

# **Cumberland Delta Moose Habitat Enhancement Project**



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## **Executive Summary**

Moose Habitat in the Cumberland Delta has progressively deteriorated over the past couple of decades. As a consequence, the winter moose population is 55% below the long-term population objective (~5500 moose) for this Moose Management Unit (MMU). Although in the past this area was a primary moose range, declining habitat has made it less hospitable and less accommodating to moose. There are a variety of reasons for the decline in habitat stemming from human impact to natural causes, although increased human access is exacerbating the problem. However, further positive manipulation of the natural environment is necessary to rejuvenate moose habitat and thereby improve moose populations. This can be achieved, in part, through prescribed burning of decadent moose habitat components. This proposal outlines a five-year plan to significantly restore moose habitat, targeting non-timber vegetation associated with the Cumberland Delta marshes. Prescribed burning, as a method of habitat enhancement, is optimum in achieving practical and significant results that harmonize with the general public and environmental issues. Of all management options that were considered, habitat manipulation and enhancement is viewed to be most beneficial. Other methods of population management are still under review by the Cumberland Delta Moose Management Committee (CDMMC) as complementary methods of moose restoration to prescribed burning.

In order to implement a prescribed burn, community involvement is essential to maintaining a good level of communication and contribution to the overall success of the prescribed burn. Consultation with the CDMMC is pertinent in establishing a foundation of support in addition to addressing issues of responsible wildlife management. By acknowledging the past potential of the Cumberland Delta landscape, recognizing community involvement and scientific research, and addressing the problems pertaining to the current decline of moose populations/habitat, the proposed prescribed burning project is the most practical option to achieve the desired objective.

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<b>Table of Contents</b>	<b>Page</b>
1.0 Introduction.....	1
2.0 Study Area and Physical Geography of the Cumberland Delta.....	3
2.1 Water Management on the Saskatchewan River.....	9
3.0 Wildlife.....	11
3.1 Moose Habitat Selection.....	11
3.2 Forestry.....	13
3.3 Ducks Unlimited Canada.....	14
4.0 Community Profiles.....	16
4.1 Cumberland House.....	17
4.2 Shoal Lake First Nation.....	19
4.3 Red Earth First Nation.....	19
4.4 The Cumberland Delta Moose Management Committee.....	19
5.0 Moose Population Restoration.....	21
5.1 Methodology.....	21
5.2 The Solution.....	23
6.0 Appendix.....	25
7.0 Literature Cited.....	26
7.1 Electronic Sources.....	26
7.2 Personal Communication.....	27

## List of Tables

Table		Page
1	Results of consultation with Cumberland House trappers, August 2004.....	18

## List of Figures

Figure		Page
1	An illustration of the distribution of moose range in Saskatchewan.....	4
2	The proposed prescribed burning project area encompasses a large portion of WMZ 60 and portions of WMZ 61.....	5
3	An avulsion event in the 1870's created the New Channel on the Saskatchewan River.....	6
4	The mouth of the Steamboat Channel showing lack of water flow off the Saskatchewan River and intermittent streams, found further along the Channel, are depicted above.....	7
5	Riverbed of the Saskatchewan River showing lack of water flow resulting from E.B. Campbell Dam withholding water for peak electrical generation.....	8
6	The E.B. Campbell and Francois-Finlay Hydroelectric Stations are the predominant features that affect water flow on the Saskatchewan River.....	9
7	An illustration of water flow fluctuation as a result of E.B. Campbell Dam water manipulation.....	10
8	Summer moose habitat includes wet areas, as is illustrated above.....	11
9	Extreme decadent vegetation and severely over-grown decadent willow on the west side of the target area near Cumberland Lake are illustrated above.....	12
10	Logging in the Cumberland Delta is relatively insignificant and under regular annual review by Saskatchewan Environment.....	13

11	Ducks Unlimited Canada has implemented conservation efforts for waterfowl through water flow manipulation off the Saskatchewan River.....	14
12	The community of Cumberland House.....	17
13	Local Conservation Officer, Doug Lessmeister, consulting with local trappers on target areas for the prescribed burn.....	18
14	The targeted burn areas will be selected so as to avoid merchantable timber.....	22

## List of Appendices

Appendix		Page
1	A sample questionnaire used to solicit support from local residents.....	25

## Map Attachment

Five-year Prescribed Burn Areas in the Cumberland Delta (2005-2009)

## 1.0 Introduction

This report will provide a framework to government and stakeholders to plan and implement moose habitat enhancement initiatives in the Cumberland Delta. The purpose of this document is to feature prescribed burning as a preferred and complementary option in a multi-faceted program to rebuild the moose populations in the Cumberland Delta.

