

# Information for Decisions



2007  
Fish & Wildlife Inventory Program  
Project Summaries

Results reported here are preliminary. Many projects are still underway. Please contact the person responsible for each project before using or quoting any information in this document.

Information compiled May, 2008 and reflects the status of projects to March 31, 2008.

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INTRODUCTION.....	5
MOOSE.....	6
Carmacks West Moose Census.....	6
Local Ground-based Moose Monitoring - Mayo, Pelly and Carmacks .....	8
Nisutlin and Teslin Burn Moose Composition Survey .....	10
Moose Winter Range Habitat Suitability – Eastern Kluane Region.....	11
Dawson East Moose Population Monitoring .....	14
South Canol West Moose Population Survey .....	16
Teslin Moose Habitat Use Study.....	18
BARREN-GROUND CARIBOU .....	20
Fortymile Caribou Herd Winter Range Habitat Assessment .....	20
Fortymile Caribou Herd Winter Distribution and Monitoring .....	22
Porcupine Caribou Collaring and Composition Count.....	24
WOODLAND CARIBOU.....	27
Ethel Lake Caribou Herd – Fall Composition Survey.....	27
Clear Creek Caribou Herd – Fall Composition Survey.....	29
Tatchun Caribou Herd – Rutting Season Composition Survey .....	31
Hart River Caribou Herd Monitoring.....	33
Nahanni Caribou Herd - Fall Composition Survey .....	36
Finlayson Caribou Herd - Fall Composition Survey .....	38
Aishihik and Kluane Caribou Herds - Fall Composition Survey .....	40
Southern Lakes Caribou - Census (Carcross and Ibex herds).....	42
Southern Lakes Caribou Herd - Fall Composition Survey (Carcross and Ibex herds).....	44
GRIZZLY BEARS.....	46
Kluane Region Grizzly Bear Population Assessment.....	46
SHEEP .....	48
Ruby Range Dall Sheep Survey .....	48
Pelly Mountains Stone Sheep Survey .....	50
MOUNTAIN GOATS.....	52
Tungsten (Nahanni Range) Road Area Mountain Goat Survey .....	52

FURBEARERS.....	54
Beaver Distribution and Abundance Assessment .....	54
FRESHWATER FISH .....	56
Peel Watershed Fisheries Investigations .....	56
Braeburn Lake Whitefish Monitoring .....	58
Old Crow Freshwater Fish Assessment.....	60
Fisheries Assessment Surveys .....	62
RARE SPECIES.....	64
Field Survey of Invertebrates in the Dawson Land Use Planning Area.....	64
Field Survey for Rare Plants in the Dawson Land Use Planning Area.....	66
Rare Small Mammal Inventory in Southern Yukon .....	68
British Columbia /Yukon Gyrfalcon Productivity Monitoring .....	70
Aishihik Wood Bison Herd Inventory and Monitoring .....	72
ELK .....	74
Takhini Valley Elk Herd Census and Monitoring .....	74
Braeburn Elk Herd Census and Monitoring.....	76

## ***Introduction***

Land-use planning, wildlife management plans, resource development assessments – to be effective in resource management and planning processes we need to have good up-to-date information.

In 2007 an additional \$1.3 million was allocated to begin to revitalize Environment Yukon's aerial and ground surveys of fish, wildlife and their habitats.

How many? Where do they live? What makes this habitat special? Has anything changed since the last time we looked? New inventory projects are beginning to provide some answers.

From the smallest insects to the largest mammals, from lake bottoms to mountain tops, and from the North Slope south into B.C., Environment Yukon and its co-management partners carried out a wide range of surveys. In all, 36 inventory projects were done in the 2007-08 fiscal year.

This document provides a snapshot look at the Fish and Wildlife Branch's inventory-funded projects. Other Branch activities, such as management planning, harvest monitoring, and wildlife viewing, for example, fall outside of the inventory umbrella and are not reported here.

Some of the inventory projects reported here are ongoing, but the additional funds provided in 2007-08 allowed some activities to be expanded or enhanced. For example, in previous years it would not have been possible to do censuses on two caribou herds in addition to the ongoing caribou fall composition surveys. Readers are urged to contact the person responsible for each project for more information.

# Moose

## ***Carmacks West Moose Census***

**Traditional Territory:** Little Salmon/  
Carmacks; Selkirk

**Environment Yukon Management Region:**  
Northern Tutchone

**Project leaders:** Mark O'Donoghue, Northern  
Tutchone Regional Biologist, and Rick Ward,  
Moose, Elk and Deer Biologist, Environment Yukon

**Project funding partners:** The Selkirk First  
Nation co-funded the survey and Little  
Salmon/Carmacks First Nation supported one of  
the crew members.

**Management goal:** To obtain updated  
population information needed by Environment  
Yukon and its partners to sustainably manage  
moose in the Carmacks West Moose Management Unit.



**Background:** Residents of the Carmacks and Pelly Crossing areas have consistently placed a high priority on monitoring the health of local moose populations. Concerns about low abundance of moose and the general lack of recent information about moose populations in this area led participants at Northern Tutchone May Gatherings to recommend this survey. The *2004-2009 Community-based Fish and Wildlife Management Plan for the Little Salmon/Carmacks First Nation Traditional Territory* also expresses concerns about the low numbers of moose northwest of Carmacks.

The area northwest of Carmacks was last fully surveyed for moose by Environment Yukon in 1987. Environment Yukon tried to survey the area again in 2003, but only completed half of it because of poor weather.

Harvest of moose in this area has been closed to licensed hunters since 1987 due to low moose numbers, but there is some harvest from First Nation hunters.

This project is coordinated with Environment Yukon's moose program.

**Project objective:** To determine the numbers of moose, the composition of the population (number of bulls relative to the number of cows, and percent of cows with calves) and their distribution in the southeastern part of the Carmacks West Moose Management Unit.

**Project description:** Between November 30 and December 7, 2007, the survey team used a helicopter to search for moose in the southeastern part of the Carmacks West Moose Management Unit (northwest of Carmacks). Crews in two helicopters spent 69 hours counting moose. The weather and snow conditions were good.

Members of the survey team counted the number of moose they saw in selected blocks. These blocks cover about 44% of the area. They also determined the age class (mature, immature, or calves) and sex (for all moose except calves) of all moose seen.

Moose were found in a variety of habitats and were widely distributed in the survey area. Most moose were seen in subalpine willow flats and creek draws with abundant willows.

**Project results:** The survey team counted a total of 208 moose; 73 adult bulls, 108 adult and yearling cows, five yearling bulls and 22 calves. These observations were used to calculate the population size, the sex ratio and estimates of calf survival of moose in the survey area.

The population estimate is 520 moose. This is equal to a density of about 124 moose per 1,000 km<sup>2</sup> over the whole area. This number is lower than the Yukon-wide average but higher than estimates made in and near the same area in 1987 and 2003.

Biologists also estimate there are about 21 calves and 10 yearlings for every 100 adult cows in the survey area. This number suggests that survival of young moose has been fairly low in this area during the past two years. There were also about 75 bulls for every 100 cows in the survey area. This is a healthy sex ratio. The average is 68 bulls per 100 cows in other areas of the Yukon that have been surveyed.

Environment Yukon has prepared a report summarizing the results of the survey for distribution to the Little Salmon/Carmacks and Selkirk First Nations, Renewable Resources Councils, and other interested parties. Results were presented at the Carmacks and Selkirk Renewable Resources Council meetings.

