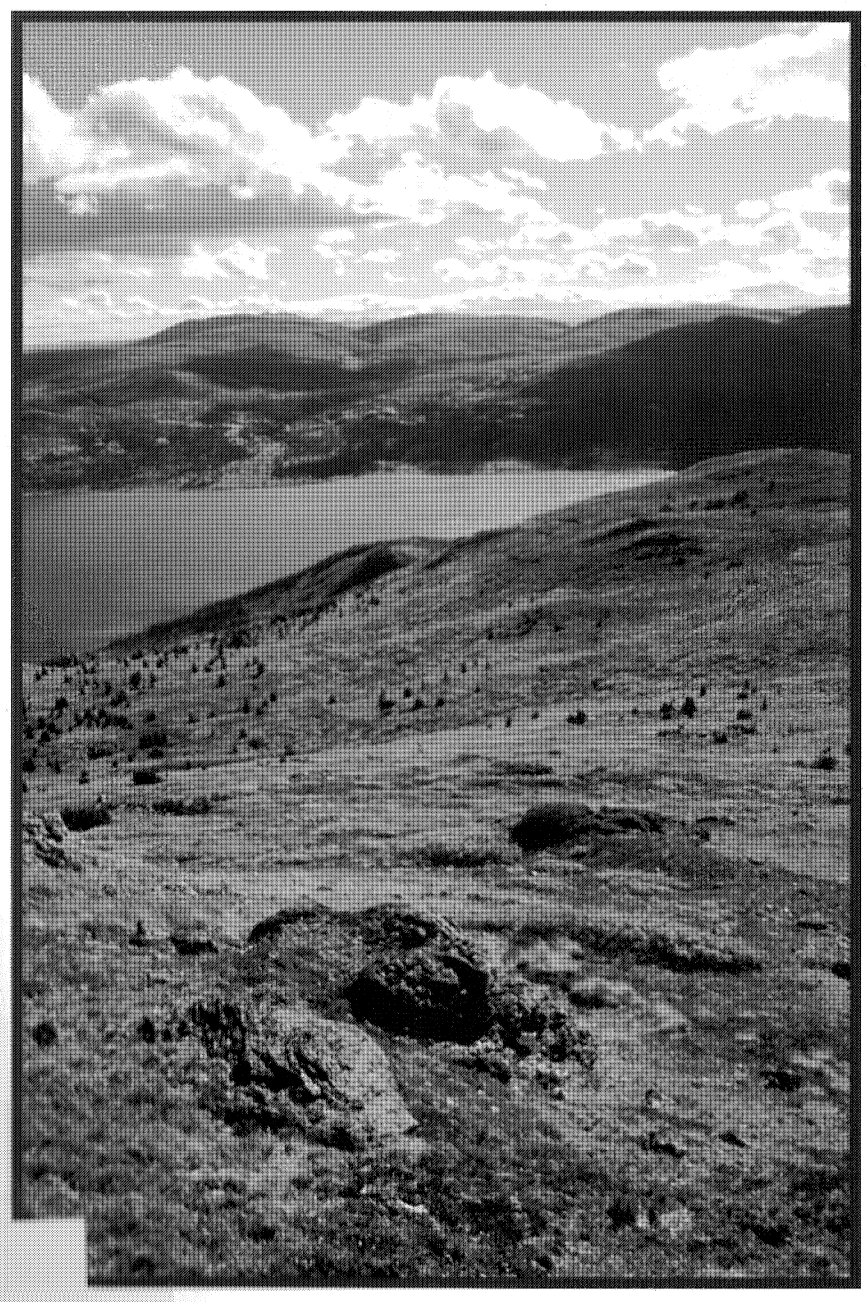
Moose in the Yukon's Coast Mountains:



Observations and Local Knowledge from Long-time Area Residents

By: Kelly A. Hayes

October 2000

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Views expressed in this document are strictly opinions of the people interviewed. They do not represent either the policy or position of the Government of Yukon.

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For more information on this project or to share your own recollections or observations of moose in the Southern Yukon, please contact the Southern Lakes Regional Biologist, Department of Renewable Resources, Whitehorse, Yukon.
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1 Introduction

Moose (*Alces alces*) are a prominent feature in the Yukon wilderness. Depending on the time of year, moose can be found in a variety of habitats—from stream banks and valley bottoms to subalpine meadows. According to Yukon government estimates, there are between 65,000 and 70,000 moose in the entire Yukon.

The history of Yukon moose populations is not well known. Initial moose surveys were carried out by the territorial Game Branch in 1973/74. The newly formed Wildlife Branch undertook the first major census of the Yukon's moose population in 1981. Hunting reports are the only other documented information on moose populations. Traditional knowledge indicates that moose may have been scarce in some areas of the Yukon during the mid-1800s. RCMP accounts from the early 1900s and evidence of a wild meat market during the Klondike Gold Rush of 1898 show that moose were quite plentiful in the area. It is estimated that by the early 1900s, approximately 600 moose were killed each year to supplement the meat requirements of Dawson City residents. Concerns about over-harvest were raised as early as 1899 by Inspector Harper of the Northwest Mounted Police (McCandless 1985).

> ***A great many moose were brought to town during the past summer and sold from butcher shops in town...The Game Ordinance was not enforced here last summer. I think this was a mistake as if the quantity of moose that was brought in last summer is brought in every year, very few will shortly exist in the country.***

Local knowledge indicates that moose populations may have dropped in the early 1900s, but probably started to increase again in the 1930s. Many people remember a healthy moose population in the Southern Lakes and Whitehorse area during the 1960s.

In the early 1980s, declining moose numbers in the southwest Yukon prompted the Yukon Fish and Wildlife Branch to carry out studies on calf mortality. They were able to determine that bears and, to a lesser degree, wolves had a significant impact on the ability of calves to survive (Larsen et al. 1989). These results complemented studies

carried out in Alaska (Gasaway et al. 1992). The role of predation in the long-term decline of moose remained inconclusive, as there were still many calves in counts from 1986 (Jingfors and Markel 1987) and 1995 moose surveys (Ward et al. 1998). Between 1979 and 1989, the annual moose harvest by licensed hunters dropped dramatically. In 1989, permit hunts for moose in Game Management Zones (GMZs) 7 and 9 were implemented for licensed hunters.