This report outlines the historic and changing status of moose populations and their habitat in the Cumberland Delta and culminates in what needs to be done to develop and implement a significant moose habitat enhancement proposal. A brief outline of the chronology of events leading up to this proposal is as follows:

- In the late 1960's, the Cumberland Delta supported very high moose population numbers and has formed a significant portion of the primary moose range.
- The arid conditions of the Cumberland Delta resulted from man-made influences and natural succession. These factors have contributed to the disappearance of good habitat thereby negatively influencing moose populations.
- Population estimates and local recognition of declining moose numbers indicate the current moose population is approximately 1/3 of the long-term average, and the desired population level for a variety of human uses, respectively.
- Moose have always maintained a significant position in the foundation of the culture of the Cumberland Delta. They are critical to the livelihood of the local people for subsistence, recreation, aesthetics, and for commercial purposes such as outfitting. This area is also very important to Saskatchewan resident hunters.
- Due to entrenched Treaty and Métis hunting rights, it is less practical to infringe upon these rights to curtail hunting as a means of moose population recovery, legislatively.

- Although voluntary hunting restrictions on behalf of Treaty and Métis people will benefit moose population numbers, this must be complementary to habitat recovery efforts. For this reason, the CDMMC has been organized to bring together the two latter factors through education and consultation.
- The CDMMC reviews potential limiting factors affecting moose, therefore their support is essential to cooperative actions that are implemented for the benefit of moose.

## **2.0 Study Area and Physical Geography of the Cumberland Delta**

The Cumberland Delta, located in northeastern Saskatchewan (Figure 1: most of Moose Management Unit 17) is the largest inland delta in North America. It spans an area of 5000 km<sup>2</sup>, composed of wetlands among meandering fluvial channels branching off from the Saskatchewan River and is marked by levees, dykes and other natural and man-made land alterations. Administratively, the proposed project area identified in this report encompasses most of Wildlife Management Zone (WMZ) 60, and portions of WMZ 61 (Figure 2 and refer to attached map). The Delta is in a continuous state of evolution as a result of both natural and human manipulation. However, the biggest impact on the region was in the 1870's when the Delta was drastically altered by an ice build-up in the Saskatchewan River, which lead to the avulsion of the river (Smith, Cross, Dufficy, and Clough 1989). The process of avulsion takes place when river systems that form extensive floodplains and are forced to divert water flow from a dominant channel, resulting in the creation one or more new channels (Smith Slingerland, Pérez-Arlucea, Morozova 1998).

