to ensure that the facilities available for skiers and biathlon competitors were improved and expanded.

Sports

CLC dominates college skiing

by Ruben Hansen

This past weekend, Feb. 8 and 9, proved to be a very exciting and eventful time in the cross-country ski scene. The weekend's activities provided skiing for all groups of individuals from the beginning skier to the seasoned racer.

In conjunction with the 75th Anniversary of Camrose Lutheran College, the college in cooperation with the Camrose Ski Club and the Camrose Canadian, held the Alberta High School Challenge Racers, the Alberta College Athletic Conference (ACAC) Championships in skiing and the 7th Annual Camrose Ski Gallop.

On Saturday, 113 skiers from Alberta colleges, high schools, and junior high schools skied 10 and five kilometers in the men and women's individual races.

The conditions were cold and slow but this certainly did not dishearten the spirit of the occasion.

On the Alberta college scene, the Camrose Lutheran College dominated both the men's and women's races. The men's team proved invincible as they, Kevin Milliken, Joel Wilkinson and Todd McNutt finsihed first, second, and third respectively in the individual 10 km race to capture the Paul Gottas trophy for supremacy in men's ACAC skiing.

The women also dominated the individual events and won the Kame Ehgstad trophy for supremacy in women's ACAC skiing. The winning team consisted of Rena Carlson, Rosemarie Rackow and Darlene Donzelmann.

In the Senior High category, Camrose Composite high school captured first place in both the boys and girls categories. The winning team for the boys was made up of Doug Sogge, Cam Schwartz and Jason Vantomme. The winning team for the girls consisted of Anki Ravold, Shauna Palmer and Cathy Hansen.

There was a close battle in the Junior High categories with Mt. Pleasant capturing the boy's title and Charlie Killam winning the girls' individual competition. The winning boys team from Mt. Pleasant was made up of Scott and Craig Rogers and Trent Duchscherer. The winning girls team consisted of Betty Johnson, Phamie Cox, and Janet Servold. The annual Jr. High Cross-country supremacy trophy was presented to Mt. Pleasant School because of their strong showing in both categories.

Sunday began with the 5 km x 4 relay races for the ACAC, Senior and Junior high school teams. This event was followed by the Ski Gallop in the afternoon.

The relay teams consisted of four members, two males and two females, each skiing five kms.

In ACACs, CLC again proved to be the dominating college winning the event 13 minutes ahead its nearest competitor, Red Deer. In third place was NAIT, another 13 minutes behind Red Deer. The winning team from CLC consisted of Kevin Milliken, Rosemarie Rackow, Rena Carlson and Todd McNutt.

Camrose Composite high school captured first in their relay competitions. Their team consisted of Doug Sogge, Shauna

school won first in the junior h
category of the relays. Each s
went 4 km and the team was m
up of Daralee Bauer, Rose V
tomme and Scott and C
Rogers.

The 7th Annual Camrose
Gallop saw over 60 particip
ski the four, 10 and 20
courses.

The 20 km men's racers ev
saw Ruben Hansen, Don Wa
and Garry Ramses place first,
cond and third respectively.

The top three finishers in or
in the women's racers 20 km w
Jan Robinson, Lesley Metcalf
Rana Carlson.

The top three, respectively
the men's citizen racers 20
event were Ray Merritt, David
gibergsson and David Sennett.

The women's citizen racers
km event was won by J
Chichak.

The top three finishers in
men's novice 10 km event w
David Boulet, Ray Strum
Danny Devine.

In the women's novice 10
event, the top three finishers w
Karen Almond, Cynthia Pohl
Shauna Neson.

The boy's juvenile 10 km ev
saw Scott Rogers, Craig Rog
and Trent Duchscherer take
top three positions respectively

The girl's juvenile 10 km ev
was won by Daralee Bauer.

The top three in the me
masters 10 km were, Clarence S
vold, Alver Pearson and
Waldon.

In the children's event the
three finishers were Scott Gr
tidge, Bonny Turberfield
Trevor Dalueg.

The 4 km Family Event
won by the Nigel Smith family,
second and third came the D
Roger's family and the Vantom
family, respectively.

Christa Haverstock and Al
Pearson were the lucky winners
cross-country touring skis in
draw made following the
Gallop.

The next major event ta
place next weekend as Gra
Prairie hosts the Alberta C
Championships. This culminati
of the Alberta Cup Series will se

Camrose becomes a training center

In a special reception Saturday night, Mayor Rudy Swanson, Reeve Bob Prestage, Camrose Ski Club representative Ken Rayment and Camrose Lutheran College President Glen Johnson, officially accepted a cheque for $17,271 from the Alberta Sport Council as a first in a series of yearly installments for the next four years to make Camrose a Nordic training centre.

Tom Berekoff of the Alberta Sports Council was impressed by the co-operation between the City of Camrose and district, the Camrose Ski Club and CLC. It is hoped that this funding delegated for the continuing operation of the Ski Centre Concept will result in establishing Camrose as a major Nordic Development Centre in Western Canada.

Currently, this makes Camrose the only city with an educational institution that is functioning in this manner.

Swanson pledged continued support to the project while Prestage suggested that the county was ready to promote skiing development. President Johnson reaffirmed that the college had actively supported nordic skiing since 1976 and looked forward to providing a healthy educational atmosphere in which athletes can achieve both academic and athletic goals of excellence.

Currently with Carol Gibson on the National Cross Country Team, Glenn Rupertus, Yvonne Visser, and Geret Coyne on the National Biathlon Teams, David Servold on the National Nordic Combined Team and John Gibson and Kim Grattidge representing Alberta in Japan, Camrose has the highest concentration of skiers competing internationally, in North America.

We have made a start but the future may be ever brighter if we can take steps to complete our facilities allowing us to continue to develop the potential of the youth of this area.

Feb 8 1982

Top honors

The Camrose Lutheran College (CLC) mixed cross-country ski team took top honors during the Alberta College Championship races held here on the weekend. Dr. Gary Gibson (left) of CLC, Joel Wilkinson, Rena Carlson and Todd MacNutt were presented with the Josteen Nordmo trophy by The Canadian's editor Jeff Harris The weekend of skiing was presented by CLC The Camrose Canadian and the Camrose Sk Club. Teammates Rosemarie Rackow and Kevi Milliken were unavailable for the photo.

DEC 22 '86

Tradition of champions at Camrose

By MARTY KNACK
Journal Staff Writer

CAMROSE — Tradition was on Carol Gibson's side when she began to make an impression on the national nordic ski scene.

She's another in a lengthy list of members of the Camrose Ski Club who have risen to national stature, from the club founded in 1911.

"We have had people from Camrose high up in nordic events, starting with the Servolds back in the '50s," says Gary Gibson, the proud father of the Canadian cross-country team star and the club coach.

The senior Gibson is an outdoor and physical education professor at Camrose Lutheran College and started coaching Carol as a nine-year-old, in 1974. His wife, Dorothy, is also heavily involved with cross-country and is busy planning for an Alberta Recreation and Parks exchange program early next month, with a team from Hokkaido province, in Japan.

"Joan Osness, Claire Rolf, Connie Servold — they were Carol's models," Gary Gibson says of the athletes his daughter followed to national skiing prominence.

"We had a sequence of those kinds of people. I got an idea of developing a ski team, and we went out two or three times a year."

There are approximately 30 members with the club, about equally divided between biathlon and cross-country. Glenn Rupertus and Ken Rayment are others currently on national teams, as the top two members of the biathlon team preparing for the 1988 Winter Olympics.

Gary Gibson arrived here in 1964 — the year Carol was born — from Terrace, B.C. He stresses the sport suffered somewhat, on a national scale, because some of the coaches were unwilling to pass on what they'd learned.

"There was a revolution, but until we (as coaches) became part of the family, there wasn't any sharing of knowledge," he says, adding that it took until 1977 for that attitude to change.

"We went to Burns Lake (for the national championships) and were the only team in Canada with

Winter Games (in Medicine Hat in 1978)," he says of how the improvement really began at the club and provincially.

Now the club is recognized throughout the country, after producing a number of fine athletes to follow the example set by Clarence Servold, who won six national senior men's championships and is 11th on Cross-Country Canada's career medal list, with 10 (also two silver and two bronze).

"We were defined last year as a nordic ski centre, for nordic, combined and biathlon, to combine education and the facility," says

SENIOR OF THE WEEK

Talk skiing — that's Paul's language

By ED CLINTON
Camrose Canadian

Eighty-six-year-old Paul Gotaas delights in recalling the days when he was active in cross-country skiing, although he downplays the role he played as an athlete and coach.

Born in Trondheim, Norway, in 1901, Paul came to Camrose in 1926 and was active in the sport as a competitor and coach for the next 40 years.

"I think I was born on skis. I started at an early age and did cross-country and jumping in Norway, but when I came here I gave up the jumping," Paul said.

Paul found employment in a garage where he worked for 29 years before establishing his own service station-garage which he operated for 12 years before he retired.

Despite his workload, Paul always found time to ski and train, and over the years the hard work brought its rewards. He won the Jasper marathon in 1928. "They gave me the cup but told me I couldn't keep it because it had to be won three years in a

PAUL GOTAAS

row so I went back and won it the next two years and they had to give it to me," Paul said.

He won the Lake Louise-Banff marathon (40 miles) in 1929 and then took the 50-km Western Canadian marathon championship when that event was staged in Camrose in 1932.

The Camrose Ski Club had already been established when Paul came to the Rose City. He

one of its most active members. "I think I held every position in the club, at one time or another," Paul said.

Many skiers owe their success to Paul. He spent countless hours over a 40-year period on the ski trail, teaching youngsters the finer points of cross-country skiing.

His efforts as an athlete and coach were recognized by the Camrose Lions Club in 1968 when they inducted him into their Sports Hall of Fame. He is a life-member of the Camrose Chamber of Commerce and the Sons of Norway Lodge, and was made an honorary CLC Viking in 1981.

Although she ws born and raised in Paul's home town in Norway, he and Hilda didn't meet until both were Camrosians and were introduced by Norwegian freinds. The couple married in 1932.

When Paul retired, he also gave up ski coaching and decided to go to Norway. "The (ski) club had a big farewell do for us, but we came back," Hilda said.

immediately joined and became

As an athlete and coach, Paul won countless trophies and some being on display on the main floor of the couple's home. "It's a shame but, we just don't have room for them all so we keep most of them in the basement, although some of them were on display in the Sports Hall of Fame. They're beautiful but, we just don't have the room for them," Hilda said.

Paul and Hilda raised three children, with Carl living in Ohaton, Paul is in Edmonton and Lea (Mrs. Alf Schwenk) lives in St. Albert. Together they have produced 14 grandchildren, six great-grandchildren and, according to Hilda, "two more are on the way."

Although he still has a keen interest and keeps fully informed of what's happening in the skiing world, Paul doesn't get to see too much of his favorite sport these days because "my legs won't work the way they should and I can't walk very well."

But ask him about skiing and he'll tell you what's happening.

Carol Gibson - O

What does it take to be an Olympian? In this writer's opinion a diary of the last two years of the life of Alberta's Carol Gibson would just about answer that question.

The story begins at the end of the 1986 Polar Cup in Scandinavia. The last races of a terrible season for Carol, which left her, for the first time in four years, off the Canadian National Ski Team. Talk of quitting, going back to school, being tired of the life style required to race internationally seemed to enter every conversation. The final verdict came on the plane back from Norway, with Carol setting her ultimate course of action. The statement, "I know I'm better at this sport and if I quit here I'll never know what I could have done!"

Every athlete who rises to the top has faced this moment, and it is only those who, like Carol, undertake the challenge, that give themselves the chance to become Olympians.

Carol has lived and trained with me since that time, and her life has been a model of committment. Last year she came back from being off the team to become the second fastest woman in North America, behind veteran teammate and World Cup medalist Angela Schmidt - Foster. She qualified for the World Championships in Oberstdorf, and placed 27th at 5Km, 26th at 20Km, and 21st at 10Km, and skied an unbelievable relay leg to put Canada in 3rd place at the half way split. At the Canadian Senior Championships Carol carted out three medals in four races. Even this big improvement in results was not enough to satisfy her. Early this summer we discussed long range goals, and to my delight there was a change of perspective. Canadians have always been satisfied to make it into the World Cup, but haven't set high expectations on themselves to win. Pierre Harvey has changed that, and Carol Gibson has taken up that challenge. She is very young in relation to most World Cup skiers, at the age of 22 her best years are still to come.

as a skier 24 hours a day, and everything she does which is seemingly unrelated to skiing is first evaluated by its effect on training and racing. Carol trains monthly from 60 to 85 hours throughout the year, for a tot hours a year. Her a wide range o swimming, rowing, road biking, and h she adds ski speci trains on snow in Ma in September. Stren throughout the year and using rollerboa strength circuits. methods of rollerski occur weekly. Carc of the best technica worked with, part techniques.

One of the bigg initiated last year nutritional diet and which keeps her fit Gibson is a MORNI first see her each my balcony, bleary e coffee in hand, wh from her first work do this she usually r to get her regular 9 Quality rest she co as quality traini incorporates regu activities into her da stretching, and reg are as necessary themselves. At the l at the Univ.of Ott a skiing treadmill athletes aerobic lev set a new female star

Carol is the fitte her life. Her out motivation are posi personal bests in Ca is high over relay though 1988 is dom right now, her lo contemplating the year 1992 and France.

In my view Carol Gibson has it all, the physical capacity, the technical skills, and the Calgary Olympics are but one major step in Carol's quest

FEB. 18, 1987

Family tradition

Four long time cross-country skiers in the Camrose area got together Saturday night to celebrate the Camrose Ski Club's 75th anniversary. Paul Gotaas (front left), Roy Phillips, Carl Gotaas (back left), and Daryl Phillips represent two generations of support to the ski club. The senior skiers were at the top level of competition in the 30's while the younger members carried on the tradition when their fathers retired from competition. All four continue to support the club in 1987.

—Photo by Murray Green

Camrose is a Terrific Sporting Centre

Camrose, the province's 10th largest city with a population of 13,000, is the distributing and manufacturing centre for a rich, mixed-farming area. It is also a hotbed of athletic activity.

Camrose has one of Canada's first ski clubs, formed in 1911. It is the home of the Camrose Merchants, one of the best senior fastball teams in Canada. It is host to the prestigious Viking Cup hockey tournament, a biennial event that attracts the best junior teams from around the world. It was, moreover, the creator of the Alberta Seniors Games (see first issue of *Alberta Sport Report*).

Bill Steen is program co-ordinator for the City of Camrose and an assistant coach with the CLC (Camrose Lutheran College) Vikings of the Alberta College Athletic Conference. He says the city's four major sports are soccer, fastball, hockey and BMX (bicycle) racing. The organization that oversees these activities is the Camrose Minor Sports Association (CMSA). Each sport has four members in the association and they do their best to enhance sporting opportunities in Camrose.

Skating on Mirror Lake; Garry Gibson (inset)

The major facility is Kin Park which features a lighted football/soccer field, fastball diamond, a ParticiPARK, and basketball and tennis courts. Nearby is an 18-hole golf course. In winter Mirror Lake, in the city centre, is kept clear of snow for hockey and skating. In fact, one can skate for three miles on the lake and nearby waterways.

A major athletic contributor is Camrose Lutheran College, Alberta's first and only private college to offer baccalaureate degrees in Arts and Science (it also has Grade 12 matriculation and a first and second year transfer program). The college is 76 years old, has 700 students, and puts a heavy emphasis on basketball, canoeing, cross-country skiing, biathlon and hockey.

Some well known international and national hockey players have participated in the Viking Cup, established in 1980. Teams from Finland, Sweden, Czechoslovakia, the U.S. and Canada have played some very exciting hockey in Camrose. Quite a few individual players then went on to the National Hockey League. Among them: Hannu Virta of Finland, now with the Buffalo Sabres; Petr Klima of Czechoslovakia, Detroit Red Wings; Mats Thelin of Sweden, Boston Bruins. Dave Tippett, James Patrick and Greg Paslawski were all once with the Prince Albert Raiders. Tippett was also captain of the 1984 Canadian Olympic team and is now with the Hartford Whalers. Patrick plays for the New York Rangers, while Paslawski is with the Blues in St. Louis.

CLC Viking hockey coach Mike Johnston says the player calibre is very high in his conference. There are many former junior players, as well as those who have played semi-pro but now want an education and to continue playing hockey. "We try to attract elite level players who are academically inclined," he says. Some players can receive scholarships up to $2,000 a year, which covers tuition costs.

But perhaps it is in cross-country skiing and biathlon (a combination of rifle marksmanship and cross-country skiing) where CLC has had the greatest impact. The man primarily responsible is Dr. Garry Gibson, who teaches outdoor recreation and whom everyone calls the Gibber. Two of the outstanding athletes who have profited from his tutelage have been his daughter, Carol, who is top ranked in the nation in women's cross-country skiing, and Ken Rayment, who won a gold medal in the National Biathlon Championship.

It was in the mid-1970s that the Gibber, who has been at the college since 1964, decided cross-country skiing needed a higher profile. "I made up my mind that it should be as important as hockey and basketball," he says. The Camrose Rotarians donated $5,000 worth of cross-country ski equipment. Then the Gibber rounded up a few expatriate Norwegians living in the area who possessed great technical knowledge about the sport. Next step was to recruit teenagers with good athletic sk
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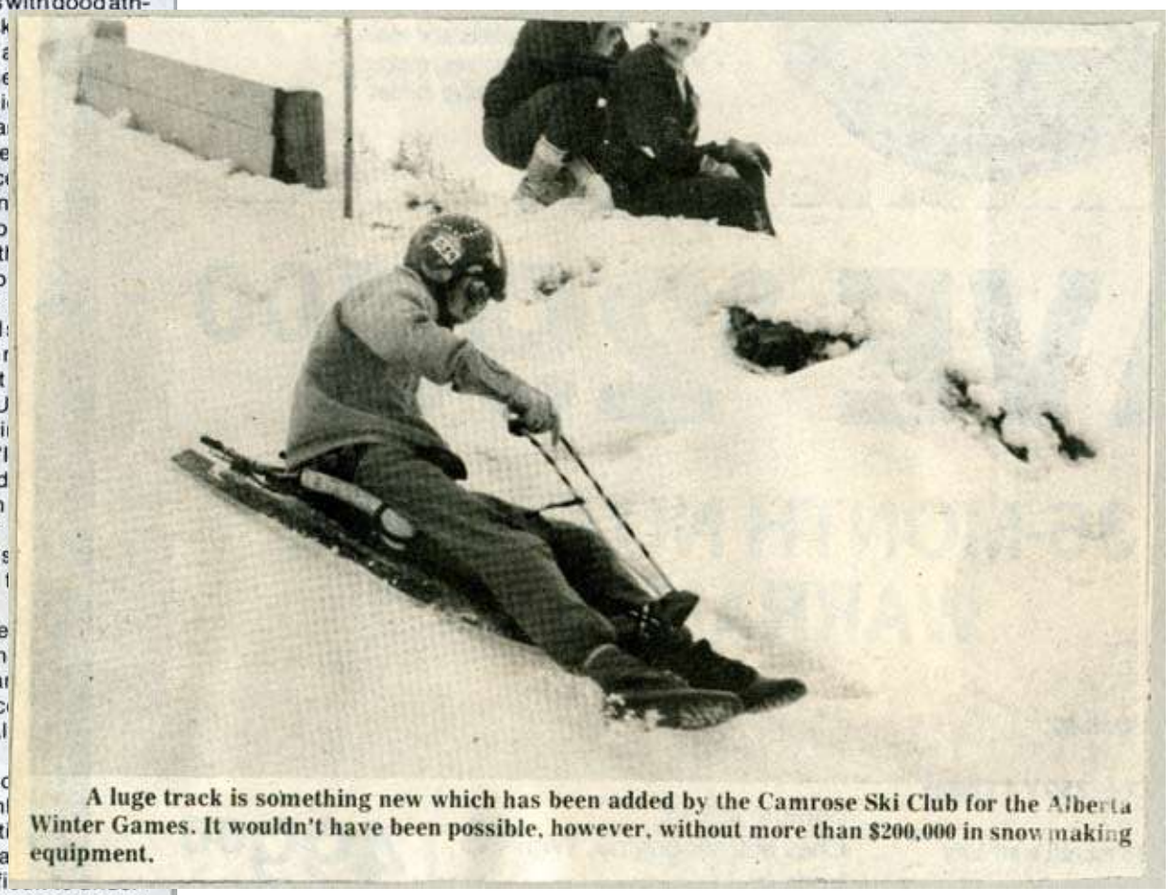


A luge track is something new which has been added by the Camrose Ski Club for the Alberta Winter Games. It wouldn't have been possible, however, without more than $200,000 in snow making equipment.

Winter Games — Feb. 22 - 25, 1990 The Camrose Canadian, Feb. 21, 1990

—Winter Games '90 Special Edition—

Servold set 32-year Canadian record

Canadian cross-country skiers in the 1988 Calgary Winter Olympic Games will try to break a 32-year-old record set by Clarence Servold of Camrose.

Servold placed 19th in the 15 km event in Cortina, Italy which is still the best showing for a Canadian in the event.

"I didn't expect to do that well," Servold said. "We didn't have coaches in those days. We had to train on our own. We had the support of the Camrose Ski Club and we would have races starting downtown near the old *Camrose Canadian* office. Our prize for finishing the race was a cup of hot chocolate."

Some of the local skiers, Paul Gotaas and several others, helped the Servold's (Clarence and his brother Irvin) travel to meets in Banff, Revelstoke, Kimberley, B.C. and Edmonton.

"We had to scrape for equipment. We wore ordinary clothes and work boots. Sometimes we even had to make poles out of poplar branches."

When the Servolds dominated the cross-country skiing and nordic combined events in Canada during the '50s and '60s, the sport was filled with fun and spirit.

"Today the stress is on medals. We skied for fun and recreation. Now they train summer and winter and the athletes can't hold a job to support their costs. My son Dave came home exhausted from training and broke. He had to give it up. Jon, Irvin's son, stayed on hoping to raise money from equipment sponsors. That didn't work out either." Jon Servold is the only Canadian in nordic combined in Calgary.

"With only one person on the team, there is no team spirit. It's a letdown for him," Clarence said of his nephew.

The former Olympian hopes the sport doesn't fade away. "Some kids are starting to get interested in ski jumping so it's possible the sport will continue. They need coaching and support from Canada though."

Dave Servold, a coach in nordic combined, will be a fore runner in Calgary. A fore runner completes the course before the Olympic athletes to ensure the trails are even and the jumps are in top condition.

"I didn't train as hard as they did. I was careful not to burn myself out." He was ready for the 1956 Olympics in Italy.

But a ski mishap kept Clarence away from the nordic combined event. "It was icy. I slipped and turned over, hitting a ski against my leg. I could ski but not jump."

He placed 19th in the 15 km event and 22nd in the 50 km race. Irvin, five years younger than Clarence, competed in both.

In the 1960 Olympics in Squaw Valley, California; Clarence was second in the 15 km race in nordic combined. He was leading but slid under a tree and had to let some slower skiers pass. He soon caught up but had to pass in deeper snow, losing 20-30 seconds.

A chance for medals slipped through his fingers when the weather turned warmer for the ski jumping. "I had stiff skis for colder weather. I couldn't afford to buy new skis."

If Servold could have placed in the top three in jumping, a medal was his. But the warm snow stuck to his skis causing him to have bad jumps and he finished 28th.

Clarence entered three world championships, won four Canadian 15 km championships and captured one nordic combined title during the '50s and '60s. And he still enters masters competition today.

He won his first Canadian title in 1951 but was left off the 1952 Olympic team. Western Canadian skiers were not notified of the Canadian finals and eastern skiers went on to represent Canada.

The disappointment left Servold cold until 1955 when he again won the title and a shot at the 1956 Games.

In the late '50s, Clarence headed for the United States to earn a degree in civil engineering and ski at Denver University.

Clarence Servold of Camrose skied in the 1969 Canadian championship after competing in two Olympic Winter Gam has been an inspiration to skiers for many years.

He won championships in the states and was voted All-American.

After the Olympics he came back to Camrose to help build a steel plant (now called Stelco). As a natural athlete, he was asked to play hockey for the Camrose Maroons.

When the plant wa for Calgary to help Olympics and wo Calgary. He was a Canadian team bu because of business

Facilities — the Winter Games are everywhere

The ski jump at the Camrose ski hill has quickly become a landmark in Camrose since its installation last fall.

By Brett Browne

From February 22 to 25, the Alberta Winter Games will be literally everywhere in Camrose.

Every public building in Camrose, along with a number of hotels and facilities outside the city, will be utilized in staging the Games.

In total, 42 different venues will be used including hotels, schools, recreational facilities, and community halls.

In each of these locations, dozens of details have had to be worked out to ensure that everything needed by those using the facility is provided.

The man charged with this mind-boggling organizational task is Director of Facilities Grant Skippen and his committee of Max McLean, Gordon Hay, and Ray Heck.

"If anybody needs something in the form of a building, we have to get it ready for them," explains Skippen, who says that has involved making arrangements with schools and service clubs for accommodation of the athletes and working with the Camrose Regional Exhibition to ready their facility which will be the site of the opening and closing ceremonies, plus most of the athletes' meals.

In addition, Skippen has been responsible for everything from marking off space for portable washrooms, concessions, and first-aid huts at the ski hill to determining the usage of every classroom in Camrose schools.

In order to do this, Skippen has had to work with all the during the Games," he said. "There's a lot of work organizing and getting facilities ready, but I think during the games little things are going to come up that our people are going to have to be right up on our toes to handle."

Though a lot of work has gone into preparing the different venues for the games, only two facilities have required any renovation or construction.

That, says Director of Sport Erroll Moen, is an indication of the quality of facilities in Camrose.

Also impressive, is the fact that only two facilities outside of Camrose were needed; those being Rabbit Hill, which will be used for Alpine Skiing, and the Wetaskiwin Civic Arena that will be used for hockey.

Still, a large portion of the Winter Games budget went into the creation of an outdoor speed skating oval and improvements at the Camrose ski hill.

The speedskating oval was a relatively minor project, involving the leveling of the track and construction of a surrounding fence.

Improvements at the Ski Hill, however, were much more involved and considerably more expensive. They included the construction of a new 30 metre ski jump, the creation of a luge and bobsled run, and the installation of around $200,000 worth of snow making equipment. In addition, a judges' stand was built, tow ropes were moved and upgraded, and improvements were made to the project will be, but the Camrose Games Society and the Camrose Ski Club will share the cost of the improvements estimated to be worth $500,000. The Ski Club is paying for the snow making equipment, while the Games Society will pick up the tab for the remainder of the improvements.

According to Moen, the ski hill project was a real community effort and without the hundreds of hours of volunteer work and thousands of dollars worth of materials and labor donated by Camrose businesses the improvements would have been much more expensive.

Inmates from the Ft. Saskatchewan Correctional Institution also helped keep the cost down through an off institutional work program.

"They were actually a very valuable commodity to us," he explains. "We were looking at a very tight budget and if it wasn't for those people working as a program we would have had bills for labor, etc., to do a lot of the work that we couldn't have afforded."

If the 1990 Winter Games are to leave any kind of a legacy behind for Camrose, many believe that legacy will be the facilities at the Camrose ski hill.

Already, those improvements have reaped benefits for the community as more and more Camrosians are making use of the facility and getting involved in the nordic sports.

Moen says that with a facility of this quality on which to learn and train, in the years

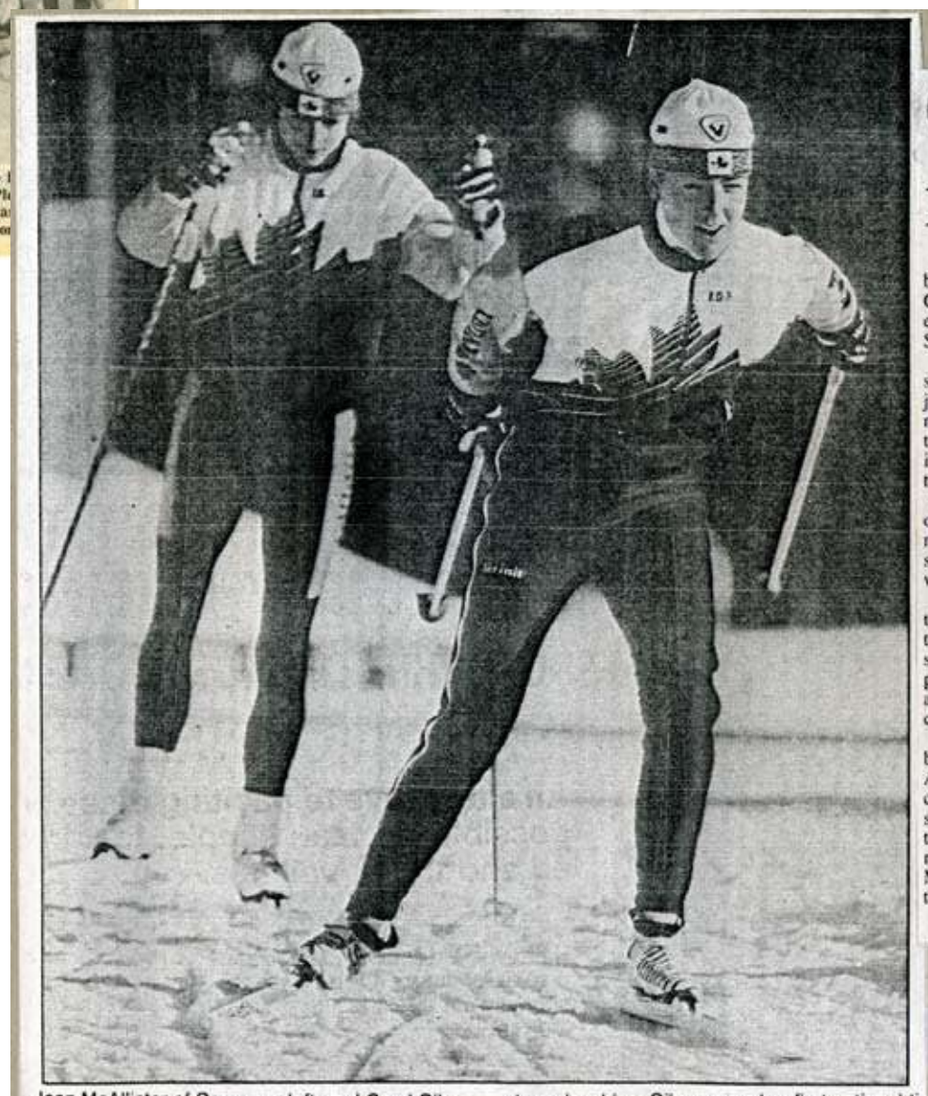
Ole Uffda tries luge run

An athletic Ole Uffda tried the luge run following the grand opening of the Camrose Ski Hill Sunday morning, December 3. The ski hill has undergone many improvements, including the construction of a luge run and ski jump, in preparation for the Alberta Winter Games in Camrose, February 22 to 25, 1989.

arol Gibson, a member of the ... respectively both days in another ... category dominated by provincial ... upic team as well as the ... team members.

Chester Ronning students display skis presented to Phys. Ed. instructor Barry Dillan by Ray Hansen (left) on behalf of the Camrose Rotary Club. The ski equipment donated to the school February 2 included 38 pairs of boots, and 30 pairs of skis, bindings and poles.

In the last three years, the Rotary Club ... equipment to Jack Stuart, Our Lady of Mount Pl... schools. In addition to supporting various Ca... organizations, the Rotary Club has also sponso... Air Cadets for the past 30 years. FEB 9/89



Jean McAllister of Canmore, left, and Carol Gibson of Camrose trained hard together at the Canmore Nordic Centre before they headed for Quebec and the national cross-country skiing championships. Gibson won her first national title since her days as a junior competitor.
—Photo by John Gibson

Gibson claims national crown

After years of struggling to be the best cross-country skier in Canada, Carol Gibson of Camrose finally earned the national crown in Mont Ste-Anne, Quebec Jan. 11-21.

Gibson had a disappointing 1989 season which was plagued by injuries. She spent most of the summer months on a less stress oriented training regime by running and hiking long distances along the mountain side near Canmore.

She also cut down on the amount of international travel and focused more on the training approach. Gibson wanted to see what she could do when she was healthy.

"I've been coming to these nationals for years, but to put it all together in one week gives me a special feeling that I still have the potential to go farther," Gibson said after she was crowned the Canadian champion.

Gibson garnered the national title by earning 395.85 points. Marie-Andree Masson of Quebec was second at 395.05 points. They were selected one and two on the national team. Angela Schmidt-Foster, Lorna Sasseville, Ida Mitten and Jean McAllister of Canmore also made the women's national squad.

Gibson grabbed the top spot by her performance in the nationals. She was in first place in the 15 km event, the first in the 10-day competition, when she was racing neck-and-neck with Schmidt-Foster. The two skiers collided which allowed Mitton to claim first and Foster take second. Gibson had to settle for the bronze.

In the 10 km classic skiing event, the Camrose skier dropped back to fifth place but came back strong in the 15 km free technique race. She won the event in 28:57.6, her first gold medal at the nationals since she skied as a junior.

In the long distance event, the 30 km race, she claimed the silver in a time of 1:34:08:2. Her training parter, McAllister, followed her at 1:34:44.8.

The recent first place standing was the first time she was number since her Shell Cup victories in 1981 and 1982.

Gibson earned a spot on the 1988 Calgary Winter Games roster, but always followed in the limelight of Schmidt-Foster.

The Camrose athlete will be competing in several world cup competitions in Europe before the world championships begin.

NATIONAL CHAMPIONSHIPS
JAN 11-21. 1990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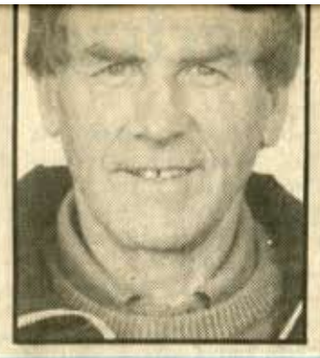

Clarence Servold of Camrose skied in the 1969 Canadian cross-country skiing championships in Camrose after competing in two Olympic Games. Servold, now 60 (insert), will be part of the opening ceremonies at the Canmore Nordic Centre Feb. 14.

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When the plant was completed he headed for Calgary to help the city bid for the Olympics and work for the City of Calgary. He was asked to join the 1964 Canadian team but turned them down because of business commitments.

Although Calgary failed to win the bid, they continued to bid until they were awarded the 1988 Games.

Clarence worked in Innisfail for three years before starting his own business. In 1979 Clarence started Serv-Alta Engineering in Camrose and later sold the business to Randy Block.

Now 60, he is stll involved in the Olympics. "I will be lighting the torch in Canmore to open the competition."

The Servolds work in cross-country skiing and nordic combined have kept the sports alive since their Olympic appearance. And Clarence will be remembered long after some breaks his personal best.

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Other CLC skiers and biathletes who have attained national status include Glenn Rupertus, Geret Coyne and Yvonne Visser. Up and comers are Keltie Van Binsbergen and Yvette Guillet. "It's a good atmosphere for skiing and academics," says provincial biathlon coach Ingo Hentschel. However, if an athlete's grades begin to slip he or she will not be able to participate until that situation improves.

Camrose has 25 kilometres of lighted ski trails, and outdoor and indoor rifle ranges. There are also plans to add a ski jump so the city could become the complete nordic capital of Alberta, maybe even of Canada.

Besides that, the little city named after a town in Wales is only a half hour drive from swimming, boating and camping at Miquelon Provincial Park. That's why Bill Steen finds it difficult to understand his daughter when she complains that there's nothing to do in Camrose.

Couple receives skiing awards

A local couple who have spent much of the past 17 years dedicating their time and energy to the development of cross-country skiing and biathlon have recently been rewarded for their contributions.

Garry and Dorothy Gibson will be joining the cross-country Alberta's Hall of Fame after receiving builder's awards at a Red Deer supper earlier this month.

"I was shocked out of my boot straps," said Garry, who has been the Camrose Lutheran College University cross-country skiing and biathlon coach since 1973.

"Camrose has a long history in this sport. It's been fun to be a part of the modern history," he says.

And part of it they have been — as parents, coaches, managers, timers, bus drivers, you name it — the two will have most likely done it some way or another.

"I've been involved because I love the sport and I love the kids," says Dorothy, who was Camrose's club manager for eight years.

"I find it very rewarding to work with the kids."

Garry, who once finished 15th in the 30 km World Masters race in Lake Placid, says he's very much enjoyed his experience of coaching and helping young athletes grow with their sport.

"It's important that a skier set their own personal goals and focus on beating themselves," he says. "Rather than an athlete thinking that they can do it on their own, they must do it with the help of others on the team. They can support each other in doing it."

As well as filling the coaching and managing duties, the couple have continually been actively involved with several winter games in this province, from the Alberta Winter Games to the Olympics. If there's a ski trail, there's the Gibsons.