**Next steps:** Environment Yukon will continue discussions with affected First Nations and Renewable Resources Councils about options for population monitoring and managing harvest of moose in this area. Options for monitoring include gathering information about recruitment rates of moose in this area from ground-based or low-intensity aerial monitoring

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## **Local Ground-based Moose Monitoring - Mayo, Pelly and Carmacks**

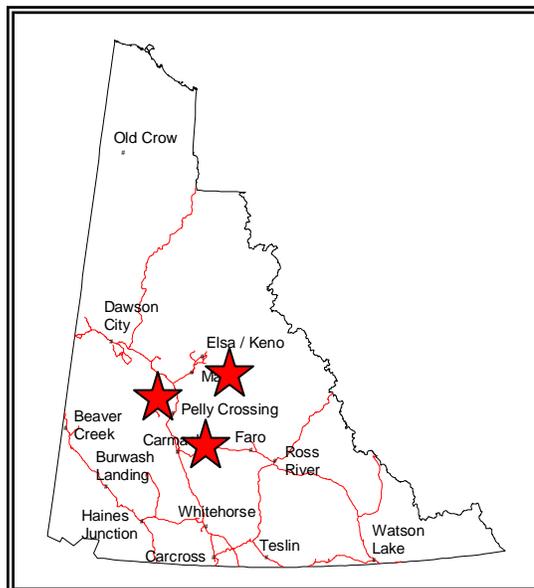
**Traditional Territory:** Na-Cho Nyäk Dun, Selkirk, and Little Salmon/Carmacks

**Environment Yukon Management Region:** Northern Tutchone

**Project leader:** Mark O'Donoghue, Northern Tutchone Regional Biologist, Environment Yukon

**Management goal:** To obtain updated population information needed by Environment Yukon and its partners to sustainably manage the moose population in the area.

**Background:** Aerial surveys of moose are costly and can only be conducted about every 5 years in priority areas. In areas with significant harvest, more regular monitoring of moose populations is desirable. Ground-based monitoring is a cost-effective way of monitoring calf survival. It also actively involves the local community in keeping track of the health of the local moose population.



Environment Yukon confirmed its intention to continue this monitoring program in the *2004-2009 Community-based Fish & Wildlife Management Plan for the Little Salmon/Carmacks First Nation Traditional Territory* and in the *2002-2007 Community-based Fish & Wildlife Management Plan for the Na-Cho Nyäk Dun Traditional Territory*. Environment Yukon also expressed an intention to do this monitoring at the Selkirk First Nation May Gatherings.

The ground-based monitoring was started in the Mayo area in 2001 and has been conducted there annually since then. Each year, 15 to 20 hunters have kept track of all moose seen from August through October. To date, they have reported an average of 409 sightings of moose and recorded them by age and sex. The monitoring has provided valuable data on how well moose calves are surviving as well as recording participants' observations on the overall health of the moose population in the Mayo area.

In 2007, the first monitoring calendars were distributed in the Pelly Crossing and Carmacks areas to start ground-based monitoring in those communities.

This is a cooperative project with support and expertise contributed by:

- Mayo District Renewable Resources Council and First Nation of Na-Cho Nyäk Dun
- Selkirk Renewable Resources Council and Selkirk First Nation
- Carmacks Renewable Resources Council and Little Salmon/Carmacks First Nation

**Project objective:** To monitor the composition of the moose population in the Mayo, Pelly Crossing, and Carmacks areas, using ground-based methods.

**Project description:** In Mayo, the regional biologist distributed the calendars to 20 local hunters in July 2007; in Pelly Crossing and Carmacks, calendars were distributed by the Renewable Resources Councils. The hunters were asked to use the calendars to record the moose they saw only during the fall hunting season, as this is the time of year they focus on

moose hunting. Hunters recorded each observation of moose separately, noting the number, sexes, ages, and locations of all moose seen.

The calendars were collected in November 2007.

**Project results:** Nineteen hunters reported a total of 441 moose in the Mayo area; 41% of adult cows still had calves, indicating that calf survival was quite good this year. Hunters are still harvesting enough moose to satisfy their needs for food, but noted that hunting pressure is up and numbers of bulls seen are down in some areas.

This is the first year the ground-based monitoring has been done in Pelly Crossing and Carmacks. Only four hunters completed calendars in the Pelly Crossing area (reporting 56 moose) and two hunters completed them in the Carmacks area (reporting 22 moose). The regional biologist believes that participation will improve as the program becomes more established in these two communities.

Data summaries were sent to all participants in the monitoring programs. More detailed data summaries were presented to each participating Renewable Resources Council. Each participating Renewable Resources Council holds the original copies of the completed calendars.

**Next steps:** The regional biologist is preparing a report summarising the first seven years of ground-based monitoring in the Mayo area for wider distribution.

Environment Yukon and its project partners will continue to conduct annual ground-based monitoring of moose in the Mayo, Pelly Crossing, and Carmacks areas.

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## ***Nisutlin and Teslin Burn Moose Composition Survey***

**Environment Yukon Management Region:**  
Southern Lakes

**Project leader:** Rob Florkiewicz, Regional Biologist,  
Southern Lakes Region, Environment Yukon

**Project funding partners:** Teslin Renewable  
Resource Council, Teslin Tlingit Council

**Management goal:** To sustainably manage moose in  
the Lower Nisutlin River Valley and the Teslin Burn

**Background:** The Nisutlin area and Teslin Burn are  
the core of some of the most heavily hunted and  
accessible areas in the region. They are also core areas  
for valuable moose habitat.



Annual, low intensity surveys form an important component of the community moose monitoring program as they are relatively inexpensive, they support community involvement and can be conducted consistently from year to year. The Teslin Burn survey has been conducted annually since 2004. The Nisutlin area was surveyed in 2004 and 2005. The 2006 survey was abandoned due to poor weather conditions. Surveys have demonstrated the importance of assessing calf recruitment on an annual basis for areas of concern in order to understand the dynamics of a population.

Moose are an important species for the community of Teslin. Gathering information on the status of local moose populations is a priority. The Community-based Management Plan for the Teslin Tlingit Traditional Territory identifies the need for an ongoing moose monitoring program to provide regular information on the status of local populations.

**Project objective:** To maintain regular low intensity monitoring of moose in the Nisutlin and Teslin Burn winter ranges

### **Project description:**

**Teslin Burn survey area** - On December 20, 2007, the survey team, which included an observer from the Teslin RRC, used a fixed-wing aircraft to complete a low level composition flight over key winter concentration areas in the Teslin Burn moose ranges. The Teslin Burn survey area broadly encompasses the area between Teslin Lake, the Alaska Highway to Jakes Corner, south to the Atlin Road and to the BC/Yukon border. The survey was completed in 3.5 hours, under clear skies. Fresh snow had fallen within 3 days. There was snow and wind at higher elevations.

The survey team counted the number of moose in the area, recorded their sex and age group and mapped their locations.

A second three-hour flight was conducted in March, 2008.

**Nisutlin survey area** -

On December 13, 2007, the survey team which included an observer from the Teslin RRC, used a fixed-wing aircraft to complete a low level composition flight over key winter concentration areas in the Nisutlin area moose ranges. This area broadly encompasses Mountain ranges bordering the east and west parts of the Nisutlin River from the South Canal road downstream to the Nisutlin Delta.

The survey was completed in 3.5 hours, under partial overcast conditions. Calm to light winds built through the day. Snow fresh had fallen one day prior to the survey.