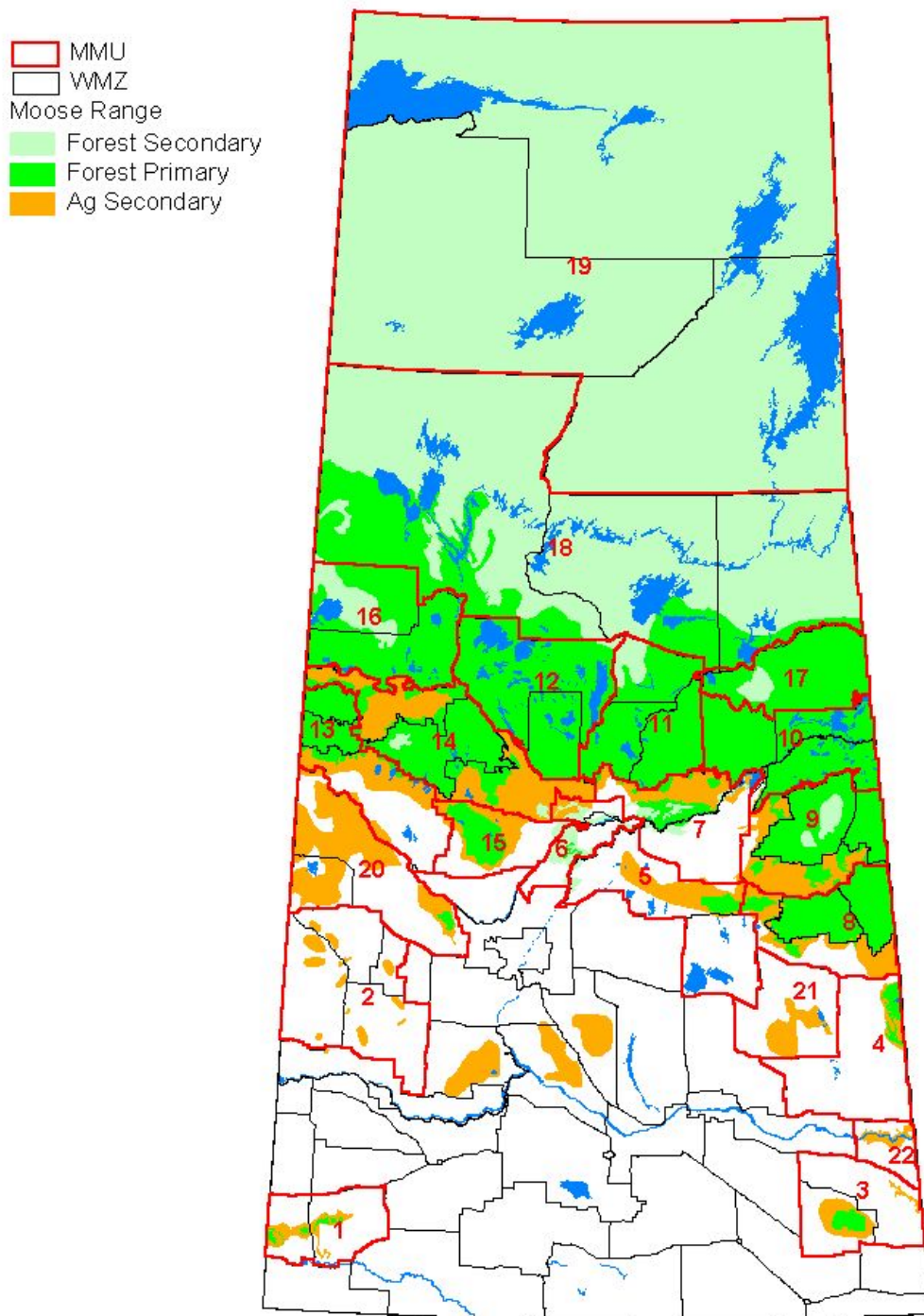


Figure 1. An illustration of the distribution of moose range in Saskatchewan (Arsenault 2000).

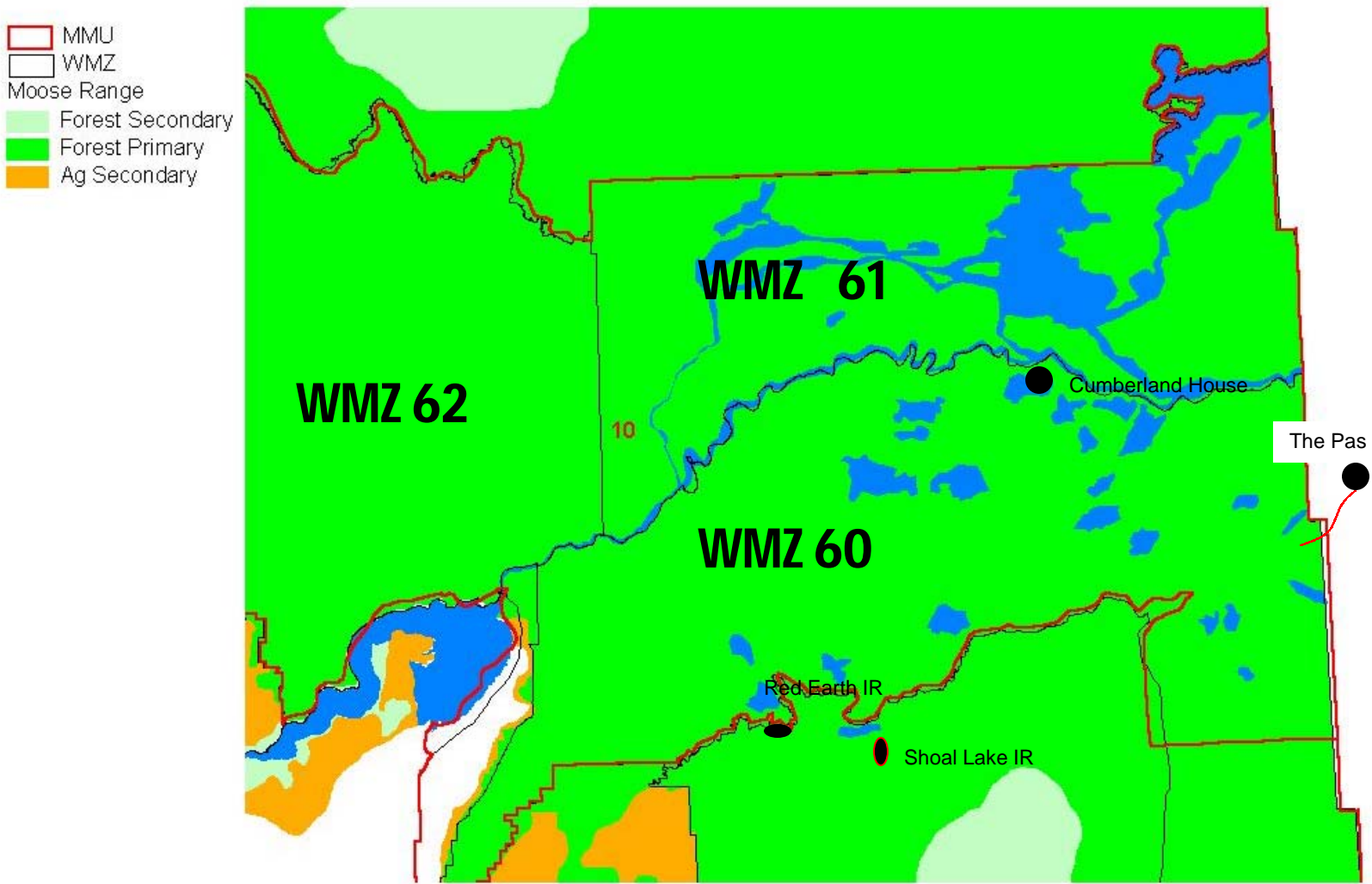


Figure 2. The proposed prescribed burning project area encompasses a large portion of WMZ 60 and portions of WMZ 61 (map modified from Arsenault 2000).