"We've been called the mother and father of modern day skiing," says Garry.

As parents of the recently retired national cross-country ski team veteran, Carol Gibson, the two know what type of dedication and work ethic that come with the sport. Carol, 26, a silver medallist winner from the 1987 World Cup relay event, has retired to pursue a degree in physiotherapy at the University of Alberta.

"Education has to become important in this sport," says Garry. "There should be some strategies for (national level) athletes to get some educational planning.

"The excitement and experience of the sport is only good for so long."

Gary and Dorothy Gibson

Skiers sweep championships

MAR 2/3. 1991

The Camrose Lutheran University Vikings, holding high their tradition of college cross-country ski supremacy, destroyed all comers on the weekend in sub zero conditions at the beautiful Lac La Biche ski centre at Shaw Lake, March 2-3.

In the 5km free-style, led by Jennifer Plischke in a time of 22:46, the team of: Tara Garrett, Laryssa Ross, Susan Storsberg and Teresa Tiffen; placed 1, 2, 4, 5, 6.

The team produced a low score of 7pts., with second place Red Deer a high of 29pts., followed by Lakeland with a score of 30, Alberta Vocational Institute, Grant McEwan and NAIT.

This marked the 10th time that the lady Vikings have won the coveted Kari Engstad trophy honoring one of early Camrose skiers, who went to the 1932 Olympics.

With one of the strongest overall teams of the decade the Vikings, led by Bjorn Morisbak, Craig Ferguson, Markku Kostamo, Marvin Lizotte, Brede Svenneby, placed 1, 2, 3, 4, 5 in the 10km Free event. This produced a low score of 6pts with 29pts. for Red Deer, 49 for Lakeland, followed by Grant McEwan, Alberta Vocational College and NAIT.

The greatest ski pioneer in Camrose Nordic History, Paul Gotaas, was honored for the 9th year as his trophy for excellence was returned to the hall of the Vikings.

The greatest excitement of the weekend was generation on Sunday with the 3x5km relay events. The team of Svenneby, Plischke and Kostamo completed the race in a time of 55:58 downing 2nd place RDC by 7:46 Lakeland had to settle for 3rd, with NAIT, AVC, and GMCC following behind.

The Camrose Lutheran University College Vikings cross-country ski team recently dominated the standings at the College Championships at the Lac La Biche Ski Centre in Sha Lake.

The biggest competition of the day actually resulted from the 1st and 2nd place CLUC squads, with only 1:52 separating the Svenneby squad from the Ferguson team with Tara Garrett and Bjorn Morisbak; however, due to conference rules, only one team can score for each institution.

The relay event is for the Justine Nordmoe Trophy in honor of another Camrose resident who competed in the 1932 Olympics in Nordic Combined, this trophy also returning to Camrose for the 8th time.

The champion ships were in conjunction with the Lac La Biche loppet, at which over 20 medals were won by a combined Cross-country and Biathlon teams.

This concludes a very successful college series for the Vikings.

Most of the team graduates this season, while a few of the return will be testing themselves in weeks ahead.

Neil Musgrave leaves for National Championships March while Marvin Lizotte and Kars Muendel head for the Continen Cup in Canmore in two weeks' tim

Don't forget to keep your e peated for the results from t Vikings in the Canadian Biathl Championships in Canmore th weekend.


1990-91
1990-91 Team

Rotary donates skis

Marvin LaBarge, far left, projects committee chairman of the Camrose Rotary Club, and Bill Lamb, Rotary Club president, presented 30 pairs of skis, shoes, poles and bindings to St. Patrick School students last week. Several students were on hand to accept the skis and physical education instructors John Bauer and Reg Zimmer were also present. The equipment presented by the Rotary has an estimated value of $4,000. The Rotary Club has donated ski equipment to CLC and other Camrose schools in the past. —Photo by Susan Moore

world of cross country skiing was probably best illustrated when she reluctantly admitted that, from a technical viewpoint, she had passed beyond her father's ability in coaching, and Dr. Gary Gibson's record as a coach with CLC and Camrose Ski Club skiers has placed him among the top coaches in the country.

Although making the admission, Carol was quick to point out that, from mental and emotional point of view, her father was still her best coach and was quick to bring her to the levels needed during all competitions.

Gibson also pointed to another reason for an extended stay in Europe for training sessions.

The attitude towards the sport of cross country skiing in Europe is directly in contrast to that found in Canada with Europeans, as a result, showing much more intensity that is found in Canadian competitors.

Cross country skiing is immensely popular in Europe, among both athletes and spectators.

It is not as easy to get into world competitions from Europeans countries because of the numbers of participants who are throughly dedicated to the support. In Canada, the competition is not nearly as intense and those with dedication are almost automatic winner, if they have ability.

Canadian competitors find that it is a new experience to take part in European competitors because of the large numbers of spectators.

Canadian competitions usually see the participants outnumber the crowd with about 200 spectators being the largest crowd every to watch a competition in which Gibson competed in this country.

In Europe, three thousand people would be considered a small crowd with attendance usually around the ten thousand mark and important competitions attract more than 20,000 fans who usually line up along the full length of the course.

Exhibiton meets are often staged in European centers, usually in town squares or in large stadiums.

While attending the world championship meet in Austria, Gibson also competed in a relay event during which, on the individual level, she

Carol Gibson

Carol Gibson ... Canadian junior girls' champion

NEIL SERVOLD, CAROL, JOAN & HANS SKINSTAD

March 9/81 CH

Gibson sets Alberta ski history

By Jarl Omholt-Jensen
(Special to The Herald)

Thanks to an impressive effort by Carol Gibson of Camrose, Alberta has its first aggregate junior girls' Shell Cup champion.

Gibson skied to a bronze medal in Saturday's 2½- kilometre event on the Sugarloaf Provincial Park trails (near Campbellton, N.B.) in the Shell Cup Canadian junior cross-country skiing championships. It earned Gibson sufficient over-all points in two individual events to win the junior title, the first for an Albertan since the expanded national calendar came into effect in 1974.

Lana Lindaas of Burns Lake, B.C., won the distance in 10:07, followed by Josee Bertrand of Quebec in 10:13. Gibson posted 10:22.

It was Gibson's large victory margin in Thursday's five-km race that guaranteed the title. Beth Tabor and Teresa Potter, both of Calgary, ran fifth and eighth in 10:46.45 and 10:54, respectively.

Alberta's team depth was expected to ensure the province of a medal in Sunday's 3x5-km relay. However, bad luck played a part in thwarting the team's goal.

Potter lost her ski during the middle lap. She recovered sufficient time to put anchorwoman Gibson within striking distance of Southern Ontario's Petra Helewa. But, with 100 metres to go, Gibson caught a ski tip and fell as she was skiing neck-and-neck with Helewa.

Helewa took the bronze in 53:42, six seconds ahead of Gibson. The National Capital Division won its second gold since 1976 with a 50:44 time.

No Alberta men captured medals in Saturday's individual events. However, Edmonton's Morgan Scott was close. In the junior boys' five-km sprint, he clocked 16:29 in fifth place, six seconds from the bronze that was taken by Ottawa's Gerald Rayner. Ottawa's Dave Lumb won in 16:00. Wayne Dustin of Sault Ste. Marie, with a silver, accumulated enough points for the aggregate award.

Alberta's Eric Hannula of Edson was ninth in 16:54. Calgary's John Berg ran 16th in 17:27.

Waiting

Skiers and skis were to be seen in great numbers in Camrose during the past weekend when people gathered from many points in Western Canada for the Western Canada Cup, Alberta colleges' championship and the Camrose Ski Gallop. In the background is the ski lodge and the Viking Cultural Centre.

—Rick Erlendson photo

Quite a sight

The mass start of the Camrose Ski Gallop near the Ski Lodge Sunday was quite a sight as the 73 colorful skiers wound their way into the scenic Battle River Valley beginning the eight-mile cross-country ski race. Further photos and stories concerning the Ski Gallop and Western Cup races held in Camrose on the week-end are printed this week in the sport section.

—Rick Erlendson photo

Local skiers excel at ski championships

JAN 17. 1981

JOHN, STEVE, JAN, CAROL & LORALIE
CAMROSE SKI LODGE

course with a time of 29:57.

CLC VICTORIOUS

And, in an Alberta College Championship event that was held for the first time this year, Camrose Lutheran College came home with the Edmonton Journal University and College cross-country ski championship trophy.

The award was presented on the basis of the times of the top three racers from each college.

HIGHSCHOOL EVENT

The second official high school team championship was also held at Gold Bar Park in Edmonton over the weekend and three local students took medals in this event.

Carol Gibson came home with a gold while Ken Rayment took a silver and Glen Rupertus a bronze.

About 160 skiers from high schools all over the province competed in this event. The race was based on participation points rather than top competitors so Camrose did not rate well in the overall standings.

ANOTHER BRONZE

Camrose also captured bronze medals for a mixed relay involving Garry Gibson, Clarence Servold and Kristi Skaret.

According to Gibson, who coaches the cross-country ski team at Camrose Lutheran College, the race was an exciting one with the Camrose team finishing only a ski length behind the winning team.

49:14, Nancy Gibson coming in second with a time of 57:25 and Nancy Scharff capturing a third spot with a time of 59.42.

In the Mini-midged race young Kristene Matson took a silver medal in the 1.5 km race with a time of 8:32.

In the Junior Men 15 Km race, Neil Servold of CLC took third spot with a time of 59:06.

The pee Wee Boys division brought Eric Matson a silver medal with a time of 7:06 while brother Ted Matson also took a silver in the Midget Boys 2.5 Km race with a time of 13:40.

Although Bob Barnes of Camrose didn't have any competition in the Pioneer Men 5 Km race, he completed the

Medal winners

Several local cross country skiers participated in the Provincial Championships and High School Championships at Gold Bar Park in Edmonton over the weekend.

Medal winners include (Back Row L to R) Neil Servold, Nancy Gibson, Coach Gary Gibson, Carol Gibson and Glenn Rupertus. (Fr. L to R) Sandy Scharff, Ken Rayment and Susan Stewart. See story for details.
Photo by Rick Erlendson

The Camrose Ski Club this year marks its 75th anniversary. The club's charter members back in 1912 included P. Mikkelson (front, left), Adolph Maland, Lars Maland; and Engelbretson brothers Oscar (back, left), Anton and Dick.

Twenty-seven members of the Camrose Ski Club before a day's skiing on one of Alberta's first ski jumps. Notice the variety of headwear.

Gibson skis into sunset

By GORD VINCENT
Calgary Sun

Canmore's Carol Gibson has retired from the Canadian cross-country ski team.

"She's on to her next career — we'll miss her for a lot of reasons," national chief coach Marty Hall said yesterday from his home near Ottawa. "Not just because she was one of our leaders as an athlete, but because she's just a great person.

"She didn't state any reasons (for retiring), she just thanked us for all the help and said it was time for her to move on."

Hall received the 25-year-old Gibson's written resignation in the mail Tuesday — the seven-year team veteran is now considering a career in physiotherapy. An Olympian of the Calgary Winter Games in 1988, Gibson's World Cup career was highlighted with a silver medal in the women's 4x5 km. relay in Canmore in 1987.

According to Hall, Gibson had made a breakthrough this winter topped by a terrific national championships, and had a greater degree of success to look forward to.

"In the old days I would've tried to talk someone out of it but she's been around for 10 years now, I think she has a fair assessment of where she is, what she wants to do and what her reasons were," Hall said. "And she's a pretty mature lady . . ."

CAROL GIBSON
. . . returning to sch

Ole Uffda: *Mascot of the Camrose Games with new friends*

Jon Servold, Canada's only competitor in nordic combined

—larry wong, team sun

FORMER OLYMPIC competitor Clarence Servolo of Canmore proudly lights the cauldron during the torch ceremony.

Good Luck to our Olympians

Cross-country skier, Carol Gibson, and biathlon competitor, Glenn Rupertus, are two Camrose athletes who, by sheer determination and lots of hard work, have been selected to represent Canada at the 1988 Olympic Winter Games in Calgary.

Carol Gibson

Carol was born in Camrose on December 15, 1964 and began her love affair with cross country skiing by the time she was nine years old, after being introduced to the sport by her father, Dr. Garry Gibson, professor of Outdoor and Physical Education at Camrose Lutheran College.

By the age of 15, she had made Canada's Junior National Team. Now 23, she's the No. 2-ranked female in the country and labelled a "comer" by national coaches. Her favorite event is the 5-km Free Style Relay. She hopes to finish in the top 15 in the world.

Carol is currently a full-time athlete, working part time for Cross Country Alberta, as a program co-ordinator. Other interests include studying French, gardening, knitting, massage, haircutting and music.

Glenn Rupertus

Glenn is one of those rare athletes who didn't learn his craft at a very early age. He was already 16 years old when he began cross-country skiing seriously with the Camrose Lutheran College ski team.

He had been a fine cross-country runner at Camrose Composite High School and the progression to cross-country skiing seemed natural for him. His interest in the biathlon began when he was 18. In 1984, he was the top junior biathlete in Canada and has since been a top competitor on the Canadian team.

Glenn, 23, has been a full-time athlete the past three years, spending

Skiers go to Japan

By Ruben Hansen

This past week marks yet another milestone in the history of cross-country skiing in Camrose.

Two local skiers, John Gibson and Kim Grattidge, entered the international ski scene as members of the Alberta team going to Hokkaido, Japan.

This event is part of a continuing of sport exchanges between Alberta and Hokkaido whose purpose is to promote lasting, friendly relations and international goodwill between the Hokkaido Amateur Sport Association (HASA) of Japan and the Government of Alberta (Department of Recreation and Parks).

The athletes itinerary begins on Jan. 25, their departure date and ends two weeks later, Feb. 8 on arriving back in Edmonton.

During these two weeks, the athletes will participate in several races ranging from 5 kilometer distances for the women up to 50 kilometer distances for the men. Both John and Kim, well-known in local ski circles, were selected for their abilities as superior skiers and good representatives for Alberta.

Sunday, Gold Bar Park in Edmonton, hosted the Zone 4 Parkland Alberta Winter Games trials in cross-country skiing. A contingent of eighteen skiers from Camrose participated.

In midget boys, Scott Grattidge finished third while Neil Musgrave, in his first weekend of racing, finished seventh.

In midget girls, Daralee Bauer finished in third place.

Juvenile boys saw Jason Vantomme finish third.

Junior boys' event was won by Doug Sogge. In third place was Cam Shwartz.

Junior women's event was won by local Finnish skiing sensation Anki Ravald. She was followed by Susie Gomez. In fourth place was Rose Marie Rackaw.

The junior men's event was won by Pierre Bergeron. Following with a close second was Greg MacIntyre. Colin Farynowski and Aaron Schnick also raced.

Senior women's event was won by Dawna Ehmon. Darlene Donszelman was third while Zanette Sikorski also participted.

The senior men's event was won by Greg Hall of Red Deer, a former CLC skier. He was followed by Ruben Hansen.

In masters men, Coach Garry Gibson took home the gold.

In each event, the first two finishers qualify for the Alberta Winter Games to be held in Edson from Feb. 22 to Mar. 2.

Gold Bar Park was also the sight for Alberta Cup Number Five, on Jan. 18.

The five kilometer event in mini-midget boys saw Neil Musgrave place seventh.

Doug Sogge skied in the senior boys and placed 10th.

Camrose entered six skiers in the junior women's event. Placing fourth was Anki Ravold; sixth was Rose Marie Rackaw; eighth was Suzie Gomez; ninth place was taken by Dawna Ehmon; tenth was Anne Marie Birchill; and 11th place was Darlene Donszelman.

Four skiers from Camrose raced in the junior men's. In third place was Greg MacIntyre; fourth place was Pierre Bergeron; fifth was Colin Fargnowski; and in sixth place, Aaron Schnick.

In senior women, Kim Grattidge placed fourth over the course. Zanette Sikorski placed sixth.

In senior men B event, Ruben Hansen placed third.

In masters men V, Camrose took the top three positions. The event was won by Clarnece Servold; second place was won by coach Garry Gibson; and third place was taken by Bob Barnes.

The next event in the Alberta Cross-country Skiing schedule is the Western Canadian Masters championships to be held in Vermilion this coming weekend.

Ski Japan

John Gibson and Kim Grattidge left for Japan to enter the international ski scene as members of the Alberta team going to Hokkaido, Japan. This event continues the sport exchanges between the two countries.

JAN 22 '82

Coal

What is it?

The name of the fuel we know as coal originated from the Anglo-Saxon word for charcoal which is 'col'. Coal is a fossil fuel which began forming during the Carboniferous era (280 to 345 million years ago). Coal is mostly carbon with hydrogen, oxygen and nitrogen making up the remainder. Graphite formed from high ranked coal is pure carbon.

Overtime silt and sediment buried large deposits of prehistoric vegetation and tectonic movements of the earth's crust caused high temperatures and great pressure to change this vegetation into peat. Over millions of years this transformation continued, changing the peat into the many types of fuel we know today. Coal is ranked according to its moisture content and its potential energy production. As coal rank increases water is lost rapidly and volatiles more slowly, ash and fixed carbon are retained. The quality of each coal deposit is determined by the temperature , pressure and length of time in formation. This is usually referred to as its 'organic maturity'.

PEAT forms when plant material is inhibited from decay by acidic conditions. It is soft and can be used as fuel when dried. Peat has a very high moisture content and burns slowly so was often used by poorer families in Europe as a cheap fuel which would produce heat for a long period of time. Ireland is the country most associated with using peat as a fuel and the first recorded use was in the 7th century .In 1926 over 6 million tonnes of hand cut peat was used in Ireland. In Canada we associate peat with the peat moss cut from upper layers of peat bogs and used in gardens to improve the soil. Canada is the world's leading producer of peat moss.

LIGNITE or brown coal is the lowest ranked fuel because it contains the most moisture and has a high sulphur content. Lignite was formed approximately 50 million years ago. It is soft and has a low energy content -around 8 -10 MJ/Kg. It is generally used in steam-electric power generation plants situated close to the mine because it is an inefficient producer of energy. Fossil evidence is best preserved in lignite. Over millions of years lignite is transformed into sub-bituminous coal.

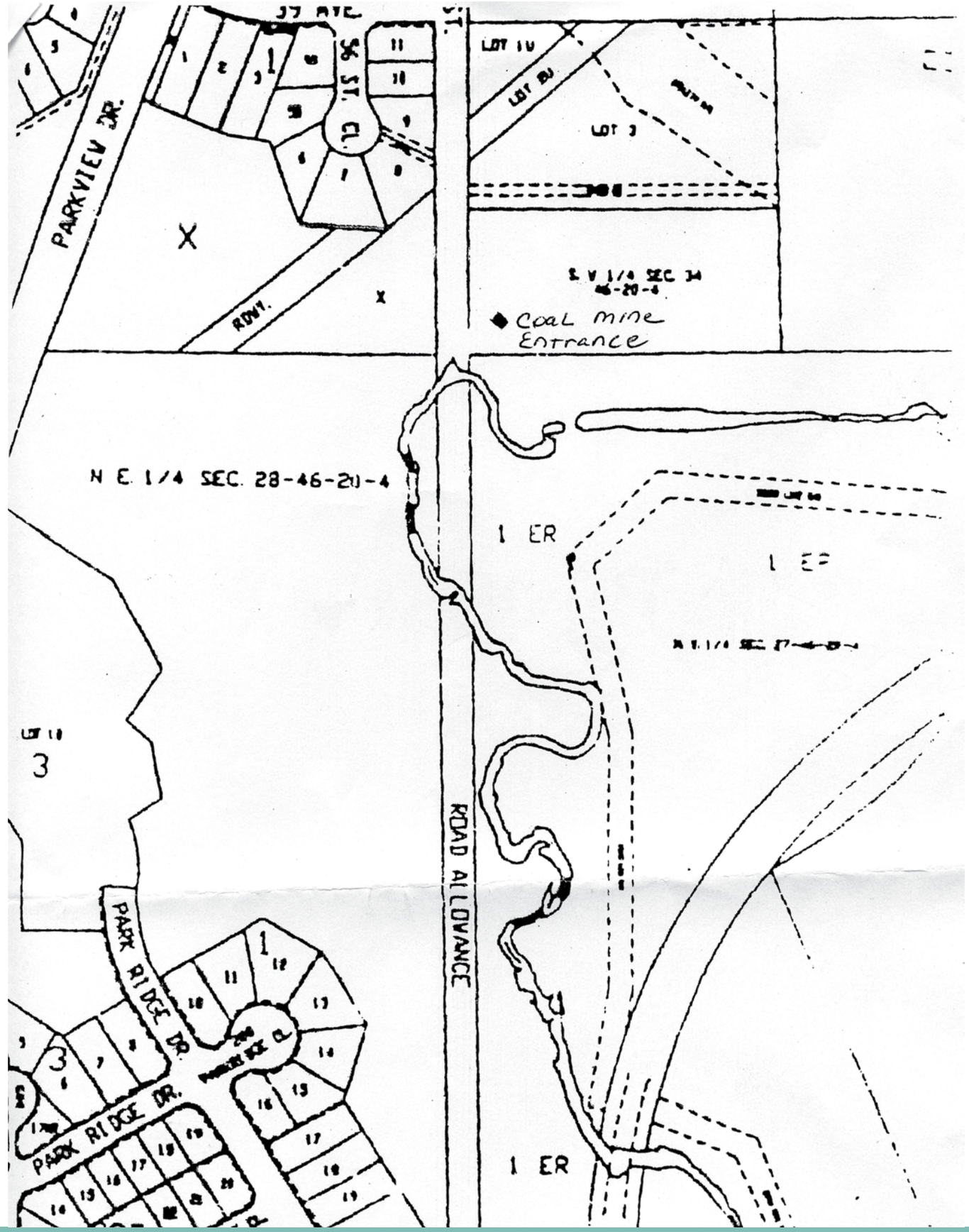
SUB-BITUMINOUS COAL has a higher carbon content and less moisture than lignite. There are varying ranges of sub-bituminous coal again depending on the length of time it has been subjected to high temperatures and pressure over millions of years. Most sub-bituminous coal mined today is 35-45% carbon and has a lower sulphur content although its high moisture content makes it less economical to transport and its fuel value is lower than high ranked coal.

BITUMINOUS COAL is 45-85% carbon and has therefore less moisture. It is usually black with well defined bands of shiny material alternating with dull bands. Because of its lower moisture content it is more easily transported and produces more energy when burnt. When heated in the absence of oxygen some bituminous coals form a high grade carbon product called 'coke' which is used in the manufacture of steel.

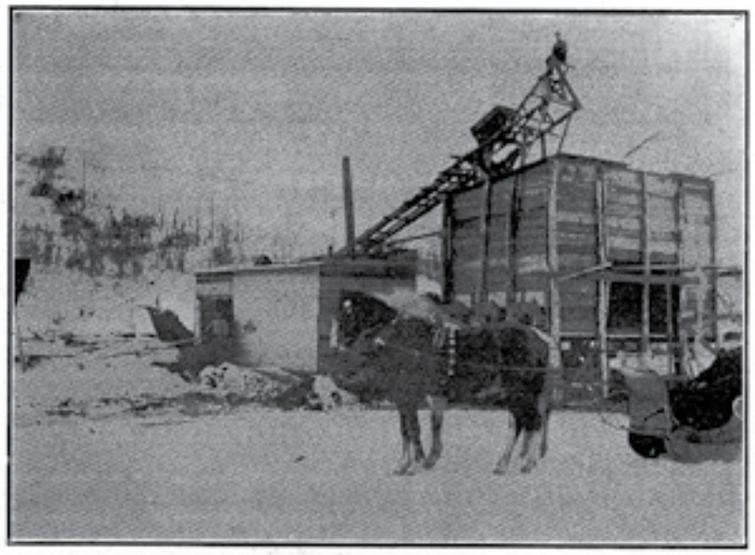
ANTHRACITE is the top ranked and most desirable form of coal. It was discovered in 1769. It is the blackest and hardest kind of coal because of the 85-95% carbon content. It burns cleanly and has a high heat value. It can be stored on the ground for long periods of time without causing environmental problems.

WHERE IS COAL FOUND.

Of the three fossil fuels coal has the most widely distributed reserves. It is mined in over 100 countries and on all continents except Antarctica. The largest reserves are in the USA, Russia, China, Germany, India, Australia and South Africa. Canada ranks 13th in the world with production of higher ranked coal such as bituminous and anthracite. It is estimated that there is enough coal to last 300 years ,although this does not take into account an increase in the world population and a resulting decrease in natural gas and petroleum reserves.

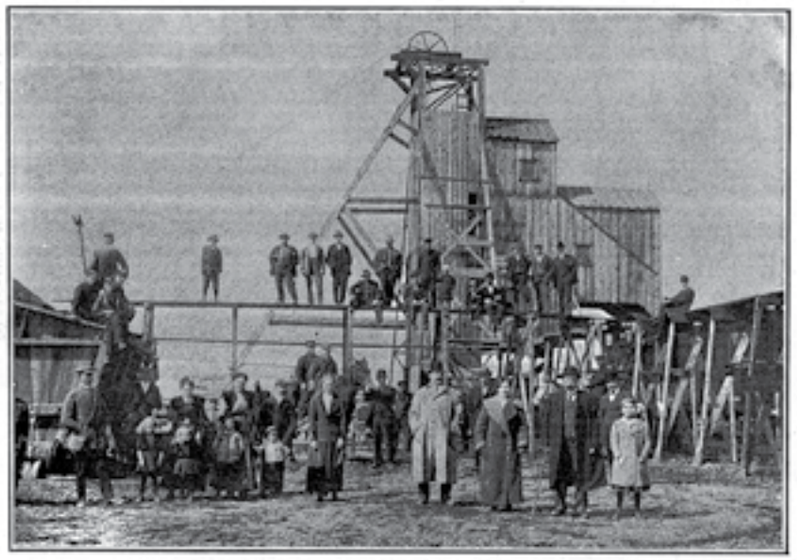


Coal---
A Wonderful Source of Wealth to the Camrose District--- The Key to Unlimited Commercial and Industrial Expansion



A Primitive Coal Mine in the Camrose District. Many farmers have private mines and supply coal to their immediate neighborhood at from $2 to $3 per ton.

IN considering the tremendous importance of the coal mining industry in the Camrose district, no time need be lost in setting forth the result of scientific investigations. The fact is that the best lignite coal in seams of an average thickness of six feet, is being mined at various points in the district within a radius of sixteen miles from the town of Camrose. These mines, all well located on railway lines, are near the eastern extremity of Central Alberta coal areas and thus supply enormous quantities of coal to Saskatoon and other Saskatchewan points.



Scene at the Mine of the Battle River Collieries Ltd., Ten Miles East of Camrose

Coal Makes Big Pay Roll

The five large company mines in the Camrose district and the score of smaller concerns easily mine a total of 1000 tons of coal per day during the winter months. These mines give employment to about 300 men and put a pay roll into circulation of not less than $6,000 per week.

Page Eight

HOW DO WE MINE COAL

Coal is extracted from the ground by underground mining or surface mining known as open pit mining. Outcrop coal which was close to the surface was used in Britain during the Bronze age (2-3000 years BCE) and was commonly used during the late Roman occupation of Britain. These easily accessible sources were largely exhausted by the 13th century and underground mining using shafts was developed. The first shafts were known as “bell pits”. These were little more than wells widened at the bottom to reach larger amounts of coal. Often women and children were employed to carry the coal up ladders to the surface. Later, mines were enlarged and by 1683 were using timbers to support the roof. This enabled coal to be mined further away from the entrance shaft. By 1832 a method known as “board and pillar” was being used in deeper mines. The coal was extracted and pillars of coal were left to support the roof. When the seam was exhausted the miners worked backwards removing the pillars as they moved back to the mine entrance. This technique was also known as pillar and stall, room and pillar and stoop and stall depending upon the area in Britain where the coal was mined. When British miners came to Canada to open the first coal mines they used the name most familiar to them. The Mines and Collieries Act of 1842 banned all women and children under 10 from working underground although young children were still employed at the pit surface to lead the pit ponies and haul coal.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Modern methods of mining include :

Longwall mining - a machine known as a longwall shearer uses a rotating drum to move across a coal seam. The loosened coal falls onto a conveyer belt and is removed to the outside. These systems have hydraulic roof supports which move forwards as the machine advances through the coal face. Over 50 % of underground production uses this method.

Continuous mining - This uses a machine with large metal teeth which scrapes coal from the seam . This accounts for 45% of all underground coal production.

Conventional mining - This uses explosives to loosen the coal and accounts for less than 5% of underground production. Explosives used in underground mining are generally restricted to specially formulated materials which reduce, but do not entirely eliminate, the possibility of methane or dust explosions.

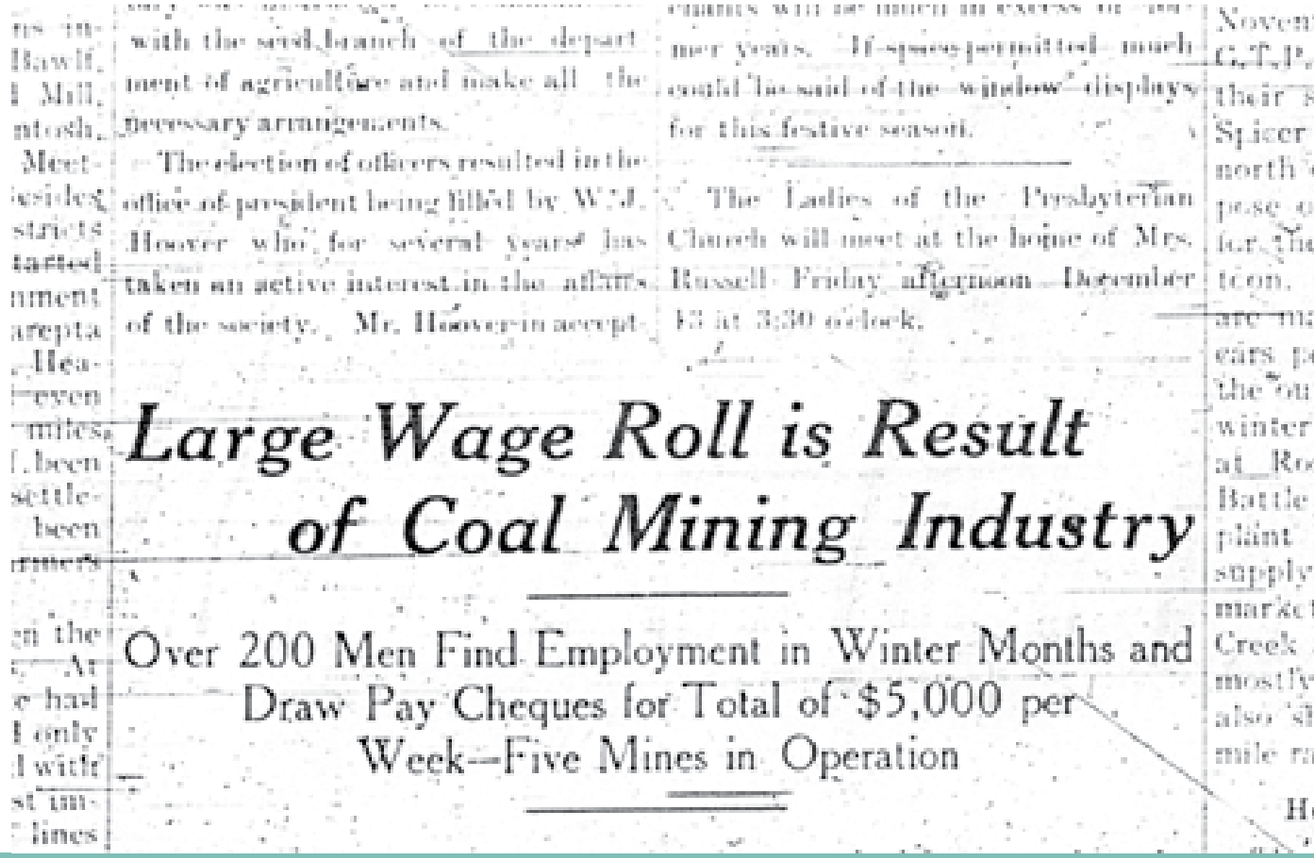
Surface mining - simply strips the soil from the top of shallow seams and the coal - mostly bituminous in the US - is extracted. This is the most environmentally damaging of all methods since the soil is often not replaced and trees and plants will never cover the scars on the earth. Instead of excavating the contour of a ridge side they now blast the entire mountain top off and almost everything that isn't coal is pushed down into the valleys below, covering creeks, forests and healthy streams. This dismantles the entire ecosystem. In Alberta the Cheviot mine permit application to extend the mine adjacent to Jasper National Park has been opposed. Roughly 25 tonnes of the mountain will be stripped away and dumped onto the surrounding landscape for every tonne of coal exported. Destroyed would be a mountain wildland including eight creeks and valleys of the headwaters of the Mc Leod and Cardinal rivers. Both the company's and Parks Canada experts concluded that the Cheviot mine would result in the direct loss of quality habitat and wildlife travel routes for at least 100 years. In 2006 the governor of Montana opposed an application by the Cline Mining Corporation to remove a mountain ridge in southeastern British Columbia. For every 2 tonnes of coal mined the company would leave 16 tonnes of waste in the Folsey creek drainage , a tributary of the Canadian Flathead river. Contaminants dropped into the river would reach Flathead Lake in Montana in 48-72 hours.

Underground mining was and still is a very dangerous occupation. Hazards include roof collapse, fire and gas explosions from buildup of methane. Improvements over the centuries include the Davy lamp, electronic gas monitors, improved ventilation systems and the use of heavy machinery to cut the coal instead of explosives. HOW

THE WORLD USES COAL

Coal is used most significantly in electricity production , steel and cement manufacturing and for domestic use as heating fuel. Coal generates 39% of all electricity production, more than double the amount produced individually by hydro, gas, nuclear or oil generation. In western Canada, where most of Canada's coal resources are found, increasing demand for electricity could result in additional coal fired generating plants. By products of burning coal, such as ash and slag, are used in the manufacture of many household products including fertilizer, paint, insulation, rubber bands, golf balls, batteries and chalk. Coal can also be converted into liquid fuels such as gasoline and diesel but the process releases large amounts of carbon dioxide and is not viable while oil and natural gas reserves are easily available.

Concerns have been raised over the ability to produce electricity from coal without increasing carbon based emissions. Combustion of coal releases carbon dioxide and nitrous oxides as well as sulfur dioxide. Some of these emissions when mixed with water fall to the earth as acid rain. Coal mining also emits methane, another cause of global warming. Coal and coal waste products including ash, slag and flue gas contain heavy metals such as arsenic, lead, mercury, nickel, cadmium, copper and radium. These emissions are trace impurities but paradoxically result in more radioactive waste than nuclear plants. In Ontario the government has pledged to close all coal fired power plants . The goal is to clean the air and cut carbon emissions in the province. European nations such as Great Britain and Germany have cut coal use by 40% in the years from 1990 up to 2002 and have consequently cut carbon emissions to produce cleaner, safer air resulting in fewer deaths from asthma and other lung diseases. The German government, in 2007, announced that they would close all coal mines in Germany by 2010. The movement to phase out coal production is gaining momentum. Many nations are proposing a "carbon tax" to discourage coal use. Other ideas have been discussed such as the use of filters on coal generating plants to burn 'clean' coal, but these are expensive and still leave the problem of where to dispose of the gases produced by these methods. Until the world can agree on cleaner methods of producing energy it is likely that coal production will continue as it has for centuries.



with the seed branch of the department of agriculture and make all the necessary arrangements.

The election of officers resulted in the office of president being filled by W.J. Hoover who for several years has taken an active interest in the affairs of the society. Mr. Hoover in accept-

The Ladies of the Presbyterian Church will meet at the home of Mrs. Russell Friday afternoon December 13 at 3:30 o'clock.

Large Wage Roll is Result of Coal Mining Industry

Over 200 Men Find Employment in Winter Months and Draw Pay Cheques for Total of $5,000 per Week—Five Mines in Operation

Lions Memorial Grove

The Lions Club of Camrose has decided to contribute to the community by developing a living forest within the Camrose parks system. The Lions Club has worked in cooperation with the City Parks department selecting a site suitable for our project and its future expansion. Trees have been planted, a red shale path lain, and table and seats set up for the enjoyment of the public. The area will serve as both a beautifuicaiton of the current park, as well as memorial honoring those Lions members who have passed on. A marker by one of the trees will be placed in recognition of all the Lions members who have died between 1954 and 2004. Later members will be honored in the spring with a public dedicatin and the setting of name plates on other trees in the park. The Lions Club is proud of it commitment to the community and hopes that this project will enhace the beauty of Camrose while properly honoring its former members.

Rotary Contributions

The Rotary Club of Camrose has been contributing to our community since it's inception in 1925.