The survey team counted the number of moose in the area, recorded their sex and age group and mapped their locations.

**Project results:**

**Teslin Burn survey area-** Lateness of the survey in the Teslin Burn area, along with high snow and wind at higher elevations, resulted in fewer moose observations compared to previous years. All fresh tracks seen at higher elevations headed into the trees and many observations occurred along edges of willow meadows and treed habitat suggesting most animals had left the high ground.

The survey team counted 25 bulls (12 mid-size, 13 large), 27 cows, and two of unknown sex, for a total of 54 moose. No calves or yearling bulls were observed. Using these observations, biologists estimated at ratio of 92 bulls/ 100 cows. The high bull to cow ratio suggests that the cows with calves were located in habitat where they couldn't be seen and explains the lack of observed calves. Regardless, given the small sample observed and the lack of age classes observed, this data should be considered cautiously in drawing any conclusions about the status of the Teslin Burn moose population.

No calves were seen during an additional three hour flight conducted in March, 2008.

**Nisutlin survey area -** Fresh snow and good flying conditions allowed crews to obtain sample sizes similar to the previous two surveys. Good conditions this year also allowed the survey crew to gather better information on bulls and to classify them by size.

The survey team counted 40 bulls (12 mid-size, 20 large and eight yearling bulls), 50 cows, and nine calves, for a total of 99 moose.

Using these observations, biologists estimated at ratio 80 total bulls/100 total cows; 18 Calves/100 total cows; 19 yearling bulls/100 mature cows; and 38 yearlings/100 mature cows.

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***Moose Winter Range Habitat Suitability – Eastern Kluane Region***

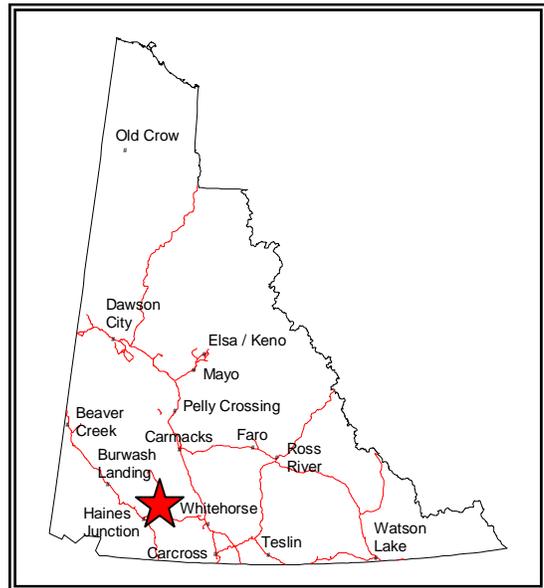
**Environment Yukon management region:** Kluane

**Traditional Territory:** Champagne and Aishihik

**Project leader:** Lorne LaRocque, Acting Regional Biologist, Kluane Region, Environment Yukon

**Management goal:** To obtain information on moose distribution and habitat use patterns to support land use planning and development impact assessment.

**Background:** The Haines Junction area is experiencing an increase in land use applications. More applications are anticipated when the forestry road network is put in place.



Environment Yukon needs to determine the importance of valley floor habitats in this area in order to contribute effectively to the land use planning and development impact assessments. These processes require the identification of the potential impacts of land use activities on moose population and the design of appropriate mitigation measures associated with any development.

Environment Yukon has developed habitat suitability maps for moose in the Kluane Region using information from existing forest cover maps, Landsat imagery (EOSD) Digital Elevation Models, Bioterrain mapping, and relevant survey files.

**Project objective:** To survey moose in the Dezadeash valley to document areas of important use in late winter.

**Project description:** From March 12 to 14, 2008, the survey team flew 17 hours in the Haines Junction area as far south as Kathleen Lake, east to Marshall Creek and west to Bear Creek, covering a total area of about 840 square kilometres. The habitat covered varied from spruce and aspen forest and riparian habitat along the Dezadeash and Kathleen Rivers to subalpine in Aurial and Ruby Ranges.

The survey was done using a fixed-wing aircraft. It was flown earlier than planned due to the sudden decrease in snow levels. Old snow, lots of bare ground around tree wells and extensive forest canopy in the survey area made conditions poor for sighting moose.

The area surveyed was divided into 50 sample units to assist in the analysis of density and distribution. In each sample unit, the survey team counted the number of moose. Conditions were not suitable for getting more information about sex and age. The survey crew also noted the amount of moose tracks, describing them as light, moderate or heavy.

**Project results:** A total of 39 moose were seen in 19 of the 50 sample units. Every sample unit had some tracks. Most observations were of single animals but did include sightings of two cows with single calves. The largest group consisted of three moose that were seen in the subalpine. None of the animals seen had antlers. Most of the moose tracks and sightings were in areas with extensive forest cover.

Moose were scattered at lower densities throughout the survey area. Snow depth and condition did not appear to be limiting their ability to move through most of the area. Some limited use of willow habitats was observed in the productive subalpine post rut areas.

The survey showed that the most heavily used areas were mixed forest types about mid-slope between subalpine and river bottom. Most of the moose counted were in, or close to mature spruce forest. There was minimal use of extensive willow patches or recent burns. Riparian habitat along the major drainages showed the lightest tracking during this survey. These same habitats also had the most sign of wolf travel.

Moose distribution during this low snow year is in marked contrast to deep snow winters when riparian and valley bottom habitats appear to be used much more extensively.

**Next steps:** Environment Yukon will use the results of the survey to verify or ground truth habitat suitability maps for moose in the Kluane Region.

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## ***Dawson East Moose Population Monitoring***

**Environment Yukon Management Region:**  
Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leaders:** Dorothy Cooley, Regional Biologist, Northern Region, and Rick Ward, Moose, Elk and Deer Biologist, Environment Yukon.

**Management goal:** To monitor moose abundance and distribution in the Dawson Gold Fields in order to sustainably manage the population.

**Background:** The Dawson Gold Fields are a high priority moose management area. Environment Yukon has been monitoring moose distribution and abundance in the area using aerial surveys since 1989.

Past intensive surveys of the area indicated that moose numbers are likely declining. The area consistently receives intense harvest pressure and there are concerns about the current level of harvest.

**Project objective:** To obtain current information on moose distribution and relative abundance, as part of a regular monitoring program.

**Project description:** Environment Yukon is currently testing a relatively low cost population monitoring technique in the Dawson Gold Fields area. Beginning in 2005 the area has been resurveyed every two years using relatively low intensity survey methods. This type of survey provides an index of population size based on the number of moose seen per minute of flying. If done consistently in the same area, the survey will show a trend in population size over time.

In 2007, the survey was done using two fixed wing aircraft between November 11 and 14, covering approximately 2,647 square kilometres south and east of Dawson. This area includes the Gold Fields. First Nation Fish and Wildlife staff and members of the public participated in some flights as observers. Weather and snow conditions were good.

The survey team recorded the number of moose they saw, their location, and whenever possible, classified these moose as cows, adult bulls, yearling bulls, or calves.

**Project results:** A total of 295 moose were recorded in the survey area (174 cows, 86 adult bulls, 16 yearling bulls, 15 calves and 4 undetermined). The total number recorded was considerably lower than that recorded in 2005, but similar to the numbers observed in 1989 and 1997 in the same area.