## Old/New Channel junction



Figure 3. An avulsion event in the 1870's created the New Channel on the Saskatchewan River.

Avulsion has resulted in the formation of the New Channel (Figure 3), which feeds the multitude of channels that make up the Delta, whereas the Old Channel maintains flows of much less volume. Discharge records indicate that the Old Channel carries 5-10% of the mean annual water flow (Smith et al. 1989), mostly during high flow periods (Smith et al. 1998). The New Channel diverts the remaining water flow into the breakout area. Accordingly, the geography of the Cumberland Delta area is in a constant state of change due to the fluvial processes that constantly carve the landscape. Consequently, water flow variation results in drying up of old channels and the creation of new channels (Smith et al. 1989). Overall, there are current trends indicating that the Delta is becoming increasingly arid.

The Cumberland Delta is presently in need of intervention in order to retard the negative impacts of natural succession and human-induced factors affecting the vegetation of the

Delta. Wildfire suppression has allowed vegetation to mature and overgrow, making browse availability scarce and palatability marginal for ruminants. Maturation of the Delta through natural succession is already contributing to the overall drying up of the area. Drought conditions in the Delta have exacerbated the problem by decreasing the occurrence of flooding, and accelerating the disappearance of marshland (Biodiversity 2003). The effect of all the latter factors reflects a progression from wetlands to terrestrial-like features throughout the Cumberland Delta, which has also resulted in ingress of predators.

These terrestrial-like features are demonstrated in such areas as Steamboat Channel (Figure 4). The Old Channel of the Saskatchewan River historically supported steamboats, but as early as the 1870's, journal entries of the Hudson Bay Company reflect concerns about low water levels (Smith et al.). The low water levels were a result of an avulsion event, which forced the steamboats to divert to the New Channel, from where the Steamboat Channel emerges (Smith et al.), in 1882. Today, however, Steamboat Channel is almost dry with intermittent sections of stream, a reflection of the severely altered state of the Delta (Figure 5).

Steamboat Channel: mouth



Steamboat Channel: intermittent streams



Figure 4. Depicted above is the mouth of the Steamboat Channel showing lack of water flow off the Saskatchewan River and intermittent streams, found further along the Channel.

Steamboats were permanently grounded in the 1950's, when they succumbed to competition from the railroad system (Smith 2004). Therefore, the abandonment of Steamboat Channel as a passage for steamboats was not necessarily a direct result of low water levels. There is no known documented date as to when Steamboat Channel began to dry up (Smith 2004); however, today Steamboat Channel is just one example of the arid conditions on the Cumberland Delta. Today water levels in the main Saskatchewan River channel preclude regular water travel because of the requirement for hydroelectric power generation. This has been a major issue with the community of Cumberland House in their day-to-day travel requirements, which are hampered by water fluctuations. Activities such as trapping, hunting, outfitting, and commercial fishing have been seriously affected by this irregular water flow (Figure 5).

Saskatchewan River: restricted water flow



Exposed riverbed



Figure 5. Riverbed of the Saskatchewan River showing lack of water flow resulting from E.B. Campbell Dam withholding water for peak electrical generation.

## 2.1 Water Management on the Saskatchewan River

The Saskatchewan River is the main artery to the Cumberland Delta. Historically, the Saskatchewan River replenished water supplies to the marshes and was the main human travel corridor accessing the area. Currently, two major hydroelectric stations operate on the Saskatchewan River, the E.B. Campbell and Francois-Finlay, built in 1963 and 1986, respectively (Figure 6). These installations seriously affect local water level fluctuations (Figure 7). It should be noted that the Gardiner Dam on the South Saskatchewan River, above the Saskatchewan River Forks, also significantly restricts the overall amount of water flow in this river system, compared with historical unrestricted water movement. These installations collectively contribute to the channelization and gradual drying up of the Delta through a disruption of the natural ecological processes.

E.B. Campbell Hydroelectric Station



Francois-Finlay Hydroelectric Station



Figure 6. The E.B. Campbell and Francois-Finlay Hydroelectric Stations are the predominant features that affect water flow on the Saskatchewan River.

The dams are responsible for “reduced magnitude and frequency of spring flooding” (Ecosystem Based Operating Plan, East Boreal Ecoregion 2002), which goes against the natural activities of the Delta. The prevention of annual flooding “deprive[s] riparian vegetation of needed moisture and nutrients” (Biodiversity 2003). This in turn impacts wildlife through the fragmentation and deconstruction of the natural ecosystem.

Consequently, the Delta is in a state of succession from marsh to more terrestrial-like features.

E.B. Campbell Dam: withholding water

Saskatchewan River: during power generation



Figure 7. An illustration of water flow fluctuation as a result of E.B. Campbell Dam water manipulation.