Some of the ways the club has contributed to the Stoney Creek Valley and the environment in our community are:

For decades Rotary Club of Camrose has been distributing trees to local school children, as part of an environmental awareness project

1974 Rotary made a financial contribution which allowed Camrose Lutheran College to start its ski club.

Throughout the 1980s, Rotary ran the "Skis for Schools" project. Every year they would give ski equipment including skis, boots, poles and bindings, to a different Camrose school, including CLC. Most years this included about 40 pairs of skis.

1986 Rotary Park at Mirror Lake was established (that's where the Fountain is)

In 1992 Rotary donated $17,000 for the establishment of the playground at Mirror Lake Centre (near where the Bill Fowler Centre is located). That playground was completed and signage put up in 1994

1990 Rotary donated $10,000 for snow making equipment to the Alberta Winter Games committee

In the mid 90s, Rotarians worked to establish and build the Rotary Four Season Park, an extension of the newly-paved trail system developed by
the City of Camrose. In 1994 Rotary pledged $1000 to landscaping and trail improvements, and 1000 hours of labour to cleaning up the area.

In 1995, Rotarians planted more than 350 trees and built fences in the new park, as well as pledging $50,000 over the next three years

In 1996 the first ever Rotary Ski Loppet took place, kicking off the Rotary Four Season Park. The Loppet, now known as the Ole Uffda Loppet, is still hosted by the ski club

2001 Rotary replaced all the ski equipment at Augustana

The present members of The Rotary Club of Camrose are grateful for the privilege of being able to continue this tradition.

A Special Thanks

Thanks to our Supporters:

The Government of Canada
Kevin Sorenson, M.P.
The City of Camrose
Community Futures
KeLa Graphic Services
Duff Layton's Mens Wear
UFA
Rose Country Realty
Battle River School Division
U of A Augustana Campus
Lefse House
Ducks Unlimited
Camrose Wildlife Stewardship Group
BRAED
Royal Alberta Museum
Camrose & District Museum

Thanks to our Research Team:

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Candace Tremblay
Kim Macklin
Gillian Bell
Ryan Stang
Lindsay Anderson
Gareth Higgins
Sara Walkey

Our Environment

By producing this document on a CD instead of printing it, we are existing in an environmentally responsible manner.

For every 100 books not printed we save:

2 trees
1,784 gals. of water
367 lbs. of reduced greenhouse emissions
1,213 lbs. of wood saved
189 lbs. of reduced landfill
2,415 BTU of reduced energy

Resources Hydrology

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Resources Invertebrates

There are many online resources that promote invertebrate diversity and highlight their role and importance in the environment, but locally, there are no active programs that one may join to learn about invertebrates. If one is interested in getting involved with a little help, the Edmonton Nature Club (http://enc.fanweb.ca/) has a Bug and Spider study group that coordinates a few field trips each summer. The Club also leads butterfly counts. The best method is to educate oneself a little and get out there and find them. The hands on experience with some of the wildest creatures of our environment may be all you need to get hooked. From the smallest zooplankton to the largest diving beetles, and the prettiest butterflies, they are a diverse and accessible group of organisms that can provide a nature lover with great satisfaction. Whether in your backyard, or out in the
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Historical Perspective – Camrose Ski Club By Joan Skinstad

Bob and Norman Osness

The Osness family continued the Nordic Combined tradition in Camrose holding the Canadian National Jr. Championship title for five years. The boys started skiing on the Camrose alpine hill, but under the influence of their father George and the Servold brothers soon started cross country skiing and ski jumping at the Camrose site. In the early years George, Bob, Norman and sister Joan all jumped in competition in Camrose making it a family affair. These brothers were born and grew up in Camrose attending grade school and later high school at Camrose Lutheran College. Not only did the Osness boys compete in Nordic skiing but also played football at CLC. Bob later played football on full scholarship at Augsburg College in Minniapolis, Minnesota where he excelled and became a leader on the team and was named "All American" in their conference. Norman attended NAIT and became a draftsman which he is still working at today. In skiing they were coached by Irvin and Clarence Servold. These young athletes competed on the competition circuit in both Alberta and BC traveling and competing at such venues as Banff, Devon, Camrose, Calgary, Revelstoke, and Prince George. There were various clinics held in Camrose with visiting coaches coming to help the young aspiring athletes such as Sture Gran from Sweden and Snowball Severrud who was the National US coach at the time. These visits helped to motivate the athletes as well as teach them valuable skills.

These are some of the highlights from Bob and Norman's careers.

Bob Osness

1966

- Bob qualified for Team Alberta and went to the Canadian Championships in Mont Sutton, Quebec where he finished in the top 10.

1967

- At the Alberta Championships in Camrose, Bob was won the gold in cross country.
- He again qualified to travel with the Alberta Ski Team to Nationals in Thunder Bay, ON. Here he won his first Canadian Jr. Championships in Nordic Combined competing for Camrose Ski Club.

1968

- The Alberta Championships were again held at the Camrose valley venue where Bob won both the Nordic combined event as well as the cross country competition for junior men.
- Team Alberta traveled to Prince George, BC for Nationals and Bob repeated his excellent performance from the previous year, winning the gold for Alberta.
- Later in the winter, he was asked to represent Canada at the US Jr. Nationals in Bridger Bowel, Montona. This was an exciting experience for this young athlete.

1969

- Bob had a new coach this year in jumping and placed in the medals at the Alberta Championships in Devon, AB for the first time managing a silver medal. Arne Tuft from Norway was in the Camrose area and made the difference for Bob's technical prowess. In the same weekend, Bob was crowned Alberta Nordic Combined Champion. He was a busy athlete for this set of competitions and also got a silver in the cross country race.
- The Canadian Junior Championships were held in La Riverer, Manitoba where Bob finished his junior career with an unprecedented three year run at the top of the podium winning gold medal in the Nordic Combined competition.
- Bob made a brief return to the sport in 1978 when he won the senior men's (Class B) title at the Alberta Championships in Devon.

Norman Osness

1969

- Norman made his Canadian Championship debut in La Riverer, Manitoba and joined his brother Bob on the podium placing third.

1970

- The winning tradition continued in Mont Ste. Anne, Quebec at the Canadian Jr. Championships where he captured gold in Nordic Combined. His sister Joan Osness Skinstad won her first Canadian Championship medal in cross country at this event placing 3rd.

1971

- The National Jr. Championships returned to Alberta at the Devon Nordic Centre. Osness finished his last year of junior competition with a gold medal performance repeating his performance in 1970. This meant that the Osness family held the National title for five consecutive years.

Vikings Ski Team 2001-2007

In the fall of 2001 Joan Skinstad took over the coaching duties at Augustana for the second time in her coaching career. It was wonderful to return to Camrose and my childhood roots after a long hiatus. Joan and Hans Skinstad coached in Alberta for seven years in the 1980's three of which were spent as head of the biathlon program at Camrose Lutheran College creating a very successful program placing 11 of their athletes on the Canadian National Biathlon Teams. Joan acted as player coach as she was also on the National Team at this time competing for Camrose and Canada around the world. Hans was the Women's National Team Coach during this period as well. Then in 1988 he coached the Canadian Olympic Team at the Calgary Games. Since that time Joan has become the only female Level 4 coach in the country.

Augustana Faculty continues to have one of the best university programs in the country giving student athletes the opportunity to pursue both their academic and athletic pursuits. The Vikings Ski Team provides a host of

support including athletic performance scholarships, university credit for ski team membership, convenient team room and wax is provided, subsidized competition and trip costs and knowledgeable and certified coaching staff. The ski team is composed of members from various parts of Canada as athletes are attracted to the unique programs at Augustana Faculty. For example, in 2004 six members of the Vikings represented four different provinces at the Canada Winter Games in Charlo, New Brunswick.

Tim Wintoniw	Manitoba
Carl Skinstad	Alberta
Mikael Laxdal	Saskatchewan
Sharon Clay	Saskatchewan
Tristan Toope	Newfoundland and Labrador
Stephanie Corbett	Newfoundland and Labrador

Joan Skinstad was part of the Team Alberta coaching team.
This year the 2007 Canada Winter Games will be held in Whitehorse, Yukon. The Vikings will be represented by Marcia Birkigt (Alberta), Sarah Stephen for (North West Territories) and Sam Lindsey (Yukon). Coach Skinstad will be again joining the Team Alberta coaching staff.
There have been a number of highlights in the 2001-2007 time period. The team won multiple medals at the Canadian Colleges and University Championships which is held in conjunction with the National Cross Country Championships. Carl Skinstad won the overall National CCUNC title and had many medal winning performances in the individual events. Marcia Birkigt is also one of the student athletes that have distinguished themselves in the past five years while participating in the Augustana program. She has medaled at both the CCUNC events as well as the National Cross Country Championships. Menno Boelman and Scott VanderMeer joined Carl Skinstad to win the gold in the relay at the college championships and Menno won an individual gold in the sprint event.
In 2005 Carl, Marcia and Coach Skinstad have represented Canada at the World University Games in Innsbruk, Austria. Marcia Birkigt and Joan Skinstad traveled to the World Jr. Championships in Stryn, Norway in 2004 where Marcia had the best Canadian result in the classic distance race.
The 2007 Universiade was hosted in the Olympic city of Torino, Italy. Coach Skinstad was part of the coaching team for these Games.
Augustana continues to compete at all major events in Alberta and Canada placing well in the Alberta Cup Series, Canadian Western Championships, the Canadian Birkebeiner and on the loppet series.
Listed below are the highlights from the past years under head coach Joan Skinstad and assistant coaches Hans and Carl Skinstad.

ACAC – Alberta Colleges Athletic Conference
CCUNC – Canadian Colleges and University Nordic Championships

(4)

2002 Team Members

1Kyle Anderson
Menno Boelman
Elizabeth Demers
Jennifer Gonnet
Eleanor Huettmyer
Hanne Porsholt Jensen
Brent Magneson
Scott McGrath
Graeme Moore
Holly Nusse
Brent Ristau
Carl Skinstad
Scott VanderMeer
Steven Wintoniw
Tim Wintoniw

1***ACAC Cross-Country Championships – Lac La Biche, AB***
Men
Roddy Ward - Gold, Jamie Masters - Silver,
Menno Boelman - Bronze
Women
Hanne Porsholt Jensen - Gold, Holly Nusse - Silver,
Liz Demers - Bronze
Mixed Relay - Gold
Liz Demers, Chris Halldorson, Menno Boelman
Overall Men's & Women's Team - Gold
Augustana University College
Overall Team Aggregate Award - Gold
Augustana University College
ACAC Male Rookie of the Year - Scott VanderMeer
ACAC Female Rookie of the Year - Holly Nusse
ACAC Athlete of the Week Awards
Carl Skinstad ~ January 28 - February 3, 2002
Menno Boelman ~ March 11-17, 2002
Canadian College & University Nordic Championships – Canmore, AB
Men's & Women's Combined Aggregate - Bronze
Augustana University College
Men's Sprint Event
Menno Boelman - Gold
Carl Skinstad – Bronze

2003 Team Members

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1Selene Austin
Marcia Birkigt
Menno Boelman
Sharon Clay
Stephanie Corbett
Liz Demers
Blake Hall
Mikael Laxdal
Brent Magneson
Graeme Moore
Holly Nusse
Brent Ristau
Carl Skinstad
Scott VanderMeer
Mark Wever
Chad Winger
Tim Wintoniw
Earl Zimmer

1**ACAC Athlete of the Week Awards**
Carl Skinstad
March 6-10th, Oct. 21-27th, and September 23-29th
Selene Austin, Marcia Birkigt, and Steph Corbett March 6-10, 2003

Canadian College & University Nordic Championships – Duntroon, ON
Men's Sprint Carl Skinstad – Silver
Men's 15 km. Skate Carl Skinstad – Silver
Scott VanderMeer – 4th
Men's Aggregate – Carl Skinstad – Silver
Men's Relay Menno Boelman, Scott VanderMeer, and Carl Skinstad– Bronze
Woman's Relay Selene Austin, Steph Corbett, and Marcia Birkigt- Silver
Women's 15 km. Classic Marcia Birkigt - 4th
Women's Sprint Selene Austin 6th
Overall Women's Team – Bronze

Alberta Championships -
Sr. Men's 15 km. Skate
Carl Skinstad – Silver
Carl Skinstad – Aggregate Sr. Men's – Gold
Scott VanderMeer- Aggregate Bronze
Jr. Women's Sprint Selene Austin - Silver
Selene Austin - Jr. Women's Aggregate - Bronze

Canada Winter Games – Charlo, NB
Carl Skinstad – Relay Silver

ACAC Cross Country Championships – Vermilion, AB
Men
10 km. Classic
Mikael Laxdal – Gold
Scott VanderMeer – Bronze
10 km. Skate
Scott VanderMeer – Gold
Mikael Laxdal – Silver
Tim Wintoniw – Bronze

Mixed Sprint Relay – Gold
Chad Winger, Stephanie Corbett, and Mikael Laxdal

Women
5 km. Classic
Marcia Birkigt – Gold
Stephanie Corbett – Silver
Holly Nusse – Bronze
5 km. Skate
Stephanie Corbett – Gold
Holly Nusse – Silver
Overall Men's & Women's Team – Gold
Overall Team Award - Gold
Augustana University College
ACAC Male Rookie of the Year – Earl Zimmer
ACAC Grand Prix Series
Men
Scott VanderMeer – Silver
Mikael Laxdal – Bronze
Women
Marcia Birkigt – Gold
Stephanie Corbett – Silver
Selene Austin - Bronze

2004 Team Members

Marcia Birkigt
Menno Boelman
Stephanie Corbett
Liz Demers
Mikael Laxdal
Holly Nusse
Carl Skinstad
Scott VanderMeer
Chad Winger
Tim Wintoniw
Earl Zimmer

Canadian College & University Nordic Championships – Charlo, NB

All Canadian
Menno Boelman
Marcia Birkigt
5km Classic
Marcia Birkigt - Bronze
Sprint
Menno Boelman - Bronze
Men's Team Aggregate
Augustana University College - Silver
Men's Relay
Augustana University College - Gold
(Scott VanderMeer, Menno Boelman, Carl Skinstad)

Canadian National Cross-Country Championships – Charlo, NB

Marcia Birkigt (Jr. Woman)

5km Classic	Bronze
7.5 km Skate	Silver
Sprint	Silver
15 km Skate	Silver
Aggregate	Silver

Marcia Birkigt

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2005 Team Members
Marcia Birkigt
Stephanie Corbett
Adam Doogan-Smith
Andy Hallett
Brad Heron
Sarah Stephen
Carl Skinstad

Canadian College & University Nora
Championships (CCUNC) – Prince
Marcia Birkigt
3rd Classic (5 km)
4th Pursuit (10 km)
Bronze Aggregate Winner
Carl Skinstad
2nd Classic (7.5 km)
1st Pursuit (15 km)
Canadian National Aggregate Champion
Women's Team Aggregate - 3rd - Augustana
(Steph Corbett, Sarah Stephen, Marcia Birkigt)

All-Canadian Team
Marcia Birkigt
Carl Skinstad

National Cross-Country Championships - Prince George, BC
Marcia Birkigt
5 km Classic - 10th
10 km Pursuit - 11th
Carl Skinstad
7.5 km Classic - 10th
15 km Pursuit - 6th

World University Games - Innsbruk, Austria
Team Canada Members
Marcia Birkigt
Carl Skinstad
Joan Skinstad (Associate Coach)

Alberta Cup - Aggregate
Marcia Birkigt 1st - Sr. Women
Sarah Stephen 2nd - Jr. Women
Adam Doogan-Smith 6th - Jr. Men

World University Games – Innsbruck, Austria
Vikings represented: Carl Skinstad, Marcia Birkigt, Joan Skinstad (Coach) and Gary Gibson (Sport Manager)

2006 Team Members

Adam Doogan-Smith	Julianna Nusse
Sarah-Ann Stephen	Rebecca Scholten
Jennifer Kathriner	David Birkigt
Kyle Schrama	Tamara Taerum
Marcia Birkigt	Earl Zimmer
Stephanie Corbett	

CCUNC - Thunder Bay, Ontario

Women's Team Aggregate 5th
Men's Team Aggregate 4th

Women's 10 km Free

Marcia Birkigt 11th

Women's 5 km Classic

Marcia Birkigt 7th

Individual National Aggregate

Marcia Birkigt 11th

Alberta Cup - Aggregate

Adam Doogan-Smith 3rd Jr. Men

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Jennifer Kathriner	2nd	Jr. Women
Julianna Nusse	2nd	Jr. Women
Steph Corbett	1st	Sr. Women
Tamara Taerum	2nd	Sr. Women

ACAC Championships

Men's ACAC Aggregate

Adam Doogan-Smith	1st
Kyle Schrama	3rd

Women's ACAC Aggregate

Sarah Stephen	1st
Steph Corbett	2nd
Jennifer Kathriner	3rd

Men's ACAC 10 km Pursuit

Adam Doogan-Smith	1st
Kyle Schrama	2nd
David Birkigt	3rd

Women's ACAC 7 km Pursuit

Marcia Birkigt	1st
Stephanie Corbett	2nd
Jennifer Kathriner	3rd

2007 Team Members

Marcia Birkigt	Alberta
David Birkigt	Alberta
Sam Lindsey	Yukon
Matt Sutherland	Yukon
Tamara Taerum	Alberta
Becky Scholten	British Columbia
Kyle Schrama	Alberta
Adam Doogan-Smith	British Columbia
Sarah-Ann Stephen	Northwest Territories

We have not completed the season as yet, some of the noteworthy results are:

Canadian Western Championships – Smithers, BC

Sam Lindsey – 4th place Junior Men

Canadian Birkebeiner

Marcia Birkigt – 2nd Senior Women and 1st in her age class

David Birkigt – 2nd in his age class

OUTSTANDING COACHES AND SKIERS ASSOCIATED WITH CAMROSE

Kaare Engstad was born on January 1 , 1899 in Norway . Moved to Camrose where he was part of the first wave of Olympians coming from Camrose. In 1932 he moved to Burns Lake BC and was selected to represent the west at the selection trials in eastern Canada . He skied so fast in the 50km that he finished the race 10min ahead of all his competitors and secured a place on the Olympic team.

Olympic Games 1932 Lake Placid

Cross Country 50K Rank 16

Mr Engstad died in Ottawa , January 10 , 1981.

Jostein Nordmo won the all round Dominion amateur skiing championship in Montreal in 1929. In 1930 Mr. Nordmo won the Clark Cup for the third time in ski-jumping events in Banff. In 1932 he represented Canada at the Lake Placid Olympic Games. Mr Nordmo was very lucky to have obtained the funds to go to the games from the Canadian Ski Association as other skiers such as Paul Gotaas were unable to compete because of lack of funding.

Irvin Servold , born on Camrose in 1932 , now residing in Devon ,Alberta.(2007)

He first started competing at the age of 7

Canadian Nordic Combined championships First place
:1955,1958,1961,1964,1965,1966 and 1968 .

North American Nordic Combined :First place 1967.

Olympic Games 1956 Cortina , Italy .

Classic Combined:Rank 27

Olympic Games 1960 Squaw Valley , USA.

Nordic combined Ind. Rank 25 Cross Country 15K Rank 47 30K Rank 40

National chairman of the cross country C.A.S.A. IN 1969

National cross country ski coach. A member of the Canadian Olympic association and the Coaching Association of Canada .In 1980 his outstanding contribution to sport was recognized with his induction into the Alberta Hall of Fame. In 1985 he was inducted into the Canadian Ski Hall of Fame.In a media release in 2005 the Canadian

Birkebeiner Society made known the fact that Mr. Servold would be skiing the event with his two sons,a daughter and three grandchildren.He has now been skiing for over seventy years.After the Birkebeiner Mr. Servold was to travel to Russia to compete in the World Masters Championships and then on to ski competitions in Norway.

Clarence Servold , born in Camrose in 1927 ,now residing in Camrose (2007)

After several years of local competitions he gained national prominence in 1948 when he became Canada's Junior Nordic Combined Champion.

At the 1955 Canadian Championships Mr. Servold took first place in the 15K and the 30K cross country and first place in the Nordic combined event.

In 1956 he won the 15 K cross country at the Canadian championship and the North American championship races .He attended the University of Denver from 1956 to 1958 where the Denver Post referred to him as "the best cross country man in college history".

Olympic Games 1956 Cortina , Italy

Cross Country 30K Rank 37 15K Rank 19 50K Rank 22

Olympic Games 1960 Squaw Valley , USA

Nordic Combined Rank 28 Cross Country 15K Rank 35 30K Rank 36

In 1960 he came back to Canada and went as coach of the Canadian Nordic ski team to the World ski championships in Poland.

In 1962 and 1964 he took first place in the 15K race at the Canadian championships. In 1966 he coached the Canadian cross country team to first place in the world championships in Norway.

In 1967 Mr. Servold became the first veteran's 15K cross country North American champion. He was active as a team member in the development of several ski facilities, among them the site of the 1971 Canada Winter Games in Saskatchewan. He was a consultant in the design of the 1975 Canada Games site in Lethbridge and acted as an official for the games.He was active in the design and construction of the ski facilities for the Alberta Winter Games in Camrose.

Claire Rolf was born in Edmonton and was raised in Camrose. She took Grade 12 and the first two years of university at Camrose Lutheran College and then left to complete

her degree in Outdoor Education at the University of Alberta in Edmonton.Worked at the University of Calgary in Educational Psychology.Spent 6 years with the Community of L'Arche in Calgary and India. L'Arche is a community founded by Jean Vanier to take care of people with developmental disabilities. She represented Alberta at the junior National Championships in 1969 ,1970 ,1971 ,1972 and 1973. In 1973 she was selected to the Can-Am team. In 1976 she won a gold medal in the first Alberta Winter Games. In 1978 she was a coach for the Canada Winter Games in Manitoba. She entered the Dominican Order in 1980 and was the coordinator on the International Committee of Dominicans. She is now Sister Claire Marie of Jesus of the Dominican Order . Until recently (2007) she resided in France as the Prioress of the International Community of Prouilhe. After taking some time for a sabbatical Sister Claire hopes to found a Dominican Monastery in the Vancouver Area.

Carol Gibson was born in Camrose, Alberta on 15th of December,1964. As a young girl she developed her endurance capacity by competing for the Camrose swim club in the summer, running cross country and the distance events in track and field in the spring and skiing with her friends on the Camrose trails all winter.. She won her first cross country race in Camrose when she was 11 yrs of age and began her climb to excellence in Alberta, Canada and the World.

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Carol's greatest achievement was in the 1987 relay at the World Cup in Camrose, where they came 2nd to the Swedish team who were at the time rated as the fastest in the world. She also considers her 17th place at the World cup in the 5km Free Technique at La Clusaz in France, her 9th place finish in the 6.8 Free Technique in Baretschruti Switzerland and her 26th place finish at the 1988 Olympics to be major accomplishments of her career. She left the National Team in 1990 and became a physiotherapist, married Geret Coyne who is now national biathlon coach in Canmore. They have two young daughters who are following in the skiing tradition, Carol continues to help in her beloved sport and is starting to race again in the Alberta Loppets. During the 2006 Winter Olympics she was invited by CBC to be the technical commentator for the coverage that came to Canada by digital and also helped organize the homecoming celebration for the Canmore Olympic Champions. Carol has been named a life long member of the Camrose Ski Club.

Olympic Games 1988 Calgary Canada.

Cross Country 10 K Classic rank 33 5K Classic Rank 33 20K Free Rank 26 4X5K Relay Rank 9

1990 Canadian Sr.Championships National Senior Champion

15K. free Rank 1 10K. classic Rank 1 30K. free Rank 2

1989 Canadian Sr. Championships Burns Lake, BC. Ranked 6th

North American Championships White Horse Yukon Ranked 1st.

1987 World Cup Canmore , Alberta. Skied second leg of Relay .Team placed second . The highest result ever for a Canadian team

1986 Canadian Sr. Championships Ranked 4th Overall winner Canada Cup

1985 World Jr. Campionships Seefeld Austria Ranked 31st Overall winner Canada Cup

1984 Canadian Jr. Championships Kamloops BC. National Junior Champion. Qualifies for World Jr. Championship team in Trondheim Norway and Polar Cup

1983 North American Junior Champion . Competes in World Championships in Finland and World University Games in Bulgaria , Sweden and Finland.

1982 Canadian Jr. Championships , Manitoba.Wins Shell Cup as Overall Jr. Champion. Qualifies for World Juniors in Austria.

1981Canadian Jr. Championships in Charlottetown, N.B. Overall Jr. Champion First First Skier to bring Shell Cup to Alberta. Joins Sr. Team to win 3rd in the relay in Championships. In North American Championships in Whitehorse places 3rd. ..

1980 National Jr. Championships Second in 5 km Classic.

1979 Qualifies for Canada Winter Games in Brandon , Manitoba.

Glenn Rupertus was born in 1964 in Wetaskiwin , Alberta. Now lives in Courtney , BC.

He joined the Camrose Ski Club in 1978 .Dr. Garry Gibson was his first coach.In one of his early races in the 1979 provincial championships he came third in the junior boys category. Among his many accomplishments are 14 years on the National Biathlon team , 10 National titles as a senior and one as a junior and 3 Olympic Winter Games. After moving to British Columbia he was head coach of the local ski club, the Strathcona Nordics , for three seasons. They have a world class cross country and biathlon facility at Mount Washington Alpine resort. In 2003 he was the head wax coach for the Senior and Junior National Biathlon teams and went to Finland in 2004 with the National Biathlon Junior team. Also in 2004 he was involved in the Spirit of 2010 committee Glenn is

a Level 4 Biathlon and a Level 3 Cross country coach. In 2006-2007 he focused on helping children in the Bunny ski class and guided blind skiers in competition for the Para Olympic events at Mount Washington. He credits Dr. Gibson with much of his success as well as Hans and Joan Skinstad who prepared him for his first Olympics in 1988 . He is a lifetime member of the Camrose Ski Club . Glenn has 2 children, Stephanie born in Camrose in 1998 and Orion born in Comox in 2001.

Olympic games 1988 Calgary ,Canada

Biathlon Sprint 10K Rank 34 20K Rank 34 4X7.5K Relay Rank 15

Olympic Games 1992 Albertville

Biathlon Sprint 10K Rank 52 20K IND. Rank 20 4X7.5K Relay Rank 10

Olympic Games 1994 Lillehammer

Biathlon Sprint 10K Rank 62 20K IND. Rank 49

1991 Canadian Biathlon Championships Relay Rank 1
1991 World Cup Italy 10 km. Rank 25
1989 Canada Cup Race Series Champion. 1989 Canada Biathlon Champion.
1988-1990 Polar Cup Finland 20 km. Rank 3 10 km. Rank 20
1988 Olympic Games Canada Canadian Biathlon Champion
1987 Raced 8 World Cups
1986 Raced 10 World Cups.
1985 - 1993 Raced 7 World Championships.
1985 Canadian Biathlon Championships 20 km. Rank 3. 10 km. Rank 1
Relay Rank 1
1984-1994 Member of National Biathlon Team .
1984 Canadian Junior Biathlon Champion.
1984 Junior World Championships 15 km. Rank 27 10 km. Rank 38
1979 Alberta Provincial Championships Junior Boys 3rd. place.

David Leoni was born in Liverpool , England on September 8 , 1982. He began downhill skiing at age 5 while living in Edmonton. When his family moved to Camrose he was encouraged to start cross country ski racing because of a lack of suitable downhill facilities. David joined the Camrose Ski Club and later found the addition of target shooting motivated him to train for Biathlon. Joining the Augustana University Junior Vikings program when he was eleven David became more focused on a career in Biathlon. At age thirteen he joined the Rocky Mountain Racers. He was the North American Junior Champion four times and six times the Canadian Junior Champion. David i lives in

Canmore, Alberta (2007).He hopes to compete in the 2010 Winter Olympics in Vancouver.

2006 Winter Olympic Games Turin Italy

12.4K Pursuit Rank 49 10K Sprint Rank 43 20K Ind. Rank 65

2006 North American Biathlon Championships 1 Gold, I Silver Overall Champion
Biathlon Canada Athlete of the Year 2000 and 2006
2005 Biathlon World Championships Austria Relay Rank 15
2005 World Championships Russia Mixed Relay Rank 14
2004 World Cup USA Sprint Rank 52
2004 World Championship Germany Ind. Rank 67
2004 Europa Cup Italy Sprint Rank 18
2004 Canadian Championships Quebec Sprint Rank 2
2003 World Junior Championships Poland Rank 16
2002 World Cup Biathlon Germany Sprint Rank 95
2001 World Junior Championships Russia Ind. Rank 18 Sprint Rank 19
2000 World Junior Championships Austria Rank 27
World Junior Championships 3 top 20 placements 2000-2003
1996 Alberta Biathlon Top Gun Award.

Paul Gotaas was born in Trondhjem ,Norway on June 2 , 1901. He immigrated to Camrose in 1926 where he worked as a mechanic. Mr. Gotaas remembers skiing from early childhood and competed in cross country race as a boy in Norway . He was also an accomplished cyclist and set the Norwegian record in 1922 in a 1500 meter race.
Mr. Gotaas first competed in Camrose in 1926 when he won ski races in Camrose Banff, Jasper ,Edmonton and Prince George. He won the Jasper 32 mile race in 1928 ,1929 and 1930. In 1929 he also won the 10 mile and 40 mile marathon races in Banff. He was picked for the 1932 Canadian Olympic team but was unable to compete at Lake Placid because he could not afford to go. In those days competitors paid their own way. To train for his races Mr. Gotaas would begin running a distance of 10-12 miles from his home to the Battle river valley at least 3 to 4 times every week. Mr .Gotaas trained many of the great Camrose skiers including Irvin Servold ,Bob Hurlburt, Ken Rayment Sr.,Gordon Lund ,Bob Osness , Claire Rolf and his own sons Carl and Paul Gotaas, Jn. He was the first Western Canadian official to be named an Official Canadian Ski jumping judge. Mr. Gotaas helped rebuild the Camrose ski jump in 1930 and again in 1965. Mr Gotaas died in Camrose on August 9 , 1989 at the age of 88 .

Gord Lund was selected to be a member of the Alberta Ski team in 1962 and was awarded the Sons of Norway trophy for the best combined junior skier in Alberta.In March 1963 he won the Canadian junior combined ski title and in 1964 he won the ski jumping competition representing Camrose Lutheran College in the Interprovincial High School Tournament. In 1964 he won gold in the National championships in ski jumping and bronze in the nordic combined.

Joan Osness was born in Camrose on March 2 , 1955 .She began racing at the age of nine after downhill skiing from age four and in 1968 won the Open midget cross country event at the BC Nordic championships. At the 1970 Canadian Junior Nationals Joan finished seventh in the ladies 5K cross country event. At the Alberta Ski Championships held in Camrose in February Joan was second behind Claire Rolf. In 1976 Joan was given a berth on the Olympic ski team , unfortunately she was not given a chance to compete because she lost to Sue Holloway in the last qualifying race in Germany. Joan Osness married Hans Skinstad and is now the Cross country ski coach at the Augustana faculty of the University of Alberta in Camrose (2007). Her husband Hans coached the Canadian Biathlon team in 1987 and coached Cross Country Canada's team from 1973 to 1978. He was a member of Canada's cross country team at the Olympics in Innsbruck.He coached the Canadian Olympic team in Calgary in 1988.

Athletic Achievements 21 times Canadian Championship medalist
Member of both Canadian Cross Country and Biathlon Sr. National teams
World Championship Team 1974 , 1984 and 1985
Canada Winter Games relay silver medalist
Swiss National Biathlon Champion 1985 Relay
Western and Canadian Masters Champion

Dr. W. G (Garry) Gibson was born in Vancouver in 1931. He started cross country skiing at 8yrs when a Finnish Logger made him and his two brothers birch skis. In his teens, he was introduced to downhill skiing while in Vernon when Silver Star was still a backcountry trip for the hardy. It was not until he had a University degree in Physical Education and was a Lay Minister for the United Church at Burns Lake B.C. that he was introduced to cross country ski racing. In his congregation was a famous Camrosian skier by the name of Kaarie Engstad who said to this young novice, "If you will ski for me I will wax your skies." After his first race in Smithers B.C. when he was passed by a man twice his age, Garry was destined to follow this sport for the rest of his life. After a 4 yr. teaching stint in Terrace B.C., he returned to university for a Masters Degree in Physiology and began his new career as the Director of Sport and Physical Education at Camrose Lutheran College. During those early years as a coach for Basketball there was little time for skiing. This all changed when he obtained a PhD in Outdoor Leadership and Sport History in 1973. This allowed him to return to his first love in coaching "endurance sport". It was timely as the Rotarian Club, under the urging of Norm Rolf Sr. and other interested members donated $5000 worth of Norwegian touring skis and equipment to the College. These skis were used for the Outdoor program, ski lessons, and for beginner racers, both students and members of the community. Garry soon found out that if he wanted his skiers to win he had to find more specialized equipment. To do this, he began selling racing equipment and skis through the College Book store and funneled the money back into the racing program.

To meet the coaching demands of his skiers, Garry became a Level II National Coach with Level III Practical, and Level II Ski Instructor. This training, aided by the updated information gained from his daughter, Carol on the National team, opened the doors to new ideas and methods of coaching. At the same time, his team was growing in prowess and by 1981/82 his teams dominated the College Championships, Alberta Winter Games and the Provincial Championships. By 1983 Augustana College had the largest team of junior cross country skiers and biathletes in Western Canada. As the reputation of the Vikings grew Augustana attracted top cross country skiers and biathletes from across Canada.

To provide various programs of competition Garry initiated the forming of the College Ski League, a focus on the Alberta Winter Games and the organization of the Alberta Cup. In this period the Ole Uffda Loppet was born, an Alberta Cup race was held every year in Camrose, and the sport of Biathlon was started with the help of Daryl Phillips and later Don Rogers. To help develop skiing at the Provincial level he soon became part of the Executive of the Alberta Ski Association serving in a number of capacities. The most difficult assignment was being the Technical Chairman for Alberta and the committee on preparation for the 1988 Olympics in Canmore.

Realizing that a competitive program needs a good facility, he developed a five year plan from which the City Fathers endorsed the building of a stadium and increasing the height of the ski hill. This plan also included extending the ski trails to the Camrose Shooting range where the new sport of biathlon was taking place. Over the next 20 yrs and two more 5yr plans the current Nordic Facility was well on its way with a new Ski Lodge, and Storage Garage; the trails were widened and contoured to accommodate classical as well as the new skating technique, the new Biathlon shooting range was completed in addition to a Lodge and Storage Garage. With the additional money earmarked for the Urban Park in place Garry helped to design a multiuse trail down the valley to accommodate roller blading and biking, as well as walking. Subsequent to this the Rotarians with the leadership of Franco Leonie, took steps to enhance the beauty of the valley establishing the Four Seasons Park. Through a co-operative effort with the City of Camrose Parks department, the Camrose Ski Club, Augustana University the the venue was dedicated in 2002 as the **Camrose Nordic Centre**.

Through his promotion of both cross country and biathlon Garry, with the help of a number of Camrosians, particularly at the time Daryl Phillips, Ken Rayment Sr., Bob Hurlbert, and Don Rogers brought such events as the Alberta Cups, Western Canada Championships, the Alberta College Championships in the Cross Country and Canadian Championships in Biathlon in 1983, 1984 and 1990. As a result of this focus in 1986 Camrose became the Official Training Centre for Biathlon in the province. Seeing an opportunity get more profile for winter sport in Camrose, Garry and Ken Rayment lobbied the Provincial Government for the 1990 Alberta Winter Games and with the help of Ken Rostad our M.L.A. and our Camrose Committee, saw our dream materialize.

Garry worked as a volunteer not only for the World Cups preceeding the Olympics but also at the Games as a volunteer in the Olympic stadium and his wife Dorothy as hostess for the Coaches' Meetings. In 1987 Dorothy organized and hosted the Japanese delegation during the World Cup and on an after event tour. This set the stage for her in helping many teams going to provincial and national competitions in Canada. She was the manager of the Vikings Ski team for eight years and teamed with Garry in helping athletes achieve their best potential. At one point it was said that they "Were the mother and father of modern skiing in Alberta."

Good programs can only develop with the cooperation and skills of many people and our program in Camrose had the aid of such people. iOur first official coach for Biathlon was Daryl Phillips aided by Willy Pederson of the Camrose Shooting Club. Through the years Joan and Hans Skinstad had a profound effect on both cross county and biathlon. Garry organized the program but people like Ingo Henschel, Jan Robinson, Darren Grosky, George Smith and Terry Musgrave also all made a major contribution in coaching the teams.

Since retiring in1996 Garry has been the Volunteer Director/Promoter for the World University Games in Canada. After a start in Spain with the Augustana cross country team he realized that he had to expand the team to include the best University Athletes from across Canada in both cross county and biathlon. Though working with the Canadian Interuniversity Sport Association and the Canadian Cross Country and Biathlon Associations he was able to coordinate the process of selection at the National Championships. He has been the Manager/ Coach for teams going to Spain, Korea, Slovakia, Poland, Italy, and Austria. Each year as he involved more resources and personnel the results have improved. Through the six Games we can be proud to say that a high percentage of the athletes have come from Augustana University College program as members of the Camrose Ski Club. The most important factor has been that this prestigious event has provided an opportunity for students to have their own special Olympic experience.