To expand the knowledge base, exchange information, and evaluate possible directions for moose recovery, a survey of First Nation hunters was commissioned (Joe 1989). This work identified the need for a management plan to recover moose numbers in GMZs 7 and 9 and the critical importance of including First Nation issues and concerns into any program. The study detailed many issues and concerns surrounding the influence of predation and over-harvesting on moose numbers and their role in population decline. While restrictions on non-First Nation harvesting have been in place since 1989, few of the other recommendations from Joe (1989) have been attempted in the proposed recovery of moose south of Whitehorse.

1.1 Purpose

The purpose of this report is to provide insight from long-time area residents into moose population changes in the eastern half of GMZ 7 and the western part of GMZ 9, an area south of Whitehorse often referred to as the Coast Mountains. Information from government surveys indicates that moose populations have been declining in the area for the past 20 years. There is no documented information that can provide managers with an understanding of these populations prior to that period.

This project was undertaken to assemble the experiences of long-time residents of the Whitehorse and Carcross areas. The information gathered is anecdotal and, in many cases, does not translate to a map-based format. This report is designed to complement information on moose in the southwest Yukon, both scientific and anecdotal, that has been previously collected. This information will help identify possible reasons behind large-scale moose population shifts in this region. This will assist First Nation and the

Yukon Territorial Governments in using a balance of technical data and local knowledge to manage moose and other animal populations in the southern Yukon.

Participants interviewed for this project included local hunters, wilderness outfitters, trappers, pilots, biologists, and long-time area residents. They all had varying degrees of knowledge about moose in different areas within the Coast Mountains region and could comment on the observations they have made over the years. Kwanlin Dun First Nation supported this project by providing access to transcripts of elders' interviews. Involvement through Macauley Lodge's recreation program also allowed for the inclusion of many long-time Yukon residents. Using the information gathered from these various sources, this study examined local knowledge of moose populations within the study area and some of the observations regarding their change in numbers.

1.2 Study Region

The study area covers the mountains to the south and west of Whitehorse, ranging from Kusawa Lake to Marsh Lake and from the Alaska Highway south to the B.C./Yukon border (see attached map). This area falls within the traditional territories of Carcross/Tagish, Kwanlin Dun, and Champagne and Aishihik First Nations. The Klondike gold rush of 1898 brought many non-First Nation people to the area, which led to the establishment of the communities of Carcross and Whitehorse. The White Pass and Yukon Railway linking the two communities was completed in 1900. A wagon road was also established in the early 1900s and is now a major highway in the southern Yukon.

The Watson and Wheaton River valleys are part of the Carcross/Tagish First Nation's traditional territory. Numerous hunting and fishing camps can still be found in the area. In the early 1900s, gold and silver were discovered near Mount Skukum and a system of roads were developed in the valleys, linking the mines to Robinson Station on the White Pass railway system. These roads have been continually upgraded over the past century. When the Mount Skukum mine went into production in the early 1980s the road was significantly improved, providing increased access into the area.

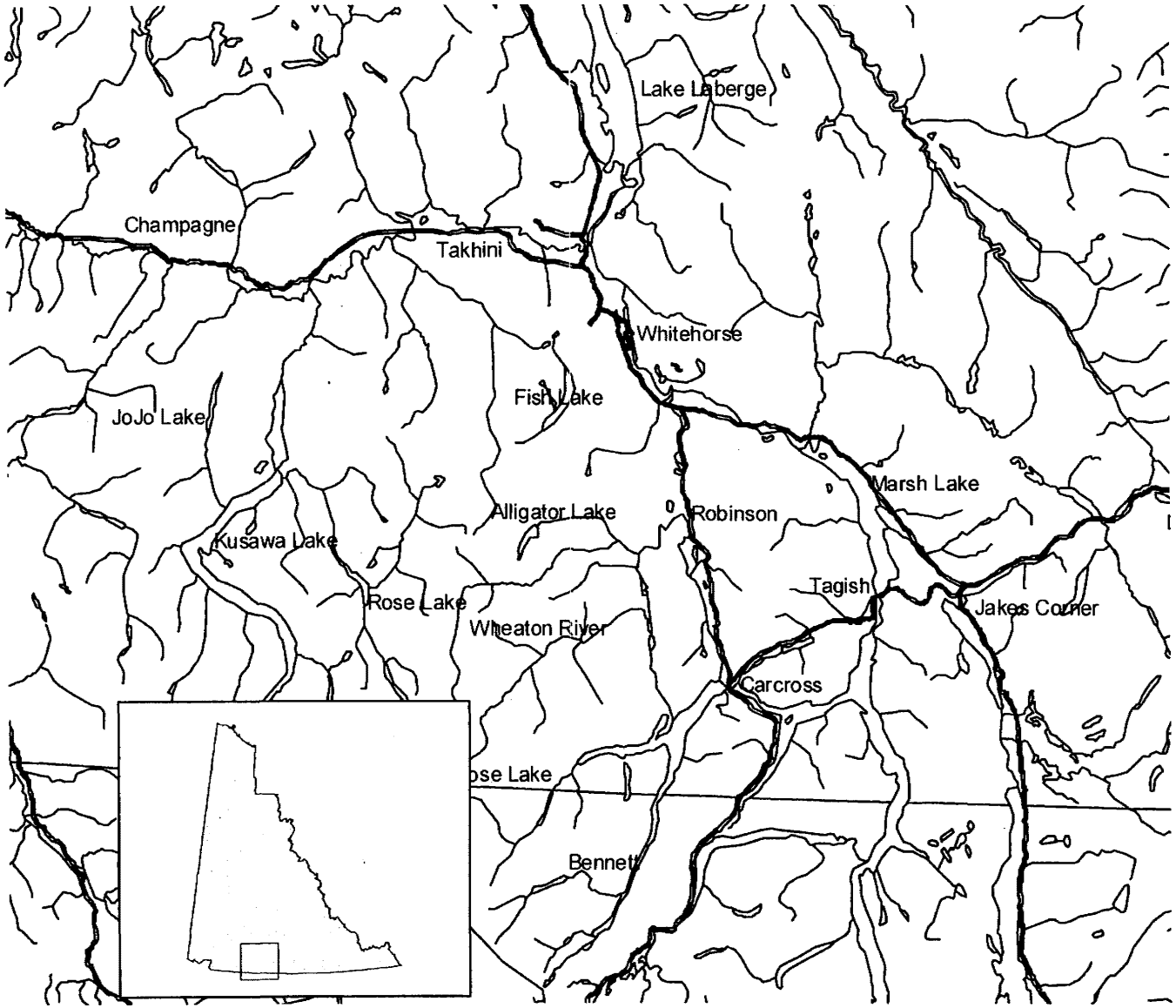

Figure 1: Area of interest, Yukon Coast Mountains moose local information study.