Aside from moose, the alteration of water flow has presented “problems to lake-spawning fish and shoreline-nesting birds ... because water levels are either too high or too low at critical times in the animal’s life cycle” (Biodiversity 2003). This may lead to increased mortality and decreased reproduction, which in turn affects populations.

### 3.0 Wildlife

Many kinds of wildlife inhabit the Cumberland Delta, the most common being moose, deer, elk, black bears and a wide variety of bird species, waterfowl, furbearers, coyotes and wolves (Ecosystems Based Operating Plan East Boreal Region 2002). Recent research shows that the general wildlife populations are relatively stable, but moose populations are severely below historical levels (Arsenault 2003). In the past, the Cumberland Delta, Pasquia Hills and Porcupine Forest have maintained two thirds of the provincial moose population, sustaining a density of one to two moose per square kilometre (Kowal 2004). However, with an overall average population of 2,484, equivalent to 0.21 moose per square kilometre, the decline in moose is evident. This decline is a function of many coexisting factors, which coincides with the arid conditions contributing to the overall maturation of the Delta. These factors include: human impact stemming from snowmobiles, all terrain vehicles, power boats, hydroelectric dams, indiscriminate hunting, and road development; increased mortality rates due to predators (wolves, black bears), disease and parasites, and accidental mortality; and finally, reduced frequency of disturbance events such as forest fires and flooding (Kowal 2004).

#### 3.1 Moose Habitat Selection

Summer moose habitat



Cut Beaver River



Figure 8. Summer moose habitat includes wet areas, as is illustrated above.

The quality and quantity of available forage strongly influences moose population densities and trends (Arsenault 2000). Consequently, moose are “adept at selecting seasonally advantageous habitats consisting of boreal forest, mixed forest, large delta flood plains, tundra, subalpine shrubs and stream valleys” (Arsenault 2000). These locations offer an environment where forage contains nutritional components necessary to moose dietary requirements. Ideal moose forage includes a “mixture of willow, spruce, fir, aspen and birch” (Arsenault 2000), particularly in areas of “early successional stages of regeneration” (Arsenault 2000). In addition, “riparian habitat, wet meadows, lakes and wetlands provide water, high quality forage, insect relief and/or thermoregulation from spring through autumn” (Arsenault 2000). The mature closed-canopy features with easy access to water in the Delta are also important to moose because it provides thermal and hiding cover (Arsenault 2000). Summer habitat selection by moose with high preference for aquatic areas (Figure 8) has been detrimental to moose populations because the channels in the Delta allow hunters access to moose resources through the extensive amount of water travel. The Cumberland Delta has historically, and still maintains the potential to sustain ideal habitat conditions, but maturation of the Delta (Figure 9) is preventing such conditions to flourish.

Near Cumberland Lake



Overgrown and decadent browse



Figure 9. Extreme decadent vegetation and severely over-grown decadent willow on the west side of the target area near Cumberland Lake are illustrated above.

### 3.2 Forestry

Although there is little significant forestry activity in the Cumberland Delta relative to the Commercial Forest, it is still a present and important factor to assess (Figure 10). Saskatchewan Environment is working with Weyerhaeuser (Saskatchewan) Ltd. on a continual basis through review of annual operating plans to address cutblock and road management issues that could decrease the impact on wildlife populations, particularly moose. In addition, cutblock designs and silvicultural practices are reviewed and altered annually to minimize negative impacts on wildlife.

#### Logging activity adjacent to Anderson Island



Figure 10. Logging in the Cumberland Delta is relatively insignificant and under regular annual review by Saskatchewan Environment.

Hardwood volumes dominate the current annual harvest of forestry activity in the Delta for the production of Oriented Strand Board (OSB) totalling 22,504 m<sup>3</sup>, or 75% of logging activity with a concentration on trembling aspen (Boehm 2004). To a lesser

extent, softwood harvesting totals 8,364 m<sup>3</sup>, or 25% of total logging activity, for pulp and dimensional lumber (Boehm 2004). Total harvest for 2004/2005 combined is 30,704 m<sup>3</sup> (Boehm 2004). Weyerhaeuser has recently initiated plans to harvest 100,000 m<sup>3</sup> of timber over a 10-year period (Boehm 2004). They will begin by harvesting 50,000 m<sup>3</sup> in the next year and the remainder will be harvested over a preferred 3-4 year period, but will maintain a contingency plan to extend the remaining harvest over 9 years (Boehm 2004). The goal of the prescribed burn project will be to avoid merchantable timber, concentrating on areas with non-merchantable vegetation important to moose.

### 3.3 Ducks Unlimited Canada

Ducks Unlimited Canada (DUC) has implemented major project initiatives aimed at water flow manipulation in their conservation effort for waterfowl in the Cumberland Delta. Although the Hudson Bay Company (HBC) originally built Dragline Channel in 1938, in the 1960's DUC completed a new control structure in order to control water flow into the western section of the marshes (Eskowich 2004) (Figure 11).