In May of 1990 the Alberta Cross Country Association honored Garry and Dorothy as Builders. In 1995 Garry was inducted into the Camrose Sports Hall of Fame. In 1995 the Camrose Ski Club honored them for their years of dedication to skiing development. In 1996 Garry received the Recreation Parks and Wildlife Foundation Volunteer Recognition Award for his work in Nordic Sport. In 2003 Garry received the Queen's Golden Jubilee award for outstanding contributions to his community, the country and internationally. In 2005 Dorothy was given a Citation Award for a significant contribution to the life of Augustana, and subsequently the Alberta Centennial Award for her work with young people in sport. In addition, in 2005 both Dorothy and Garry were given the Paul Harris Fellowship Award for their contribution to outdoor leadership and skiing. They still reside in Camrose in the winter and have three children all making their contribution in some aspects of sport and the arts. Their four grandchildren keep Garry busy teaching them the virtues of exercise and a reverence for beauty in the outdoor world. When in Cam-

rose you will find Garry on the ski trails either working on the facility or training for the next Birkebeiner where he is the 5 time Gold winner of the 70+ category in the 55 Lite class.

Camrose Athletes who have played a significant role in Nordic Sport are:

Norm Osness, Bob Osness, Joan Skinstad, Rob Rolf, Claire Rolf, Roy Merrit, Connie Servold, Marty Servold, Steve Hansen, Ruben Hansen, David Ingibergsson, Kim Grattidge, Carol Gibson, John Gibson, Glenn Rupertus, Ken Rayment, Stacy Phillips, Erin Phillips, Amy Ford, Shane Hoehn, Christine Saugen, Greta Reiten, Andreas Dahle, Karstin Mundel, Neil Musgrave, Shane Musgrave, Mike Ross, Robert Heie, Scott Rogers, Craig Rogers, Anthony Leoni, Andrew Leoni, David Leone and now Philip Eriksson and Melanie Schultz

COAL MINE EVALUATION
NE-28-46-20-W4M
CAMROSE, ALBERTA
EG-07473 AUGUST 5, 1992

HBT AGRA Limited

Engineering & Environmental Services

AGRA
Earth & Environmental Group

COAL MINE EVALUATION
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Prepared For:

THE
CITY OF CAMROSE

Prepared By:

HBT AGRA LIMITED
EDMONTON, ALBERTA

AGRA
Earth & Environmental Group

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1.0 INTRODUCTION

This report presents a review of previous work carried out by HBT AGRA Limited (previously R.M. Hardy & Associates), compilation of all available coal mine records, review of aerial photography, review of records of previous boreholes, and an assessment of the potential risk of development on the property. Additional research has been undertaken on coal mine subsidence theory since the submission of the original report 17 years ago, and the more current research information has been utilized in review of the recommended areas of restricted development. This update includes only the portion of the NE¼ of Section 28 which has not been developed to date and does not include any additional drilling. Written authorization to proceed with the review was received in a letter, from Mr. Gary Gibeault, P.Eng., City Manager of The City of Camrose, dated May 27, 1992.

2.0 BACKGROUND

HBT AGRA Limited (previously R.M. Hardy & Associates) has previously submitted reports assessing the conditions of an underground coal mine underlying Sections 28 and 33. The initial report, on mine subsidence in Section 28, Report No. E-1800A, was issued in 1975. Subsequent to submission of this report, HBT AGRA Limited have, on numerous occasions, been requested to review individual or groups of lots and to provide confirmation and the lots are suitable for development. In order to continue the review of this area, it was recommended that the earlier work be updated to include a compilation of as much of the mining records as is possible and to review the assessment of which areas are and are not considered suitable for development.

3.0 REVIEW PROCEDURE

The review procedure to update the previous study consisted of compilation of all available coal mine records, review of aerial photography, review of records of previous boreholes and an assessment of the potential risk of development on the property. The sources of information for coal mine records included in HBT files, and Energy Resources Conservation Board (ERCB) records in Calgary.

Areas of restricted development were reviewed in order to revise, where prudent, the development restrictions established previously utilizing more current research information on coal mine subsidence. A similar assessment was also made of proposed development areas which are underlain by coal mine workings. This was done utilizing current research information to assess whether the areas are potentially susceptible to risk of damage due to subsidence.

4.0 ASSESSMENT RESULTS

4.1 REVIEW OF MINE RECORDS

A search of mine records at the ERCB in Calgary revealed that the only known mine which underlies any part of Section 28 is one recorded as Mine No. 244 operated by Stony Creek Collieries. This mine, which also incorporated Mine No. 183, was opened in 1910 and abandoned in 1944. The mine workings underlie LSD 1,2, and 3 of Section 33 and LSD 9, 10, 14, 15, and 16 of Section 28. A large part of the mine workings are located in the study area.

On the basis of the drilling program carried out for the earlier assessment, consisting of a series of 30 boreholes, the general accuracy of the mine plan was confirmed in the 1975 study to be accurate within ± 10' (3 m). The development restrictions presented in the 1975 study were based on acceptance of the mine plan, with some allowance for inaccuracy. The review presented in this report is also based on acceptance of the accuracy of that plan. There is a risk associated with assuming the accuracy of detail and layout of the mine as shown on the mine plan. However it would not likely be economical to investigate to the extent that every detail is proven.

There are no other records of mining activities, production figures, or other operating details for this mine available from the ERCB. The 1975 report presented a brief discussion of the method of mining, dimensions of rooms and pillars, and thicknesses of the coal seam.

4.2 REVIEW OF AERIAL PHOTOGRAPHY

Aerial photographs covering the study area dating from 1950, 1962, 1970, 1976, 1981 and 1987 were examined for indications of general or localized subsidence. The photographs were re-examined with particular attention given to signs of subsidence at air shaft locations. No signs of general or local subsidence were noted in any of the aerial photographs examined.

4.3 PREVIOUS INVESTIGATION RESULTS

On the basis of the work carried out for the previous study, the recommended restrictions to development were divided into three categories. The first, Zone A, were areas around abandoned air shafts. It was recommended that no form of development be permitted in these areas. The second, Zone B, were areas overlying portions of the coal mine where additional movement could occur in the future. It was also noted that there was a considerable risk of rupture of utility lines in this area. The third area, Area C, included areas outside of the limits of the coal mine or overlying portions of the mine where no future subsidence was expected. The zones where it was recommended that development be restricted, Zones A and B, related specifically to the locations of buildings and not to lot boundaries. The limits of the restricted development areas were detailed on Plan E1800A-103 from the earlier report.

4.4 ASSESSMENT OF SUBSIDENCE POTENTIAL

Initially, the proposed development plan was examined to determine the accuracy of placement of areas of restricted development in accordance with those areas shown on Plan E1800A-103.

Secondly, building lots and roads on the proposed development plan were examined to identify any which are within areas of restricted development. Where this condition existed, mine information was re-examined to assess if the development restrictions might be revised. The re-assessment was based on review (where possible) of previous work which determined the restriction of development, and on reassessment utilizing more current methods.

Thirdly, areas proposed for development which are underlain by mine workings were examined for subsidence potential by review of previous work and assessment using more current methods.

Finally, all hazardous areas within the study area were re-examined to consider revision, where prudent, of the development restrictions placed on these areas.

4.5 REVIEW OF DEVELOPMENT PLAN

Examination of the proposed development plan for Parkview I, II, and III provided by the City of Camrose showed a number of errors in the locations of restricted development areas as set forth in Plan E1800A-103 from the 1975 report. In particular, these are errors related to the locations and the areal extents defined for air shafts.

4.5.1 Air Shafts

Three air shafts in the northern part of LSD 16 were plotted incorrectly on the proposed development plan. In addition, the location of the air shaft in LSD 10 also appears to be plotted incorrectly. Two air shafts shown near the northern limit of LSD 16 should have been shown several meters further north in the southeast part of Section 33. The air shaft northeast of Lot 69 in Phase IV should have been shown several meters northeast of where it appeared in the proposed development plan. The locations of the air shafts, as shown on the mine plan, are presented in the 1975 report on Figure E1800A-103. This figure gives coordinates for the air shafts.

The proposed development plan identified the locations of the abandoned air shafts with circles of approximately 5 m diameter. No notation or other marking was found which would identify these circles as air shafts or as hazardous areas.

The 1975 report provided a restricted zone 50' (15 m) in diameter around each of the air shafts. Although these shafts were braced and backfilled on abandonment, there exists a considerable risk of failure of the bracing and sudden slumping of the backfill. It is important therefore that the development plan be modified to more accurately identify the location and extent of these hazardous areas. Further, as the air shaft areas present a risk of sudden slumping as opposed to the more gradual subsidence associated with collapse of mine pillars, the shading or hatching used to identify these hazard areas should differ from that used to identify other restricted areas.

4.52 **Building Lots**

The proposed layout of building lots in general avoided encroachment into areas of restricted development. In some cases, however, building lots did extend some distance into restricted areas. The following building lots were noted to be partially within restricted zones:

Phase II:	Lots 21 and 22
Phase III:	Lots 44 and 45
Phase IV:	Lots 59, 60, 64, 65, 68 and 69.

The infringement of these lots into restricted areas was judged to be acceptable for the following reasons:

- hazardous areas as set out in the 1975 report relate to building lines and not to property lines, and;
- the restricted areas overlap into the portions of the building lots where there is little likelihood that permanent structures would be constructed. However, land use bylaws or other means such as a caveat are recommended to ensure that no structures are constructed in these areas. The proposed development plan should be reviewed to assess the required restrictions on the individual lots.

4.5.3 Roads

Portions of Parkview Drive, Mount Pleasant Drive, and the unnamed proposed streets in Phase IV, east of Parkview Drive pass over restricted development areas. The 1975 report suggested that this condition is acceptable provided the authority realizes there is some risk of subsidence and that extra maintenance may be required in these areas.

Sewer, water, and gas lines constructed in these zones are also subject to rupture due to subsidence. Subsidence will increase the potential for leakage or rupture of these utility lines.

4.6 BUILDING LOTS UNDERLAIN BY MINE WORKINGS

All proposed building lots were examined in conjunction with the mine plan to assess the risk of subsidence in these areas. Dimensions of mine pillars were reviewed according to criteria used in the 1975 study, and were then assessed using more current methods of analysis.

All proposed building lots underlain by mine workings outside of the restricted development areas are acceptable for development subject to the recommendations put forth in the 1975 report. It is recommended that the following recommendations be adhered to for development in these areas:

1. No buildings or other structures which will apply a net load over the area of the building exceeding 24 kPa (500 pounds per square foot) should be erected over undermined areas. This pressure should be calculated as the dead weight of the building plus reduced live load less the weight of any soil which may be excavated for basements.

2. Under no circumstances should pumping or lowering of the groundwater table from the undermined area be permitted.

3. The use of any type of pile foundations in the area over the abandoned mine is not recommended.

Fires Kill Rabbits

Coming into the district in the next year were Henry Birkness, the Youngbergs and their sons, S. T. Wetterberg, E. T. Saby and the Sundens, all settling in the Bawlf area.

RABBITS FLEE FIRE

Henry Birkness settled on the northwest of 12-47-18 where his nearest post office at the time was at Mundtad. His son, Harold, married Miss Sadie Sabee who was also raised in the Bawlf district, coming with her parents to south of Bawlf in 1902. Her vivid recollections concern an early prairie fire when the grass had grown to over two feet high. They were fortunate in that they had a field of summer fallow in front of the house, but the rabbits, fleeing before the fire, were so thick that they took to the field and ran up against the house in their frenzied efforts to reach safety. The animals were badly burned.

ACME SCHOOL RAISED

The Olaf Youngbergs arrived on the Fourth of July and settled on the northeast quarter of 10-46-18 in what was called the Acme district. They had just got their tent pitched when Hattie Saby came riding over on horseback to invite the family to a celebration at their home for the Glorious Fourth. It was the first time that young August Youngberg had seen people dance and he thought it was very amusing. The Saby young folks supplied the music for dancing. The following year the Youngberg family was very glad to see more settlers arriving, including the Peter Hansons, C. Sterre, Hans Hanson and the Schiedeggers. Olaf Youngberg was a blacksmith by trade. In 1903 the family watched the Acme School raised and in 1906 were in witness the start of Bawlf.

S. T. Wetterberg came to Wainwright in 1902, staying there for a short time, then he went to what was known as Old Duhamel, situated upon the river bank. George and Norman Smith owned the trading post at the site which was the only store there at the time.

Thomas Shea was the Hotel manager and A. W. Hardy was the blacksmith.

"BLUE" SMITH

"Blue" Smith was stationed with the R.N.W.M.P. Duhamel served as a trading post for all the country in four directions, and Wetterberg became very friendly with "Blue" Smith and his family. He recalls Mr. Smith riding his horse over the cold and bleak country to the far north, being gone for days at a time and camping out of doors whenever he ran out of a stopping place.

Wetterberg filed on a homestead on the township line six miles east of where Camrose is now located. After completing his homestead duties he came to Bawlf in 1907. While he was still on the homestead he became a road overseer and hacked down the brush from where the Hampton School is now located.

BAWLF PAROCHIAL SCHOOL — 1909

Peter Olafson of Rosebush, who had been a teacher in Norway, filled-in in many of the early parochial schools. Mr. Olafson was a kindly man, who maintained good discipline as can be seen in the model faces of these children.

Local Men Mine Coal

One PARAMOUNT importance to the development of the town of Bawlf was the Bawlf Collieries Limited, a firm which commenced in the fall of 1910 to mine coal on an extensive property secured 2 miles west of the town. It was in the process of well digging for a homesteader that a find of coal was made. A coal expert was called in who declared the coal to be six per cent better than the semi-hard coal of the Galt mines at Lethbridge. So interested did he become that it was not long before a gang of prospectors were on the spot and a succession of tests were made.

The results were most favorable and a bore hole drilled showed that the coal was in two seams below the surface, the first seam was over nine feet thick with the second seam a deeper depth measuring just about eleven feet. Exhaustive tests revealed that approximately 10,000,000 tons of coal lay under one section of land.

1910

The research work occupied several months and finally led to the formation in the early spring of '10 of the Bawlf Collieries, Ltd., of which the directors were as follows—W. K. Clark, as president; A. P. Coe as first vice-president and general manager; L. W. T. McEacheran as second vice-president; K. O. Eggen as third vice-president and P. R. Thompson as secretary-treasurer. The company was composed entirely of Bawlf business men and the first instalment of capital was raised in Bawlf.

SPUR LINE

In late September of that year the mine began the regular output of coal. The management thought at first that the question of railway transportation could be arranged with ease, but in this they were mistaken. For weeks the product was hauled in wagons and sleighs to the Bawlf railway station where cars were drawn up along the siding for loading. Three months later a spur line 5,000 feet long, was built to the mouth of the mine.

When the spur line was established the output reached four carloads per day with the first shift having a capacity of 500 tons per day. Around 100 miners were employed and night and day shifts were run. The coal was very compact in the seams and very little timbering was necessary.

He also did the first road grading over this same ground the following spring. He unloaded the first steam threshing outfit ever shipped to Camrose and delivered it into the Kingman district where he threshed as far north as Tofield and Round Hill.

SAW CHICAGO FIRE

Coming to Bawlf in 1907 he was induced by O. H. Anderson to take over the bookkeeping in the store erected the previous year. He was with him for three years, later becoming a partner with Torres and Sons, when the new brick building had been completed. Later he started a store on his own, forming a limited company with his immediate family. His parents had come from Sweden to the United States during the time of the Civil War and the family lived in Chicago at the time of the great fire in 1871.

80 Men on Payroll

Around 1908 A. S. Rosenroll of Wetaskiwin and O. H. Anderson of the same town came to a point about three miles east of Ohaton where they established the Rosenroll coal mine. From the mine site a small town sprang up. The first persons connected with this venture were Norman Bradley, Lewis Speidel, Wm. Holiday, Harry Hunter, Charlie Grey, Charles Stevenaro, M. E. Selund, A. A. Andreason, Gus Finkleman and George Cunningham who was the pit boss. Also at the mine site were E. Lenkvold, Tom Parsons, Ed Wilcox as engineer and George Carter.

The Store was operated by M. E. Selund, the pool room by Lewis Speidel and the Livery stable by Harry Hunter. Vernon Hardy owned the store, and there were also two large boarding houses, one of which was owned by Gust Flickman, and a school.

At one time the mine had as high as 80 men on the payroll, and it was stated that the coal was the highest quality coal this side of Edmonton.

Baseball and dances were the early means of entertainment, with the old schoolhouse rollicking with the sounds of dance music at the end of a day's hard work. A townsite was surveyed, with August Speidel purchasing the first lot. John Ross and Mr. Connor were the first teachers.

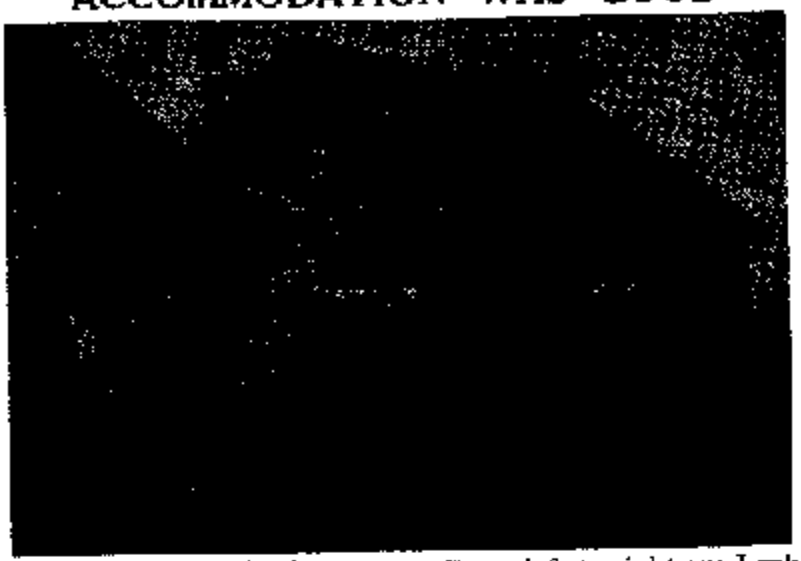
Vernon Hardy who operated the General Store at Rosenroll moved the structure to Bawlf in 1918 and it was known as the Hardy's General Store. That business changed hands several times and is now used as a restaurant owned by Mr. and Mrs. Arnold Capis.

Speidel's pool room, which also contained Ed Gallagers barber shop operated until 1918, when Mr. Speidel moved the pool hall to his farm south of Rosenroll, and used the building for a tool shop.

Gust Flickman built a boarding house at Rosenroll in 1912, operating the business until 1918 when he sold out and moved to Donalda.

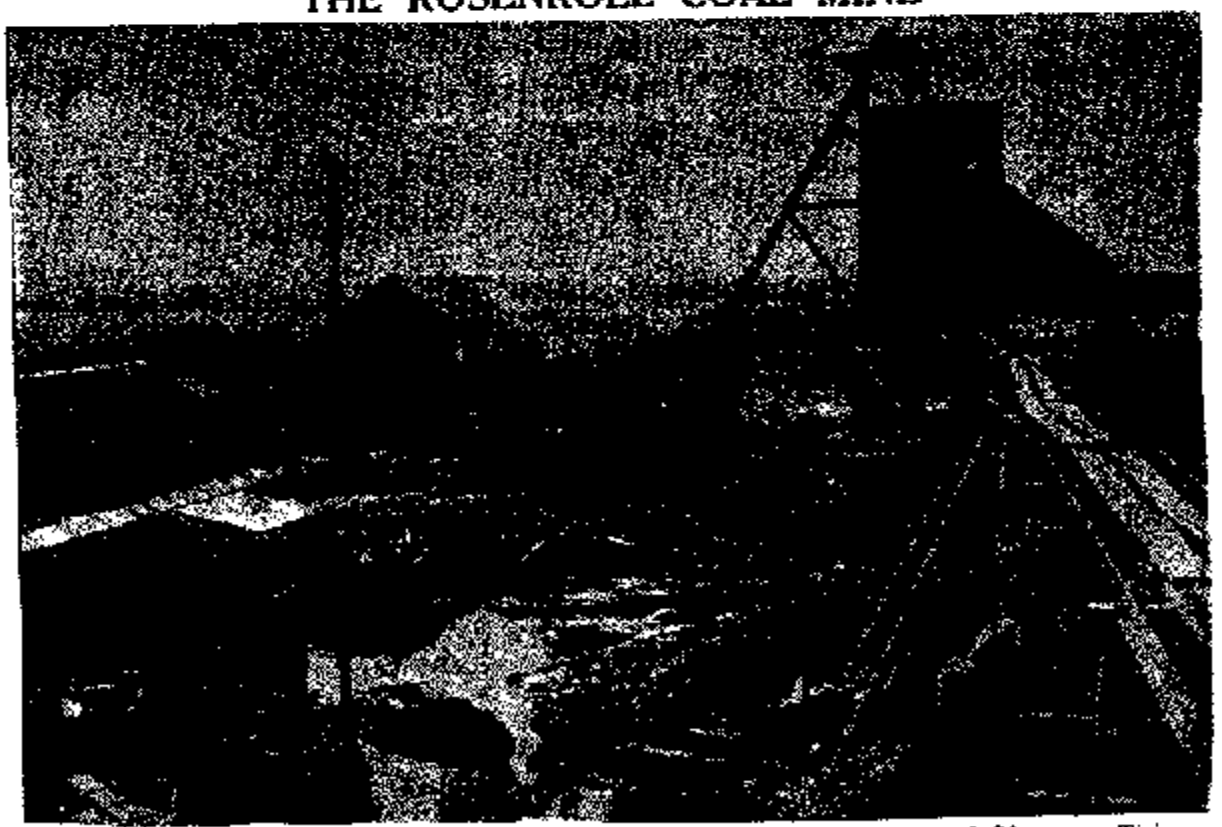
Bawlf finally received another Rosenroll business when the M. E. Selund General Store, opened in 1912 was moved to Bawlf in 1918 and is now owned by Thompson's Variety Store. The building was purchased by O. H. Anderson and he moved it to Bawlf where he started up a grocery business. The building was a frame construction about 24 feet by 40 feet, and was lighted with coal oil.

ACCOMMODATION WAS GOOD



One of the huts in the fine town. From left to right are Leakvold, Hains, Lloyd Sheets, Charlie Grye, and another Hains.

THE ROSENROLL COAL MINE



An excellent view of the mine tipple at the Rosenroll coal mine east of Ohaton. This was a vertical shaft mine, as can be seen from the picture. The Round Hill mine, taken over by the Camrose Syndicate in early years, was a sloping shaft mine.

Incorporated as a City on its 50th. Anniversary, January 1st., 1955.

CITY STATUS

Since the Jubilee Year for Alberta is coincident with the City of Camrose attaining its city status, it shall be attempted to present some of the reasons for the City's development. In order to grow, an urban community must provide the services a growing community finds need for. In this respect **Camrose has** certainly fulfilled its destiny.

The Camrose district was settled and developed primarily as a mixed farming enterprise. Agriculture is still the backbone of the district's general economy. Statistically, the Camrose district is the most densely populated agricultural area of Alberta. This indicates a high degree of potencial production. While grains are a vital factor in the farm economy and wheat is always grown for the ready cash market, the feed grains to develop the livestock industry are a major factor. Beef cattle of the choicest varieties and quality are turned off the farms and the feed lots with clock-like regularity. Many farmers are consistent hog raisers, and hogs are, of course a real factor in the farm economy of any district. Dairying has not, as yet, developed to the extent to which an outside observer might expect. The district is just outside the borders of the vast "milkshed" feeding into the City of Edmonton. But those who are going into this branch of agriculture in the Camrose district are establishing herds with breeding stock of the very highest standards, with the view to high production and ultimate development of the dairy industry.

Poultry raising has not been the factor here that many agricultural authorities would like; but the Camrose district has been a consistent shipper of Western Canada's high grade turkeys. It is not unusual for the Camrose district to ship out 200,000 lbs. of dressed turkeys in a single season.

COAL

Coal production has been a factor here, but not to the same extent as in the larger mining centres. With shallow coal seams near the surface, as well as deep seams at the 400 foot level, the early mines supplied the local coal demands, with considerable shipment to outside markets from the Round Hill mines. Then during World War II the new idea of strip mining was introduced, made possible by the development of the giant earth moving machines. The big strip mine at Camrose has a capacity of 100,000 tons per season, and when the war demand was at its peak the mine was producing to full capacity. The new strip mine at Hastings Coulee, with its major outlet through the C.N.R. at Camrose, has a production capacity of two thousand tons a day, and is Western Canada's most outstanding example of this modern method of mining.

HYDRO ELECTRIC

The challenge to better living and to ultimate industrial expansion is provided by ample hydro electric power, through Calgary Power, which corporation purchased the Camrose municipally owned electric plant in 1908, as well as the Camrose waterworks system. Calgary Power maintains a central distribution station at Camrose as well as district administrative offices covering the territory as far east as Macklin, Sask.

NATURAL GAS

The advent of natural gas has changed the fuel picture in Camrose, as it has done in many other cities and towns in Alberta. Camrose was hooked up to gas in 1945 and 1946, through Northwestern Utilities, the supply coming in from the Viking-Kinsella field, leading off from the huge gas mains feeding into the City of Edmonton, mid-way between Viking and Edmonton. Now it has been discovered that there is lots of gas in the oil wells around Camrose and what this will mean to the future is a matter for speculation.

THEN CAME OIL!

It was in February 1947 that the first oil strike was made in the Leduc field. It took a few weeks before the import was fully realized, even at Leduc, let alone Edmonton and Calgary. People began to wonder here at Camrose what the prospects might be. By 1948 the district was swarming with geophysical crews making their technical surface surveys of the underground stratas. Then a drill test was made southwest of the present City, and the two dry holes gave the optimists a jolt. In 1950 a drilling rig was set up on the Flint property in the DuHamel - New Norway district. This well was the first marked success in the Camrose district field. Later, drilling on this structure demonstrated that the range of production was very limited, but when production was obtained it was on a very profitable scale. Oil is obtained here from the D2 and D3 zones, under very high pressure.

It was in October 1950 that the big strike was made in the North Armena field, which subsequently encouraged drilling all the way south-eastward, down through Camrose proper, and on gas, till now wells are pumping eight miles below the City. These are shallow wells, production comes out of the Viking Sands. The oil is "sweet", commanding a price premium. The wells are from 3300 to 3500 feet deep. Their average potencial is probably 50 barrels a day, and under conservation methods, are expected to produce from 30 to 50 years. Their output kept the Camrose field in third place volume of production for all of Alberta for many months, until the recent heavy production was obtained from the new Pembina field.

Two pipelines carry oil from the Camrose fields into Edmonton, the one line coming down into the Armena field from Joseph's Lake, and the second line reaching down below Stettler and gathering from all the intervening wells.

Hundreds of thousands of dollars quickly fell into the hands of landowners who held oil rights on their lands, and others benefitted to a lesser degree from payments made for surface rights. Millions of dollars were spent in drilling enterprises. Camrose as a town was called upon to house and service hundreds of technicians and their assistants. This gave a real upsurge to the local business economy.

Now that the oil industry has become stabilized, with drilling being continued on a very modest scale, there remains in Camrose only the operational staffs, the administration staffs, and the service personnel, but even still the volume of business brought to the City of Camrose through the medium of oil production and field development is of great economic importance to the community.

Since the material was compiled for this book two oil wells have been drilled to successful production within the actual City limits of Camrose.

THE SOURCES OF CIVIC PRIDE IN CAMROSE AS A CITY

Camrose gives its citizens and its shopping patrons many things to be proud of. The City of Camrose is an exceptional example of a Top Flight Shopping Centre. The Camrose merchants are really on their toes. Nowhere can you find stores superior to those to be found in Camrose. The stores themselves are in keeping with the modern methods of commercial displays to be found in the larger cities . . . in departmental drygoods, in ladies' wear, in men's wear, in boots and shoes, the exceptional development in grocery and food markets, in meat markets and locker storage, in furniture, in the new broader developments in hardware, in jewellery, in elec-

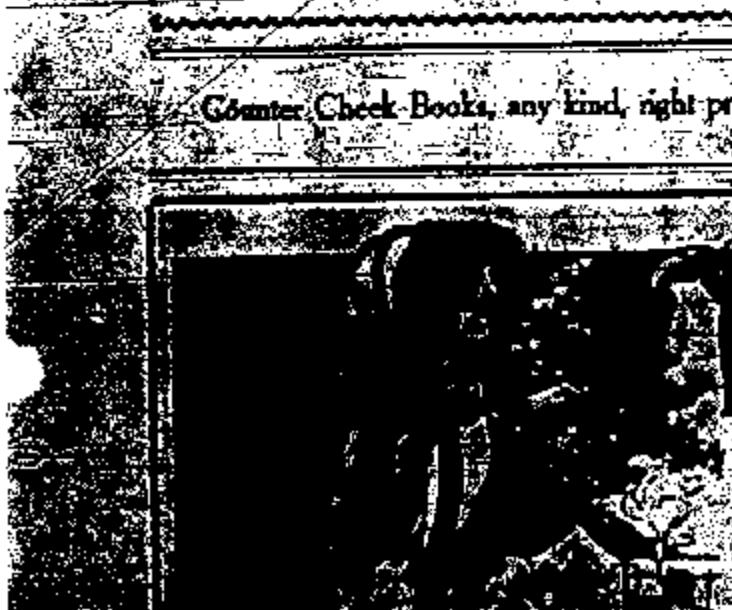
N.R. are putting in a [illegible] at the junction of the Cardiff branch into the Athabasca line a few miles south of Morinville, and are establishing a station agent at Cardiff.

The railway in providing for the coal output on their lines in North Alberta are arranging to take care of an average of 40 cars a day—from the Cardiff, 15 from the Alberta and 8 from the Bannor mines, all at Cardiff, 10 cars a day from the St. Albert mine and 8 a day from the Twin Cities, and 15 a day from the Pembina, a total of 100 cars a day from mines on the Company's lines in the immediate vicinity of Edmonton. Each car holds an average of 30 tons, so that the estimated output is 3,000 tons a day.

On the Vegreville-Calgary branch the estimate is 10 cars a day from the Round Hill and three from the Dodds mines near Camrose and 10 cars from the Newcastle, 10 from the Rosedale, 10 from the Rosycor and 10 from the Drumheller mines in the Knee Hill coal district, south of the Red Deer River. This coal will go east to Saskatoon south to Calgary.

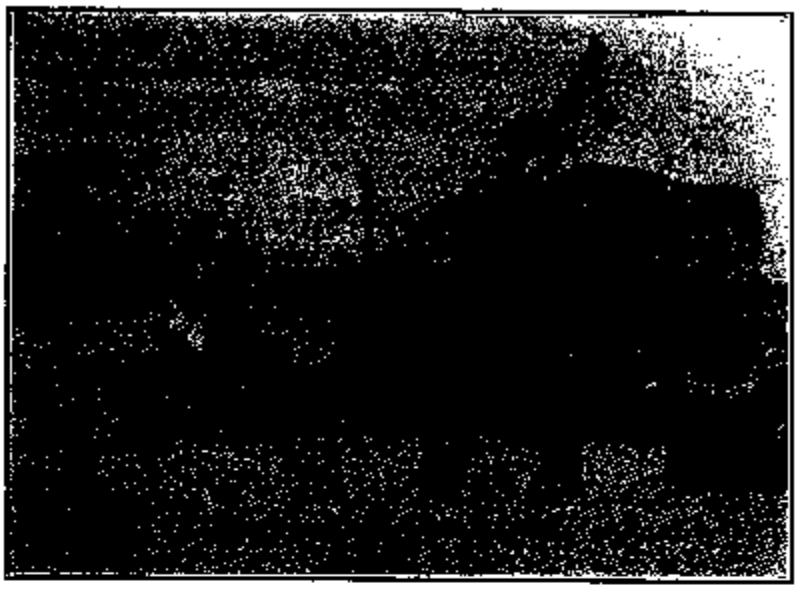
16,000 HARVESTERS HAVE COME TO WEST

Carefully compiled estimates of the total number of harvest hands now on the farms of the prairie provinces place the number at approximately 16,000. The province of Saskatchewan is calling for a further 8,000 and there are at least 4,000 of these in sight on the next excursion from the eastern provinces which are scheduled to reach Edmonton Wednesday or Thursday morning.



Coal---

A Wonderful Source of Wealth to the Camrose District--- The Key to Unlimited Commercial and Industrial Expansion



A Primitive Coal Mine in the Camrose District. Many farmers have private mines and supply coal to their immediate neighborhood at from $2 to $3 per ton.

IN considering the tremendous importance of the coal mining industry in the Camrose district, no time need be lost in setting forth the result of scientific investigations. The fact is that the best lignite coal in seams of an average thickness of six feet, is being mined at various points in the district within a radius of sixteen miles from the town of Camrose. These mines, all well located on railway lines, are near the eastern extremity of Central Alberta coal areas and thus supply enormous quantities of coal to Saskatoon and other Saskatchewan points.

Scene at the Mine of the Battle River Collieries Ltd., Ten Miles East of Camrose

Coal Makes Big Pay Roll

The five large company mines in the Camrose district and the score of smaller concerns easily mine a total of 1000 tons of coal per day during the winter months. These mines give employment to about 300 men and put a pay roll into circulation of not less than $6,000 per week.

FOR SALE

NOTICE TO

Geo. L. Owen

W. C. EDWARDS

Auction Sale

Tuesday, March 16th

Auction Sale

Public Notice

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Before you buy your rig

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Our Motto. "The Best Goods at Best Prices"

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We solicit the patronage of the people of Camrose.

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Camrose, - Alberta

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Sample Rooms

Choice Liquors and Cigars

Corner Hotel and Depot Streets

Rates $1 and $1.50 per day

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THE CAMROSE CANADIA

VOL. I. CAMROSE, ALBERTA, THURSDAY, DECEMBER [illegible]

The Rate-payers Meet

Retiring Council Meet the Electors — Many matters of Importance Discussed — Suggestions for next year's Work — Splendid Financial Standing of the Town.

A meeting of the ratepayers was held in the town hall on Friday evening last, to hear the annual report of the council for the past year, and to discuss freely the affairs of the town. A good representation of the citizens turned out and the discussion was thorough and complete. Mayor Code occupied the chair and was the first speaker. "We are here," he said "in accordance with an old custom and a good one, to give an account of our stewardship to the electors who have honored us with their confidence." One of the first acts of the council was the purchase of a [illegible] grader. This has proved a good investment. About five miles of streets had been graded [illegible]. The work had been better done and [illegible] than similar work done by the Provincial Government. A large expenditure had been incurred [illegible]. A bond of $3,000 had been issued for a market square. The site had been bought and improvements to the value of [illegible] had been carried out. This left a balance of [illegible] to still further improve the market, and it would be for next year's council to decide how this might best be spent. Over [illegible] had been granted to the Board of Trade and this money, he considered, was well spent. Mr. Code referred to the difficulty of succeeding a mayor of the recognized ability of Mr. Thos. Dahl, but said that [illegible] had always received the hearty support of both ratepayers and council. He was there as a [illegible] and claimed the same right as other ratepayers to make suggestions. He would recommend that next year's council give even more liberal support than had been given in the past to the Board of Trade, and that that important body be re-organized and properly incorporated, thus giving [illegible] greater powers [illegible]. He pointed out the [illegible] of a public well [illegible] the Medical Health Officer [illegible]. He also recommended that the council undertake the construction of a [illegible] which work could be carried out at an estimated cost of [illegible]. Mr. Code then referred to the pleasure it had given him [illegible] over last year's council. The council had known no cliques or party, but had always acted together [illegible]. He would not be a candidate for any [illegible] [illegible] the work of the retiring mayor.

Finance Committee.

Councillor Tenney, chairman of the Finance Committee, [illegible]

[illegible] the Treasurer [illegible]

[illegible] worth of formalities [illegible] chairman of the committee. [illegible] could point [illegible] after this important [illegible] small work with a [illegible] and ability [illegible] had shown. Therefore [illegible] expressed the hope that there would be no change made in the chairmanship of the Public Works Committee for next year.

Hospital, Cemetery and Parks.

Councillor Bushton presented the report of the committee on Health, Cemetery and Parks. He referred to the fencing of the cemetery and [illegible] grounds, and the improvements to the [illegible] and made some valuable suggestions for future activities.

Fire, Water and Light.

Councillor Price was chairman of this committee. He thought that the committee had been perhaps too conservative last year. They had [illegible] the members of the Fire Brigade, [illegible] the band stand and "board money" [illegible] for the members of the band. He would recommend next year's council to appropriate [illegible] for expenditure on a hook and ladder equipment.

Police and License.

In the absence through illness of Councillor Barcus, the Police and License report was also presented by Councillor Price with [illegible] and comments.