The discovery of copper and coal deposits in the Whitehorse area in the early 1900s also brought mining claims and road development into the Coal Lake, Fish Lake and Mount McIntyre areas. This region is part of the Kwanlin Dun First Nation's traditional territory and many old camps are located around the Fish Lake area. Several major mining operations lead to widespread development in the early 1900s. An increase in copper prices in the 1960s rekindled interest in the area and mining continued to be a major activity in the Mount McIntyre area until the 1980s.

The Kusawa and Takhini River valleys were important trading routes for the coastal Tlingit and inland Athapaskan First Nations. The Champagne and Aishihik First Nation's traditional territory includes this area. A rough trail was blazed into Kusawa Lake from the Mendenhall crossing of the Silver City wagon road during the early 1900s. After the construction of the Alaska Highway, the trail was upgraded and two campgrounds were established along the lake and river. The Ibex valley leads off the Takhini River valley. Prospectors cut a trail into the area in the early 1900s; this road was upgraded in the 1960s.

2 Method

The Yukon Government's Department of Renewable Resources commissioned this report, but was not involved in any of the interviews. A local consultant with resource management and journalism experience was hired to conduct the research.

Research for this report occurred in two phases. The first began in May 1999 with discussions with Southern Lakes Regional Biologist Rob Florkiewicz to determine the nature and the scope of this project. A brief review of relevant historical and departmental information on moose in the Yukon, particularly in the Southern Lakes region, was also carried out. This provided the necessary background information and framed the remainder of the research. At this time, the interview themes originally identified by Renewable Resources were modified, based on the findings of the

background research. These themes included the activities people took part in, any observed changes in moose populations, the number of moose seen in various decades, the number of moose seen in particular areas, possible reasons for changes in moose populations, and potential solutions to managing moose in the Coast Mountains area.

The second phase of the study included the identification of individuals with a long background in the study region by staff at Renewable Resources. Selection criteria included the amount of ground and/or aircraft experience in the region, involvement in trapping or other wilderness-based economies, and good observation skills. Individuals on the initial list were contacted and asked if they would be interested in participating in this project. It was made clear that their name would not be attributed to any comments included in the final report. Most people contacted were eager and willing to participate in the project. Those who declined the invitation to participate did so because of time constraints or because they believed they did not have any information useful to the project.

The first group of people interviewed was asked to identify other individuals who might be good sources of information. Through this snowball technique, 12 individuals with various backgrounds were identified and interviewed between June and September 1999. People interviewed ranged in age from 40 to approximately 90 years old. Everyone interviewed had a minimum of 30 years experience viewing moose in the study region.

In addition, Kwanlin Dun First Nation provided access to transcripts of interviews with six prominent First Nation elders. This was a valuable source of information as it provided important insight into the memories of First Nation people from the Whitehorse area, some of whom had passed away.

Open-ended questions were used during the interview process so the content and manner of the responses would be restricted only by the subject matter. These questions were designed to draw out information on the major themes identified for this project. The questions were pre-tested on a YTG Renewable Resources employee and a First

Nation elder. The questions were then re-organized to reflect initial feedback and the interviewer's observations. One of the major changes was to simplify the questions. The initial list was too structured and appeared to make people uncomfortable and feeling that they were being interrogated. This was not a desired effect. Therefore, the major themes to be addressed were highlighted through a general conversation instead of following a list of detailed questions. The use of a basic interview guide to ensure that major topics were covered while exercising minimal control over responses, often referred to as 'semi-structured interviewing', is a commonly used technique in anthropological research (Bernard 1995). The lack of defined structure in open-ended questions allowed for an examination of the major themes, but left people open to identify the issues they felt were pertinent to the topic. As a result, some new issues were raised that would not have been included if a strict questionnaire had been followed.

Each interview was completely transcribed and given a code to represent the person and ensure anonymity. Each transcript was carefully read and comments were grouped into major categories to reflect different ideas presented by the interviewees. The transcript information was then re-organized under each of the identified categories. Not all comments made by interviewees were included under each category. Instead, the most compelling and illustrative comments were included and general reference to other ideas is presented in the written text. Each direct quote is attributed to the interviewee by their random code. These codes are numbered between 100 and 300.

As the purpose of this project was to identify local knowledge about moose populations as a way of identifying change in the population over time, a series of final observations are included in the "conclusions" portion of this paper. Recommendations on areas of further research are made. This report is not intended to be exhaustive but is designed to act as a tool to be used along with other research projects in the area. Recommendations are offered on ways of improving this type of research.

3 Results

Several themes related to changes in the Coast Mountains moose population were identified through the interview process. These themes related to the changes in moose numbers, hunting pressure, increases in access, predation by other animals, moose demographics (age and sex structure of the population), habitat change, and education needs. The following sections will examine these themes in more detail.

3.1 Population Change

> ***We did a flight a long time ago. The one thing I can remember is we came out over Kusawa Lake and we flew this Moose Hollow area out through Fish Lake and just saw moose after moose after moose... I just couldn't believe it. Just over those mountains, just out of my reach was this absolute African-style land of plenty. It was quite impressive. (100)***

According to the personal recollections of all people interviewed, moose were plentiful in the Whitehorse area prior to 1980. Moose sightings were recalled in every watershed within the study area. Fish Lake, Bonneville Lakes, Mount McIntyre, Haeckel Hill, Coal Lake, Alligator Lake, Ibex Valley, Wheaton Valley, Primrose Lake and Kusawa Lake were specifically identified as areas where moose were particularly abundant.