Calf numbers were low, making up only 5% of the number of moose observed. In previous surveys, calves made up 15 to 26% of the total observed. Low calf numbers in a single year could be caused by a variety of factors. A continuation of low calf numbers as seen in the current survey, however, would indicate a declining moose population. Stable Yukon moose populations generally contain at least 15% calves.



A final assessment of moose abundance and population trend is done using density estimates. The population density was estimated as 185 moose per 1000 square kilometres. When compared to density estimates obtained from previous low-intensity surveys, the results indicate that the population has remained relatively stable since 1989. However, recent more intensive population surveys indicated that the population is declining.

**Next steps:** Environment Yukon expects to distribute the results of the survey in late April 2008.

High harvest pressure, easy access and indications of a declining moose population all combine to make the Dawson East moose survey area a high priority for long-term monitoring.

Environment Yukon is scheduled to conduct an intensive population estimate in this survey area in November 2008. Monitoring surveys that use low-intensity search methods will continue every 2 years.

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## South Canol West Moose Population Survey

### Environment Yukon Management Region:

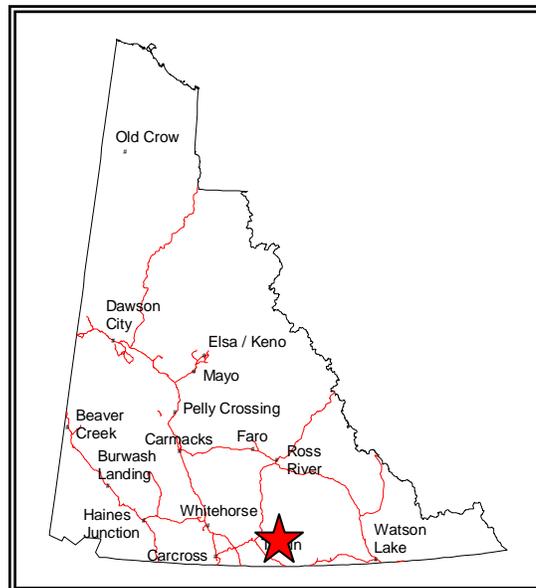
Southern Lakes

**Traditional Territory:** Teslin Tlingit, Kaska, Ta'an Kwäch'än, Kwanlin Dun

**Project leaders:** Rick Ward, Moose, Elk and Deer Biologist, and Rob Florkiewicz, Regional Biologist, Southern Lakes Region, Environment Yukon

**Management goal:** To inventory and monitor high priority moose populations throughout the Yukon.

**Background:** There have been no reliable or precise estimates of moose distribution and abundance in the selected South Canol West study area, north east of Teslin. Environment Yukon conducted a preliminary survey in the southern two-thirds of this area in 2003 and intensive moose surveys have been undertaken in several adjacent areas.



Although the central portion of the survey area is relatively remote, the South Canol Road and Teslin River, along its eastern and western borders area, are important hunting areas for Whitehorse and Teslin residents. The overall harvest of moose reported for the South Canol West survey area is within recommended allowable harvest rates but the harvest is likely at or over the maximum allowable limit in some game management subzones along the South Canol Road.

The need for information on this population has become more important with the potential for mine development in the area. Environment Yukon has concerns that new access to the core of the area, as part of mine development, could result in an unsustainable increase in moose harvest. Current and reliable information on moose abundance and distribution in the area are required to monitor and effectively manage the effects of development.

Environment Yukon will use the information obtained in the survey to monitor population trend, the effects of mine development activities in the area and to help identify effective mitigation measures.

**Project objective:** To obtain current and reliable estimates of moose distribution, abundance and population composition in the South Canol West study area.

**Project description:** Environment Yukon used standard survey techniques. It is not financially feasible to count all the moose in a large area such as this, so a sampling procedure is used. Biologists divide the study area into smaller blocks, select a portion of them and attempt to count all the moose in these selected blocks. Results from the sampled blocks are then used to come up with a moose population estimate for the entire area. About 24% of the entire South Canol West study area was surveyed.

Between November 5<sup>th</sup> and 13<sup>th</sup>, 2007, two survey teams made up of Environment Yukon biologists, staff, and observers from the Teslin Tlingit Council, Ta'an Kwäch'än Council and

Kwanlin Dun First Nation counted all the moose they saw within the predetermined blocks, noting the location, sex and age of each animal. The survey was conducted in helicopters, with each of the two helicopters flying almost 40 hours. Weather and snow conditions were very good.

**Project results:** A total of 412 moose (148 adult bulls, 203 adult and yearling cows, 17 yearling bulls and 44 calves) were counted in the surveyed blocks. Using those numbers biologists calculated that there were about 1620 moose in the entire study area, giving a density of about 241 moose per 1000 kilometres square. When areas of unsuitable habitat, such as mountain peaks and lakes, are excluded, a density of about 329 moose per 1000 square kilometres was calculated. This density is higher than estimated for adjacent areas surveyed to date and considerably higher than the Yukon-wide average.

Biologists estimate that there are 22 calves for every 100 adult cows in the entire study area. This ratio is slightly lower than the 25 to 30 calves/100 adult cows normally considered necessary to maintain a stable moose population. The estimate of 18 yearlings/100 adult cows is also lower than generally needed to sustain stable moose populations. Overall, an assessment of the number of animals added to the population each year (calves minus deaths) indicates a stable to slowly decreasing population.

Biologists also estimate that there are 76 adult bulls /100 adult cows in the survey area. This is slightly above the Yukon average of 67 adult bulls /100 adult cows, as calculated from surveys in other areas.

Environment Yukon has prepared a draft report. Survey information has been entered into the wildlife database.

**Next steps:** Once the report is finalized, Environment Yukon will distribute it to the appropriate First Nations, Boards, RRCs, and other interested parties. In addition, presentations of the results will be given as requested. The next survey of this type is scheduled to take place in the next five to ten years.

Environment Yukon will continue to monitor the status and harvest of the moose population, particularly in the more accessible parts of the area where harvest rates have the potential to cause a decline in the population.

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## ***Teslin Moose Habitat Use Study***

**Environment Yukon Management Region:**  
Southern Lakes

**Traditional Territory:** Teslin Tlingit, Kaska, Ta'an Kwäch'än, Kwanlin Dun

**Project leaders:** Rick Ward Moose, Elk and Deer Biologist, and Rob Florkiewicz, Regional Biologist, Southern Lakes Region, Environment Yukon

**Project funding partners:** Teslin Tlingit Council, University of Northern British Columbia

**Management goal:** To obtain information on moose distribution, movement and habitat use patterns to support land use planning and development impact assessment.



**Background:** Historically, Environment Yukon has primarily gathered information on moose populations for harvest management purposes. This information has generally been limited to accessible areas near communities and to the early winter period.

To date, moose surveys have been conducted in only about 25% of the Yukon. These surveys generally provide only a “snap-shot” of early winter moose distribution and abundance. Little or nothing is known about moose movements or habitat use at other times of the year. There is no reliable information on moose abundance, distribution or habitat use in any season, for the remaining 75% of the Yukon.

The current lack of information related to moose distribution, abundance, movement patterns and habitat use limits Environment Yukon's ability to contribute effectively to land use planning and development impact assessments. These processes require the identification of the potential impacts of land use activities on moose abundance and the design of appropriate mitigation measures associated with any development.

Environment Yukon chose the study area in order to be prepared for the development of a Land Use Plan for the Teslin region. There are also concerns about potential development in the area and the effects increased access could have on the moose population.