Ducks Unlimited control structure



Dragline Channel



Figure 11. Ducks Unlimited Canada has implemented conservation efforts for waterfowl through water flow manipulation off the Saskatchewan River.

A summary of the DUC activities (Eskowich 2004) in the Cumberland Delta, includes:

- In 1961 DUC received a short-term lease from the Saskatchewan Provincial government to initiate conservation efforts for ducks and muskrats.
- Also in 1961 DUC built the Birch River Dam as a method of controlling water flow on the eastern side of the marshes.
- From 1974 to 1981 DUC constructed major works for water management throughout 32 wetland segments. Included in these segments were 38.5 miles of dykes, 54.4 miles of canals and 17 major control structures.
- In 1984 DUC began initiatives for a project north of the Old Channel and west of Cumberland House.
- In 1987 the Siisiip Project was put into action. This project includes 12 control structures and 14 miles of dykes over the 18,900-acre complex from Portage Marsh to 18 miles west to Dumbell Knudson Marsh.

The method of water manipulation throughout the marshes is by means of a “partial drawdown capability as well as seasonal water level manipulation” (Eskowich 2004). The main concern with channels and dykes is increased access to moose. The conservation efforts initiated by DUC focussing on wetlands and ultimately on waterfowl are complementary to sustaining summer moose habitat. The prescribed burn project proposed in this document predominantly targets vegetation that is utilized for moose winter forage and cover. Wildlife species, especially moose, and their habitats in the Cumberland Delta have always been an important part of the lives of people in Northern communities for sustenance and to maintain the cultural fabric upon which their traditions are based.

## 4.0 Community Profiles

The Saskatchewan communities of Cumberland House, Shoal Lake and Red Earth are located within the Cumberland Delta and their predominant livelihood is dependent on the natural environment. For this reason, habitat enhancement, especially for moose, is a benefit to their economies. Hence, consultation with each community is essential in maintaining open communication and input from the local people. Also, recent court decisions regarding Treaty status and Métis hunting rights have impacted the number of unregistered and unregulated hunters in the area, which in turn ultimately affects wildlife populations. These issues are discussed below.

Impact from subsistence hunting has been affected by adjustments made to the Indian Act through amendments in Bill C-31, and the recent final judgement in the *Powley* case in Ontario. Bill C-31 has newly instated rights increasing the number of Treaty Indian people across Canada, including Cumberland House (The Department of Indian Affairs and Northern Development 1995). The implications concerning wildlife is the issue of an increased number of hunters hunting outside defined hunting seasons. Certain aspects of aboriginal hunting rights have been reinstated for Métis residents living in specific areas. The *Powley* case is especially relevant to Cumberland House because of the large population of Métis living in the community (Supreme Court of Canada 2003). Local Métis people now have the same broad hunting rights as Treaty Indian people in the area. In other words, as in the amendments made to the Indian Act, there are now a larger number of people hunting outside of the regulated hunting season for subsistence. The livelihood of the people who reside within or near the Delta will continue to have a direct effect on the environment and will also be impacted positively by the decision and actions to rejuvenate the Cumberland Delta moose habitat. For this reason, input from local trappers and hunters from Cumberland House and affected communities associated with the Cumberland Delta are paramount (Figure 13).

## 4.1 Cumberland House



Figure 12. The community of Cumberland House

The community of Cumberland House (Figure 12) is located in east-central Saskatchewan, approximately ninety kilometres west of The Pas, Manitoba and 157 kilometres northeast of Carrot River (Saskbiz 2004). Cumberland House was established in 1774 as the first inland trading post for the Hudson Bay Company because of its location on the Saskatchewan River. It presented a convenient place for trappers to trade and offered competition for independent fur traders. Today, Cumberland House is home to approximately 1500 people, most of which come from a hunting and trapping tradition. Approximately 831 of the total population belong to the Cumberland House Cree Nation, which includes bands such as Pine Bluff, Muskeg River, and Budd's Point (Saskbiz 2004). Aside from hunting, trapping and fishing for subsistence, the Cumberland Delta offers opportunities for outfitting and ecotourism (Saskbiz 2004). Understandably, the people of Cumberland House rely very heavily on the natural resources in the area. Since the predominant activity is hunting, wildlife populations will inevitably be impacted, and the moose population is no exception.

August 18, 2004 Trappers Meeting: Cumberland House



Figure 13. Local Conservation Officer, Doug Lessmeister, consulting with local trappers on target areas for the prescribed burn.

To determine the level of support in the community, questionnaires (see sample: Appendix 1) were distributed throughout the community of Cumberland House to determine the level of support from residents, such as trappers and outfitters, from the target areas. Clearly there is strong support for prescribed burning in the Cumberland Delta as is shown in Table 1.

Table 1. Results of consultation with Cumberland House trappers, August 2004.

Fur Conservation Area	Support for Prescribed Burn Project		Comments
	Responses		
	Yes	No	
N-90	19		General comments supported prescribed burning as a method to rejuvenate decadent moose habitat
N-28	13		Summary of comments includes revival of moose habitat with recommendations for burning areas around Barrier Lake, along the Tearing River and around Belanger Lake

Further communication with the communities of Shoal Lake Cree Nation and Red Earth First Nation will be done at a later date and through the CDMMC.