Railroads and Transportation.

Councillor Gallichan reported on the work of the committee on Railroads and Transportation. He stated that he was not seeking re-election.

Messrs. Pike and Burgess moved a vote of thanks to the retiring council for their untiring efforts for the welfare of the town.

Messrs. Thomas and Smith moved a similar vote of thanks to Secretary-Treasurer R. D. Fleming.

Then Rev. [illegible] remarks. He drew attention to the fact that only one fine was recorded for the year. Some [illegible] had been fined [illegible]. Mr. McLeod, with [illegible] wanted to know whether that stated a high moral tone in the town or laxity on the part of the police.

Lawyer Burgess explained that the matter had been brought up and suggested that the fine be refunded to the [illegible] individual who had paid it.

Rev. Mr. Connelly objected, saying that the absence of convictions [illegible] being unable to bring out the truth.

Rev. Mr. Connie suggested that the [illegible] explanation was being quite [illegible]. It was due to good preaching.

And Bank Manager [illegible] suggested that whatever the explanation might be, the fact should be given due publicity to the peoples of the earth through the columns of the Camrose press.

After remarks from Messrs. Layton, Burgess, Younge, Thomas and Smith the meeting finally dispersed, everyone satisfied, and everyone resolved to contribute his quota to the forces of progress during the coming year.

[illegible]

First Day of American Service [illegible]

[illegible], Dec. [illegible]—It is stated that, up to midnight on Monday the first day of the [illegible] service, the [illegible] car in operation [illegible]. The traffic has greatly exceeded expectations [illegible]. The service is being [illegible]

Brushing and Breaking

Why our lands do not sell more Readily — How to increase the value of your Farm — Some hints on Breaking Contracts [illegible].

It is an undisputed fact that land in the vicinity of Camrose is cheaper than in any other district with land of as high quality in the Province of Alberta. Yet a good many settlers who are delighted with our town and readily agree that our land is unsurpassed in quality pass on to other points to make their selections. There can be but one reason. The settlers who are coming to the west do not like the sight of brush. [illegible] their fathers took up bush farms in the east and spent years [illegible] clearing them for the plow, while now [illegible] working [illegible] will clear the brush from any farm in this district. It is also true that [illegible] land [illegible] will grow something [illegible] which are still [illegible] in this district [illegible] will be reduced to a minimum. But still we have the fact, and the fact is that settlers [illegible].

There are after all only a few brush areas in the Camrose district, and even these are very light and scattered. But unfortunately, the most of these are very close to the town, and give a really unfair impression [illegible]. A great benefit would accrue to the entire district if all those holding land near the town would take energetic steps to brush and break those lands. It is doubtful if there are more than twenty five acres of brush on any quarter section of land in the entire neighborhood, and it would be a comparatively light undertaking to clear it. Every dollar spent in brushing will add more dollars to the value of the land and increase the opportunities of selling it. Already we know of cases where this has been done at once. Mr. A. S. Rosenroll, M.P.P. has decided to brush and break for [illegible] the land which he holds one-half mile west of the town. And Messrs. Thompson, Pike and Smith intend carrying out a still larger contract [illegible] during the coming season. We hope the good work will go on and that this small drawback, which is our only drawback, will be speedily removed.

Vaccination for Typhoid.

Washington, Dec. [illegible]—After several hours of discussion the board of medical scientists who met at the war department to consider the advisability of immunizing soldiers against typhoid fever by vaccination, decided that inoculation as a preventive against typhoid had been so thoroughly demonstrated [illegible] and recommended that the [illegible] method be adopted in the United States army. At the close of their session Surgeon General O'Reilly, president of the board, issued the statement. "The board is convinced of the usefulness and the harmlessness of the anti-typhoid vaccination and has recommended that the practice of voluntary vaccination be introduced in the army of the United States as a practicable means of diminishing the amount of typhoid [illegible]

[illegible]

Send the "Canadian" for a year to your friends down east as a Christmas gift. It will keep them posted on the important questions of the West.

Drop into the office of Mr. F. J. Farley, [illegible] temporary quarters at [illegible], and leave a list of those you want to remember.

By subscribing at once you will secure the first number and the Special Christmas Number.

The Alberta Musical Festival.

The following article should have appeared in last week's issue and was [illegible] owing to [illegible]. It was crowded out at the last moment. It is not too early to begin preparations for this important event and we trust that Camrose may be worthily represented.—Ed.

Complete arrangements have been made for the holding of the second annual Alberta Musical Festival, which takes place in Edmonton on Tuesday and Wednesday, May 4th and 5th next. The success of this year's festival held in May last was most gratifying both to the committee in charge and the competitors and visitors from all parts of the province. The arrangements were complete and the decisions of the adjudicator, [illegible] of Winnipeg, were decidedly popular. The results were pleasing to the out-of-town contestants, they having won the majority of the competitions in which they competed, the winners hailing from [illegible] and other places.

The first Alberta Musical Competition Festival was organized last year having as its primary object the raising of the standard of, and increasing the interest in, the choir music of the various churches in [illegible].

The original scheme, which provided for Choir Competitions only, was eventually enlarged to include competitions for Male Choruses, Amateur Vocalists and Pianists, while this year additional competitions for Female Choruses and Trios, Violinists and Bands have been arranged.

At the first Festival held in May last, there were just over a hundred entries in the various competitions, and the judging occupied the adjudicator two days, the Festival closing with a concert in the Thistle Rink in the evening of the second day, when the programme was supplied by the winners in the various competitions, and a massed chorus of a hundred and eighty voices, assisted by an orchestra of forty players.

Throughout the country and in every town in Alberta is to be found excellent musical talent, both in vocal, instrumental and band. To make the Alberta Festival the success it deserves, every town should be well represented. [illegible] railway arrangements will be made, so that all who wish may attend at small cost [illegible] transportation. A complete list of music chosen for competition may be obtained on application to the Secretary of Alberta Musical Festival, Box [illegible], Edmonton.

Federation Approved.

Toronto, Dec. [illegible]—At the annual meeting of the Methodist educational board, the federation of the Methodist College at Edmonton with the Alberta university was approved.

Coal at Camrose

Great wealth of the [illegible] — Opportunities of Development in the near future — [illegible] — Heavy [illegible] already being made to acquire Properties.

Few of us realize the wonderful possibilities that the future holds for Camrose through the [illegible] presence of the coal fields. We have on all sides of us coal of a quality that is [illegible] in Alberta. We are in the very centre of a large and [illegible] deposit. This deposit extends only a few miles to the east of us, and then there lies the great [illegible] prairie of Eastern Alberta and Saskatchewan, a great and growing market. Saskatoon, [illegible] and many other towns along the various new lines of railway which are tapping this district now get their supplies from Edmonton and other points. [illegible] of the black gold are rolling east and west every day. Ere next summer the missing link of the Camrose [illegible] Winnipeg branch will be completed. Then will [illegible] opportunity to Camrose.

Already there are those who are alive to the possibilities of the mining industry. Last week Mr. Ferguson Adair was appointed [illegible] at the price of an acre [illegible] mile south of the town. A satisfactory arrangement was made with the purchasers, Messrs. Schuland and Wilson of [illegible], who are already at work. Other companies will be formed during the coming months and ere the leaves fall in [illegible] will be in readiness for [illegible] on a large scale.

[illegible] Subscribers.

Camrose telephone exchange [illegible] growing—[illegible]

Mr. Silver of the telephone department reports that there are now [illegible] telephones installed in the town of Camrose and the number is constantly increasing. Although it is only a few months since the system was actually installed in town the capacity of the cables is already exhausted. During the winter a good deal of work will be put on to rebuild the system and [illegible]. All of which is but another indication of our continued prosperity and growth.

Move to Revise Coronation Oath

Proposal to Eliminate "Declaration That Catholicism is Superstitious and Idolatrous."

London, Dec. [illegible]—The Earl of [illegible] [illegible]

Lord Lansdowne, [illegible]

The Earl of [illegible]

[illegible] Winnipeg Mayor.

Winnipeg, Dec. [illegible]—William Sanford Evans, [illegible]

[illegible]

The keenest interest is being shown all over town in the approaching session of Parliament. Premier Connelly has again shown [illegible] in the selection of his Cabinet, which we learn on good authority will be as follows.

Premier and President of the Council—C. H. Connelly.

Minister of Finance—F. P. Layton.

Minister of Public Works—D. Tenney.

Minister of Militia—W. W. Smith.

Minister of Railways—[illegible] Barnwell.

Minister of Agriculture—[illegible]

Postmaster General—R. D. [illegible]

Minister of Marine and Fisheries—Dr. W. C. [illegible]

Minister of Trade and Commerce—Watson Younge.

Secretary of State—F. C. Russell.

Minister of Interior—F. L. [illegible]

Minister of Justice—Principal [illegible]

The other portfolios are not being filled for the present, but it is rumored that Mr. George H. [illegible] is slated for a position in the Cabinet without portfolio. The Premier called a cabinet meeting last Monday evening when the business of the session was discussed [illegible].

Opposition Leader Pike has selected his chief lieutenants who will occupy the front benches. These are Messrs. K. C. McLeod, F. Adam, G. F. Smith, G. H. Stewart, J. [illegible], D. Simpson, A. Code, R. Davidson, and W. G. Duggan. A caucus of the Opposition members was held on Monday night, and the plan of attack upon the present [illegible] administration was fully developed.

The last issue of "The Canada [illegible]" announces the opening of Parliament for Friday evening, December 11th. Governor-General [illegible] and Mr. Chapin, parliamentary usher of the Black Rod, have both ordered new clothes for the occasion, and the opening ceremony is expected to be a very fashionable affair.

Already the air is full of rumors of raids from the [illegible]. Special constables are being sworn in and strict orders have been posted that no lady be admitted to the House on any pretext whatever.

[illegible] just [illegible] at the moment of going to press to inform us that the order excluding the ladies has been rescinded. They have promised to be good. We hope the Government has acted wisely in the matter, and that nothing will occur to [illegible] the dignity of Parliament.

[illegible] Dead.

Winnipeg, Man., Dec. [illegible] [illegible]

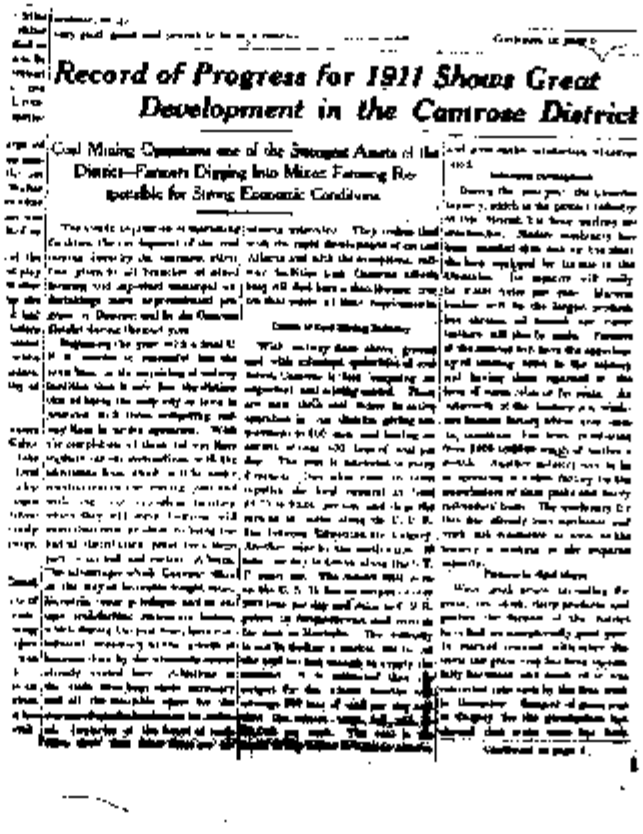
King's Condition Unchanged.

London, Dec. [illegible] [illegible]

[illegible]

[illegible]

To Prohibit [illegible]



Record of Progress for 1911 Shows Great Development in the Camrose District

Coal Mining Operations one of the Strongest Assets of the District—Farmers Digging Into Mines Farming Responsible for Strong Economic Conditions

Page 1 of 2

JAN. 29, 1940 - 1110
(Dennis Twomey)

CAMROSE, ALBERTA, CANADA, WEDNESDAY, FEBRUARY 7th, 1940.

Funeral Rites Tomorrow Morning For Revered Townsman, Dennis Twomey

Camrosians Are Sad Today Because Dennis Twomey Is Away.

It is true Camrose has lost, with profound regret many links severed in its chain of early pioneers, but with the passing of this citizen in whom was vested so many sterling and admirable qualities, there is a feeling of irreparable loss. More more than thirty years Mr. Twomey's influence in all things that tended toward the welfare of the town began to be felt almost immediately on his arrival, and the imprint of his personality has been left on practically every civic, educational, club and sports group in the town. A high standard of citizenship was set by the deceased at all times, quietly and without ostentation, and his leadership on many questions and issues throughout the years was marked by moderation, discernment and good judgment. It was a tribute to these qualities that he was asked on literally hundreds of occasions to advise friends and others on matters of moment to them. Irish to the back-bone, his irrepressible sense of humor found expression in all manner of anecdote stored away in a remarkably retentive memory. Mr. Twomey loved to study history, particularly Canadian history and the exploits of explorers into the west and many books on these subjects are to be found in his extensive library, as well as many volumes on political economy and related subjects. A lover of trees, shrubs and flowers Mr. Twomey's home is one of the beauty spots of the town, and he was a moving spirit in the formation of the former Horticultural Society here, which did so much to establish the reputation of Camrose for attractiveness. This interest extended beyond his own property and the Boulevarding program carried out over a period of years had his encouragement.

Mr. Twomey came out from the east in 1903 on the advice of his physician and located in Strathcona, where a relative, J. J. Duggan, resided. In 1905 he drove overland 70 miles to the new town of Sparling (now Camrose) then about to be served by the C.P.R. railway. He was accompanied by the late W. G. Duggan and together they decided to open a hardware store.

It was only a short time until Mr. Twomey was elected to serve on the town council. His ability was recognized at once and he presently became mayor. It was during his regime that electric lighting service, was given to the town, and that the preliminary work for the waterworks system was started.

One of the early organizations with which he was closely associated was the Camrose Canadian Club. He was keenly interested in hospitalization and had a leading part in selling up the old municipal hospital, and in later years proved a tower of strength to the Sisters of Providence in establishing St. Mary's hospital. A staunch supporter of St. Francis Xavier church, Mr. Twomey has served in every advisory capacity.

It was shortly after the erection of the new high school that Mr. Twomey became chairman of the board and during the depression years and consequent complex situations which sometimes developed, he and his colleagues carried on the necessary routine programs in an admirable manner.

[Continued On Page Four]

DENNIS TWOMEY

DENNIS TWOMEY

(Continued from page one)

Charter member of Camrose Rotary Club, formed in 1920 and of which he was the second president, officer of Victoria Park Golf club, a firm and helpful friend of the Boy Scouts organization, a keen curler and popular skip in Camrose Curling Club—these and numerous other organizations were the name of Dennis Twomey.

He was appointed deputy sheriff of Camrose sub-judicial district in 1917, following dissolution of the Farley and Twomey partnership which had existed since 1911. This position he filled with distinction until 1936 when the courts house was closed.

Perhaps Mr. Twomey's outstanding achievement was the reorganization and successful operation of the mine south of Camrose known as Stoney Creek Collieries, Ltd., having been its president and managing director for 28 years. This business has always given the town its largest single pay-roll. Mr. Dennis Twomey, Jr., has been assistant to his father for the past three years.

Mr. Twomey was born at Newton Falls, Ontario, in 1875. He observed his 65th birthday two weeks ago. During the past three or four years he had not enjoyed robust health and on Wednesday night, January 31, was stricken with a heart attack. The following day he was taken to the hospital where his condition became extremely critical on Friday, January 26. He rallied but on Monday of this week, shortly after five o'clock in the afternoon, the great summons came and he passed away peacefully.

Solemn high mass will be conducted at ten o'clock tomorrow morning at ten o'clock at St. Francis Xavier church. Rev. Dean Harrington, resident priest, will be assisted by Monsignor Lyons of Daysland, Fr. Hammill of Camrose, Fr. McCarthy of Killam, Fr. Schnitzler of Spring Lake, and Fr. Martin of Heisler.

The pall-bearers will be Mr. F. L. Farley, Mr. J. A. Young, Mr. E. V. Kerr, Mr. J. K. Burgess, K.C., Mr. C. J. Duggan and Mr. J. J. Duggan of Edmonton. There will be twenty honorary pall-bearers and four Boy Scouts.

The wealth of floral and spiritual tributes arriving hourly bears testimony to the high esteem in which Mr. Twomey has been held.

He is survived by his wife and two sons, Dr. Arthur Twomey of Pittsburg, Penn., who arrived a few days before his father's demise and Dennis, Jr., Camrose. His niece, Miss Genevieve Twomey, Edmonton, made her home with Mr. and Mrs. Twomey for many years, and a nephew, Jerry Twomey, is resident in Winnipeg. His sisters are Mother Cupisia of Loretto Abbey, Toronto, and Mrs. L. Wakely of Vancouver. A nephew and niece, children of Mrs. Wakely, are James of Vancouver and Sister Annunciata of St. Ann's Academy, Victoria.

In deference to the late Mr. D. Twomey's memory the business places will be closed from 10 to 11 a.m.

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Week.
HENRY, Business Mgr.

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History Of Camrose

(Continued from page one)

crossed on a log bridge three logs wide. Some slept in a bunk house and some in the hay loft, at Erickson's.

The first store building erected on the east side of the first block Main Street was built by Andrew Carruthers who had been operating a store and "stopping place" a mile north of the townsite. In 1905 Mr. Carruthers sold out to George W. Wells who came from Manitoulan Island. This building on Lot 22, Block 3 was followed by one on Lots 18 and 19, Block 3, erected by Abram Bunkar and George Wallace as a hardware store.

Other buildings erected at this time were—General Store by H. "Dad" Price, Lots 30 and 31, Block 3 (H. B. Price was joined in 1907 by George D. Smith and Norman Smith, as Smith Bros and Price. Smith Bros. built a store in 1906 on Lots 11 and 12, Block 2, and sold out to J. Watson and C. Adair Yeunge in 1907); Hardware and Tinshop, Harry Bonnar, Lot 22, Block 3; Harness Shop and Hall, Lars Larson, Lot 19, Block 2; Farm Implements, W. C. (Billy) Duggan, Lot 24, Block 3.

In the fall of 1905 Billy Duggan and Dennis Twomey bought out the hardware business of Harry Fenear. (George Keeble and David Durferin McLaren built a fancy goods and jewelery store on Lot 20, Block 3. Humphrey L. Biggs built a drug store on Lots 25 and 30, Block 6. Francois Adam had an insurance office on Lot 20, Block 2.

The first building on the west side of the second block, Main Street, was built of logs by A. Blaspe, an old settler to the northeast. During this first fall the remark could frequently be heard "this town will never amount to anything until we get a livery barn so people can stop here." Joe Cowan built a livery barn on Lots 23 and 24, block 4 and Charles Peterson built one on Lot 17, Block 2.

The hay loft of the Peterson barn was used as a dance hall during the first winter. Music for these dances was supplied by "Bill" McWhirter's fiddle.

Two lumber yards opened for business in 1905. The Rushton Lumber, Grain and Implement Co., owned by R. L. Rushton and Crews Nest Pass Lumber interests was located on Lots 6, 7, 8, 9 and 10, Block 4. Mr. Rushton also built an elevator now owned by the United Grain Growers. A man named Conroy doing business so frequently confused with that of Sperling in Manitoba and Stirling in Alberta, that the name was changed to Camrose and on January 15th, 1917, the Village was raised to the dignity and status of a Town.

At the first town election R. D. Fleming was returning officer, Thomas Dahl was elected Mayor by acclamation. The following were elected to the first town council: Abraham Code, Real Estate Agent; George D. Smith, Merchant; H. B. Price Merchant; Dennis Twomey, Hardware Albert Fuscus, Blacksmith and Edward R. Bjelke, Butcher.

The defeated candidates at this first election were Lars Larson, Harnessmaker and Charles C. Swanson, Real Estate Agent.

At the first meeting of the town council R. D. Fleming was appointed Secretary-Treasurer at a salary of ten dollars per month. Some of the first appointments made by the first town council were as follows: Dr. W. V. Lamb, Medical Officer of Health (salary $50 per year); F. W. Layton, Auditor (salary $60 per year); George Keeble, Assessor (salary $25 per year); Charles E. Asp, Town Constable (salary $50 per month); George E. Fuller, Night Watchman (salary $35 per month); Sidney Lambert, Bell-ringer (salary $5.00 per month); and Tom E. Olson, Pound Keeper.

In March 1907 a contract was let to Henry Nelson of Wetaskiwin for the erection of a town and fire hall on Lots 1 and 2, Block 6. A contract was let to William Bonnyman for three underground water tanks for fire protection purposes. These were placed, one near the C.P.R. station, one at the fire hall, and one on Government Road, one block east of Main Street. With the purchase of a Waterous gasoline fire engine in 1907 a volunteer fire brigade was formed with F. P. Layton, Chief, and Thomas C. Tattram, Engineer, Dr. W. V. Lamb, captain in charge of the ladder truck and "Tiny" Farmwell captain of the hose cart.

In June 1907 the Fair Grounds property was purchased from W. J. McNamara for $4,000. This purchase was financed by a bank loan secured by a note signed by several of the business men about town.

In June 1905 the election of the first Board of Trustees of School District No. 1345, was held in the Presbyterian Church building. The returning officer was T. P. Layton

[illegible] Lars Rindland were active in this work. A Presbyterian Church building was erected on Lot 21, Block 6, the Scandinavian Baptist church on Lot 10, Block 3 and the Methodist church on Lot 1, Block 3. In the early days the members of the Catholic faith in Sparling attended church at Duhamel ministered unto by the late Rev. Father Bellevaire who served the Duhamel community for more than 50 years. Later on a Catholic church building was erected on Lot 4, Block 17, Baldwin Addition.

Although Sparling was a most law-abiding place Mr. James Kennedy Turgeon, formerly of Sala, in the Province of Ontario, opened a law practice here in the summer of 1905, moving his family from Wetaskiwin and taking up permanent residence here in 1907.

Prior to the advent of a train service, lumber and all other freight

"Always A Leader"

DENNIS TWOMEY
MAYOR TWICE, MANAGES
BIGGEST LOCAL INDUSTRY

"MR. TWOMEY, would you please let us have your latest photograph" said the Canadian reporter. And what the D—— - do you want my picture for?" replied the irrepressible Irishman known so long and so well as Dennis Twomey.

Mr. Twomey came to Sparling (later Camrose) in 1905 and with the late W. C. (Billy) Duggan con-

ducted a hardware and farm implement business in the location on Main Street now occupied by Bill's Cafe and Brody's store. They later built on the east side of Main Street in the first block. Mr. Twomey first came to South Edmonton in 1898.

Member of the first Town of Camrose council in 1907, Mr. Twomey became mayor in 1909. Due to failing fitness in March, 1909, Mr. Twomey sold out his business interest and on leave of absence went to Ontario. He resigned as mayor in June 1909 and returned to Camrose in August 1909. He was also mayor for terms beginning in 1910 and 1924.

In 1911 Mr. Twomey organized Stoney Creek Collieries today the biggest pay-roll industry of the town and immediate vicinity. He has acted as managing director continuously ever since. A partnership with F. L. Farley was entered into in that year.

Nineteen twelve was the year that marked an enterprise which set Camrose aside as one of the most aggressive and resourceful centres in the west—the Camrose district agricultural car tour to eastern Canada and the United States, organized by Hon. Geo. P. Smith of Hamilton, Ont., was carried through in a highly successful manner. Mr. Twomey was one of the leading members of the party.

In 1917 Mr. Twomey disposed of his interest in "Farley & Twomey" real estate, loans.

He was appointed deputy sheriff and deputy clerk of the court for

TRUCK DRIVERS ... TAKE A BOW

Edmonton.—"I Drive Safely" is the slogan of careful drivers of commercial vehicles who may well be proud of the safety records they are establishing day after day. In proportion to the number of miles driven, fewer accidents are chalked up against the men who operate the trucks and buses employed in the daily transport of millions of tons of freight and millions of passengers than are charged to the general run of motor vehicle operators.

The professional truck and bus driver, as a rule, knows his mount and its mechanical limitations better than does the average passenger car owner. Experience has been his teacher. He covers more miles and acquires more driving experience in a year or two than the average passenger car operator gains in a lifetime.

took his life some 19 years later. The greater part of his scientific career, therefore, was shadowed by illness. In spite of this, however, Dr. Pickwell distinguished himself as a teacher and a naturalist. His best known books include a series published by McGraw-Hill—Weather, Deserts, Animals in Action, and Birds. His latest work on Amphibians and Reptiles of the Pacific States, published by the Stanford University Press, has become a standard reference. He was also the author of numerous articles for scientific journals.

Well known for his work in nature photography, Dr. Pickwell prepared illustrations for 50 or more filmstrips dealing with ecology, weather, trees, flowers, insects, amphibians, reptiles, birds and mammals. Each filmstrip he accompanied by an explanatory leaflet.

Although his work in natural history covered a broad field, Dr. Pickwell's chief interest was in birds. In addition to his membership in the American Ornithologists' Union, he had been President of the Northern Division of the Cooper Ornithological Club. He was also a leader in the local Audubon Society of the Santa Clara Valley.

Following Dr. Pickwell's death, a number of his friends presented a substantial financial contribution to the Multiple Sclerosis Research Society of New York. This was given as a memorial to Dr. Pickwell who, throughout his own years of illness, had many times offered himself for experimentation with the hope of providing information of value in helping other sufferers from this disease.—HILDEGARDE HOWARD.

FRANCIS (FRANK) LA GRANGE FARLEY died in Camrose, Alberta, Canada, on October 22, 1949, in his 79th year. He was born at St. Thomas, Ontario, on February 24, 1870, a son of the late John Farley. Long identified with natural history interests, he became an Associate of the American Ornithologists' Union in 1946 and received the rank of full Member approximately two weeks before his death.

Early in his career Frank Farley became passionately devoted to birds. For many years his studies were conducted in Ontario. At the age of 22, in March, 1892, he arrived in Red Deer, then the end of steel between Calgary and Edmonton. Farley homesteaded in the district, retained his enthusiasm for ornithology, and rapidly developed into an outstanding field naturalist.

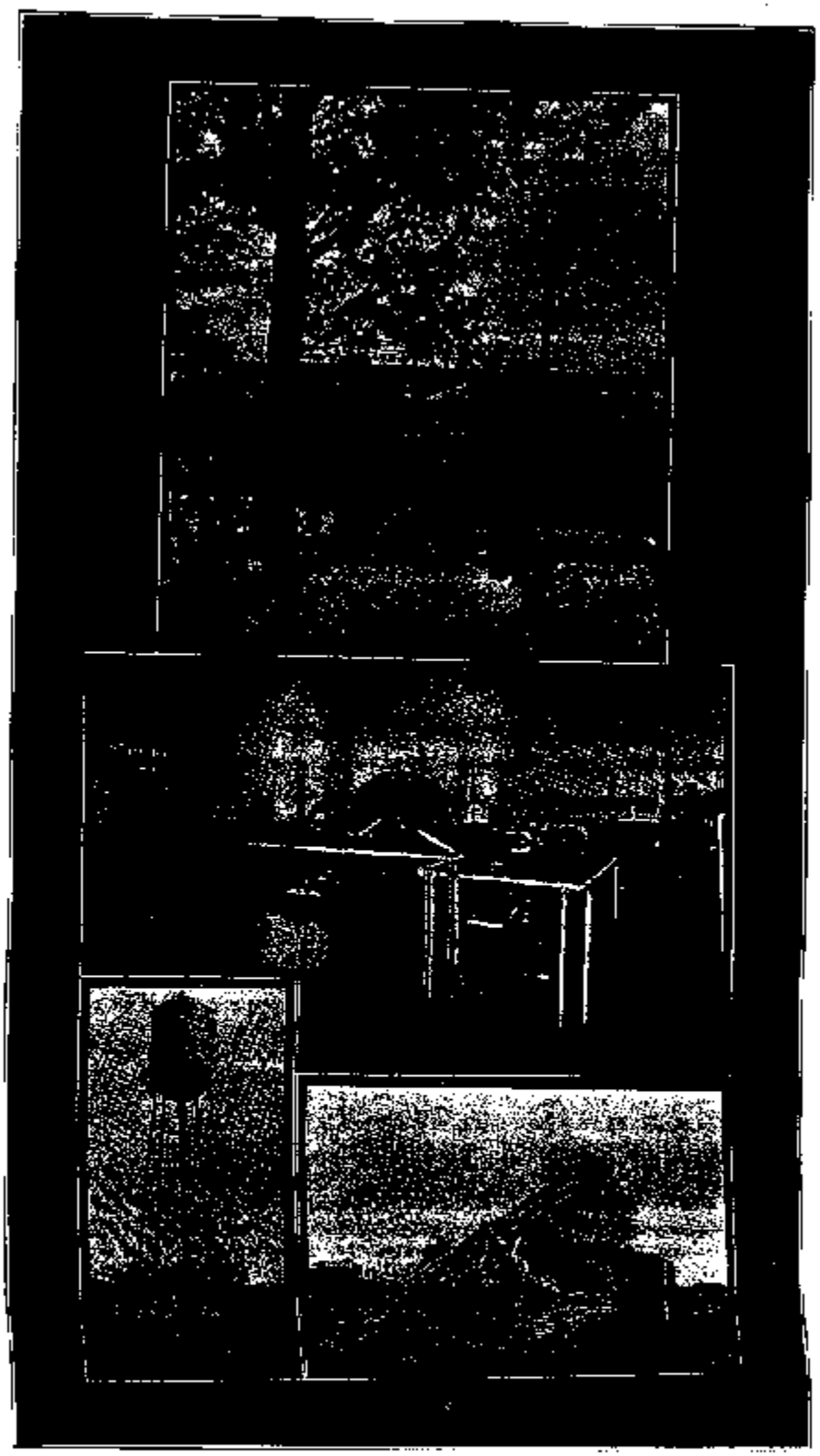
In 1907 he sold the farm and located in the new town of Camrose; there he continued to live for the remainder of his life. As the years went by he seized every opportunity to cover various parts of the province to gather data for a work on Albertan birds which, unfortunately, was not completed before his death. Frank published numerous notes and longer papers on birds of the province. The majority of these appeared in the 'Canadian Field-Naturalist.'

In due time Farley won wide recognition on the continent as a lover and student of birds and an ardent conservationist. In the best sense of the term he was a true pioneer in Alberta ornithology. His circle of friends was very extensive and his beneficial influence marked in relation to aspiring young students of wildlife. His vigorous and cheerful personality will remain a cherished memory. With Frank Farley's passing, another link with the pioneer days of Western Canada is irrevocably lost.—J. DEWEY SOPER.

VICTOR RAMMON JONES, professor of zoology at Idaho State College, Pocatello, Idaho, and an Associate of the A. O. U. since 1940, died at Salt Lake City, Utah, August 24, 1949.

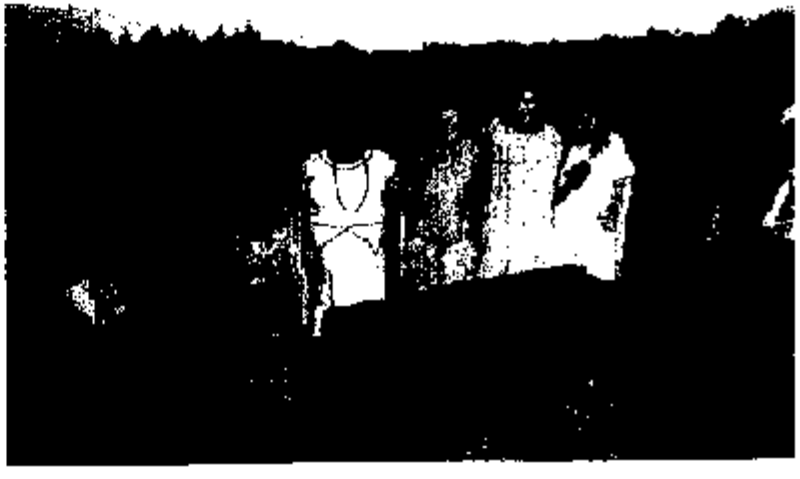
He was born June 13, 1892, at LaPlata, Missouri. After graduating from the

All Public Utilities Are Available in Camrose on Account of Unlimited Supply of Good Coal at Low Cost



The accompanying illustration shows Camrose public utilities as they will appeal to the casual visitor to Camrose. There is a view of the electric light and power plant, prettily situated on the north bank of Mirror Lake. The interior view of the power plant shows the generating machinery to which has recently been added an auxiliary engine and dynamo, to meet the demand for a continuous day and night service. The lower illustrations show the coal mine of the Round Hill Collieries, Ltd., and the huge reservoir of the Camrose waterworks system. No money was better expended than in these various public utilities.

Dave Williams (the Pit Boss) and Bruce Munsa (Foreman) of the Stoney Creek Mine. Photo is from the late 1920's.

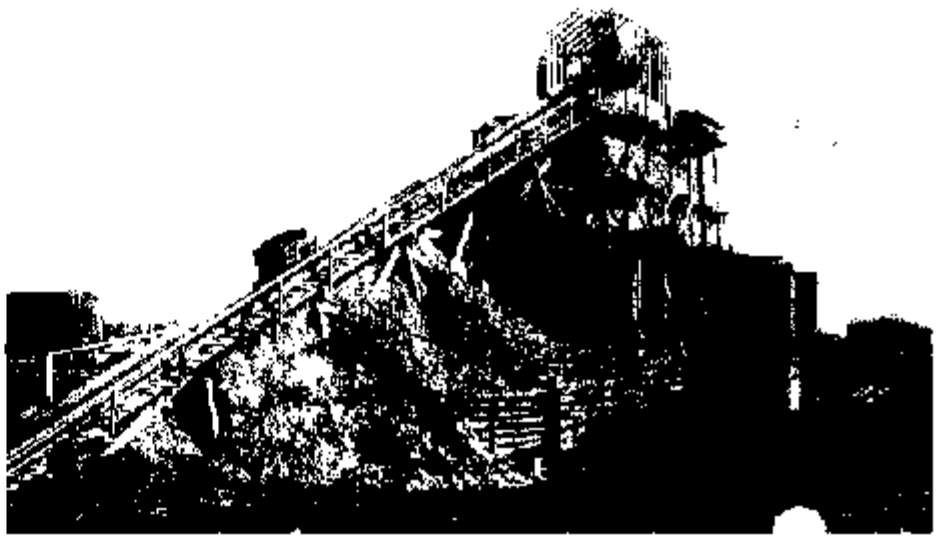


This photo is taken in the late 1920 s at the entrance to the Stoney Creek mine. On the left is the Quattrocchi family (Joe and Freda, with their children Alfred and Mary. On the right are three Normal-ites (students from the Normal school?)

Spicer Lump Coal wagons selling coal to Camrose citizens. The cost was $3.27/ton.

The Rosenroll Coal Mine

Inside Rosenroll Coal Mine



The Round Hill Coal Mine

BRAID'S BEST TEA
a drink of delight
MORNING - NOON & NIGHT

Watch Repairs

Young's Jewelry Store

[illegible]

[illegible] Manager

DAVID

Theatre Calendar

[illegible]

THEDA BARA

in

"Sister Against Sister"

[illegible]

LOUISE LOVELY

in

"A Man Who's Changing"

[illegible]

"A DREAM OF THE ANDES"

Services

JOHNSTONE'S DRUG STORE

For

Drugs, Stationery, Tobacco, School Supplies, Cameras, Films, Nabob's Chocolates

THE RECALL STORE

PHONE 127

COAL

[illegible]

STONEY CREEK COAL

[illegible]

FARLEY & BAILEY

AGENTS PHONE 43

MINE OFFICE PHONE 143

Let The Canadian find that Lost Horse for you.

The Store Where

The Prettiest Blouses

Are Always on Display

Lovely new creations by the foremost

Large Wage Roll is Result of Coal Mining Industry

Over 200 Men Find Employment in Winter Months and Draw Pay Cheques for Total of $5,000 per Week—Five Mines in Operation

On the Left Bank of Mirror Lake is Located the Municipal Power Plant. The Gas Well Lies directly beyond but is not shown in this Illustration.

What Does the Coal Situation Mean for Those Who Come to Live in Camrose?

The Coal Bin Can Always be Kept Full and the Coal Bill is Always Low—Residences and Business Places May Have All Public Utilities Without Being Charged Exorbitant Rates—There is no Danger of Depleting the Supply as the Town Rests on a Huge Coal Area—Coal is of Splendid Quality and Especially Suitable for Domestic Uses.

IN sinking the gas well at Camrose a fifteen-foot seam of coal was located at a depth of 400 feet. This demonstrates that the townsite rests on an unlimited supply of coal of excellent quality.