2007–2008 is the second year of this four year project. The project involves several activities, including radio-collaring a sample of moose in the study area, mapping habitat types and quantifying their use by season, collecting local/ traditional knowledge on moose habitat use patterns, and assessing risk of harvest and predation in various habitat types along roads.

**Project objective:** To obtain information on seasonal moose distribution, movement and habitat use patterns in the Teslin study area using a combination of Global Positioning System (GPS) collars, and traditional and local knowledge.

**Project description:** The primary activity in the second year of this study is to collar and begin monitoring a sample of moose in the study area. Throughout February and March 2008,

Environment Yukon used a helicopter to capture and place GPS telemetry collars on 27 moose in the study area. Eighteen collars were put on females and nine on males. The collars are programmed to record the location of each moose every 3 or 4 hours and transmit the information back to Environment Yukon via satellite and email. The collars are designed to record and transmit location information for three years.

The field crew also took a variety of body measurements and collected biological samples to obtain information on health and population characteristics.

**Project results:** The collars have been providing location information since they were put on the moose, but none of the data has been analysed yet.

**Next steps:** A graduate student from the University of Northern British Columbia (funded in part by Environment Yukon) will begin to work on the project in 2008. The student's responsibilities include analyzing habitat use data, collecting local and traditional knowledge of harvest patterns, and identifying habitats where moose are most vulnerable to harvest and predation.

Data collection and analysis will be ongoing through November 2010 when the collars will be removed. Environment Yukon will complete the final analysis and write a report by November 2011.

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# Barren-ground Caribou

## *Fortymile Caribou Herd Winter Range Habitat Assessment*

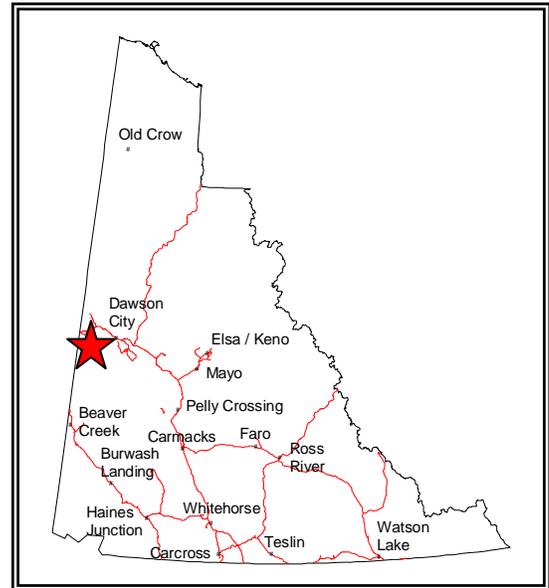
**Environment Yukon Management Region:**  
Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leader:** Val Loewen, Habitat Inventory Coordinator, Environment Yukon

**Management goal:** To support the long-term growth and sustainability of the Fortymile Caribou Herd.

**Background:** Since the mid-1990s, the Fortymile Caribou Herd has been the focus of a population recovery program. A number of Alaskan and Yukon agencies have been working together to plan and implement strategies that support the herd's ability to grow and reoccupy ranges they abandoned years ago. In the past several years, the Fortymile Caribou Herd has been moving into the Yukon from Alaska and re-occupying former areas of their winter range.



The Fortymile Caribou Herd Working Group has identified habitat protection as an important element in supporting the long-term growth and sustainability of the herd.

This is the first year of a multi-year project to complete a habitat assessment of the winter range of the Fortymile Caribou Herd in the Yukon.

**Project objective:** As part of a multi-year project to complete a habitat assessment of the Fortymile Caribou Herd's winter range, the objective of the sampling is to describe the vegetation communities and to provide information on the distribution and abundance of caribou food lichens. This information will provide a preliminary assessment of terrestrial lichen abundance in relation to the vegetation community types.

**Project description:** An Environment Yukon field crew conducted the sampling vegetation from road accessible sites between July 5th and 10th. For each of the 42 plots selected, they recorded site characteristics and plants present. They also estimated percent cover of each plant species and dug pits in order to describe the soil.

**Project results:** Environment Yukon has completed the data entry of all observations.

**Next steps:** No further field sampling planned for 2008. Results of the 2007 field work will contribute to the development of a study design to determine how to assess lichen abundance using satellite image analysis.

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## **Fortymile Caribou Herd Winter Distribution and Monitoring**

**Environment Yukon Management Region:**  
Northern Yukon (Dawson)

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leader:** Martin Kienzler, Fish and Wildlife Technician, Northern Region, Environment Yukon

**Project funding partners:** Alaska Department of Fish and Game

**Management goal:** To support the long-term growth and sustainability of the Fortymile Caribou Herd.

**Background:** In the early 1920s, estimates of the number of caribou in the Fortymile Herd was as high as 600,000 animals. This herd ranged throughout central Alaska and much of the central and southern Yukon. A traditional knowledge study conducted by the Canadian Wildlife Service in the early 1990s documented that this herd once ranged as far south as Lake Laberge. Overharvest, poor weather and predation severely reduced their numbers after the 1930s. Ranges in Yukon shrunk as herd size shrunk. In the early to mid-1990s, caribou were barely crossing the border west of Dawson City.



Since the mid-1990s, the Fortymile Caribou Herd has been the focus of a population recovery program. A number of Alaskan and Yukon agencies have been working together to plan and implement strategies that support the herd's ability to grow and reoccupy ranges they abandoned years ago. The 1995 management plan identified range expansion as one important indicator of herd recovery.

The herd size increased 1995 to 2000 but is now showing a slow decline. In 2006, the herd size was estimated at 38,364, down from over 43,000 in 2003. Biologists have recorded the presence of Fortymile Caribou in the Yukon for a number of years. Almost half of the herd wintered in the Yukon in 2003.

This herd is primarily managed by the Alaska Department of Fish and Game (ADFG) in Tok, Alaska. Environment Yukon began a monitoring program in 2003. Their contribution to the management of this shared herd is to document movements and range use if, and when, the caribou cross into the Yukon in the fall. No composition counts are done during the winter surveys as there are too few animals in the Yukon to provide any useful information about the ages and sex ratios. Composition counts are usually done by ADFG during the rutting season.

Environment Yukon also documents caribou sightings reported by local travelers as well as the location of fresh caribou tracks seen during any flights.

**Project objective:** To obtain information on the distribution of the Fortymile Caribou Herd in the Yukon. This information is used by Environment Yukon and its partners to document important ranges and range use.

**Project description:** In 2008, Environment Yukon conducted a six-hour telemetry flight on March 4 and 5 to locate collared caribou and search for tracks. Visibility was good during the flight.

**Project results:** This year, the caribou crossed the border into the Yukon and were distributed in areas where they are now beginning to be expected. By late in October 2007, the Alaskans estimated that over half the herd (2/3 of the collars) was in the Yukon. During a routine telemetry flight in mid-February, the ADFG documented 16 collared caribou east of the Alaska-Yukon border. During flights on March 4 and 5, Environment Yukon located only four collared caribou in the same area; the other 12 collars were located close to the border or back in Alaska. All collared caribou in the Yukon were located on the east side of the Yukon River, mainly in the Sixty Mile River area, off the Top of the World Highway. It seems that the caribou move into the Yukon post rut and are in highest numbers early winter, but then start to drift back to Alaska mid- to late winter.

Environment Yukon provided the Alaska Department of Fish and Game with the location information.