> ***They were everywhere. If you wanted a moose in those days, you didn't have to go far...I still know where those incidental moose are. But I would say it is down by, well, if I said a half I would be generous. (210)***

There was general agreement among all those interviewed that moose numbers were very high during the 1950s through the 1970s. Many people described seeing groups of 30 or more moose in one location. These sightings seemed to be mainly in the fall or late winter. Specific areas mentioned where many moose could be seen were Coal Lake, Alligator Lake, Bonneville Lakes and the Primrose Valley.

There are other arguments about why was it so high in the first place. It was a grand moose population. But then when I think of what Finlayson is at now, it wouldn't have been much better. Like 400 moose per thousand [square kilometres]. That's just a grand kind of density. And anywhere else in Canada, like down south, 400 moose per thousand is considered to be pretty low. For us it is just the best we've ever had. Finlayson was 300 and something per thousand. If this area had 400 moose per thousand, it would look like it was moose wall to wall. And it did. Like these post rut areas like Bonneville Lakes were just great, great moose hunting. (100)

Only a few people could recall what moose populations were like prior to the construction of the Alaska Highway, but some presented anecdotal information. Those with personal or anecdotal knowledge of moose populations prior to the 1950s indicated that moose numbers were low in the early 1900s. Some indicated this may have been the result of natural cycles in the moose population, overhunting or human disturbance. However, there was no definitive reason that came out of these discussions or transcripts.

There used to be a lot of moose before, but at one time my mom told me there were hardly any moose left. Because of the gold rush days. They'd sell meat and they'd clean them out. (190)

I was talking to this fellow by the name of Soloman Charlie. He was an old Indian that lived at Cracker Creek...He told me that in the early 30s there weren't many moose. There were lots of caribou, but he said, "When we found a moose track, we would hunt hard to get that moose." He said, "If there was snow we would follow it a long way to get him." He said there weren't that many moose and they could get caribou any time. But for a big change, he said, they would want to get moose meat. (140)

I heard a lot people say hardly no moose sometimes. That is why one moose...they try to follow him and they go and camp right behind it...but, moose come back again, you know...they come back again. I don't know why they are gone...but moose come back again. (152)

People indicated that the moose population around Whitehorse began to increase sometime during the 1940s or 1950s. Among those whose memories went back to that time, few had any ideas as to why the population began to increase again.

Ever since they started that season thing, they started growing up again. There were moose all over here. It was really hard to get moose out of town at that time. They had to go a long ways a long time ago. (190)

Changes in management approaches may have been one reason. One person suggested the government's wolf poisoning program in the 1950s (reviewed in Smith 1981) might have decreased the number of natural predators in the area, allowing the moose population to flourish. Others noted that the gold rush and the construction of the Alaska Highway increased hunting pressure on moose and may have depressed their numbers. Interviewees did not suggest any single or consistent reason for the apparent population rebound during the mid-1900s.

During the 1960s and 1970s, many moose could be found around the Whitehorse area. According to those interviewed for this project, outfitters were taking trophy moose from the area and local hunters enjoyed the availability of game close to home.

It was easy to find a moose. Right up behind the Whitehorse Copper mine, McIntyre, we regularly hunted there. With the convenience, you could get up there after work. Usually we went up on the weekend and would go home at the end of the day. (200)

People could not agree on the exact time when moose populations began to change. In addition, it may have varied in different parts of the study region. One participant felt the change began much earlier than that, perhaps as early as the mid-1960s. However, most indicated that moose numbers began to drop sometime between the early 1970s and the 1980s.

I think it really started to fall out in the early 1970s. Pretty much in 1972/73 is when I noticed it. People were looking for more. Like the hunting fraternity that was road hunters. Outfitters had horses and some guys had boats. But those who didn't and those who had vehicles were always looking for another backwoods road (100)

I took it for granted that plentitude was going to be there all of the time. You do at the time. You can't picture it going away. I actually counted 27 moose horns shining over a large area, I glassed the area and that was not that far away from here. That was up above Coal

Lake. And I thought that was lots of moose, but today I would be astounded—well, I wouldn't see it. (210)

Different reasons were offered for the population decline. Hunting pressure, access, predation, reproduction, education and habitat issues were all mentioned in varying degrees. Although there was no agreement on the timing or the cause of the population decline, all agreed that the population had changed substantially during the mid- to late-1900s and that something should be done to help the population recover. The following sections of this document will examine the potential reasons for the change in moose numbers in the Coast Mountains area during the past 30 years.

3.2 Hunting

If I had to point my finger, I'd say it was human harvest. (200)

Moose hunting has a long history in the Coast Mountains area. Hunting moose for food and other uses has always been an important activity for Yukon First Nation people. Traditional hunting practices made the acquisition of moose meat a difficult and time-consuming task. Some people recalled stories of using snares to capture moose and one spoke of chasing a moose until it collapsed.

A long time ago...moose got a lot of trails them days...I drive through there and I see moose trail coming down to the lake and that is where they used to dry their meat up here at that lake...these lakes...and there is moose trail and so they just set up camp right there and they wait until the moose getting water or something. There is a lot of moose there they say. (154)

Prior to the 1898 gold rush the Yukon's small human population would have placed only limited hunting pressure on moose in the Coast Mountain region. During the gold rush and in the years that followed, hunting near the major communities would have been more intensive. The territorial government has always controlled the use of wildlife resources, and hunting regulations in one form or another have been in place since the turn of the last century. Some of those interviewed for this project indicated that market hunting might have had an effect on moose populations around Whitehorse. Market hunting was legal until the 1950s but interviewees indicated that the sale of wild meat

was commonplace until at least the 1970s. However, it was recognized as an important part of the Yukon economy in the early 1900s by several of the people interviewed.