Most of the coal at present mined in the Camrose district is secured at a depth of from twenty to one hundred feet and in seams of from six to seven feet in thickness. Under these circumstances the coal is easily extracted, which to some extent accounts for the present large output of the district. In 1907 only 5,000 tons of coal were mined in the district. To-day the annual output has reached over 60,000 tons, and the real development of the coal mining industry has only commenced.

One of the greatest boons to the town of Camrose is the unlimited supply of coal at a price which is no hardship on the poorest resident. While in many parts of Saskatchewan coal is retailed at from $8.00 to $7.00 per ton, this same coal is available in Camrose at from $3.00 to $4.00 per ton. An analysis of the coal has frequently been made, and it has been shown to be a lignite of semi-bituminous quality admirably suited for domestic and industrial purposes.

With coal so readily to hand, it naturally follows that Camrose maintains a municipally-owned electric light and power plant at a high state of efficiency, and that in comparison to the number of services installed the town can supply electric light and power at the lowest possible rates. Coal is supplied to the power plant at the remarkable low rate of $2.50 per ton on a yearly contract. It is, therefore, safe to say that electric power can be generated from steam cheaper at Camrose than in any part of Alberta. When to this is added natural gas as a factor in producing power, the situation will have a far reaching effect on our industrial development.

The surplus of coal required for the Camrose district will always find a market eastward. New railway lines are opening up to serve the country of the middle west, and to all this country Camrose will have favorable access for the coal business. It will thus be seen that, considered from any standpoint, the coal mining industry of the Camrose district is fraught with tremendous possibilities.

very good guide and proved to be in

Continued on page 6

Record of Progress for 1911 Shows Great Development in the Camrose District

Coal Mining Operations one of the Strongest Assets of the District—Farmers Digging Into Mixed Farming Responsible for Strong Economic Conditions.

The steady acquisition of marketing facilities, the development of the coal mining industry the increased attention given to all branches of mixed farming and important municipal undertakings mark unprecedented progress in Camrose and in the Camrose district during the past year.

Beginning the year with a local C. P. R. service so successful has the town been in the acquiring of railway facilities that it now has the distinction of being the only city or town in province with three competing railway lines in active operation. With the completion of these railway lines to their various destinations, with the additional lines which will be under construction in the coming year and with the ever extending territory which they will serve Camrose will more than ever lay claim to being the logical distributing point for a large part of central and eastern Alberta. The advantages which Camrose offers in the way of favorable freight rates, industrial spur privileges and an unique tradelerring system are factors which during the past year, have contributed immensely to the growth of business done by the wholesale houses already located here. Additions to the stocks have been made necessary and all the available space for the storing of goods has failed to prove adequate. Inquiries at the board of trade office show that other lines are becoming interested. They realize that with the rapid development of central Alberta and with the exceptional railway facilities that Camrose affords they will find here a distributing centre that meets all their requirements.

Centre of Coal Mining Industry

With railway lines above ground and with unlimited quantities of coal below, Camrose is fast becoming an important coal mining centre. There are now three coal mines in active operation in this district, giving employment to 100 men and having an output of over 400 tons of coal per day. The coal is marketed in every direction. One mine close to town supplies the local demand at from $2.75 to $3.50 per ton and ships the surplus to towns along the C. P. R. line between Edmonton and Calgary. Another mine to the north ships 100 tons per day to towns along the C. P. R. main line. The Round Hill mine on the C. N. R. has an output of over 200 tons per day and ships to C. N. R. points in Saskatchewan and even as far east as Manitoba. The difficulty is not in finding a market but to get the coal out fast enough to supply the demand. It is estimated that the output for the winter months will average 600 tons of coal per day and that the miners will earn [illegible] $3,000 per week. The coal is the equal of any mined in Western Alberta

and gives entire satisfaction wherever tried.

Industrial Development

During the past year the Camrose tannery, which is the pioneer industry of this district, has been entirely reconstructed. Modern machinery has been installed thus making the plant the best equipped for its size in the Dominion. Its capacity will easily be 2,500 hides per year. Harness leather will be the largest product, but chrome, oil tanned and russet leathers will also be made. Farmers of the district will have the opportunity of sending hides to the tannery and having them returned in the form of warm robes or fur coats. An outgrowth of the tannery is a wholesale harness factory which, ever since its operation, has been purchasing from $400 to $600 worth of leather a month. Another industry soon to be in operation is a shoe factory for the manufacture of shoe packs and heavy railroaders' boots. The machinery for this has already been purchased and work will commence as soon as the tannery is working to the required capacity.

Farmers in Good Shape

With good prices prevailing for grain, live stock, dairy products and poultry the farmers of the district have had an exceptionally good year. In marked contrast with other districts the grain crop has been successfully harvested and much of it was converted into cash by the first week in December. Samples of grain sent to Calgary for the grain exhibition have shown that while some has been

Continued on page 4

1798

CERTIFICATE OF INCORPORATION

C A N A D A

PROVINCE OF ALBERTA

No. 1942.

I hereby certify that The Barney Creek Collieries,Limited,N.P.L., is this day incorporated under the Ordinance of the Northwest Territories respecting Companies, and that the company is ~~limited~~ specially Limited under Section 60 thereof.

Given under my hand and seal at Edmonton this Twenty-third day of June, 1911.

Head office--Calgary

Capital--$50,000.00

S. Trowbridge

Registrar of Companies.

Treasury Receipt No.

Send copy of Gazette to Messrs. Burgess & McKay,

Barristers &c.,

Calgary, Alta.

This is the Schedule referred to in Clause 86, of the Articles of Association of The Stoney Creek Collieries Limited.

AGREEMENT made this first day of June, A.D., 1911,

B E T W E E N :

FRANCOIS ADAM, of the Town of Cowrose, in the Province of Alberta, Notary Public, hereinafter called "the Vendor"

of the first part

-and-

THE STONEY CREEK COLLIERIES, LIMITED, hereinafter called "The Company"

of the second part

1598

WHEREAS the Vendor is the owner of the following coal lands under Contract of purchase from The Canadian Pacific Railway Company, namely :-

All the coal under legal sub-division One of Section Thirty Three, in Township forty six and range twenty, west of the fourth Meridian, containing forty acres.

AND WHEREAS the Company has been formed under The Companies' Ordinance of the North west Territories, with a nominal capital of Fifty Thousand Dollars ($50,000.00), divided into five Hundred shares (500) of one Hundred Dollars ($100.00) each, with a view amongst other things, to acquisition of the Vendor's interest of, in and to the said lands and premises.

AND WHEREAS by Clause 86 of the Articles of Association of the Company, it is provided that the Company shall enter into the agreements therein referred to, this being one of the agreements.

IT IS HEREBY AGREED AS FOLLOWS :

(1) The Vendor shall sell, and the Company shall purchase all the Vendor's right, title and interest of, in and to the said coal lands, buildings and appurtenances, tools and chattels now used in connection with said lands as a coal mine.

(2) The consideration for the sale shall be the sum of Thirty Thousand Dollars ($30,000.00) which shall be paid and satisfied as follows :

By the allotment to the Vendor or his nominee of Three Hundred (300) fully paid up shares, in the Capital of the Company of One Hundred Dollars each, to be numbered from 201 to 500 inclusive.

(3) The Company shall without investigation, objection or requisition accept such title as the Vendor has.

(4) The purchase shallbe completed forthwith after incorporation of the Company.

(5) The validity of this agreement shall not be impeached on the ground that the vendor as promoter or otherwise stands in a fiduciary relation to the Company, and that the directors having accepted office at his request do not constitute an independent board.

(6) The Company shall, with respect to shares to be allotted to the Vendor or his nominee, cause this agreement or some other sufficient contract within the meaning of the Companies' Ordinance, and also the returns required by that section to be duly filed with the Registrar of Joint Stock Companies.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals.

SIGNED, SEALED AND DELIVERED :
in the presence of :

as to signature of Francois Adam.

Francois Adam

one acre of land owned by the Vendors in fee simple, on the extreme North East Corner of said section Twenty Eight, township Forty Six, Range Twenty, west of the Fourth Meridian.

AND WHEREAS the Company has been formed, under the Companies' Ordinance, of the North West Territories, with a nominal Capital of Fifty Thousand Dollars, divided into Five Hundred Shares of One Hundred Dollars each, with a view amongst other things, to acquisition of the Vendor's interest of, in and to the said lands, leases and premises.

AND WHEREAS by Clause 26, of the Articles of Association of the Company, it is provided that the Company shall enter into the agreements therein referred to, this being one of the said agreements ; "

IT IS HEREBY AGREED AS FOLLOWS :

(1) The Vendor shall sell, and the Company shall purchase all the Vendor's right, title and interest of, in and to, the said lands, leases and premises, buildings and appurtenances, goods and chattels, used in connection therewith as a coal mine.

(2) The consideration for the sale shall be the sum of Twenty Thousand Dollars ($20,000.00) which shall be paid and satisfied as follows :

By the allotment to the Vendors or their nominees of Two Hundred (200) fully paid up shares in the Capital of the Company of One Hundred Dollars ($100.00) each to be numbered from 1 to 200.

(3) The Company shall, without investigation objection or requisition, accept such title as the Vendors have.

(4) The Purchase shall be completed forthwith after incorporation of the Company.

(5) The validity of this agreement shall not be im-

pended on the ground that the Vendors or either of them as promoters or otherwise stand in a fiduciary relation to the Company, and that the directors having accepted office at their request do not constitute an independent board.

(d) The Company shall with respect to shares to be allotted as to the Vendors of their nominee, cause this agreement or some other sufficient contract within the meaning of the Companies' Ordinance, and also the returns required by that Ordinance, to be duly filed with the Registrar of Joint Stock Companies.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands and seals.

SIGNED, SEALED AND DELIVERED in the presence of

W. H. Bayer

as to signatures by H.A. Worrall and E.L. Bostwald. and L.L. Bostwald

L. L. Bostwald
E. L. Bostwald
H. A. Worrall

This is the Schedule referred to in Clause 86, of the Articles of Association of The Stoney Creek Collieries Limited.

AGREEMENT made this first day of June, A.D., 1911,

B E T W E E N :

M. A. MAXWELL, of Coaldale, Alberta, Engineer, E. L. Scotvold, of the same place, Teamster, and Enoch L. Scotvold of the same place, Agent, hereinafter called "the Vendors"

of the first part

-and-

THE STONEY CREEK COLLIERIES, LIMITED, hereinafter called "the Company"

of the second part.

WHEREAS the Vendors are the owners of the following lands, coal leases and premises, namely :-

Coal Lease, bearing date the 17th day of June, One thousand nine hundred and eight, made between the King, as represented by The Minister of the Interior of Canada, and Ingvald Schulstad, of the City of Strathcona, Alberta, Painter, which lease is now owned by the above named Vendors, of all and singular that certain parcel or tract of land situate, lying and being in the Province of Alberta, and comprising the North Half of legal sub-division Nine, and all of legal sub-division Fifteen of Section Twenty Eight, Township Forty Six, Range Twenty, west of the Fourth Meridian, containing an area of Sixty acres more or less.

..... of..... or failing him
..... of ..... as my proxy to
vote for me and on my behalf at the ordinary (or
extraordinary) general meeting of the Company to be
held on the ..... day of ..... and
at any adjournment thereof.

As witness my hand this ..... day of .....
SIGNED by the said ....
in the presence of .....

No Member entitled to vote etc. while call due to Company.

77. No member shall, without the consent of the directors be entitled to be present, or vote on any question, either personally or by proxy, at any general meeting or upon a poll, or be reckoned in a quorum, whilst any call or other sum shall be due and payable to the Company in respect of any of the shares of such member.

Resolution of Directors in certain cases to be equivalent to resolution of general meeting.

78. Any resolution passed by the directors, notice whereof shall be given to the members in the manner in which notices are hereinafter directed to be given and which shall within one (1) month after it shall have been passed be ratified and confirmed in writing by members entitled at a poll to three-fifths (3/5) of the votes, shall be as valid and effectual as a resolution of a general meeting, but this clause shall not apply to a resolution passed in respect of any matter which by the statutes or these presents ought to be dealt with by special or extraordinary resolution.

Number of directors.

79. Until otherwise determined by a general meeting the number of the directors shall not be less than three (3) or more than seven (7) each of whom shall be the holder of at least fifty (50) shares of the capital stock of the Company.

First Directors. 80 The persons hereinafter named shall be the first Directors, that is to say :

.....D. Lawrence.....
.....H. A. Macdonell.....
.....F. L. Beckwith.....
.....
.....
.....
.....

First Directors qualifications. 81. A first Director may act before acquiring his qualification but shall in any case acquire the same within two months from his appointment. 1599

Remuneration of Directors. The Directors shall be paid out of the funds of the Company by way of remuneration for their services such sums as the Company shall in general meeting from time to time determine, and such remuneration shall be divided among them in such proportions and manner as the Directors may determine.

Directors may act notwithstanding vacancy. 83. The continuing Directors may act notwithstanding any vacancy in their body, but so that if the number falls below the minimum above fixed, the Directors shall not, except for the purpose of filling vacancies, act as long as the number is below the minimum.

When office of Director to be vacated. 84. The office of Director shall ipso facto be vacated : (a) If he becomes bankrupt, or suspends payment, or compounds with his creditors.

(b) If he is found lunatic or becomes of unsound mind.

(c) If by notice in writing to the Company he resigns his office.

the Company, and may with the like sanction, vest any part of the assets of the Company in Trustees upon such trusts for the benefit of the contributories as the liquidators with the like sanction shall think fit.

Indemnity.

136. Every Director, Manager, Secretary or other officer or servant of the Company shall be indemnified by the Company against, and it shall be the duty of the Directors out of the funds of the Company to pay all costs, losses, and expenses which any other officer or servant may incur or become liable to by reason of any contract entered into or act or thing done by him as such officer or servant, or in any way in the discharge of his duties, including travelling expenses, and the amount for which such indemnity is provided shall immediately attach as a lien on the property of the Company, and have priority as between the members over all other claims.

Head office.

136. The Directors may establish an office of the Company at the ..... of ..... in the Province of ....., and may constitute such office the head office of the Company, but only such office as shall be the registered office of the Company shall be deemed the head office.

Where meetings may be held.

137. For greater certainty it is hereby declared that all or any meetings of the Company and of the Directors may be convened and held as well without the Province of Alberta, as within the said Province, and in particular at the ..... of ..... aforesaid.

NAMES, ADDRESSES AND DESCRIPTIONS OF SUBSCRIBERS.

D. Finnerty, Canmore, Alta., Broker
M. A. Finnerty, " " Engineer

E. Beckwith Cameron, Alta Agent
E. L. Stafford Cameron, Alta Translator

DATED this ..12th..... day of ..June.....

A. D., 1911.

WITNESS.

as to signature of D. Livermay, M. A. Mackay
E. L. Stafford, L. K. Slater

J. H. Sinclair

In the Matter of the Estate of
C. Beckwith Cameron Deceased

To .....

This is exhibit "B...." referred to in the
affidavit of Jean M. Sinclair
Sworn before me this 12th
day of June A. D. 1911
Before me [illegible] Commissioner

CANADA

PROVINCE OF ALBERTA

To wit :

IN THE MATTER OF the application under "the Companies Ordinance" of the north west Territories, of The Stoney Creek Collieries, Limited.

I, J. McLaurin Burgess of the Town of Camrose, in the province of Alberta, Solicitor

MAKE OATH AND SAY :

1. THAT I was personally present and did see D. Lorimer, W. A. Macnell, E. H. Chestnut and H. L. Scottfield the parties named in the Memorandum and Articles of Association of the said proposed Company marked as exhibit "A" and "B" to this my Affidavit duly sign said Memorandum and Articles of Association.

2. THAT I know the said parties.

3. THAT the signatures D. Lorimer, W. A. Macnell, E. H. Chestnut and H. L. Scottfield are of the proper handwriting of the said parties.

4. THAT the signature "J. McLaurin Burgess" attesting the signatures hereinbefore mentioned is the true signature of me this deponent.

SWORN before me at the Town of Camrose, in the Province of Alberta, this 12th day of June A.D., 1911.

J. McLaurin Burgess

Wallace Chestnut

A Commissioner etc.

-38-

CONSENT to act as Directors of

"THE STONEY CREEK COLLIERIES, LIMITED"

TO THE REGISTRAR OF JOINT STOCK COMPANIES:-

We, the undersigned, hereby testify our consent to act as Directors of "The Stoney Creek Collieries, Limited".

SIGNATURE	ADDRESS	DESCRIPTION
H. Tawney	Lawrence	Farmer
D. A. Maxwell	Canada	Engineer 1594
E. L. Litchfield	"	Agent

DATED this 12th day of June A.D. 1911.

WITNESS to the signatures of H. Tawney, D. A. Maxwell and E. L. Litchfield

J. H. Lugsdin

Stoney Creek Collieries Limited, Camrose, Alberta.

LIST OF PERSONS holding Shares in _____ on the 23rd day of October, 1922, and of Persons who have ceased to be Members since the date of the last Report, or (in the case of the first Report) since the date of incorporation, showing their Names, Addresses, and Occupations and an Account of the Shares so held.

NAMES, ADDRESSES, AND OCCUPATIONS				ACCOUNT OF SHARES			
SURNAMES	CHRISTIAN NAMES	ADDRESSES	OCCUPATIONS	Number of Shares held by each EXISTING Member at date of Report † ‡	‡ Particulars of Shares Transferred by Persons who are STILL Members, and Persons who have CEASED to be Members		REMARKS
					Number ‡	Date of Registration of Transfer †	
Barlow.	Frank,L.	Camrose	Agent.	25.			
Farley.	Mrs.Ethel M.	Camrose.	Married Woman	50.			
Henderson.	James A.	Edmonton.	Accountant.	50.			
Varwell.	Marshall.A.	Pensacola, Florida.	Engineer	100			
Twomey.	Dennis.	Camrose.	Agent.	75.			
Twomey.	Mrs.Alice.	Camrose.	Married Woman.	50.			
Twomey.	Dennis (in trust).	Camrose.	Agent.	100			
Walker.	John.	Armena.	Merchant.	50.			
			TOTAL	500.			

* The Aggregate Number of Shares held, and not the Distinctive Numbers, must be stated, and the columns must be added up throughout, so as to make the total to agree with that stated in the Summary to have been taken up.

† The date of Registration of each Transfer must be given as well as the Number of Shares transferred on each date. The particulars should be placed opposite the name of the Transferor, and not opposite that of the Transferee, and the name of the Transferee should be inserted in the "Remarks" column, immediately opposite the particulars of each Transfer.

‡ When the Shares are of different classes these columns may be subdivided so that the number of each class held, or transferred, may be shown separately.

Signature: G.C. Farley Secretary

(Usual Signature of Director, the Manager, the Secretary, or other Officer of the Company.)

GOVERNMENT OF THE PROVINCE OF ALBERTA

Office of the Deputy Provincial Secretary

Statement required under the provisions of
"The Corporations Taxation Act"

(Made up to December 31, 1929)

1. The name of the Company is - THE STONEY CREEK COLLIERIES LIMITED.

2. The nature of the business being transacted or carried on is Coal Mining and the said Company was incorporated under the laws of Alberta.

3. The address of the Company { in Alberta is Canrose. / outside of Alberta is -

4. the names and post office addresses of the President, Secretary and Manager are as follows:

D. Twomey, President, Canrose, Alberta.

D. Twomey, Secretary " "

D. Twomey, Mgr.Director " "

1598
1598

5. The authorized capital of the company is $50,000.00, divided into 500 shares of $100.00 each.

The number of shares without nominal or par value authorized is Nil.

5. In the case of a company having shares without nominal or par value, and where the letters patent, memorandum of association, articles or regulations of the company state a maximum price or consideration at or for which such shares shall be issued, set out here such maximum price or consideration. $

I, D. Twomey, "President", of the above named company do solemnly declare that the foregoing is a true and correct statement of the particulars therein set out as of the 31st day of December last.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath, and by virtue of The Canada Evidence Act.

DECLARED before me at the Town of Canrose in the Province of Alberta, 28th day of January A.D. 1930.

D. [signature]

[signature]
A Commissioner for taking Affidavits, Justice of the Peace or Notary Public.

FULL NAMES, Addresses, and Occupations of Persons who are the Directors of Stoney Creek Collieries Limited, on the said 31st day of December, 39.

Farley, Frank.L. Agent, Camrose, Alberta.
Farley, Mrs.Ethel M. Married Woman, Camrose, Alberta.
Twomey, Dennis, Managing Director, Camrose, Alberta.
Twomey, Mrs.Alice, Married Woman, Camrose, Alberta.

BALANCE SHEET made up to the 30th day of April, 1939, containing the particulars of the Capital, Liabilities, and Assets of the Company, and certified by a Director, or the Manager, or Secretary of the Company, to be a true copy of the last balance sheet which has been audited by the Company's auditors. (A Private Company as defined by the Act is exempt.)

ASSETS.

Cash on hand and in Bank		$ 1,116.04
Accounts Receivable		6,282.88
Trucks less depreciation		1,988.70
Horses, Supplies and Timber		1,408.69
Buildings, less Depreciation		473.17
Tipple construction, less depreciation		922.78
Cost of driving South Entry		455.00
Deferred charges		204.85
Land & Mining Leases	45,896.73	
		$ 58,348.76

LIABILITIES.

Loan	$ 450.00
Accounts payable	1,970.66
Depletion Reserve Account	5,401.99
Capital Stock paid up	50,000.00
Profit and Loss Account	525.91
	$ 58,348.76

Camrose, Alberta.
Feby. 22nd, 1940.
Certified a true copy.

A. L. Davies
Secretary

Registration Fee, $5.00

File No. 1598

THE COMPANIES ACT, 1929
(Section 117.)

ANNUAL REPORT

Annual Report of the STONEY CREEK COLLIERIES LIMITED. Limited,

Cameron, Alberta made up to the 31st day of December, 1939.

Address of Registered Office Cameron, Alberta.
(Street and Number) (City or Town) (Province)

SUMMARY OF CAPITAL AND SHARES

GS18

The authorized Capital * $ 50,000.00 Divided into 500 Ordinary Shares of $ 100 each
Preference Shares of $ each

The Number of Shares authorized * is

The total Number of Shares taken up to the said 31st day of December, 1939

(Each Number must agree with the total shown in the list as held by existing members.) Ordinary 500 $
Preference Nil Nil

Number of Shares issued subject to payment wholly in cash Ordinary
Preference Nil

Number of Shares issued as fully paid up otherwise than in cash Ordinary 500
Preference Nil $

Number of Shares issued as partly paid up to the extent of per Share Nil

otherwise than in cash, viz. Ordinary
Preference Nil Nil

There has been called up on each of Ordinary Shares $

There has been called up on each of Preference Shares $ Nil

There has been called up on each of Shares $ Nil

Total amount of Calls received, including payments on applications and allotments $ Nil

Total amount (if any) agreed to be considered as paid on 500 Shares
which have been issued as fully paid up otherwise than in cash $ 50,000

Total amount (if any) agreed to be considered as paid on REGISTERED Shares
which have been issued as partly paid up to the extent of per Share $ Nil

Total amount of Calls unpaid Nil $ Nil

Total amount (if any) of sums paid by way of Commission in respect of Shares or Debentures or allowed by way of Discount in respect of any Debentures, or, in the case of a specially limited company, of any Shares, since the date of last summary or (in the case of a first return) since the date of incorporation—

Commission $ Nil

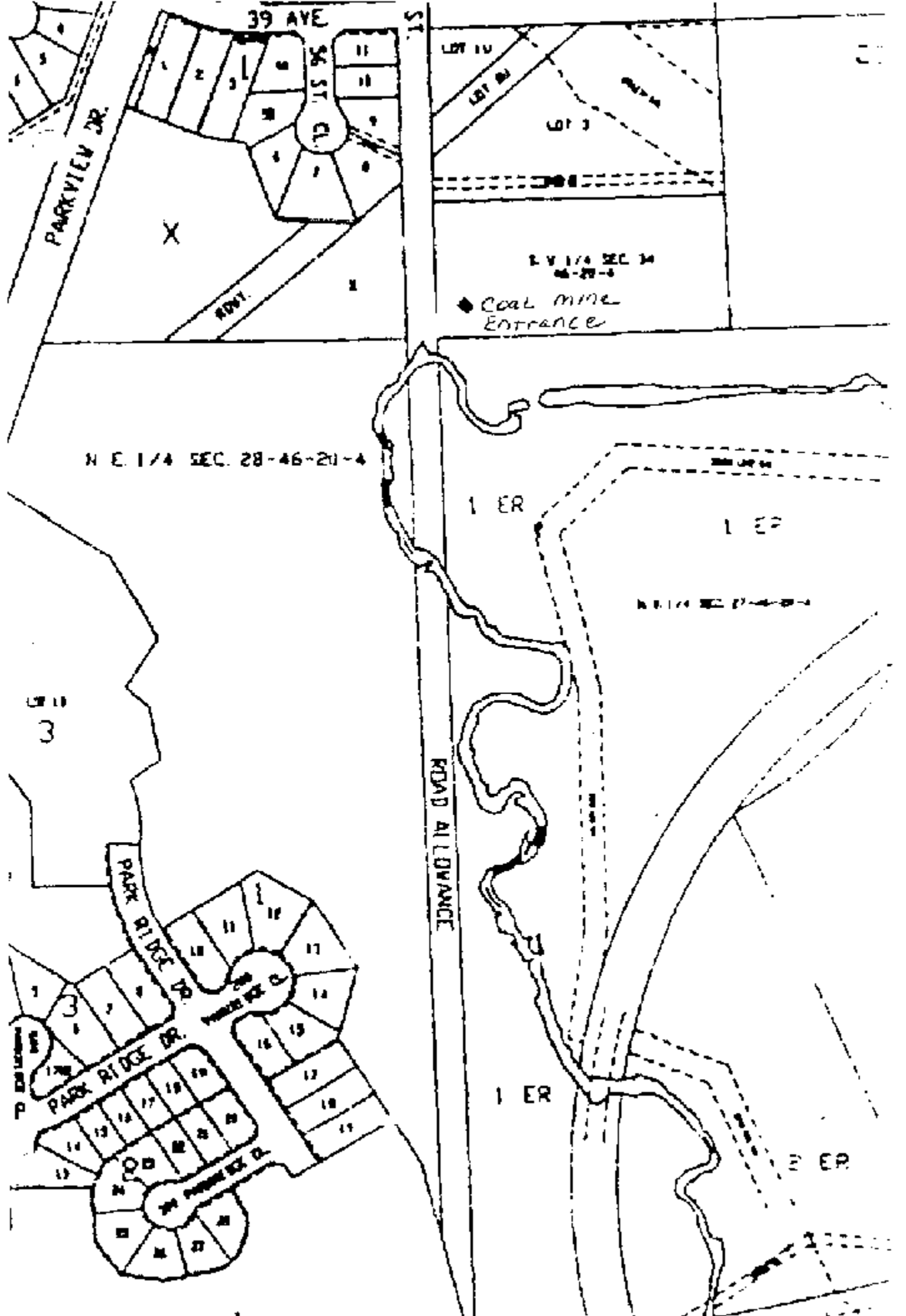
Discount $ Nil

Total amount (if any) paid on Shares forfeited $ Nil

The aggregate amount of sums due from the Company in respect of all mortgages registered or required to be registered with the Registrar 11

* Authorized Capital refers to Shares with nominal or par value, and total number of Shares authorized where no Shares without nominal or par value.
1. Where there are Shares of different classes or amounts (e.g., Preference and Ordinary, or $10 and $5), state the number and amount of each separately.
2. Where certain amounts have been called, or other than cash Shares or Debentures issued, state these separately.
3. Include what has been received on forfeited, or will be on Treasury Shares.
4. State the aggregate number of Shares forfeited.

C.3—500 11 39.


39 AVE
PARKVIEW DR.
56 ST. CL.
56 ST.
X
Coal mine Entrance
N E 1/4 SEC. 28-46-20-4
1 ER
1 ER
1 ER
2 ER
ROAD ALLOWANCE
PARK RIDGE DR.
PARK RIDGE DR.

MINE ENTRANCE

COORDINATES
N.5000·00
E.3000·00

N.E. CORNER
SEC. 28-46-20-4

STONEY CREEK

ROAD PLAN 23782

Certificate of Title.

North Alberta Land Registration District

Ref. Cert. C.T. 154

CANCELLED.

This is to Certify that Wood H Quail, of Mukamet, in the District of Alberta, in the North West Territories of Canada, Farmer

is now the owner in fee Simple

of and in the North West quarter of Section Twenty seven (27), in Township Forty Six (46) in Range Twenty (20) West of the Fourth Meridian, in the said District and Territories, containing by admeasurement One hundred and Sixty (160) Acres, more or less;

This Certificate of Title is entitled to grant [illegible]

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the same.

In Witness Whereof I have hereunto subscribed my name and affixed my Official Seal this twenty third day of January A.D. 1914

[illegible] Registrar.

P.O. address Mukamet, Alta. North Alberta Land Registration District

The Title of H. H. Quail is subject to a mortgage made by him to the National Trust Co. Ltd. to secure the repayment of $650.00 with interest thereon at 7% per annum, as therein mentioned. Dated 20th Feb. 1913. Regd. at 11.45 a.m. on 23rd Jany. 1914 as No. 8926 I.

[illegible] Registrar.

CANCELLED

178 E 4/2

CANADA

Duplicate Certificate of Title

Register Number 178 E 4/6

LAND TITLES OFFICE Land Registration District

CANCELLED

This is to Certify that William Taylor of the Town of Fort Saskatchewan in the Province of Alberta in the Dominion of Canada Settler

is now the owner of an undivided Moiety

of and in the South west quarter of Section Twenty four (24) in Township Fifty one (51) Range Twenty two (22) west of the Fourth Meridian in the Province of Alberta in the Dominion of Canada Containing One hundred and Sixty (160) acres more or less reserving unto the Canadian Pacific Railway Company all coal on or under the said Land.

CANCELLED

This Certificate of title is cancelled
as to the undivided moiety
hereof by Transfer No. 1917
dated the 1st day of June A.D. 1917
at 11 o'clock in the forenoon

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this 12th day of January A.D. 1916

Registrar

LAND TITLES OFFICE

for the Land Registration District

A.D. 1916 at 9 o'clock in the forenoon

This Certificate of Title is issued in exchange for Certificate of Title No. 178 E 4

Dated at Edmonton this 6th day of Jan. A.D. 1916

for the Canadian Northern Ry Co

Solicitor for Applicant

This Title to the undivided moiety hereof is subject to a Lease dated 1st day of January A.D. 1917 for the term of 21 years from the 1st day of January A.D. 1917 at the yearly rental of $79.00 payable half yearly on the 1st day of January and the 1st day of July in each year.

Assistant Registrar

84 A

Certificate of Title.

North Alberta Land Registration District

This is to Certify that University Federowicz, of Redwater, in the District of Alberta, in the North West Territories of Canada, farmer

is now the owner in fee simple of and in the North East quarter of Section Twenty eight (28) of Township Forty Six (46) Range Twenty (20) West of the Fourth Meridian, in the said District and Territories, containing by Admeasurement One hundred and Sixty (160) Acres More or less: reserving unto His Majesty His Successors and Assigns all Mines and Minerals

CANCELLED

This Certificate of Title is cancelled
by [illegible] 1907
and a new Certificate [illegible]
issued this 31st day of [illegible]
A. D. 1910 in lieu thereof
D. L. No. 7545 CR

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may be made in the future.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this Eighteenth day of August A.D. 1904

[illegible] Registrar,
North Alberta. Land Registration District.

P. O. address Redwater, Alta.

The title of the Mortgagee is subject to the mortgage made by Thos. A. Thompson to Thos. A. Thompson to secure the repayment of $ [illegible] with interest thereon at 10% per annum and dated the 15th day of November 1909 registered on the 17th day of November 1909 as No. [illegible]

[illegible]
Registrar

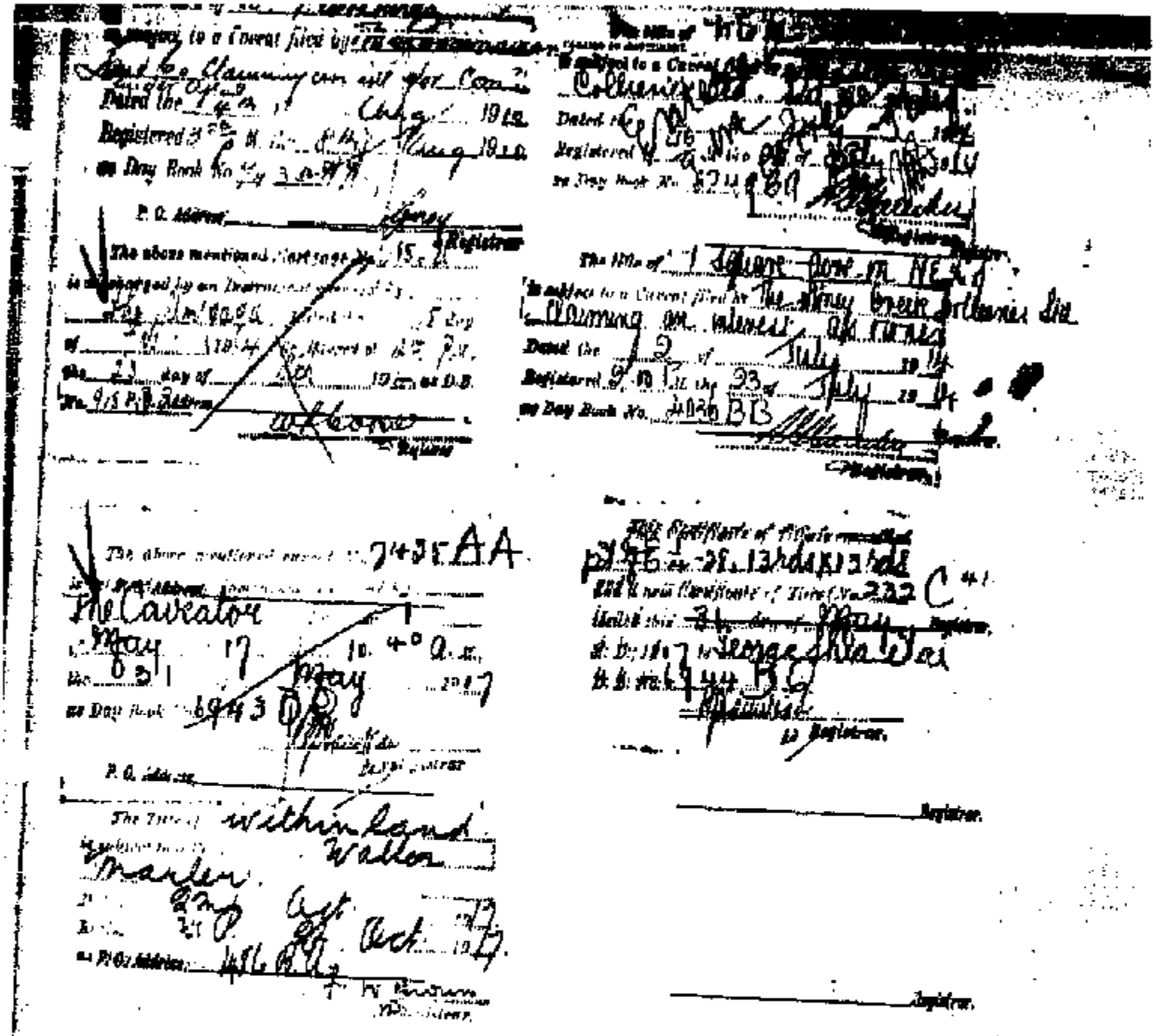
The above mentioned Mortgage No. 14[illegible] is discharged by the Mortgagee this 25th day of March A.D. 1910 at [illegible] o'clock P.M.

[illegible]
Registrar

The Title of [illegible] is subject to a Mortgage made by [illegible] to secure the repayment of $ [illegible] and interest thereon at [illegible] per annum as [illegible]

Dated [illegible]

[illegible]



Certificate of Title.

North Alberta. Land Registration District

This is to Certify that Thorand Emerson Myhre of Okotoks in the District of Alberta, in the North West Territories of Canada, farmer

is now the owner of an absolute fee Simple

of and in the South West quarter of Section Thirty four (34) of Township Forty Six (46) Range Twenty (20) West of the Fourth Meridian in the said District and Territories, containing by Admeasurement One hundred and Sixty (160) Acres more or less: Reserving unto His Majesty His Successors and Assigns All mines and minerals

This Certificate of Title is cancelled and a new Certificate of Title No. [illegible] issued to [illegible] day of [illegible] A.D. 19[illegible] at [illegible] o'clock [illegible] noon.

[illegible]
Deputy Registrar

CANCELLED.

CANCELLED.

Mtge No 76 July 1904 Mtg.