**Next steps:** The Alaska Department of Fish and Game will summarize all the location information in a fieldwork report to distribute to local stakeholders and interested parties.

Environment Yukon will continue to use telemetry flights to document movements and range use in areas of the Yukon that are reoccupied by caribou, if and when they cross the border.

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## ***Porcupine Caribou Collaring and Composition Count***

### **Environment Yukon Management Region:**

Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in, Vuntut Gwitchin

**Project leaders:** Dorothy Cooley, Regional Biologist and Martin Kienzler, Fish and Wildlife Technician, Northern Region, Environment Yukon.

**Project funding partners:** Alaska Department of Fish and Game, Canadian Wildlife Service, Government of the Northwest Territories, Parks Canada (Ivvavik National Park), U.S. Fish and Wildlife Service.

**Management goal:** To monitor the Porcupine Caribou Herd and obtain the updated population information needed to sustainably manage the population.



**Background:** The Porcupine Caribou Management Plan directs wildlife agencies to maintain conventional and satellite collars on the herd. As caribou die of natural causes, biologists need to deploy new collars in order to maintain the overall number.

The caribou are collared for different reasons. Approximately 90 adult female caribou are collared because biologists need to locate a minimum of 75 in order to document core calving area use. Ten female short-yearling (9 months old) caribou are collared each year as part of a five-year study, started in 2003, to estimate an average survival rate of female caribou between 9 months to 3 years of age. Several collars are put on adult bulls every year in order to locate bull groups when the census is done to estimate herd size. Finally, between 10 and 15 satellite collars are maintained on adult female caribou to document seasonal range use and migration patterns.

Partner agencies usually purchase radio collars (conventional and satellite) and Environment Yukon deploys them. For the satellite program, partner agencies also contribute to satellite system and data retrieval fees. The U.S. Fish and Wildlife Service conducts most of the telemetry throughout the year, except for the calving surveys. These are conducted by the Alaska Department of Fish and Game. Typically, all agencies get involved in the census to determine population size.

In the fall of 2007, there were 93 radio and 15 satellite collars in use, for a total of 108. Conventional collars are located by aircraft. Locations for satellite collars are received automatically via satellite. Deploying and maintaining radio collars on the herd assists Environment Yukon and its partners in obtaining updated population information needed to sustainably manage the herd.

Late winter composition counts have been ongoing since 1993. These counts are done to estimate the calf to cow ratio and document the survival rate of calves over winter.

**Project objective:** As part of a co-operative long-term population monitoring program, the objective of this program is to maintain radio and satellite collars on the Porcupine Caribou Herd and to conduct an annual composition count.

**Project description:** This year, the Yukon Government, the Government of the Northwest Territories and Ivvavik National Park purchased 21 conventional collars. The U.S. Fish and Wildlife Service purchased satellite collars (and obtained some free ones) last year.

Telemetry flights were conducted in the fall and throughout the winter to determine the distribution of the herd.

Captures were done by shooting a net over the caribou from a helicopter. No drugs are used during caribou captures. During the handling, biologists took seven standard body measurements and recorded body condition. Samples of blood and hair were also taken for later testing.

Due to the long times required to ferry by helicopter to where the caribou were wintering in both Yukon and Alaska, biologists decided that it was not possible to do a thorough composition count.

**Project results:** On October 10th, the U.S. Fish and Wildlife Service flew the Alaskan portion of the winter range and located 68 of 108 collars, indicating that over two-thirds of the Porcupine Caribou were set to winter in Alaska.

In February 2008, the U.S. Fish and Wildlife Service flew telemetry in Alaska and located 61 radio collars near Arctic Village. At that time it was not possible to fly the Yukon portion of the range. Additional telemetry flights in March located 46 collared caribou in Alaska, and 14 in the Yukon. A total of nine collared caribou died over the winter.

In March 2008, field crews deployed four radio collars in the Yukon (two on short yearlings and two on cows), as well as 17 radio and one satellite collar in Alaska (five on bulls, eight on short yearlings, and five on cows) for a total of 21 new radio collars and one new satellite collar. This brings the current total number of active collars to 16 satellite collars and 109 radio collars.

Very few of the caribou that did winter in the Yukon got close to the Dempster Highway. Reported harvest by resident hunters is the lowest Environment Yukon has recorded. Very few Porcupine caribou migrated south of the Ogilvie or Peel rivers.

It's interesting to note that during the winter of 2005–06, the majority of the Porcupine Caribou wintered further south than recorded in the last 20 years. In 2006–07, they remained further north than they have in the past 10 years. During the winter of 2007–08, the majority of the herd stayed in Alaska. This hasn't happened since 1990.

**Next steps:** Environment Yukon will send field work summaries out to all user communities in Yukon and NWT, co-management boards and partner agencies.

As directed in the management plan, Environment Yukon will continue to maintain conventional and satellite collars on the herd and conduct a late winter composition count each year.

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# Woodland Caribou

## ***Ethel Lake Caribou Herd – Fall Composition Survey***

**Environment Yukon Management Region:**  
Northern Tutchone

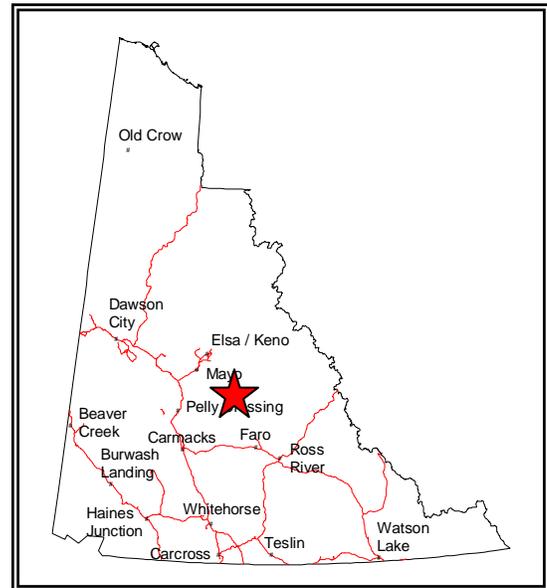
**Traditional Territory:** Na-Cho Nyäk Dun

**Project leader:** Mark O'Donoghue, Northern Tutchone Regional Biologist, Environment Yukon

**Project funding partners:** First Nation of Na-Cho Nyäk Dun funded an observer.

**Management goal:** To sustainably manage the Ethel Lake Caribou Herd.

**Background:** The Ethel Lake Caribou Herd is a small herd consisting of about 300 animals. Environment Yukon, Nacho Nyäk Dun First Nation and the Selkirk First Nation are concerned about the low numbers of caribou being added to the herd as a result of several years of very low calf survival.



The low numbers of caribou surviving to adulthood in recent years means that the animals removed from the herd by hunting or natural causes are not being replaced. This causes the herd size to decrease in size. The Mayo District Renewable Resources Council has recommended hunters avoid this herd until the rates of calf survival improves.

The Ethel Lake Caribou Herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

Environment Yukon confirmed an intention to do annual monitoring of this herd in the *2002-2007 Community-based Fish & Wildlife Management Plan for the Na-Cho Nyäk Dun Traditional Territory*. Regular monitoring of the herd is also recommended in the Ddhaw Ghro Habitat Protection Area Draft Management Plan.

This is the 13th survey of this herd conducted during rutting season since 1993.

**Project objective:** To determine the composition of the Ethel Lake Caribou Herd (number of bulls relative to the number of cows, and percent of cows with calves) and its distribution, as part of a long-term management strategy.