> ***I used to hunt sheep...ride horses down to Fish Lake, Ibex Mountain, get some sheep and sell it. And moose meat too. I used to hunt around in the summer time get a moose and sell it to butcher. Yes, it was a good life a long time ago. (151)***

> ***There was a lot of meat hunting back then...There were not a lot of ways for First Nation people to make a lot of money. It was mostly welfare. They didn't get many jobs, and those that did, didn't stick around the reserves. Those that did, did a lot of meat hunting and there were lots of white people who had contacts... And they'd come in the fall and you'd get your moose quarter off them really cheap. It was taking advantage of these people... It was exploitation like hell, but people did it. It's only a question of magnitude and the magnitude is unknown. (100)***

Comments regarding the hunting practices of both First Nation and non-First Nation people were made by many of the interviewees. Perspectives on the impact of different hunting practices on moose populations differed among people interviewed. One perception is that First Nation people have overhunted local moose populations.

> ***I think one of the biggest problems with the decline is over the past 20 years or more, when the First Nations people realized that they had the right. Prior to that, it was a... I don't know how to put it. They were unsure of how far they could push the envelope, when it came to hunting. They go out there and shoot five and eat one and go home sort of thing. Now that these rights have been guaranteed to them in the constitution, they have taken advantage of that situation and it is too bad...It won't change from pressure from us, I don't think. It's a personal responsibility that each individual band member has to accept. (120)***

Several interviewees also mentioned poor hunting practices and overhunting by non-First Nation people. Increases in the non-First Nation population and an invasion of "Southern" attitudes during the mid-1900s were noted to have an influence on how hunting was conducted in the Whitehorse area and created more pressure on the moose populations.

I quit...too many white people...We hunt over here, that Haeckel Hill...We hunt there all the time used to, but white people destroy everything now. (153)

I thought white people not allowed in there but they still hunt in there. Nobody watch them what they do...Same as Golden Horn. You go back that way, nothing but big line of car. We try to hunt there this fall. I didn't get nothing. Too many white people. We saw moose. We try to sneak to it, here, that moose took off. I don't know. Maybe white people again I guess. (154)

Some participants also referred to a change in attitude among hunters. They indicated that most hunters used to be more conscientious and respectful towards the animals they were killing. No single interview gave a definitive reason for the change in attitude but several people noted the change.

In '77 I quit guiding. There were still quite a few moose back then. I quit because I saw too many moose left in the bushes. (110)

The old folks knew what was right. They took all that they needed. That was it. It must be strange for them now. If they go out and take what they need and everybody is taking lots of things that maybe they don't need. It's a pretty wide scope to give everyone a moose tag, because there better be a moose for them. Of course it is a chance, but still, do they need it? Of course nobody wants to give up hunting. Hunters are like gamblers. They are going to go out and they are going to hunt. But then some of them appreciate the wilderness and they start to get a bad feeling. A lot of hunters quit, because they don't really need it. (210)

Participants also pointed to the growth of Whitehorse during the past 50 years and the subsequent increase of hunters in the Coast Mountains area. The construction of the Alaska Highway and moving the capital to Whitehorse from Dawson brought more people to the Whitehorse region. This may have also played a role in depleting moose numbers.

A lot of people say it is the wolf population and that, but the wolf population has always been there. I think a lot of it is pressure. Too many hunters. There are more people going in hunting. (180)

As the number of hunters increased, hunting pressure was focused on particular areas or "hot spots" that may have changed from year to year. Some interviewees noted that this pattern of hunting created a problem as certain areas would be overrun with hunters until there were only a few animals left. Hunters would then move on to another location. For some people, this also meant that the hunting experience lost some of its quality. Instead of being alone in the wilderness, they had to share areas with many other hunting parties.

> ***Everybody went up there and got his moose, and then brought all his friends to show where he got the moose and they killed one too. It got to be too populated for me to go out there and call it wilderness... At least the natives took what they needed. They never were overbearing in those days. They took a moose and went home. They didn't bring all their friends to get more. It just got so it was irritating. I didn't want to see that happen. It bothers me. I saw how it was before. (210)***

> ***(A hunter would) go in there and then say he'd seen a lot of moose and bang, everyone is in there. I don't tell anybody where I see moose. (110)***

> ***Once everybody knew, it was toast. You had to go find another place because there was no quality to it. It was just like the gold rush. Someone else found your claim, so you went off to find another one. Which is why I like fly-in hunting now because when you fly into somewhere, it's yours. You have that isolation that you want. The quality of the wilderness. In those days it was, you know, grab a six-pack of beer and do a Friday, Saturday moose hunt. You'd be driving with one arm out the window and your gun here full of bullets. A real hunting extravaganza, you know. (100)***

Changes in hunting regulations may have had an effect on moose populations as well. Several participants referred to the hunting of cows during the 1970s, where the objective was to remove some hunting pressure from bulls and help increase the population. However, this did not have the desired effect and the number of moose continued to decline.

> ***The department in those days was very much a fledgling department and science was just becoming a fact of life in the department. But we did open a cow season. That was concurrent with increased access, increased hunting pressure of residents. And it may have been a contributing factor to the decline. Although, there were enough moose.***

It's not like it was the only place in the Yukon where people were hunting. But it just happened to be close to Whitehorse where most of the people in the Yukon live. (130)

A lot of people saw cows without calves and that meant that there weren't enough bulls around to get them pregnant. There's biology for you. So they decided the thing to do was to take the pressure off the bulls by hunting the cows. So the rocketing nose-dive would have begun the day they opened cow season. It was the day we drove them into the ground. But it was already starting to decline before that. (100)

The cow season was in place only for a short time. Moose hunting by licensed hunters in the Coast Mountains has been strictly regulated since the late 1980s. Twenty moose permits are issued in GMZs 7 and 9 to resident hunters. An additional 10 moose permits for the area are distributed to non-resident hunters through two outfitting concessions. The impacts of regulated hunting have been significantly reduced. Participants commented that there still continues to be some unlicensed hunting and others questioned the current First Nation harvest in the area.

3.3 Access

Increased access, both through the construction of new roads and technological developments such as the snow machine and the all-terrain vehicle, was an issue raised by every participant in this project. All seemed to indicate that increased access into the Coast Mountains had a significant impact on wildlife populations in the area.