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may be made in the rights.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this Third day of September A.D. 1904

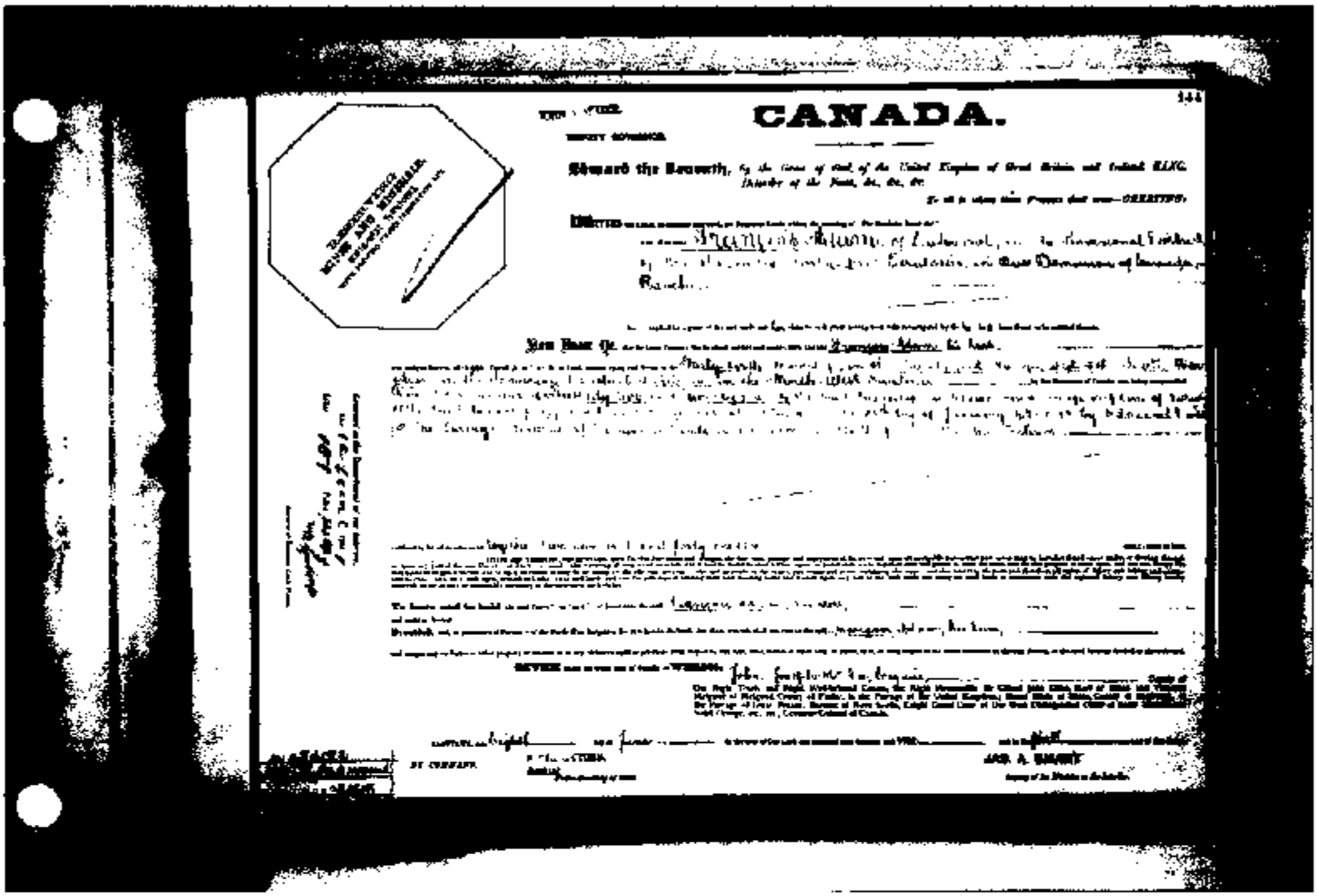
Registrar.

at the Okotoks Alta. North Alberta Land Registration District

The Title of T. E. Myhre is subject to a mortgage made by him to Theodore P. D'Ormeville of Okotoks to secure the payment of $ 425.00 with interest thereon at 10% per annum as therein mentioned dated 2nd August 1904 Registered at 11:40 a.m. 4th Aug. 1904 as No. 7162 J.

Registrar.

The above mentioned mortgage No. 7162 J is discharged by an instrument dated the 1st day of August 1911. Registered at 9:21 A.M. the 19th day of May 1911 as No. [illegible]



CANADA.

Edward the Seventh,

CANCELLED

Certificate of Title

ELEMENT

[illegible]

GOVERNMENT OF THE PROVINCE OF ALBERTA

North Alberta Land Registration District

THIS IS TO CERTIFY that ADOLPH W. NORDAHL AND JENNIE L. NORDAHL, BOTH OF CAMROSE, IN THE PROVINCE OF ALBERTA

ARE the owners of an estate in fee simple AS JOINT TENANTS

of and in

ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION TWENTY SEVEN (27) TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) West of Fourth (4th) meridian

CANCEL 6/11/91 L.C.

COMMENCING AT A POINT ON THE NORTH BOUNDARY OF THE SAID QUARTER SECTION WHERE IT IS INTERSECTED BY THE SOUTH EAST LIMIT OF THE SAID RAILWAY RIGHT OF WAY, THENCE EASTERLY ALONG THE NORTH BOUNDARY OF SAID QUARTER SECTION TO THE WEST LIMIT OF THE ROAD, AS SHOWN ON ROAD PLAN 3022 T. EIGHT HUNDRED AND FORTY SEVEN (847) FEET MORE OR LESS, THENCE SOUTHERLY ALONG THE SAID WEST LIMIT THREE HUNDRED AND TEN AND SIX TENTHS (310.6) FEET, THENCE WESTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY TO THE SOUTH EASTERLY LIMIT OF THE SAID RIGHT OF WAY THENCE NORTH EASTERLY ALONG THE SAID LIMIT TO THE POINT OF COMMENCEMENT. CONTAINING 2.911 HECTARES MORE OR LESS.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

TITLE CANCELLED AS 6122KC072
Lawfield
on the 7 day of October A.D. 19 91
B. Priestley

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE PREMISES.

IN WITNESS WHEREOF I have hereunto subscribed my name and caused my official seal to be affixed this 28TH day of SEPTEMBER, A.D. 1950

at the Office of the Registrar at CAMROSE, ALBERTA.

NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

Certificate of Title CANCELLED

Other Abstract Book Title

ABBREVIATIONS

E - Easement
Caveat
Lease
Tr - Transfer
Mtge - Mortgage

URW - Utility Right of Way
BL - Builders Lien
LN - Lis Pendens
WE - Writ of Execution
C.C. - Covenants and Conditions
POSTPONEMENT

NAME ADOLPH W. NORDWELL ET AL

LAND ... 28 ... 27 ... W.M.

TITLE NO. 1 2 - P - 1 3 5

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY MO YR	Amount $	PARTICULARS	Registration Number	Discharges and Withdrawals Registration Number	Date of Registration DY MO YR	Signature of Registrar
C.	7821b/809	27 07 78		BY NORWEST LAND MANAGEMENT LTD				
C.	7821678 18	27 07 78		BY NORTH WEST TRUST COMPANY.				
C.	792100573	10 7 79		BY NORTH WEST TRUST COMPANY				
C.	792100574	10 7 79		BY N.A. PROPERTIES LTD.				
C.	802133265	15 6 80		BY MARTSPROS SERVICES LTD				
C.	812167948	23 6 81		BY 268511 ALBERTA LTD.				

CANCELLED

LAND TITLES ACT, Sec. 66 — The land mentioned in any certificate of title granted under this Act shall be subject to such of the following exceptions and reservations as are applicable thereto, but to no others, viz.:

(a) Any subsisting reservation, exception or limitation including rights to minerals contained in the original grant of the land from the Crown;

(b) All unpaid taxes (including municipal taxes and local improvement rates);

(c) Any public highway or right of way or other public easement howsoever created, upon, over or in respect of the land;

(d) Any subsisting lease or agreement for a term not to exceed three years where there is actual occupation of the land under the same;

(e) Any caveats, orders or appointments affecting the estate or interest of the owner of the land which have been registered and maintained in force against the owner;

(f) Any right of expropriation which may be vested in any person, body or municipality or The Crown;

(g) Any railway reserve or other easement granted or acquired under the provisions of any Act or law in force in the Province.

91-E-198 2/ March /79

GOVERNMENT OF THE PROVINCE OF ALBERTA

Transfer No. of Lease No. 2453

Page No. 6 dated 2nd

Book 63

Number 3573 Book No. 136

Land Titles Registrar

Certificate of Title

Assess. Fund Value _____

Refer Cert. No. 241-[illegible]

North Alberta Land Registration District

This is to Certify that ROYCE PHILLIPS

OF CANROSE IN THE PROVINCE OF ALBERTA, CANADA, (FARMER).

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION [illegible] (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN [illegible] DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE [illegible] ROAD PLAN 6228 L, [illegible] AND THE WEST BOUNDARY OF THE SAID QUARTER SECTION; THENCE [illegible] THE SAID WEST BOUNDARY SEVEN HUNDRED (700) FEET; THENCE EAST AND PARALLEL TO THE SAID [illegible] BOUNDARY TO A POINT [illegible] SAID ROAD PLAN; THENCE [illegible] THE SAID ROAD PLAN TO THE POINT OF [illegible]

LAND TITLES ACT, Sec. 68 — The land mentioned in the certificate of title is subject to such exceptions, reservations, limitations, interests, rights of way, and conditions as are indicated under the heading "Encumbrances, Liens and Interests" and to such as are mentioned in section 68 of the Land Titles Act, viz.:

(a) Any subsisting reservations or exceptions contained in the original grant of the land from the Crown;
(b) All rights of way, including rights of entry and drainage districts;
(c) Any public highway or right of way or other public easement, however created, over or in respect of the land;
(d) Any unpaid taxes or special taxes or local improvement rates or charges which have become a charge upon the land;
(e) Any charge, lien or encumbrance created, or arising, in favour of the Crown or any person of the land which have been registered and withdrawn in favour against the owner;
(f) Any right of expropriation or of entry for mines or minerals;
(g) Any caveats, orders or other instruments affecting the land.

03-3-198 2/ March /79

GOVERNMENT OF THE PROVINCE OF ALBERTA

2223

A.D. 19 63

1373 N.E. 33

L.A. DAVIES

Certificate of Title

Assce Fund Value _____ Refer Cert. No. [illegible]

North Alberta Land Registration District

This is to Certify that [illegible]

OF CAMROSE IN THE PROVINCE OF ALBERTA, CANADA, (FARMER).

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION [illegible] TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH [illegible] MERIDIAN DESCRIBED AS FOLLOWS;

COMMENCING AT A POINT ON THE WESTERLY LIMIT OF [illegible] ROAD PLAN 9022 T. WHERE IT INTERSECTED THE NORTH BOUNDARY OF THE SAID QUARTER SECTION; THENCE [illegible] FOR A DISTANCE OF TWENTY SEVEN HUNDRED (2700) FEET; THENCE [illegible] ON THE SAID ROAD LIMIT SO LAID OFF AND THE SAID WESTERLY LIMIT OF ROAD PLAN 9022 T. AND PARALLEL TO THE SAID NORTH BOUNDARY OF THE SAID QUARTER SECTION; THENCE [illegible] ALONG THE SAID WESTERLY LIMIT OF ROAD PLAN 9022 T. A DISTANCE OF TWO HUNDRED (200) FEET; [illegible]

of and in ALL THAT PORTION OF THE NORTH EAST QUARTER OF SECTION [illegible] (24)

FORTY SIX (46) RANGE [illegible] TY (20) WEST OF THE FOURTH MERIDIAN, IN THE SAID PROVI

DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT OF [illegible] OF LOT [illegible] BLOCK [illegible] PLAN 3022 T, THENCE NORTHERLY AND [illegible] AND CITY LIMITS (RD.) [illegible] THE NORTH BOUNDARY OF THE SAID QUARTER SECTION; [illegible] THE SAID NORTH BOUNDARY SEVEN HUNDRED AND THIRTY (730) FEET; [illegible] TO THE SAID ROAD LIMITS SO SURVEYED AND THENCE SOUTHERLY [illegible] AND PARALLEL TO THE SAID NORTH BOUNDARY TO A POINT IN THE [illegible] ROAD; THENCE NORTHERLY ALONG THE SAID LIMITS TO THE POINT OF [illegible] CONTAINING TWO AND [illegible] (2.2) ACRES MORE OR LESS.

[illegible]

DUP CANCELLED No. [illegible]
IN FULL UNDER RENEWAL
Dated this 2 day of MARCH 19 78
Alberta [illegible]

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* SIXTH *day of* MARCH *A.D. 19* 62

[illegible] *Registrar*

North Alberta Land Registration District

P.O. Address CANMORE, ALTA.

7016 J.A. CAVEAT DATED 28-MAY-52 REG. 11.12 AM 22-MAY-52 ABOVE LAND AS TO [illegible] GAS & R.M.C. EX. COML & V.S. BY STURGEON [illegible] CO. CAN. PERM. JUDG. EDM., ALTA. (A. FRASER [illegible])

9722 K.F. CAVEAT DATED 13-APR-56 REG. 10.48 AM 17-APR-56 ABOVE LAND BY [illegible] PIPE LINE CO. C/O KANE & FOURNET, 906 MG LEGG [illegible] CALG., ALTA. (L. COOK) A.D. REG.

1727 K.P. CAVEAT DATED 2-NOV-56 REG. 10.57 AM 21-DEC-56 ABOVE [illegible] BY BRITAMOIL PIPE LINE CO. LTD. LAW DEPT. [illegible] DAY BLDG. CALGARY, ALTA. (H. [illegible])

OVER

5562 N.P. [illegible], DATED 03-NOV-62 REC. 9:37 PM 23-NOV-62 ABOVE AND OTHERS LAND BY BOY E. [illegible] ET AL TO SIDNEY EUGENE PHILLIPS, CAMBRIDGE, ALTA., FOR $[illegible].00 AT [illegible]. (G.M. DUNN) L.T.O. REG.

This claim mentioned in Certificate No. 522246 is discharged by instrument dated the 22 day of May 1963 Registered at [illegible] M. the 22 day of May 1963 as D.R. No. [illegible]

[illegible] Registrar

The claim mentioned in Certificate No. 246 S.H. is discharged by instrument dated the [illegible] day of [illegible] 1963 Registered at [illegible] M. the [illegible] day of [illegible] 1963 as D. R. No. [illegible]

[illegible] Registrar

The claim mentioned in Certificate No. [illegible] is discharged by instrument dated the [illegible] day of [illegible] 1963 Registered at [illegible] M. the [illegible] day of [illegible] 1963 as D.R. No. [illegible]

[illegible]

DISCHARG REG.NO. 7820+3595
OIL AND MINERAL 78
OIL CAVEAT NO. 1727 S.P

[illegible]
SURETY

Certificate of Title

NO. [illegible]

REF. [illegible]

VOL. [illegible] FOL. [illegible] LOT [illegible]

Canad.

RENEWAL
(2-MARC 1-70)

3573 N...
2820117365

North Alberta Land Registration District

THIS IS TO CERTIFY THAT ROY E. PHILLIPS (FARMER)
OF CAMROSE, IN THE PROVINCE OF ALBERTA.

IS the registered owner of an estate in fee simple

of and in ALL THAT PORTION OF THE NORTH WEST QUARTER OF

SECTION TWENTY SEVEN (27), TOWNSHIP FORTY SIX (46)

RANGE TWENTY (20)

WEST OF THE FOURTH MERIDIAN

DESCRIBED AS FOLLOWS

COMMENCING AT A POINT ON THE WESTERLY LIMIT OF THE ROADWAY AS SHOWN ON ROAD PLAN 3022 C.L. THREE HUNDRED AND TEN AND SIX TENTHS (310.6) FEET SOUTHERLY FROM THE NORTH BOUNDARY OF THE SAID QUARTER SECTION; THENCE WESTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY SEVEN HUNDRED (700) FEET; THENCE SOUTHERLY AND PARALLEL TO THE SAID ROAD LIMIT ONE HUNDRED AND THIRTY SEVEN (137) FEET; THENCE EASTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY TO A POINT IN THE WESTERLY LIMIT OF THE SAID ROAD; THENCE NORTHERLY ALONG THE SAID LIMIT TO THE POINT OF COMMENCEMENT, CONTAINING TWO AND TWO TENTHS (2.2) ACRES, MORE OR LESS.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

CANCELLED AND CLOSED
AUG 24 1982 AUG 31 1982
By...

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 9TH day of MARCH A.D. 19 52

Post Office Address CAMROSE, ALBERTA

A.D. Registrar

North Alberta Land Registration District

A.G. (REV. 1970)
REV. 7-75

Certificate of Title

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transmission
Discl – Discharge
Mtge – Mortgage
URW – Urban Road Widening
Ext – Extinguishment
WE – Writ of Execution
C.C. – Covenants and Conditions
ENCUM – Encumbrance

NAME ROY E. PHILLIPS

LAND 4 20 DP 27 [illegible]

Show Other Abbreviations Here

CANCELLED AND CO[illegible]

AUG 1[illegible]

TITLE NO. 9 3 8

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration Day / Mo. / Yr.	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration Day / Mo. / Yr.	Signature of Registrar

CANCELLED Certificate of Title

North Alberta Land Registration District

THIS IS TO CERTIFY that 291613 ALBERTA LTD.

TITLE CANCELLED No. 842097502

IN FULL

on this 2 day of MARCH 19 84

A.D. Registrar KM

of [illegible]

IS [illegible]

THE NORTH WEST QUARTER OF SECTION TWENTY SEVEN (27)
TOWNSHIP FORTY SIX (46)
RANGE TWENTY (20)
W.5 OF THE FOURTH MERIDIAN
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT: (A) 0.809 HECTARES (2.00 ACRES) MORE OR LESS AS SHOWN ON ROAD PLAN 3022 T.
(B) 3.00 HECTARES (7.39 ACRES) MORE OR LESS TAKEN FOR RIGHT OF WAY OF THE CANADIAN NORTHERN RAILWAY COMPANY AS SHOWN ON RAILWAY PLAN 7464 A.E.
(C) 2.91 HECTARES (7.20 ACRES) MORE OR LESS SHOWN ON PLAN A ATTACHED TO INSTRUMENT NO. 4280 C.L. AND DESCRIBED IN CERTIFICATE OF TITLE 82-C-17
(D) ALL THAT PORTION OF THE NORTH WEST QUARTER AND THE SAID QUARTER SECTION DESCRIBED AS FOLLOWS:- COMMENCING AT A POINT ON THE WESTERLY LIMIT OF THE ROADWAY AS SHOWN ON ROAD PLAN 3022 T. THREE HUNDRED AND TEN AND SIX TENTHS (310.6) FEET SOUTHERLY FROM THE NORTH BOUNDARY OF THE SAID QUARTER SECTION THENCE WESTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY SEVEN HUNDRED (700) FEET THENCE SOUTHERLY AND PARALLEL TO THE SAID ROAD LIMIT ONE HUNDRED AND THIRTY SEVEN (137) FEET THENCE EASTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY TO A POINT IN THE WESTERLY LIMIT OF THE SAID ROAD THENCE NORTHERLY ALONG THE SAID LIMIT TO THE POINT OF COMMENCEMENT CONTAINING 0.898 HECTARES (2.20 ACRES) MORE OR LESS
E. 0.36 HECTARES (0.90 ACRES) MORE OR LESS FOR ROAD PLAN [illegible]
REG. 8422078[illegible] 2/3/84 A.D.R.
EXCEPTING THEREOUT ALL MINES AND MINERALS

SUBJECT TO THE ENCUMBRANCES, LIENS ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN HEREON OR ENDORSED HEREON OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 23RD day of DECEMBER A.D. 19[illegible]

NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

Duplicate Issued C/O 290-10150-112TH ST.
EDMONTON, ALBERTA

North Alberta Land Registration District

ABBREVIATIONS

E Easement
C Caveat
R Right of Way
Cby Caution by
U/L Utility Right of Way
BL Building Lease
TI Tax Notification
OE Writ of Execution
CC Certificate of Lis Pendens

Certificate of Title CANCELLED

Show Other Abbreviations Here

NAME 291615 ALBERTA LTD.

LAND 1-21-16-27 NW 4

TITLE NO. 8 2 2 2 5 5 5 7 7

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date (Day / Month / Year)	Amount	Particulars	Signature of Registrar	Remarks
C	3016 G.O.	6 11 07		BY CALGARY POWER CO. LTD. (PT.)		
C	8058 K.P.	17 4 56		BY CALGARY POWER LTD. (PT.)		
C	5722 K.P.	17 4 56		(PT. CONTG. 2.2 ACRES) BY CANADIAN GULF PIPE LINE CO.		SE/10: 27/8/1 4927 N.E. 27 5
C	1727 K.P.	21 12 56		(PT. CONTG. 2.2 ACRES) BY BRITAMOIL PIPE LINE CO. LTD.		NE/9: 27/29/1 7801355 1 2 3 4 5
C	7705660	27 6 77		BY ROY E. PHILLIPS		
MTGE	822285378	25 12 89	1,250,000.00	TO NORTH WEST TRUST COMPANY (10020 JASPER AVE. EDM. ALTA)		
C	822285379	25 12 89		BY NORTH WEST TRUST COMPANY (RE: ASSIGN. OF RENTS) (10310-10020 JASPER AVE. EDM. ALTA)		
LRX	3332121	20 3 52		(PLAN 2193 M.C.) IN FAVOR OF THE CITY OF CANDOSE		

SUBSTITUTE

Certificate of Title

1804-170

THIS SUBSTITUTE CERTIFICATE OF TITLE IS ISSUED PURSUANT TO SECTION 22.2 OF THE LAND TITLES ACT BASED ON INFORMATION AVAILABLE AT THE TIME OF ISSUANCE.
REC. NO. 7920[illegible] 25-FEB-79

A.D. REC.

North Alberta Land Registration District

THIS IS TO CERTIFY THAT JAMES C. MC HUGH AND JANET C. MC HUGH

BOTH OF TOFIELD, IN THE PROVINCE OF ALBERTA

ARE now the owners of the estate AS JOINT TENANTS

of and in

ALL THAT PORTION OF THE SOUTH WEST QUARTER OF

SECTION ONE (1)

TOWNSHIP FIFTY ONE (51)

RANGE NINETEEN (19)

WEST OF THE FOURTH MERIDIAN

TITLE CANCELLED No [illegible]
on the 22nd day of [illegible]
A.D. [illegible]

BEING ALL THAT PORTION OF THE STATION GROUNDS OF THE GRAND TRUNK PACIFIC RAILWAY AS SHOWN ON RAILWAY PLAN 3607 P. DESCRIBED AS FOLLOWS:--
COMMENCING AT A POINT IN THE SOUTH WESTERLY LIMIT OF THE SAID STATION GROUNDS DISTANT SOUTH EASTERLY THEREON ONE THOUSAND AND FIFTY (1050) FEET FROM THE WESTERN BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTH WESTERLY ALONG THE SAID SOUTH WESTERLY LIMIT OF STATION GROUNDS TO THE SAID WESTERN BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTHERLY ALONG THE SAID WESTERN BOUNDARY TO A POINT THEREIN PERPENDICULARLY DISTANT ONE HUNDRED (100) FEET SOUTH WESTERLY FROM THE CENTRE LINE OF RAILWAY AS SHOWN ON SAID PLAN, THENCE SOUTH EASTERLY AND PARALLEL WITH THE SAID SOUTH WESTERLY LIMIT OF THE STATION GROUNDS EIGHT HUNDRED AND NINETY (890) FEET, THENCE SOUTH EASTERLY IN A STRAIGHT LINE TO THE POINT OF COMMENCEMENT, CONTAINING 1.90 HECTARES, MORE OR LESS.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 9 day of JANUARY A.D. 19 76

NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

Post Office Address R.R. #4
TOFIELD, ALTA.

[illegible] AD Registrar

North Alberta Land Registration District

AT 969
Rev 7/77

BY

ABBREVIATIONS

E - Easement
O - Caveat
Tr - Transmission
Dx - Transfer
Mtge - Mortgage
UPW - Utility Right of Way
SL - Survey Lien
TN - Tax Notification
WE - Writ of Execution
C.C - Covenants and Conditions
ENCM - Encumbrance

Certificate of Title

Show Other Addresses Here

NAME JAMES L. MC HUGH ET AL

LAND 4 19 61 1 S.W. -

TITLE NO. 762C047/32

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration Day / Mo. / Yr.	Amount $	PARTICULARS	Signature of Registrar	Registration Number	Day	Mo.	Yr.
MTGE.	762004733	9	1	76	19,190.00	TO FARMERS & MERCHANTS TRUST COMPANY		792049266	6	5	79

LAND TITLES ACT Sec. 88 ... land mentioned in any ... of title ... under the Act by implication and without any special ... but ... subject to—

(a) Any subsisting reservations or exceptions including royalties contained in the original ... of the land from the Crown

(b) All ... leases, mining agreements and ... affecting ...

(c) Any public highway or right of way or other public ... shown on a plan ... in respect of the land.

(d) Any ... lease or agreement for a ... not exceeding ... years where there is actual occupation of the land under the same.

(e) Any ... rights ... acquired or arising ... the interest of the owner of the land which have not been registered and which are not known to ... upon due ...

(f) Any right of expropriation which may be ... by or ... under the statutes of Canada.

(g) Any right of way or ... granted or reserved under the provisions of any Act ... in force in the Province.

(M-2)

10-R-137 2/3/78

10

Issue or enforcement registered at 10.05 o'clock
A.M. on the 28 day of SEPT
A.D. 50
2158 Wind H.W. 84
J.M. THOM
Registrar of Land Titles

Certificate of Title

Assessed Land Value $6000.00 Unearned Inc. Value $600.00 Refer Card No. 204-K-132 203-K-132

North Alberta Land Registration District

This is to Certify that ADOLPH W. NUNDAHL AND JENNIE L. NUNDAHL

BOTH OF CAMROSE, IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA

is now the owner of an estate in fee simple AS JOINT TENANTS AND NOT AS TENANTS IN COMMON

of and in FIRSTLY,-- ALL THAT PORTION OF THE SOUTH WEST QUARTER OF SECTION THIRTY-FOUR (34) TOWNSHIP FORTY-SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN IN THE SAID PROVINCE, WHICH LIES SOUTH EAST OF THE SOUTH WESTERLY LIMIT OF THE CANADIAN NATIONAL RAILWAY, AS SHOWN ON RAILWAY PLAN 3694 A.F. AND WHICH LIES WEST OF THE ROAD AS SHOWN ON ROAD PLAN 5074 T CONTAINING THIRTEEN AND TWO TENTHS (13.2) ACRES MORE OR LESS.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

SECONDLY,-- ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION TWENTY-SEVEN (27) SAID TOWNSHIP AND RANGE, DESCRIBED AS FOLLOWS,--

COMMENCING AT A POINT ON THE NORTH BOUNDARY OF THE SAID QUARTER SECTION WHERE IT IS INTERSECTED BY THE SOUTH EAST LIMIT OF THE

Vol. 1111 No.

TOWNSHIP FORTY-SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN IN THE SAID PROVINCE.

WHICH LIES SOUTH EAST OF THE SOUTH WESTERLY LIMIT OF THE CANADIAN NATIONAL RAILWAY, AS

SHOWN ON RAILWAY PLAN 3694 A.F. AND WHICH LIES WEST OF THE ROAD AS SHOWN ON ROAD PLAN 5074 T

CONTAINING THIRTEEN AND TWO TENTHS (13.2) ACRES MORE OR LESS.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

SECONDLY.-- ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION TWENTY-SEVEN (27) SAID

TOWNSHIP AND RANGE, DESCRIBED AS FOLLOWS,--

COMMENCING AT A POINT ON THE NORTH BOUNDARY OF THE SAID QUARTER SECTION WHERE IT IS INTERSECTED BY THE SOUTH EAST LIMIT OF THE SAID RAILWAY RIGHT OF WAY, THENCE EASTERLY ALONG THE NORTH BOUNDARY OF THE SAID QUARTER SECTION TO THE WEST LIMIT OF THE ROAD, AS SHOWN ON ROAD PLAN 3022 T. EIGHT HUNDRED AND FORTY SEVEN (847) FEET MORE OR LESS, THENCE SOUTHERLY ALONG THE SAID WEST LIMIT THREE HUNDRED AND TEN AND SIX TENTHS (310.6) FEET, THENCE WESTERLY AND PARALLEL TO THE SAIDNORTH BOUNDARY TO THE SOUTH EASTERLY LIMIT OF THE SAID RIGHT OF WAY, THENCE NORTH EASTERLY ALONG THE SAID LIMIT TO THE POINT OF COMMENCEMENT, CONTAINING SEVEN AND TWENTY HUNDREDTHS (7.20) ACRES MORE OR LESS.

ISSUED No. ... UNDER RENEWAL
... FULL UNDER RENEWAL
2ND day of MARCH 19 73
Wilbert Reg'r

Okr Mes M
3 Jany. 1952
subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this TWENTY-EIGHT day of SEPTEMBER A.D. 1950

Dep. Registrar

North Alberta Land Registration District

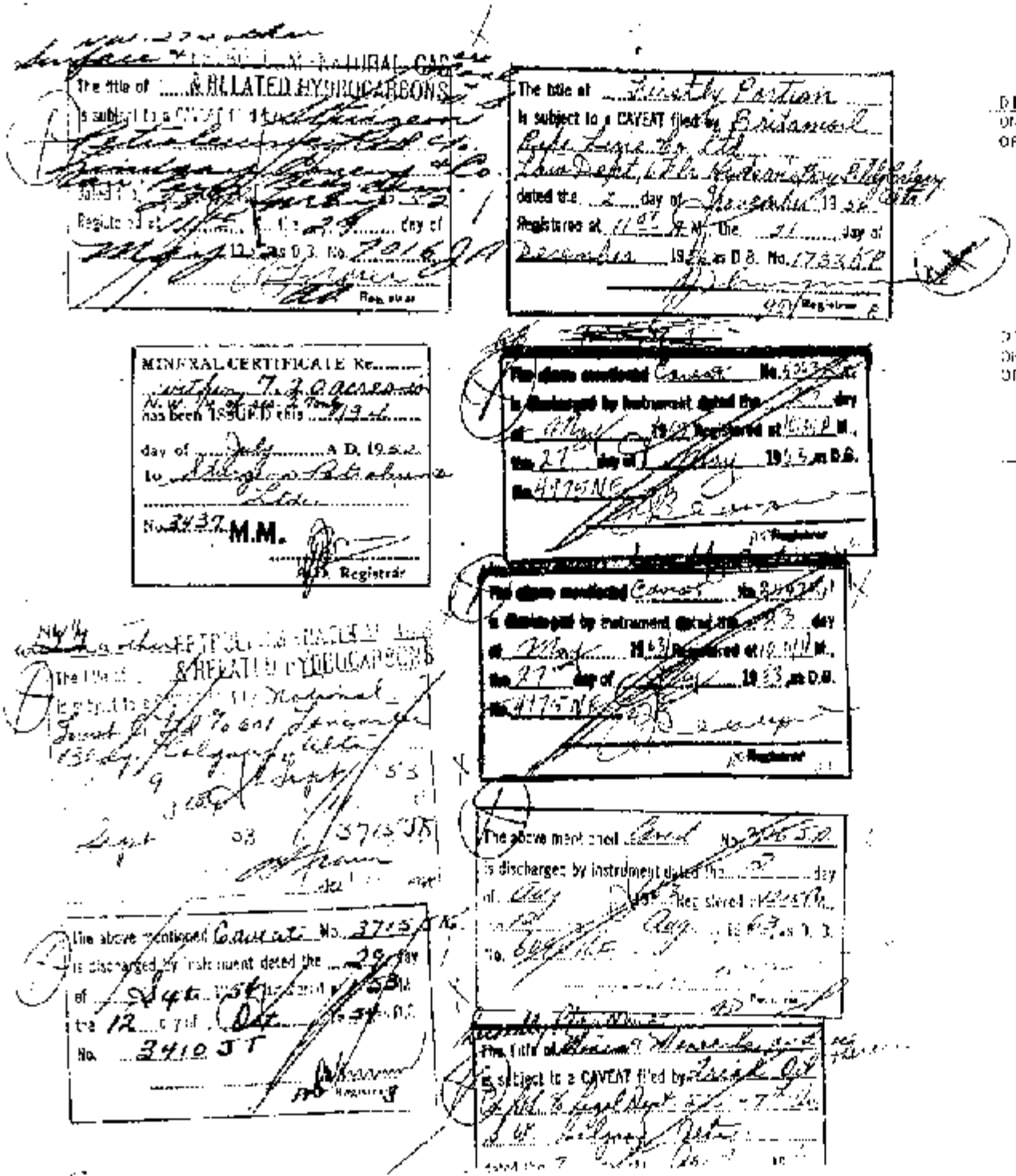
P.O. Address, CAMROSE, ALTA.

6262 E.J. EASEMENT DATED 2-MAY-32 REG. 1.52 PM 21-JULY-32 AS TO 0.31 OF AN ACRE IN THE S.W. 1/4 (PLAN 5072 E.O.) IS SUBJECT TO AN EASEMENT TO THE CALGARY POWER CO. — C.A.D.REG.

5888 G.H. TRANSFER OF EASEMENT DATED 31-MAY-47 REG. 1.50 PM 2-JUNE-47 ABOVE MENT. EASEMENT 6262 E.J. IS TRANSFERRED TO CALGARY POWER LTD. — C.A.D.REG.

4692 H.N. MTGE. DATED 1-JUNE-50 REG. 10.00 AM 27-MAY-50 ABOVE MENT. EASEMENT 6262 E.J. IS SUBJECT TO A MTGE. MADE BY CALGARY POWER LTD. TO MONTREAL TRUST CO. MONTREAL QUE. FOR $6,000,000.00 AT 3 1/2 — C.A.D.REG.

OVER

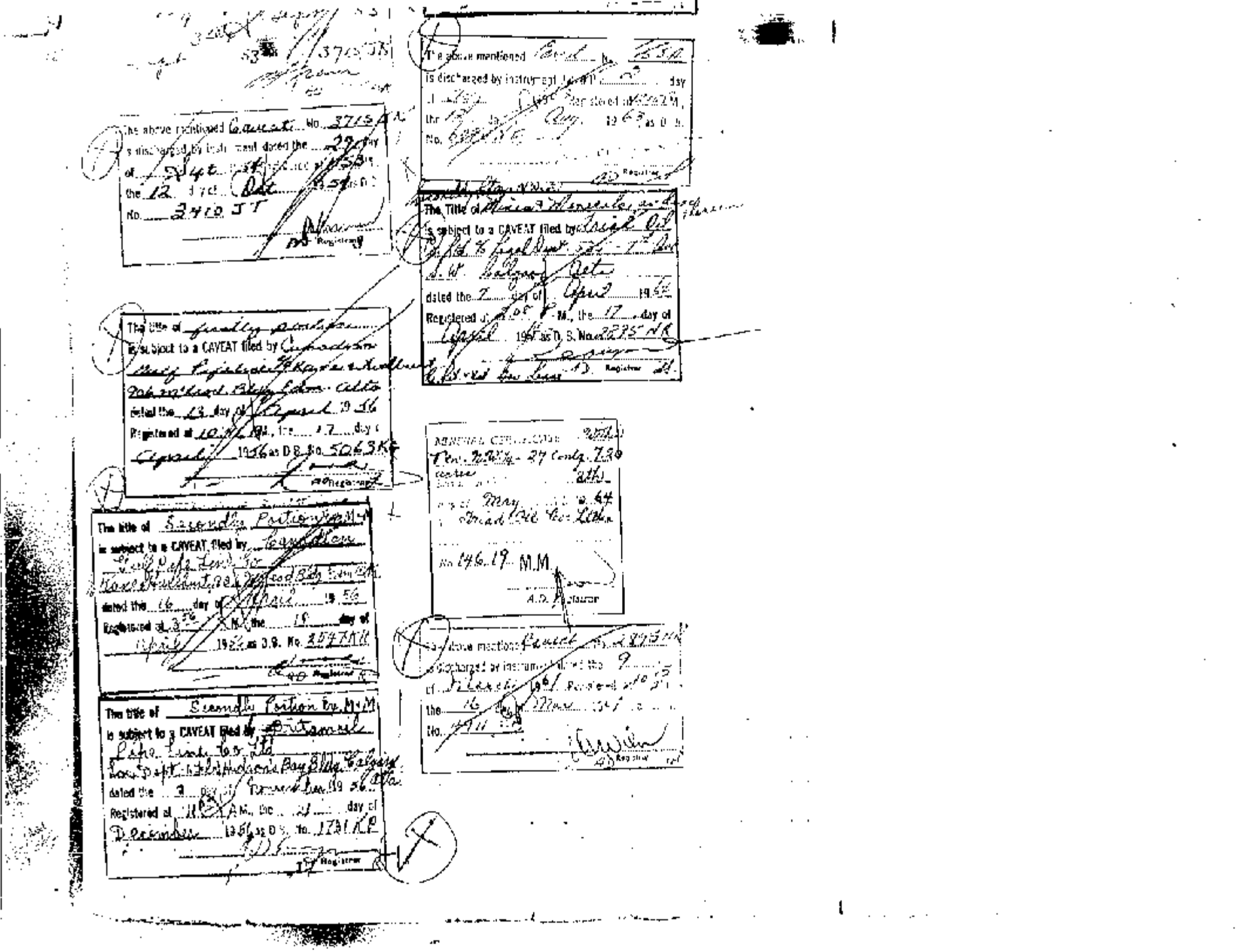


DISCHARGE REG.NO. 7820-5565
ON 2ND MARCH - 78
OF CAVEAT NO. 1751 K.P.