**Project description:** In late September 2007, the survey team used a helicopter for five hours to search alpine and subalpine areas for caribou in the Ethel Lake herd. All of the survey was completed in one day. The weather and snow conditions were good.

The survey team counted the numbers of bulls, cows, and calves in all groups of caribou seen. They also determined the ages (mature or immature) of all the bulls they saw.

**Project results:** Caribou were found in most of the surveyed areas. The survey team located 269 caribou in total - 28 large bulls, 36 small bulls, 154 cows, and 45 calves. They could not classify six of the caribou because of windy conditions and difficult terrain.

These observations were used to calculate the sex ratio and calf survival rates of the herd. The sex ratio was determined to be 42 bulls for every 100 cows. This ratio is below average for lightly hunted caribou herds in the Yukon and is consistent with low sex ratios recorded for this herd since 2000. Management guidelines for woodland caribou in the Yukon aim for at least 30 bulls for every 100 cows.

Calf survival was the highest ratio observed in this herd since 1997, at an estimated 29 calves for every 100 cows. This is at the level that biologists consider necessary for maintaining stable numbers.

The Northern Tutchone Regional Biologist has prepared a short file report for distribution to the Na-Cho Nyäk Dun First Nation, Mayo District Renewable Resources Council, Selkirk First Nation, Selkirk Renewable Resources Council, and other interested parties. Results were presented at Mayo District and Selkirk Renewable Resources Council meetings.

**Next steps:**

Environment Yukon will continue this program to annually monitor the composition of the herd. Environment Yukon will also continue to request a voluntary hunting closure for this herd until there is adequate recruitment for several years.

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## **Clear Creek Caribou Herd – Fall Composition Survey**

**Environment Yukon Management Region:**  
Northern Tutchone

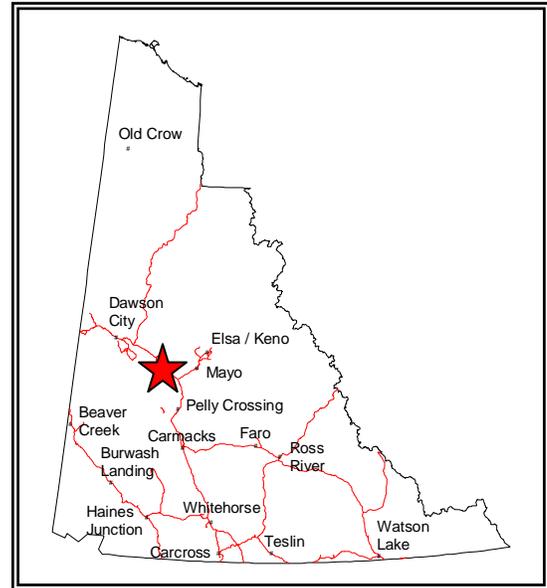
**Traditional Territory:** Na-Cho Nyäk Dun

**Project leader:** Mark O'Donoghue, Northern Tutchone Regional Biologist, Environment Yukon

**Project funding partners:** First Nation of Na-Cho Nyäk Dun funded an observer

**Management goal:** To sustainably manage the Clear Creek Caribou Herd.

**Background:** The Clear Creek Caribou Herd is important to Mayo area residents as it is easily accessible to hunters.



This is the eighth survey of this herd conducted during rutting season since 1997, but only the fifth with adequate sample sizes to estimate herd composition. Previous surveys located between 311 and 572 caribou out of the estimated population of about 900 animals. Biologists estimated that recruitment in this herd was good following the last two successful fall composition counts in 2002 and 2003.

The three surveys from 2001 to 2003 resulted in estimated sex ratios of about 40 bulls per 100 cows. This number is relatively low compared to the Yukon-wide average of about 50 bulls per 100 cows for herds that are lightly hunted.

Management guidelines for woodland caribou in the Yukon call for at least 30 bulls for every 100 cows.

The Clear Creek Caribou Herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

Environment Yukon confirmed an intention to do annual monitoring of this herd in the *2002-2007 Community-based Fish & Wildlife Management Plan for the Na-Cho Nyäk Dun Traditional Territory*.

**Project objective:** To determine the composition of the Clear Creek Caribou Herd (number of bulls relative to the number of cows, and percent of cows with calves) and its distribution, as part of a long-term management strategy.

**Project description:** In late September 2007, the survey team used a helicopter for five hours to search for caribou in the Clear Creek herd. The survey was completed in one day. The team searched the areas where the caribou had been seen in previous years during the rutting season. Weather conditions and visibility were good and it was easy to see tracks in areas where the caribou were active. Caribou were found in both alpine and subalpine shrub habitats.

The survey team counted the numbers of bulls, cows, and calves in all groups of caribou seen. They also determined the ages (mature or immature) of all the bulls they saw.

**Project results:** Although the survey team searched the entire area where Clear Creek caribou have traditionally rutted, they saw relatively little sign of caribou tracks or animals. Biologists believe that this year most caribou in the Clear Creek herd were either rutting earlier or later than usual, or were in different areas than they have been in the past.

The team counted a total of 107 caribou in 7 groups and was able to classify 100 of these animals. They saw nine mature bulls, eight immature bulls, 69 cows, and 14 calves. These observations were used to calculate the sex ratio and calf survival rates of the herd. The sex ratio was determined to be 25 bulls for every 100 cows. This is a low ratio. A larger sample size is required to be certain that the sex ratio noted by the survey team is characteristic of this herd.

Calf survival was fairly low at 20 calves for every 100 cows. This level is less than the 25 to 30 calves per 100 cows that biologists consider necessary for maintaining stable numbers. Recruitment in this herd has been good in previous years.

The Northern Tutchone Regional Biologist has prepared a short file report for distribution to the Na-Cho Nyäk Dun First Nation, the Mayo District Renewable Resources Council, Tr'ondëk Hwëch'in First Nation, the Dawson District Renewable Resources Council, and other interested parties. Results were presented at a Mayo District Renewable Resources Council meeting.

**Next steps:** No rut counts are planned for 2008–09. However, Environment Yukon will continue to monitor this herd closely due to the accessibility of this herd and its apparently low sex ratio.

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## ***Tatchun Caribou Herd – Rutting Season Composition Survey***

**Environment Yukon management region:** Northern Tutchone

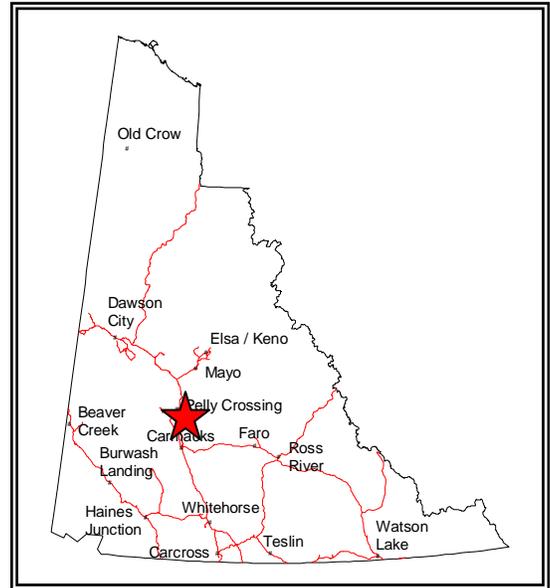
**Traditional Territory:** Little Salmon/Carmacks and Selkirk

**Project leader:** Mark O'Donoghue, Northern Tutchone Regional Biologist, Environment Yukon

**Project funding partners:** Little Salmon/Carmacks First Nation supported one of their staff members as an observer.

**Management goal:** To sustainably manage the Tatchun Caribou Herd.

**Background:** The Tatchun Caribou Herd is important to Carmacks and Pelly Crossing-area residents. The herd is easy to get to and is heavily harvested.