The moose population certainly seemed to be more plentiful then. But there wasn't very many aircraft around and there weren't any all-terrain vehicles and most of these lakes didn't have any trails or roads going into them. The only way they got to them was with the outfitters with horses. (180)

It's not because they suffered from hunting pressure or predation or anything like that as much as the fact that there were few people here. I think this is something that is overlooked. People say, well, how come? Hey, Whitehorse had 3,000 people in those days (1940s), not the 15 or 20,000 we have now. Probably half of the roads that are in existence in this area now have come in to existence at that

time. So the accessibility to these areas has increased. The mode of travel has changed. Four-wheelers, snow machines, you know. It's all a part of the problem. (120)

Major roads like the Alaska Highway and the Klondike Highway increased access across the territory. In the Coast Mountains, roads were pushed into areas like the Wheaton River Valley, Fish Lake, Alligator Lake, Coal Lake, Kusawa Lake, and the Ibex Valley. Many began as rough exploration roads but as various resources were discovered in these areas the roads were improved and more people began to travel into these remote regions. This increased animal disturbances and hunting pressures in areas where few people had been before.

You go up Annie Lake trail, it probably started as a foot trail, then somebody made it into a wagon trail. When I was a kid, it was a one-way sand track. I used to go out there and hunt grouse in my old '46 Ford... Most roads didn't just happen. They were put there over a long period of time. They just keep getting upgraded and upgraded. Now today with a four-wheeler, you can go anywhere you want. You know, the presence of people has really increased. (130)

You don't have to convince me that access is everything with moose management. I think once a road is punched in, without accompanying regulation, time and time again, bears and wolves aside, we've decimated those populations. Probably the most drastic one I've seen is over here in Kusawa West on what I call Red Squirrel Creek Road leading up in towards Granite Lake. That one was punched in during the 1970s as a result of a placer mining interest. Once people became aware of that road, moose were just hammered in there, absolutely hammered. (200)

Since the Yukon improved the roads, it got rid of the moose. It makes it too easy for anyone who owns a vehicle to go out on the road. They see a moose there and they get it. All they they have to do is load it into a pickup. Some of them will take one or two because they don't have to pack it. Years ago when people went out, I know when the natives went out hunting they had to take pack dogs with them. They go to a lake or someplace where they knew that there might be moose and when they got a moose they would have to pack it all the way out. Or else they drifted down river and they would go into a little lake and pack it out. But they'd have to pull that raft back up the river. They had to work every bit of the way. But now, people have

4X4s and they take off. They can go into any place they want to and haul out what they get. (172)

A lot of people in those days road hunted because you could. The wildlife was there. That's almost out of the question now, in this area especially. To road hunt here is just a waste of time. (120)

Participants also noted that during the 1960s, people began to have more spare time and more money to spend on things like motor boats, snowmobiles and all-terrain vehicles. Few non-First Nation people went into the backcountry before these developments. This, in combination with the growing number of roads, brought even more people into the backcountry.

It wasn't really the fashion for everybody to go camping or go hunting in the bush. In fact, basically, nobody did. There were a few natives that stuck to their traditional lifestyle. Not too much right here, but further out... But the white people didn't go to the bush. It wasn't cool. You got called a stick or something. (200)

It wasn't until the 60s the general public had an income surplus where they could afford boats and things that allowed them to exploit both air access and water access. When I grew up here, people were generally fairly poor. And no doubt, the backcountry right in the immediate environs of Whitehorse was in pretty good shape. They were outfitted, but the resident hunting pressure would have been low...Those grassland benches along the mouth of the Primrose... you could go down the lake and see, in the fall at the right time, a dozen to 20 bulls in a day easily. With the increased resident hunting pressure as a function of increased access, disposable income and available time, the moose populations were hammered. (130)

One time, I was gone for 2-3 days, I saw over 40 four wheelers. I started to think, wow, look what they are doing. They're making roads all over there. It was no longer the untouched wilderness. They came in very fast once the quads got to be "in". Everybody wanted one... I can remember seeing seven quads going along the mountain in a row, just like our horses, only they were tearing the country apart. (200)

Snowmobiles were also mentioned by several of the participants. They mentioned the old moose hunting season used to extend until the end of November, but the popularity of snow machines put moose at a disadvantage. Instead of being stopped by winter conditions, an early snowfall meant that hunters could then easily access moose on their snow machines.

> ***Moose were extremely vulnerable. I don't think it would have taken very long before hunters were having a serious, serious impact. You could basically snowmobile up to four moose, and if there were four of you, they didn't have a hope. It was simply a meat acquisition exercise. If you found them, they were harvested. They were easy to find. (200)***

> ***We were overharvesting to beat hell because the season was so long and access was good and people had skidoos. You could go up here after freeze-up (Bonneville Lakes) where all the post-rut groups were and shoot the snot out of them. There were cases of guys going up the Wheaton Valley and one guy shot seven moose. (100)***

Regulations reducing the length of hunting seasons were changed in about 1977. Recently, the use of the extended season to harvest moose in the permit zones is once again taking advantage of the snow cover to improve access to moose by licensed resident hunters.

Besides creating new roads and hazards for moose, increased access also may have lead to increased disturbances. All-terrain vehicles and snowmobiles are noisy machines and some of the participants noted this constant noise may have displaced moose and forced them to move to new areas. This may have also lead to problems during breeding season.

> ***It changed the nature. When a cow is in season and the bulls come into the area and make calves, so they don't need disturbing. So they might take off and this cow might not get bred. So her time passes and so does her calf. (210)***

Many participants recognized improved access and the popularity of "road hunting" as being a significant problem. A few highlighted changes they observed in hunting patterns as a result of increased access and improved technology.