ADR/JY

DISCHARGE REG.NO. 7820-5567
ON 2ND MARCH - 78
OF CAVEAT NO. 1732 K.P.

ADR/JY



CANCELLED

Certificate of Title

...TION
TO BE REF...
5-3-4-...-82

(GENERAL
(SOLD MAP(...-78)
5188 H.W.
7620-9506
2020 5967

North Alberta Land Registration District

THIS IS TO CERTIFY THAT ADOLPH W. NUNDAHL

AND JENNIE L. NUNDAHL, BOTH OF CAMROSE, IN THE PROVINCE OF ALBERTA,

ARE ...TENANTS IN COMMON... AS JOINT TENANTS

of and in FIRSTLY

ALL THAT PORTION OF THE SOUTH WEST QUARTER OF

SECTION THIRTY FOUR (34)

TOWNSHIP FORTY SIX (46)

RANGE TWENTY (20)

WEST OF THE FOURTH MERIDIAN, WHICH LIES SOUTH EAST OF THE SOUTH WESTERLY LIMIT OF THE CANADIAN NATIONAL RAILWAY, AS SHOWN ON RAILWAY PLAN 3604 A.E. AND WHICH LIES WEST OF THE ROAD AS SHOWN ON ROAD PLAN 5074 T CONTAINING THIRTEEN AND TWO TENTHS (13.2) ACRES, MORE OR LESS.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

SECONDLY

ALL THAT PORTION OF THE NORTH WEST QUARTER OF SECTION TWENTY SEVEN (27) SAID TOWNSHIP AND RANGE, DESCRIBED AS FOLLOWS,--

COMMENCING AT A POINT ON THE NORTH BOUNDARY OF THE SAID QUARTER SECTION WHERE IT IS INTERSECTED BY THE SOUTH EAST LIMIT OF THE SAID RAILWAY RIGHT OF WAY, THENCE EASTERLY ALONG THE NORTH BOUNDARY OF THE SAID QUARTER SECTION TO THE WEST LIMIT OF THE ROAD, AS SHOWN ON ROAD PLAN 2022 T, EIGHT HUNDRED AND FORTY SEVEN (847) FEET MORE OR LESS, THENCE SOUTHERLY ALONG THE SAID WEST LIMIT THREE HUNDRED AND TEN AND SIX TENTHS (310.6) FEET, THENCE WESTERLY AND PARALLEL TO THE SAID NORTH BOUNDARY TO THE SOUTH EASTERLY LIMIT OF THE SAID RIGHT OF WAY, THENCE NORTH EASTERLY ALONG THE SAID LIMIT TO THE POINT OF COMMENCEMENT, CONTAINING SEVEN AND TWENTY HUNDREDTHS (7.20) ACRES MORE OR LESS.

TITLE CANCELLED No. [illegible]
on this 29 day of Sept 19[illegible]
A.D. Registrar

TITLE CANCELLED No. [illegible]
on this 29 day of Sept 19[illegible]
A.D. Registrar

SUBJECT TO THE ENCUMBRANCES, LIENS, CAVEATS OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 28TH day of SEPTEMBER A.D. 19[illegible]

Post Office Address CAMROSE, ALBERTA

A.D. Registrar

...

Certificate of Title CANCELLED

ABBREVIATIONS — Other Abbreviations Here

NAME ADD BY M. NUNDAHL ET AL

LAND 5 - 24 - 26 - 24 - SW

CHARGES, LIENS AND INTERESTS.

Instrument Number	Registration Number	Date of Registration Y M D	Amount $	PARTICULARS	Cancelled Register	Registration Number	Date of Registration Y M D
E	6262 EW	24 7 59		GAS TO(0.31)OF AN AGRE IN THE S.W.1/4(EXC 5272 E.O.) TO THE CALGARY POWER CO.			
TFR OF E.	5285 OH	2 5 47		OF EASE. 6262 E.O. TO CALGARY POWER LTD.			
MTGE OF E.	9567 KN	27 5 50	6,300,000.00	OF EASE. 6262 E.O. TO MONTREAL TRUST CO.			
C.	782167805	27 07 78		(AS TO 2NDLY PORTION ONLY) BY MORWEST LAND MANAGEMENT LTD.			
C.	782167812	27 07 78		(AS TO 2NDLY PORTION ONLY) BY NORTH WEST TRUST COMPANY			
C.	782167815	27 07 78		(AS TO 2NDLY PORTION ONLY) BY NORTH WEST TRUST COMPANY			
C.	782167818	27 07 78		(AS TO 2NDLY PORTION ONLY) BY NORTH WEST TRUST COMPANY			
C.	782191404	24 8 78		(AS TO 2NDLY PTN.) BY H. A. PROPERTIES LTD. (AS TO 1STLY PORTION ONLY) BY MORWEST LAND MANAGEMENT LTD.			
C.	782191407	24 8 78		BY NORTH WEST TRUST COMPANY (AS TO 2NDLY PT.)			
C.	782191410	24 8 78		BY H. A. PROPERTIES LTD. (AS TO 2NDLY PT.)			

CONTINUED ON PAGE 2

ABBREVIATIONS

[illegible]	JREV - Joint Revolver
[illegible]	SL - Surrender
[illegible]	TN - Tax Notification
[illegible]	AE - Writ of Execution
[illegible]	CC - Covenants and Conditions
[illegible]	ENCUM - Encumbrance

Certificate of Title

CANCELLED

NAME ADOLPH W. NUNDAHL ET AL

LAND 4 20 40 24 S.W. - -

TITLE NO. 12 - P - 1 5 3

CHARGES, LIENS AND INTERESTS.

Number of Instrument	Registration Number	Date of Instrument DY	MO	YR	Amount $	PARTICULARS	Signature of Registrar	Registration Cancelled	Date of Registration DY	MO	YR
1.	80213225 12	6		80		CHARGED BY REGD 8012232512 ON SEPT 29,80 AS TO PT. OF NW TO (ENTIRELY) BY MARTSELOS SERVICES LTD.					
2.	81081708 23	4		81		AS TO PT. OF NW BY 258611 ALBERTA LTD.					

Discharges and Withdrawals

Other Abbreviations Here

180-U-114

150

LAND TITLES ACT R.S.A. 1955 CHAPTER 168

Subject, however, to the exceptions, reservations, limitations, interests, estates, rights and equities mentioned in section 135 of the said Act, and to any subsisting reservations or exceptions contained in the original grant from the Crown.

(a) Any subsisting reservations or exceptions contained in the original grant from the Crown.
(b) All unpaid taxes, including taxes assessed or levied after the date of title.
(c) Any quality, liability or right arising out of or incidental to the existence of any mines or minerals under the land described herein in respect of the same.
(d) Any subsisting lease or agreement for a lease for a period not exceeding three years where there is no provision for the renewal of the lease or agreement.
(e) Any caveats, writs or executions at the date of title affecting the land which have been registered and maintained in force against the owner.
(f) Any right of expropriation which may be exercised by the Province of Alberta, or any person duly authorized by the Province, in respect of the land described herein.
(g) Any right-of-way or other easement granted or required under the provisions of any Act in force in the Province.

GOVERNMENT OF THE PROVINCE OF ALBERTA

		10.50	
A	30	CCT	
	46		
	981	C.R.	31
	A. T. KINNAIRD		

Certificate of Title

Assur. Insured Value $45.00 *Unearned Ins. Value* $45.00 *Refer. Cert. No.* 179-U-82

North Alberta Land Registration District

This is to Certify *that* STOREY E. PHILLIPS

OF CAMROSE IN THE PROVINCE OF ALBERTA DOMINION OF CANADA. (FARMER)

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH WEST QUARTER OF SECTION THIRTY FOUR (34) TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN IN THE SAID PROVINCE DESCRIBED AS FOLLOWS.--

COMMENCING AT THE SOUTH WEST CORNER OF SAID QUARTER SECTION THENCE NORTH ALONG THE WEST BOUNDARY TWO HUNDRED AND NINETY (290) FEET, THENCE EASTERLY ON A BEARING EIGHTY NINE (89) DEGREES THIRTY SEVEN (37) MINUTES, FIVE HUNDRED AND SEVENTY EIGHT (578) FEET, THENCE SOUTH TWO HUNDRED AND NINETY (290) FEET TO THE SOUTHERN BOUNDARY THEREOF, THENCE WESTERLY ON A BEARING TWO HUNDRED AND SIXTY NINE (269) DEGREES, THIRTY SEVEN (37) MINUTES ALONG THE SOUTH BOUNDARY OF SAID QUARTER SECTION, FIVE HUNDRED AND SEVENTY EIGHT (578) FEET MORE OR LESS TO THE POINT OF COMMENCEMENT

THE LAND HEREBY DESCRIBED CONTAINING THREE AND EIGHT HUNDRED AND FORTY EIGHT (3.848) THOUSANDTHS ACRES MORE OR LESS.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

This is to Certify that SIDNEY E. PHILLIPS

OF CAMROSE IN THE PROVINCE OF ALBERTA DOMINION OF CANADA. (FARMER)

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH WEST QUARTER OF SECTION THIRTY FOUR (34) TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN IN THE SAID PROVINCE DESCRIBED AS FOLLOWS,--

COMMENCING AT THE SOUTH WEST CORNER OF SAID QUARTER SECTION THENCE NORTH ALONG THE WEST BOUNDARY TWO HUNDRED AND NINETY (290) FEET, THENCE EASTERLY ON A BEARING EIGHTY NINE (89) DEGREES THIRTY SEVEN (37) MINUTES, FIVE HUNDRED AND SEVENTY EIGHT (578) FEET, THENCE SOUTH TWO HUNDRED AND NINETY (290) FEET TO THE SOUTHERN BOUNDARY THEREOF, THENCE WESTERLY ON A BEARING TWO HUNDRED AND SIXTY NINE (269) DEGREES, THIRTY SEVEN (37) MINUTES ALONG THE SOUTH BOUNDARY OF SAID QUARTER SECTION, FIVE HUNDRED AND SEVENTY EIGHT (578) FEET MORE OR LESS TO THE POINT OF COMMENCEMENT

THE LAND HEREBY DESCRIBED CONTAINING THREE AND EIGHT HUNDRED AND FORTY EIGHT (3.848) THOUSANDTHS ACRES MORE OR LESS.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

CANCELLED 752106380

IN FULL

19 AUGUST 75

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this THIRTIETH day of OCTOBER A.D. 19 46

BB

Registrar

P.O. Address CAMROSE ALTA.

North Alberta Land Registration District

CANCELLED

[illegible]-241

LAND TITLES ACT, Sec. 64. The land mentioned in any certificate of title granted under this Act shall, by implication and without any special mention therein, be subject to—
(a) any subsisting reservations or exceptions, including royalties, contained in the original grant of the land from the Crown;
(b) all unpaid taxes, including [illegible];
(c) any public highway or right of way or other public easement, howsoever created upon, over or in respect of the land;
(d) any subsisting lease or agreement for a lease for a period not exceeding three years, where there is actual occupation of the land under the same;
(e) any decrees, orders or executions against or affecting the interest of the owner of the land which have been registered and maintained in force against the owner;
(f) any right of expropriation which may by statute be vested in any person, body corporate, or Her Majesty;
(g) any right of way or other easement granted or acquired under the provisions of any Act or law in force in this Province.

GOVERNMENT OF THE PROVINCE OF ALBERTA

Issued on instrument registered at [illegible] o'clock
[illegible] the [illegible] day of [illegible]
A.D. 19 [illegible]
Number [illegible] Book [illegible] Folio 177
[illegible]
Registrar, N.A.L.R.D.

Certificate of Title

Assessed Land Value [illegible].00

Refer Cert. No. [illegible]

JAN 5 1970

North Alberta Land Registration District

IMPORTANT NOTICE
It should be to the interest of every Owner and Mortgagee to furnish the Land Titles Office, Edmonton with his full address (Post Office and Street number) or any change in address where Notices or dealings with this Title may be sent.

This is to Certify *that* CAMROSE LUTHERAN COLLEGE CORPORATION

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH WEST QUARTER OF SECTION THIRTY FOUR (34) TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN, IN THE PROVINCE OF ALBERTA, CANADA, DESCRIBED AS FOLLOWS:------

COMMENCING AT THE INTERSECTION OF THE SOUTH LIMIT OF BLOCK (A) [illegible] SUBDIVISION PLAN 3617 A.R., WITH THE EASTERLY BOUNDARY OF THE [illegible] ON A BEARING OF TWO HUNDRED AND SIXTY NINE (269) DEGREES [illegible] THIRTY [illegible] ALONG THE SAID SOUTH LIMIT OF BLOCK (A), AND [illegible] SAID LIMIT [illegible] HUNDRED AND FIFTY FOUR (554) FEET, MORE OR LESS, TO THE EASTERLY LIMIT OF THE [illegible] ROAD, AS SHOWN ON ROAD PLAN 5375 T., THENCE ON A BEARING OF [illegible] DEGREES AND FORTY ONE (41) MINUTES ALONG THE SAID EASTERLY LIMIT OF THE SAID [illegible] DISTANCE OF FIFTY EIGHT (58) FEET AND EIGHT (8) INCHES [illegible] POINTS, THENCE ON A BEARING OF ONE HUNDRED [illegible] FIVE [illegible] DEGREES [illegible] MINUTES ALONG THE SAID EASTERLY LIMIT OF SAID ROAD A DISTANCE OF [illegible] FIVE (855) FEET AND NINE (9) INCHES MORE OR LESS TO THE [illegible] CANADIAN NATIONAL RAILWAY RIGHT OF WAY, [illegible] EASTERLY ALONG THE SAID [illegible]ERLY LIMIT [illegible]

[illegible]

is now the owner of an estate in fee simple

of and in [illegible]

[illegible] SIX (36) [illegible] TWENTY (20) WEST OF THE [illegible] MERIDIAN, [illegible]

CANADA, [illegible] AS FOLLOWS:-----

COMMENCING AT THE INTERSECTION OF THE SOUTH LIMIT OF BLOCK (A) AS SHOWN ON SUBDIVISION PLAN 3617 A.R., WITH THE EASTERLY BOUNDARY OF THE [illegible], THENCE, FROM SAID POINT OF BEARING OF TWO HUNDRED AND SIXTY FIVE DEGREES AND FIFTY (265°50') MINUTES ALONG THE SOUTH LIMIT OF BLOCK (A), AND THE SAID LIMIT PRODUCED A DISTANCE OF TWO HUNDRED AND FIFTY FOUR (254) FEET, MORE OR LESS, TO THE EASTERLY LIMIT OF THE [illegible] ROAD, AS SHOWN ON ROAD PLAN 5694 T., THENCE ON A BEARING OF ONE HUNDRED AND SEVENTY DEGREES AND FORTY ONE (41) MINUTES ALONG THE SAID EASTERLY LIMIT OF THE SAID ROAD, A DISTANCE OF FIFTY EIGHT (58) FEET AND EIGHT (8) INCHES MORE OR LESS, TO AN IRON POST, THENCE ON A BEARING OF ONE HUNDRED AND FORTY FIVE DEGREES AND FIFTY SIX (145°56') MINUTES ALONG THE SAID EASTERLY LIMIT OF SAID ROAD A DISTANCE OF FIVE HUNDRED AND FIFTY FIVE (855) FEET AND NINE (9) INCHES MORE OR LESS TO THE SOUTH WESTERLY LIMIT OF THE CANADIAN NORTHERN RAILWAY RIGHT OF WAY, AS SHOWN ON RAILWAY PLAN 5694 A.R., THENCE NORTH EASTERLY ALONG THE SOUTH WESTERLY LIMIT OF THE SAID RIGHT OF WAY TO THE EASTERLY BOUNDARY OF THE SAID QUARTER SECTION, THENCE DUE SOUTHERLY ALONG THE SAID EAST BOUNDARY TO THE POINT OF COMMENCEMENT, CONTAINING FIVE (5) ACRES, MORE OR LESS.

EXCEPTING THEREOUT:-- NINETY THREE HUNDREDTHS (0.93) OF AN ACRE, MORE OR LESS, FOR RAILWAY PURPOSES AS SHOWN ON RAILWAY PLAN 2552 E.C.

THE LAND HEREBY DESCRIBED CONTAINING FOUR AND SEVEN HUNDREDTHS (4.07) ACRES, MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

[illegible] No. [illegible]
on this 20 day of Dec 19 [illegible]
A.D. Registrar

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* THIRTIETH *day of* DECEMBER *A.D. 19*[illegible]

[illegible] *Registrar*

P.O. Address 4901 - 46TH AVENUE CAMROSE, ALBERTA

North Alberta Land Registration District

2863 E.C. EASE. DATED 29-JUL-30 [illegible] 21-OCT-30 ABOVE LANDS TO [illegible] NORTHERN RAILWAY CO. (PLAN CD). [illegible] A.D. [illegible]

1154 L.T. EASE. DATED 12-JAN-60 [illegible] AFFECTS [illegible] 0.29 OF AN ACRE [illegible]

Certificate of Title

Issued:

RENEWAL 5778 R.O.

	MER.	RGE.	TWP.	SEC.	Q.	PT.
1	4	2 0	4 6	3 4	S W	

	PLAN	BLK.	LOT	PT.
2				

North Alberta Land Registration District

THIS IS TO CERTIFY that CAMROSE LUTHERAN COLLEGE CORPORATION

[Agent the owner] of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH WEST QUARTER OF SECTION THIRTY FOUR (34) TOWNSHIP FORTY SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN DESCRIBED AS FOLLOWS:

COMMENCING AT THE INTERSECTION OF THE SOUTH LIMIT OF BLOCK (A) AS SHOWN ON SUBDIVISION PLAN 3517 A.R. WITH THE EASTERLY BOUNDARY OF THE SAID QUARTER SECTION; THENCE ON A BEARING OF TWO HUNDRED AND SIXTY NINE (269) DEGREES AND THIRTY ONE (31) MINUTES ALONG THE SAID SOUTH LIMIT OF BLOCK (A) AND THE SAID LIMIT PRODUCED A DISTANCE OF FIVE HUNDRED AND FIFTY FOUR (554) FEET, MORE OR LESS, TO THE EASTERLY LIMIT OF THE SURVEYED [illegible]D, AS SHOWN ON ROAD PLAN 5074 T; THENCE ON A BEARING ONE HUNDRED AND FORTY ONE (141) DEGREES AND FORTY ONE (41) MINUTES ALONG THE SAID EASTERLY LIMIT OF THE SAID ROAD, A DISTANCE OF FIFTY EIGHT (58) FEET AND EIGHT (8) INCHES, MORE OR LESS, TO AN IRON POST AND PLUG; THENCE ON A BEARING OF ONE HUNDRED AND FORTY FIVE (145) DEGREES AND FIFTY EIGHT (58) MINUTES ALONG THE SAID EASTERLY LIMIT OF SAID ROAD A DISTANCE OF EIGHT HUNDRED AND FIFTY FIVE (855) FEET AND NINE (9) INCHES, MORE OR LESS, TO THE NORTH WESTERLY LIMIT OF THE CANADIAN NORTHERN RAILWAY RIGHT OF WAY, AS SHOWN ON RAILWAY PLAN 3694 A.E.; THENCE NORTH EASTERLY ALONG THE NORTH WESTERLY LIMIT OF THE SAID RIGHT OF WAY TO THE EASTERLY BOUNDARY OF THE SAID QUARTER SECTION; THENCE NORTHERLY ALONG THE SAID EAST BOUNDARY TO THE POINT OF COMMENCEMENT, CONTAINING FIVE (5) ACRES, MORE OR LESS.

EXCEPTING THEREOUT:

0.93 OF AN ACRE, MORE OR LESS, TAKEN FOR WATER SUPPLY BY THE CANADIAN NORTHERN RAILWAY COMPANY, AND SHOWN AS PARCEL (C) ON RAILWAY PLAN 2552 E.O.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

CANCELLED AND CONVERTED
AUG 31 1992
By.....

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 30TH day of DECEMBER A.D. 19 50

KM

Post Office Address 4001 - 46 AVE.
CAMROSE, ALTA.

AD

Registrar

AS 456
Rev 5-72

North Alberta Land Registration District

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transferee
Tfr – Transfer
Mtge – Mortgage
UROW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
CC – Covenants and Conditions
ENCUM – Encumbrance

Certificate of Title

Show Other Abbreviations Here

NAME CAMROSE LUTHERAN COLLEGE
CORPORATION
LAND A 20 16 34 S.W. (-)

TITLE NO 1 - 3 F 2 4 1

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY MO YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date DY MO YR	Signature of Registrar
L	2863 EG	20 10 32		TO THE CANADIAN NORTHERN RY CO. (PLAN CD3)				
E	1134 LT	29 1 60		CPT. AS DESC. CONTG. 0.29 OF AN ACRE XPLAN 5523 KS TO NORTHWESTERN UTILITIES LTD.				
MTGE GN B	2354 NF	15 3 63	$2,000,000.00	TO MONTREAL TRUST CO. (EASE. 1134 L.T.)				
(M) MTGE	5779 KJ	30 12 69	10,000.00	TO MICHAEL WELLER & ROSE WELLER				

CANADA

Alberta
ATTORNEY GENERAL

M.

Certificate of Title

NUMBER 8 8 2 1 7 0 1 + 0

REFERENCE

CONSIDERATION $ NOAT CLOSURE

North Alberta Land Registration District

THIS IS TO CERTIFY that THE CITY OF CAMROSE

5204 - 50 AVENUE
CITY HALL
CAMROSE, ALBERTA T4V 0S2

is/are now the owner(s) of an estate in fee simple

of and in

ALL THAT PART OF STATUTORY GOVERNMENT ROAD ALLOWANCE ADJOINING THE EAST BOUNDARY
OF THE SOUTH EAST QUARTER OF SECTION THIRTY THREE (33)
TOWNSHIP FORTY SIX (46)
RANGE TWENTY (20)
WEST OF THE FOURTH MERIDIAN, WHICH LIES SOUTH OF A LINE JOINING THE MOST NORTHERLY
CORNER OF LOT THIRTY THREE-MR (33-MR), BLOCK TWO (2), PLAN 982 1708 AND THE NORTH
WEST CORNER OF LOT (A), PLAN 341 R.S. WHICH LIES NORTH OF THE PRODUCTION EASTERLY
OF THE NORTH LIMIT OF 39TH AVENUE AS SHOWN ON SAID PLAN 982 1708.
EXCEPTING THEREOUT ALL MINES AND MINERALS.

CANCELLED
AND CONVERTED
AUG 9 1982
By

SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

In witness whereof I have subscribed my name and affixed my official seal this

26TH day of JULY 19 82

JO

A.D. Registrar

North Alberta Land Registration District

ALBERTA LAND REGISTRATION DISTRICT
LAND TITLES OFFICE
NORTH

A.S. 1813 (7TH MAY 81)

Certificate of Title

LAND 4-20-46-33-S.E. - STATUTORY GOVERNMENT ROAD ALLOWANCE

NAME THE CITY OF CAMROSE

NUMBER 882170140

ENCUMBRANCES, LIENS & INTERESTS				DISCHARGES & WITHDRAWALS		
Registration Number	Date of Registration DAY / MO / YR	PARTICULARS	Signature of A.R. Registrar	Registration Number	Date of Registration DAY / MO / YR	Signature of A.R. Registrar
882170140 26 / 08		DUPLICATE CERTIFICATE OF TITLE ISSUED				

CANCELLED

Certificate of Title

Canada

RENEWAL
$120.65-3

NO. 18 F 65
RES. 8.16 S 11.0
VALUE $ 12.7 5 9 0 0

M. PC. TWP. RGE. S. PT.
1 20 46 R 20 8 1/2

PLAN BLK. LOT PT.

North Alberta Land Registration District

THIS IS TO CERTIFY THAT THE CITY OF CAMROSE

IN THE PROVINCE OF ALBERTA

now the owner of an estate in fee simple

IS

THE EAST HALF OF SECTION TWENTY EIGHT (28)

TOWNSHIP FORTY SIX (46)

RANGE TWENTY (20)

WEST OF THE FOURTH MERIDIAN

CONTAINING 129 HECTARES (320 ACRES) MORE OR LESS.

EXCEPTING THEREOUT:

A) 0.971 HECTARES (2.40 ACRES) MORE OR LESS OUT OF THE SOUTH EAST QUARTER FOR ROAD, AS SHOWN ON ROAD PLAN 3605 A.T.

B) 1.65 HECTARES (4.07 ACRES) MORE OR LESS OUT OF THE SOUTH EAST QUARTER TAKEN FOR RIGHT OF WAY OF THE CANADIAN NORTHERN RAILWAY AS SHOWN ON RAILWAY PLAN 3594 A.T.

C) 11.45 HECTARES (28.29 ACRES) MORE OR LESS AS SHOWN ON SUBDIVISION PLAN 812 0690, OUT OF THE NORTH EAST QUARTER.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

TITLE CANCELLED No. 852170135
AS TO PT. WITHIN LAND UNDER
SHA PLAN 812 0690
on this 26 day of JULY 19 88
NEW TITLE ISSUED
FOR REMAINDER
A.D. Registrar

TITLE CANCELLED No. 852170135
AS TO PT. WITHIN LAND UNDER
RANGEER
on this 26 day of JULY 19 88
A.D. Registrar

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THIS REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 3RD day of MARCH A.D. 19 61

Post Office Address CAMROSE, ALBERTA

F. M. Lee
A.D. Registrar

ALBERTA LAND REGISTRATION DISTRICT
LAND TITLES OFFICE
NORTH

YAE

North Alberta Land Registration District

A-C 500
Rev. 2/72

Certificate of Title

CANCELLED

NAME THE CITY OF CAMROSE

LAND M.D.-23-46-20-E.4

DRC - DEFERRED RESERVE CAVEAT

ABBREVIATIONS

E - Easement
C - Caveat
T - Conversion
Tfr - Transfer
Mtge - Mortgage
DRW - Dedicated Right of Way
DL - Dedicated Lane
TN - Tax Notification
VE - Vesting Easement
CC - Community Corrections
ENCUMB - Encumbrance

CHARGES, LIENS AND INTERESTS.

TITLE NO. 8-F-L85

Nature of Instrument	Registration Number	Date of Registration DY MO YR	Amount $	Particulars	Signature of Registrar
E	812066518	25 3 81		PLAN 812 0601 (AS TO NE) IN FAVOR OF THE CITY OF CAMROSE	
DRC	812065520	25 3 81		BY THE DIRECTOR OF THE BATTLE RIVER REGIONAL PLANNING COMMISSION (AS TO N.E.)	
DL	852223464	19 9 85	9,137.65	BY RIDGE BUILDERS (AMC 123248 CONSTRUCTION LTD. C/O #2, 9716-91 AVE., EDMONTON, ALTA.)	
DL	852258213	29 9 85	29,000.00	(AS TO NE)(3220 80 ST. EDMONTON, ALTA.) BY MURIER CONSTRUCTION CO. LTD.	
DL	852252871	18 10 85	6,363.35	(C/O ALBERT & COOK #140, 5555 CALGARY TRAIL EDMONTON, ALTA.) BY INTEANGLE STEEL LTD.	
DL	852313519	25 12 85	2,150.00	BY SUKEL EXPRESS LINES LTD. (8830 - 126 AVENUE, EDMONTON, ALTA. T5B 1G9)	
DL	842004816	9 1 84	843.00	BY FRONTIER CONCRETE SERVICES LTD. #203, 12013-70 ST, EDMONTON, ALTA.	
DL	842008562	13 1 84	11,107.50	BY JOHNSTON STEEL LTD. (9922 - 34 ST. CT. SASKATCHEWAN, ALTA.)	
DL	842009960	16 1 84	2,042.06	BY SHANRO CONCRETE FLOORS LTD C/O 804, 10024 JASPER AVE, EDM, AB	
DL	842023055	3 2 84	39,405.90	(C/O PETERSON ROSS 2700 CN TOWER 10004-104 AVE. EDMONTON, ALTA.) BY ALLFORM EXTERIORS (1981) LTD.	
DL	842039740	22 2 84	66,354.76	BY K. HANSEN MASONRY LTD. (C/O 303-8540 109 ST., EDMONTON, ALBERTA)	

CONT'D ON PAGE TWO (2)

Registration Number	Date of Registration DY MO YR	Signature of Registrar
852170133	26 7 88	
852255030	5 12 85	
852298853	8 12 85	
852203311	02 12 85	
842059297	20 3 84	
842035153	17 2 84	
842060297	20 3 84	
842036152	17 2 84	
842050297	20 3 84	
842048181	3 3 84	

Certificate of Title

CANCELLED

PAGE NO (2)

NUMBER 8 - C - 1 3 5

NAME THE CITY OF CAMROSE

LAND W-4 - 20 - 46 - 28 SE -

ABBREVIATIONS

E — Easement
C — Caveat
TFR — Transfer
MTG — Mortgage
URW — Utility right of Way
BL — Builder's Lien
TN — Tax Notification
WE — Writ of Execution

ENCUMBRANCES, LIENS & INTERESTS

Nature of Instrument	Registration Number	Date of Registration DY MO YR	PARTICULARS	Signature of A/O Registrar
BL	842050428	18 3 84	BUILDERS LIEN BY DAVIS HEATER SERVICE LTD. FOR $4,445.35 (1415 - 78 AVENUE, EDM. ALTA.)	
BI	842114369	23 5 84	BY NATALKA PYSYK AGENT FOR: ATHENA INTERIOR ENTERPRISES LTD FOR $2,592.00 15915 116 AVE,EDM,AB T5M 3W1	

DISCHARGES & WITHDRAWALS

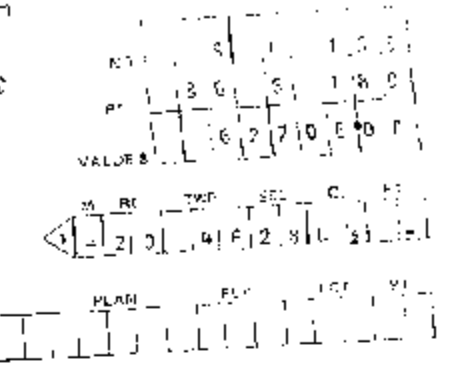
Register or Number	Date of Registration DY MO YR	Signature of A/O Registrar
842099710	7 5 84	
842114113	27 9 84	CC

CANCELLED

Certificate of Title

Caveat

RENEWAL 2061 M.D.



North Alberta Land Registration District

THIS IS TO CERTIFY that THE CITY OF CAMROSE
IN THE PROVINCE OF ALBERTA

IS now the owner of an estate in fee simple

of and in THE EAST HALF OF SECTION TWENTY EIGHT (28)

TOWNSHIP FORTY SIX (46)

RANGE TWENTY (20)

WEST OF THE FOURTH MERIDIAN

CONTAINING 320 ACRES, MORE OR LESS,

EXCEPTING THEREOUT: (.97 ha.)

(A) OUT OF THE SOUTH EAST QUARTER 2.40 ACRES, MORE OR LESS, AS SHOWN ON ROAD PLAN 3695 AE / 1.56 ACRES, MORE OR
(B) OUT OF THE SOUTH EAST QUARTER 4.37 ACRES, MORE OR LESS TAKEN FOR RIGHT-OF-WAY OF THE CANADIAN NORTHERN RAILWAY AS SHOWN ON RAILWAY PLAN 3694 A.E.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

TITLE CANCELLED 82206GH
TITLES HAVE (CN.E.) ISSUED
C28.28 ACS. UNDER PLAN SIW 1690
on this 28TH day of MARCH 19 82
A. D. Registrar SAE

TITLE CANCELLED UNDER RENEWAL
AS TO REMAINDER AND IN FULL
on this 28TH day of MARCH 19 82
A. D. Registrar SAE

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 3RD day of MARCH, A.D. 19 82

Post Office Address CAMROSE, ALTA.

A.D. Registrar

North Alberta Land Registration District

E.T. 009
Rev. 7172

ABBREVIATIONS

E – Easement
C – Caveat
Tf – Transfer of
Trf – Transfer
Mge – Mortgage
JRW – Judgment Roll Writ
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
CC – Covenants and Conditions
ENCUM – Encumbrance

Certificate of Title CANCELLED

Show Other Abbreviations Here

NAME THE CITY OF CAMROSE

LAND 4 20 46 28 F. 1/2 (-)

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY MO YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration DY MO YR	Signature of Registrar
				CANCELLED				

LAND TITLES ACT Sec. 84. The said estate is subject to such encumbrances, liens, interests, notations and registered exceptions as are mentioned in Section 84 of the Land Titles Act and to the liens and charges specified hereunder, if any, and to such as may be endorsed hereon, namely:

(a) Any unpaid taxes.
(b) Any highway or right of way or other easement established or granted in any public authority.
(c) Any subsisting lease or agreement for a lease for a period not exceeding three years where there is actual occupation of the land under the same.
(d) Any decrees, writs or executions affecting the interest of the registered owner of the land which have been registered and are in force against the owner.
(e) Any right of expropriation, power or privilege vested in any person, body or authority by any statute.
(f) Any caution, lien or other claim or proceeding authorized under the provisions of any Act of the Province.

3-F-185

GOVERNMENT OF THE PROVINCE OF ALBERTA

13-57
3 MARCH
A.D. / 61
Number 2061 M.D. 90
J.M. THOM

Certificate of Title

Assess. Land Value $62,706.00

Refer. Cert. No. 60-5-180

North Alberta Land Registration District

This is to Certify that THE CITY OF CAMROSE,

IN THE PROVINCE OF ALBERTA, CANADA,

is now the owner of an estate in fee simple

of and in THE EAST HALF OF SECTION TWENTY EIGHT (28) TOWNSHIP ~~FORTY SIX (46)~~ RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN, IN THE SAID PROVINCE, CONTAINING THREE HUNDRED AND TWENTY (320) ACRES MORE OR LESS, EXCEPTING THEREOUT,--

(A) OUT OF THE SOUTH EAST QUARTER TWO AND FORTY HUNDREDTHS (2.40) ACRES MORE OR LESS AS SHOWN ON ROAD PLAN 3695 J.

(B) OUT OF THE SOUTH EAST QUARTER FOUR AND SEVEN HUNDREDTHS (4.07) ACRES MORE OR LESS TAKEN FOR RIGHT-OF-WAY OF THE CANADIAN NORTHERN RAILWAY AS SHOWN ON RAILWAY PLAN 3694 A.F.

THE LAND HEREBY DESCRIBED CONTAINING THREE HUNDRED AND THIRTEEN AND FIFTY THREE HUNDREDTHS (313.53) ACRES MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

of and in THE EAST HALF OF SECTION TWENTY-EIGHT (28) TOWNSHIP FORTY-SIX (46) RANGE TWENTY (20) WEST OF THE FOURTH MERIDIAN, IN THE SAID PROVINCE, CONTAINING THREE HUNDRED AND TWENTY (320) ACRES MORE OR LESS, EXCEPTING THEREOUT,--

(1) OUT OF THE SOUTH EAST QUARTER FOUR AND FORTY HUNDREDTHS (4.40) ACRES MORE OR LESS AS SHOWN ON ROAD PLAN 3695 J.

(2) OUT OF THE SOUTH EAST QUARTER FOUR AND SEVEN HUNDREDTHS (4.07) ACRES MORE OR LESS TAKEN FOR RIGHT-OF-WAY OF THE CANADIAN NORTHERN RAILWAY AS SHOWN ON RAILWAY PLAN 3694 A.F.

THE LAND HEREBY DESCRIBED CONTAINING THREE HUNDRED AND THIRTEEN AND FIFTY THREE HUNDREDTHS (313.53) ACRES MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

TITLE CANCELLED AS TO Remnant
ON THE 2 DAY OF Jan 79
Richard Act

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this THIRD day of MARCH A.D. 19 51

SG

Registrar

North Alberta Land Registration District

P.O. Address CAMROSE, ALTA.

OVER

S.E.D. (153) 53 (a.ca.)

NOTIFICATION (Tax Recovery Act 1938)

County of Caernarvon

June 31 1970 1936 and the

1-4-70 as to £331 5. 0.

The above mentioned Mort. for £331 5.0

is discharged by entry in my Office this 31 day

of June 1971 1936

the 22 day of June 1971 as to £

No. 59 T.U.

A.D. Registrar