#### **4.2 Shoal Lake First Nation**

Shoal Lake First Nation is located 92 km east of Nipawin, on the edge of the Carrot River. Shoal Lake gets its name from the word pahkwawsahaikanik, Cree for “the water is shallow” (Saskbiz 2004). It has a total population of 739 with approximately 628 people residing on the reserve (Aboriginal Canada Portal website 2004). The reserve spans 1479 hectares (Aboriginal Canada Portal website 2004).

#### **4.3 Red Earth First Nation**

The Red Earth First Nation is located 75 km east of Nipawin on the banks of the Carrot River, which is north of provincial highway #55. According to the Saskbiz 2004 website, Kiseyinis, meaning “little old man”, established the community in the 1850’s, and although originally part of the Opaskwayak First Nation of Manitoba, Red Earth separated in the 1890’s. The name “Red Earth” is a reference to the physical landscape of the area, referring to the reddish clays of the Carrot River (Saskbiz 2004). The reserve occupies 1455 hectares of land. Red Earth has a total population for the area is 1188, with 1032 people residing on reserve (Aboriginal Canada Portal website 2004). The community is currently in the process of pursuing development in forestry through SMADA Development Corporation (Saskbiz 2004).

#### **4.4 The Cumberland Delta Moose Management Committee**

Endorsement by the Cumberland Delta Moose Management Committee (CDMMC) is essential in order that all parties concerned are involved in the prescribed burn planning process. Initial discussions on moose management commenced with the Cumberland House Co-management Board. The Board recommended that all the First Nations surrounding the Cumberland Delta be involved because of the implications of Treaty

rights. Early communication commenced with Cumberland House Cree Nation, Red Earth First Nation and Shoal Lake Cree Nation, which resulted in the early beginnings of the CDMMC. Because Manitoba residents share the eastern portion of the Delta, and Manitoba Conservation was already engaged in a moose management program with Opaskwayak Cree Nation, the new committee felt that the moose recovery program should be an inter-provincial effort. Opaskwayak Cree Nation and Manitoba Conservation joined the CDMMC and once the expanded Committee was established, other primary stakeholder groups with an interest in moose management, including the Saskatchewan Wildlife Federation, the Saskatchewan Outfitters Association, and the Saskatchewan Trappers Association, were recruited to the Committee. Because of the large concern about moose management by the First Nations in the Cumberland Delta, it was pertinent to include associate partners such as Prince Albert Grand Council and the Federation of Saskatchewan Indian Nations in this consultation process. Most recently, the Prince Albert Model Forest (PAMF) engaged in another consultative forum and became a funding partner under the “Beyond Our Boundaries” program. The PAMF has contributed towards community and stakeholder consultation in 2003-04 and to the production of this proposal. The current CDMMC is a model in cooperative inter-provincial resource management and has been a catalyst behind this prescribed burn proposal.

## **5.0 Moose Population Restoration**

### **5.1 Methodology**

The primary goal of prescribed burning in the Cumberland Delta is to enhance moose habitat. The Delta is in a state of moose habitat decline as a result of vegetation succession and arid conditions stemming from both human and environmental influences. To achieve optimum moose habitat a prescribed burning project would be beneficial because it creates conditions for rapid rejuvenation of high quality moose forage and cover, mitigating the described habitat decline.

The proposed treatment areas have been selected through consultation and communication with the local hunters, trappers, and community leaders, Fire Management and Forest Protection (FMFP) Branch of Saskatchewan Environment, with careful consideration of prescribed burn policies and protocols, and Ducks Unlimited Canada. Endorsement of this project by the CDMMC and senior management of Saskatchewan Environment (SE) is essential. The prescribed burn will take place over a five-year period whereby specified quadrants of predetermined areas will be burned, starting early in the season. Ideally, selected areas within Fur Conservation Areas would be burned first, forming a series of fireguards, followed by treatment of the larger portion of the target area. These smaller “backyard burns” would be conducted by trappers and outfitters under permit from SE in marshes as soon as climatic conditions would allow. SE, with the help of Manitoba Conservation (MC), if approved, would then conduct a much larger burning effort. The prescribed burn could also be used by FMFP as a training exercise for personnel engaged in forest firefighting. The size of the prescribed burn project areas must be large enough to make a significant change on the landscape. Areas containing winter moose habitat will be the primary targets, which are located in the zone between the marshes and the levees, and are predominantly occupied by willow and other shrubby vegetation (examples: Figure 14).

Cut Beaver Area



Birch River



Figure 14. The targeted burn areas will be selected so as to avoid merchantable timber. Site selection will be based on chosen areas where moose populations will be best impacted.