> ***Then when the mining road went in, we as regulated hunters could still only take one animal per person. If the natives found out there was a road in there, they would literally go in there and camp in those valleys. I've seen it. Year after year after year. And anything that walked through the valley they would kill. (160)***

> ***The other part in terms of First Nations hunting year round, there was a fairly big population at Kwanlin Dun . There was a lot. And they hunted differently. The winter areas were easy to access. You'd just have to pile your family into the GMC and drive down the road. Boom, boom, boom, boom, you load up four moose into the back and head back to town. It was easy and you didn't need any real technical requirements. (100)***

> ***My sense of the last 20 to 30 years of aboriginal hunting is, aside from a few individuals, they are very interested in being able to drive and shoot their moose... They are very interested in stepping out of their vehicle and shooting a moose or stepping out and setting up a camp and patiently waiting. (200)***

> ***I see hunters all over the place now...not before. We used to hunt and see moose out there and now...I go down the river some time, there are too many hunters out there. They park all over the place. (155)***

Road hunting is no longer a preferred method of hunting in this region, several participants pointed out. But, road hunting does continue in some of the less populated regions, such as the central and northern Yukon. Interviewees indicated that hunters today look for remote areas and more are choosing to charter an airplane and fly into hunting areas. This is a change from the way hunting was done previously. The participants who discussed the use of airplanes mentioned they felt the change was an indication of dwindling moose numbers.

> ***There weren't that many people that I knew of that flew out. You didn't have to. Why would I when I could go and drive? And there***

wasn't so many people that you felt like you were stumbling over each other. Now the quality thing is a really important point. Then it didn't seem to matter. (100)

Increased recreational activity, such as hiking, biking, camping and wilderness tourism is also bringing more people into the backcountry. Participants noted this also may be causing some disturbance to wildlife and may displace moose from their preferred habitats at specific times of the year.

(Coal Lake), that's where the moose really were... People who went hunting, most of them didn't go up to the Coal Lake area. Some of the natives did because they knew the country...The white population didn't get up there... But it is no news now. We've got our Hikes and Bikes now and they show all the trails in there and they show up in droves. (200)

My trapline is up the Wheaton River. There is no game hardly there because there are too many people. Too many skiers, too many dog teams, too many ski-doos. Pretty near everything is going up there. People are hiking... They go up to their cabin and stay there...you can't set a trap. If you set it they spring them anyhow. So there is a lot of problems with too many people. (152)

Overall, access appeared to be a primary concern for most participants. Many appeared to feel that access issues had a significant impact on moose numbers and they discussed at length observations related to increased access.

3.4 Predation

Many participants mentioned that wolves and bears might have had an impact on moose numbers. Some had observed a change in the feeding patterns of bears and they noted that before the 1980s they had not noticed many bears eating moose calves.

The grizzly bears took a terrible toll on the moose calves, back I guess in the '80s. I turned it in one time to the game department because I was getting alarmed at all the bear scats with little moose hooves. Before that I didn't consider that they were the main predator. Wolves did their share. But ordinarily, it's when the cold winter comes that they really start to predate. (210)

The other thing was the grizzly bears taking a lot of the calves. Why were grizzly bears starting to get calves when they hadn't before? They probably developed the habit and then gave up the habit when the calves were down. When they start building up again, well that's probably been happening in nature since year one, that they would act like that, but maybe there are other factors involved. (211)

They did that study in this area and bears, grizzly bears, got a big percentage of the moose calves. And just before that the gopher population dropped. Just 'bang'. I don't know why that was. But bears, they eat a lot of gophers. So I think that probably they started eating moose calves. (110)

In the 1980s, the Yukon government carried out a study to determine predation patterns on moose calves in the Coast Mountains. They determined that wolves and bears were having an impact on moose recruitment and a wolf control program was put into place to help the population recover. This program had limited success (Larsen et al. 1989).

3.5 Demographics

Many participants mentioned changes in the demographics of the Coast Mountain moose population. During the 1980s, many people observed many older bulls and cows, but very few calves.

I'd say there was a change in the moose population, one might argue, late 70s, but certainly 80s. In the late 70s, our family definitely noticed fewer cows with calves. We would still see a lot moose on our hunting trips, but they would be lone cows or cows and bulls, but you wouldn't see the yearling, calves of the year. From 1975 on, if this is any value and it probably is, you typically saw lots of very large antlered moose. Far more so than you would see moose of fork horn size to 40-inch size, we were almost regularly eight times out of ten seeing an antler size of 50 inches or greater. (200)

Before the 80s it would be more common to see three calves than it was to see a dry cow. Then in the early 80s you started to see dry cows. (211)

There were not that many calves. Quite surprising with the number of moose we had. But there wasn't that many calves. I guess it was the bear that were taking them. Wolves were polishing off what was left over, but there were no young. No problem getting a big trophy, though. I often wondered how long this was going to last with no calves showing up. (140)

One time we were hunting in at Alligator and we counted 28 cows. We went all through here, Ibex and went up to that moose lick and we camped in there. We only saw one bull. One bull moose and 20 cows. And only one of those cows had a calf. (190)

Low calf recruitment may have been a result of many different factors. Most participants appeared to agree that moose calf numbers were low during the 1980s. This is supported through moose survey information prior to surveys carried out in 1985 and 1995 (Government of Yukon 1997).

3.6 Habitat

Subalpine meadows, river valleys and low snowfall make the Coast Mountains excellent moose habitat. Participants mentioned the importance of good, undisturbed habitat for a healthy moose population.

In deeper snow winters, those pine flats along the Annie Lake Road, this was a whole great moose wintering area in those pine flats down there. I don't know what the hell they were eating, but there was a lot of buck brush. In a deep snow winter, the moose would come out of the mountains and come down onto the flatlands. And there were a lot of them. (130)

They've got a habit, moose. Like springtime, you're looking for them, you look down on the flats. Or swamps. But right now, you go up in the mountains. Around August, they move up high and in January when the drift gets high up in the mountains, they come down again. They have a pattern. That's how we hunt them. We know where they will be. They're close to water in the summer. This is how we hunt them. (190)

There is a cow that has a calf out on the point every spring out in front of my house. She was there again this year. It's not the same

one over 30 years, but I think there is a matrilineal thing going on there. A female cow will come to that place to have her calf. They are all related, over the years. (130)

However, with increased access, resource development and the construction of rural residences or subdivisions in the area around Whitehorse, moose habitat is decreasing. Some interviewees pointed to this as a possible factor in the reduction of moose in the Coast Mountains area.

Anywhere you see river bottoms. That's what we are losing. We're losing all these habitats where the moose winter. When we have deep snow, this is where they'd come down...It has lots to do with it. They've got no place to go when the snow gets deep up here. It's just a little bit here where the snow doesn't get so deep. (110)

I was brought up in Carcross and spent the first 18 years of my life there. If you drove from Whitehorse to Carcross, you were in bush and wilderness until you get to Whitehorse. Now when you drive, you see a few places along the road, but when you fly there are all kinds of places just off the road that you can't see. It's pretty heavily populated out there. It's almost like it is part of Whitehorse. Lots of buildings and lots of people. They also used to have the railway going through that area, and that would have scared off a fair bunch of animals. (180)

Habitat loss continues to be a concern as Whitehorse expands and access roads are upgraded. Some attempts to address these concerns are currently being developed by a working group established by the Yukon Fish and Wildlife Management Board.

4 Solutions

While many of the interviewees recognized reasons for the decline of moose in the Coast Mountains area, few had any ideas about how to address these problems and help bring the moose population back. Many spoke of the need for increased education and a management plan for the area. Some mentioned the Southern Lakes Caribou Recovery Program as an example of how a dwindling population could be revitalized. Others mentioned the need for stricter management of access into the backcountry. Others mentioned the need to simply educate hunters on proper hunting techniques and etiquette.

> ***I think a lot of those people go out there and they don't know how to hunt. I went up to Alligator and there were two hunters in there and they said they had been in there for two weeks and hadn't seen a thing. We camped just above them on a high hill and I got up at 4 o'clock in the morning and I counted 6 moose right in front of the camp. So...They're just learning themselves. There are a few places where people kill a moose and they don't know how to skin them. Somebody had to come along and helped them. There should be instructions on how to skin moose and things like that. (190)***

> ***We have to educate them, I think. Especially with four-wheelers. In through here you see four-wheeler tracks and they just rip up the habitat. That's what they are doing up here now. (110)***

> ***At least they should let them wait a couple of years and let them start again. They can't just go after them like that. It's too much. There's not many left. Ever since I came back, I heard about it. There's nothing at all up here. (171)***

> ***There are two things you can do realistically. You regulate hunting and you deal with predators. Ideally, if there were a 'Friends of the Moose' society, you'd be out doing predator control. But there are no 'Friends of the Caribou' and 'Friends of the Moose'. All the "Friends" in the world are friends of predators, some of which need a damn good house cleaning from time to time. I'll say that unequivocally. Man is a part of this equation. Just the fact he is living and breathing. He doesn't even have to be out there hunting.***

> ***All he has to do is go snowmobiling or driving his truck up and down the road at the wrong place at the wrong time. We are a factor in all this whether you are a hunter or not. It's a bit of a misnomer in some ways. You can actually manage wildlife if you are handed the tools to do so. If you don't have all the tools, then all you are left managing is people. (130)***

There were a few different ideas presented by participants that could help improve moose numbers in the Coast Mountains area, but there was little agreement as to the best approach to take. Most interviewees appeared to be fairly pessimistic about the potential for moose populations to recover. Most indicated that numbers had dropped too far and there was too much human interference for a large moose population to flourish in the region. The general perception was that the moose would only recover if a strong approach to managing human activity in the area was undertaken.

5 Conclusion

There was a general consensus among project participants that moose numbers in the Coast Mountain area have declined over the past 50 years. While they could not completely agree on the exact timing of the decline and whether it was focused in certain regions or an overall decline in the region, all participants remembered extremely high moose numbers in the 1950s through to the 1980s. All interviewees discussed factors that may have lead to the reduction of moose in the Coast Mountains and while there were many common themes, there was no agreement on which was the primary reason for the decline.

Whitehorse's growing human population was noted as an important factor to consider. The changing attitude of hunters was another factor that was mentioned by many participants. Issues related to predation and the composition of the moose population were also raised as concerns. The most common issue mentioned by participants was increased access through the construction of new roads or trails and the development of snow machines and all-terrain vehicles. Many felt that these activities had a serious effect on moose populations in the Coast Mountains.

Many participants agreed that something must be done in order to help the moose population to increase. Most interviewees indicated that a management plan for moose in the Coast Mountains area should be developed and access-related issues should be addressed. Some interviewees indicated moose were still present in the Coast Mountains area and were not below the point of recovery.

> ***Moose are not absent in the area. As a matter of fact, I'd say that was true for the whole area if one was paying attention. You could find one here if you had to have one. (130)***

6 Recommendations

Although this project provided interesting and useful information on moose populations in the Coast Mountains area, it also raised many questions that have yet to be answered. Moose numbers in the area have declined without clear indication or reason for this decline. The information that has been gathered through this and a number of other projects related to moose in the Coast Mountains is extremely varied. An important step to now undertake is the integration of this information to provide a broad picture of our current understanding of the situation. It would also be useful to include research into human population increases, industrial growth in the region, temperature and precipitation variations, past wildlife management practices, agricultural development, developments in transportation technology and other associated activities that have been mentioned as potential influences on moose population changes. The integration of this material may provide a clearer picture on some of the potential causes of the decline and indicate some possible management approaches that could restore moose to the region.

It is also important to note that the research approach and type of information gathered for this project is fairly unique. Local or traditional knowledge is extremely useful in providing a broad-based understanding of certain issues and can help indicate specific causes and effects that would not be noted during a short-term scientific study. Gathering this information is an activity that should not be taken lightly. Interviewees need to be clear about how the information they are providing will be used. Interviewers need to be skilled in making participants feel comfortable and knowing what questions should be asked at what time. If future projects of this type are to be pursued by YTG or any other government organization, efforts should be made to hire individuals with strong interviewing and interpersonal skills. The ability to transcribe and clearly index information is also an important asset that should not be overlooked.

Lastly, projects like this need to be done in partnership with other government organizations, particularly First Nations. While there was a close working relationship established with Kwanlin Dun, there was no official contact or involvement with Carcross/Tagish or Champagne and Aishihik First Nations. However, individuals from

these First Nations were involved in the project as interviewees. This is not the best approach and closer relationships should be established for future projects. This will increase the quality of information and improve participation by elders and other important First Nation and non-First Nation partners.

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