An aerial reconnaissance resulted in identifying large annual project areas (see attached map). These large quadrants would be burned off as agreed to by trappers and other stakeholders on a rotational basis. Information Management Branch (IMB) has ultimately transferred the field maps to the Geographic Information System (GIS) electronic version. A mosaic of non-target merchantable timber and targeted non-merchantable timber has been identified and mapped electronically from Forest Inventory data.

Prior to the prescribed burn, a communication plan will be implemented to notify people via the media and by word of mouth of burning activities in the area. In addition, on an ongoing basis, public education as to the value of utilizing fire to enhance habitat would be promoted. Finally, it is critical that any prescribed burning done through public involvement would be done with the utmost of safety precautions and under the supervision of SE field staff.

## 5.2 The Solution

Prescribed burning in the Cumberland Delta is the best option for rejuvenating moose habitat. Prescribed burning will result in promotion of new forage and a retardation of natural succession, which will in turn benefit moose populations. Although historically other methods of enhancing wildlife populations have been implemented, currently, prescribed burning is currently the most practical and accepted method of moose habitat manipulation.

Complementary options to prescribed burning for moose restoration includes:

1. Options such as legislated controlled hunting are not acceptable, as the CDMMC has already agreed to rely on voluntary hunting restrictions only. The moose recovery efforts encourage community based wildlife management and compliance even though legislated hunting restrictions would produce faster results in terms of higher moose populations. Consequently, continued public conservation education and communication will be implemented through the CDMMC that discourages winter hunting when moose are most vulnerable and the cows are in calf.
2. Development of a communication plan is essential to the success of the prescribed burn. Keeping the local people, government and the general public informed will maintain an open level of communication and education. Youth involvement is one method of perpetuating education and knowledge of important conservation and environmental issues. Through an effective communication strategy, the prescribed burn process will be a success.
3. The Cumberland Delta extends across inter-provincial boundaries. Therefore, Manitoba's participation is essential to keep environmental management strategies within the Delta consistent. Ongoing contact with Manitoba will be maintained through the CDMMC, with encouragement to support similar initiatives on the Manitoba side of the border. SE looks forward to Manitoba's continued support in this moose habitat

enhancement project. In addition, it is necessary to continue to involve all stakeholders through the CDMMC while seeking funding to maintain the Committee

4. In 2004 a new Provincial licensed moose harvest strategy was developed and implemented and has specifically limited the Cumberland Delta licensed moose harvest to a draw for Saskatchewan residents. As well, SE has harmonized the non-resident moose harvest with that of the Saskatchewan resident harvest, which allows commercial outfitting opportunities to survive while protecting moose from being over-harvested. This is also more favourable and acceptable to Saskatchewan residents.

5. Reducing predators such as wolves and bears could enhance moose populations, however, options such as predator control are not desirable because public conviction opposes sacrificing one wildlife species to enhance the population of another. For example, wolves prey on moose, but it is unreasonable to poison wolves to protect moose. In addition, wolf populations have increased from a variety of coexisting factors. One such factor is the decline in fur prices, which exacerbates an already declining interest in trapping. Therefore, trapping alone cannot be relied upon as a form of population control. The rise in deer populations has also helped increase wolf populations because high deer numbers give wolves an alternate food source. The result is the maintenance of high predator numbers to the ultimate detriment of moose. Consequently, the CDMMC and Provincial government need to encourage routine trapping as a form of predator management, as well as implement other options for moose population recovery.

In summary, although alternative methods of moose population enhancement have been briefly examined, and some have been implemented, this proposal focuses on the benefits of prescribed burning as the most beneficial option for improving moose habitat and populations in the Cumberland Delta.

Appendix 1. A sample questionnaire used to solicit support from local residents.

**CUMBERLAND DELTA MOOSE HABITAT ENHANCEMENT  
PRESCRIBED BURNING APPROVAL SHEET**

Saskatchewan Environment, Resource Stewardship Branch is proposing a prescribed burn project commencing in the spring of 2005 that would take place over a five-year period. Moose populations have declined as a result of habitat degradation. Prescribed burning will improve the quality and quantity of moose habitat. Saskatchewan Environment will consult with local trappers and hunters to devise a plan that would map out specific areas to be burned. The targeted areas will include those in marsh and willow areas located beside mature trees and the burn would follow an early spring burning schedule.

Please indicate if you support prescribed burning in your area:

- yes
- no

Reasons for your choice:

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If you chose yes, please indicate the proposed prescribe burn area on the attached map.

Please list below and illustrate on the map any values at risk in your area (example: trapping cabins, personal property, etc.):

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Additional Comments:

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Name (please print)\_\_\_\_\_

Signature of Approval\_\_\_\_\_

Date\_\_\_\_\_

Representing (please circle):

- Fur Conservation Area
- Outfitting
- Community Leader
- Other\_\_\_\_\_

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## **7.2 Personal Communication**

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Boehm, Joachim. Regional Forester. August 17, 2004.

Eskowich, Kim. Conservation Programs Specialist. Ducks Unlimited Canada.  
August 24, 2004.

Smith, Norman D. Department of Geological Sciences, University of Nebraska.  
August 25, 2004