The Tatchun Caribou Herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

Environment Yukon confirmed an intention to do annual monitoring of this herd in the *2004-2009 Community-based Fish & Wildlife Management Plan for the Little Salmon/Carmacks First Nation Traditional Territory*.

This is the 14th survey of the Tatchun herd conducted during rutting season since 1993.

**Project objective:** To determine the composition of the Tatchun Caribou Herd (number of bulls relative to the number of cows, and percent of cows with calves) and its distribution, as part of a long-term management strategy.

**Project description:** In late September 2007, the survey team used a helicopter for five hours to search for caribou in alpine areas. They searched the areas where the caribou had been seen in previous years during the rutting season. The weather conditions were good. There was complete snow cover in most places which made it easier to see the caribou.

The survey team counted the numbers of bulls, cows, and calves in all groups of caribou seen. They also determined the age classes (mature or immature) of all the bulls they saw.

**Project results:** The survey team located only 21 caribou (6 mature bulls, 2 immature bulls, and 13 cows) in 5 small groups. This is a much lower count than recorded in previous years. Biologists think that the caribou rut may have been either earlier or later this year. As a result, most caribou were down in the trees when the survey was conducted and could not be counted. Sample sizes were too low to calculate age and sex ratios this year.

The Northern Tutchone Regional Biologist has prepared a short file report for distribution to the Little Salmon/Carmacks and Selkirk First Nations, Renewable Resources Councils, and other interested parties. Results were presented at the Carmacks and Selkirk Renewable Resources Council meetings.

**Next steps:** Environment Yukon will continue this program to annually monitor the composition of the herd and attempt a complete census of the herd in the next few years.

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## ***Hart River Caribou Herd Monitoring***

### **Environment Yukon management regions:**

Northern Yukon and Northern Tutchone

**Traditional Territory:** Na-Cho Nyäk Dun, Tr'ondëk Hwëch'in

**Project leaders:** Mark O'Donoghue, Northern Tutchone Regional Biologist, and Dorothy Cooley, Northern Regional Biologist, Environment Yukon

**Management goal:** To obtain updated population information needed by Environment Yukon and its partners to sustainably manage the Hart River Caribou Herd.

**Background:** Radio-collared caribou in the Hart River herd have been monitored since 1998 to determine the status of the herd, its movements and distribution. This information is compared to the adjacent Clear Creek (woodland caribou) and Porcupine herds (barren-ground caribou) to map herd ranges and manage harvest.



Biologists have captured enough caribou to maintain an average of 30 active collars on Hart River caribou in most years. Results from regular monitoring during all seasons between 1998 and 2003 were used to determine that Hart River and Clear Creek caribou were distinct herds. Monitoring of radio-collared caribou during the fall and winter has been used to manage harvest along the Dempster Highway since 2006.

A census done by Environment Yukon in the fall of 2006 estimated the size of the Hart River herd at 2200 animals. The rates of calf survival were good but the ratio of bulls to cows was fairly low. Due to its accessibility along the Dempster Highway, the Hart River herd is vulnerable to over-harvest.

Caribou in the Hart River herd have recently increased their use of habitat along the Dempster, leading to concerns about possible over-harvest. In years when few Porcupine caribou migrate into the range of the Hart River herd in the late fall and winter, Hart River caribou may be the only caribou accessible from the highway.

Hart River caribou often range into game management subzones where allowable harvest levels are based on sustainable limits for the much larger Porcupine Caribou Herd (two caribou, of either sex, and a hunting season that remains open to January 31<sup>st</sup>). As a result, Hart River caribou may be inadvertently harvested under the more liberal Porcupine caribou regulations.

Monitoring of radio-collared Hart River caribou allows Environment Yukon to respond to any threats to the herd due to over-harvesting, including closing hunting of this herd if needed. For example, in 2006-07, Porcupine caribou did not move into the range of the Hart River herd. Environment Yukon enacted an emergency hunting closure in the overlap area in the winter ranges, to provide protection to the animals in the much smaller woodland Hart River herd.

Environment Yukon confirmed an intention to this monitoring in the *2002-2007 Community-based Fish & Wildlife Management Plan for the Na-Cho Nyäk Dun Traditional Territory*.

The Hart River Caribou Herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

**Project objective:** To monitor radio-collared Hart River caribou in the late fall and winter to determine their distribution.

**Project description:** During the fall and winter 2007-08, Environment Yukon conducted several telemetry flights to locate radio-collared caribou in the Hart River herd. The first fixed-wing surveys were done on October 15<sup>th</sup> and 16<sup>th</sup>. Weather conditions were normal for that time of year. Fall telemetry flights are done before the Porcupine caribou have migrated into the range of the Hart River herd. This allows biologist to locate the Hart River caribou and map their distribution before any potential mixing of the two herds takes place.

The next flight was done on November 3<sup>rd</sup> over portions of the area where the range of the Hart and Porcupine Caribou Herds are known to overlap. Weather conditions were marginal, with low cloud and patches of ice fog in the survey area. Two simultaneous flights were conducted on November 15<sup>th</sup>. Environment Yukon staff flew the overlap area, while US Fish and Wildlife Service staff flew the entire Yukon portion of the Porcupine Caribou Herd winter range.

On March 3<sup>rd</sup> and 4<sup>th</sup>, Environment Yukon conducted a late winter flight to locate the radio-collared Hart River caribou and to see if any Porcupine caribou had moved within their range.

**Project results:** During the flights on October 15<sup>th</sup> and 16<sup>th</sup>, biologists located 30 of the 36 radio-collared Hart River caribou. One additional collar was heard but not located, four were not heard and one was found on mortality mode.

From mid to late October, the Porcupine caribou remained to the north and west of the Ogilvie River. During the same period, area residents reported numerous splintered groups of Hart River caribou along the lower parts of the Dempster, moving slowly from west of the highway to the east.

Based on information obtained from the Porcupine caribou satellite collars and by monitoring the radio collars of both herds, biologists were able to determine that Porcupine caribou had not moved into the range of the Hart River herd by the end of October. Herd distribution obtained from monitoring radio and satellite collars was confirmed by a local outfitter who was also keeping a close eye on the progress of the Porcupine caribou migration through aerial surveys of his own. For the second year in a row, effective November 3<sup>rd</sup>, Environment Yukon had to enact an emergency hunting closure in the overlap area to provide protection to the animals in the much smaller Hart River Caribou Herd.

On November 3<sup>rd</sup>, flight crews located three radio-collared Hart River caribou and saw considerable tracking east of the Dempster Highway in the vicinity of the located collars. They also observed several groups of caribou not associated with the collars.

The flight done November 15<sup>th</sup> in the overlap area located 24 of the 35 active Hart River collars. During both November flights, a few Porcupine caribou radio collars were heard to the north of the overlap area. The Porcupine Caribou Herd winter range flight was cut short due to bad weather to the north, but all collars were heard well north of the overlap area.

All 35 Hart River caribou collars were located during the flights conducted in early March. Most of the Hart River caribou were very concentrated in the core of their winter range near the confluence of Hart River and Rae Creek.

Environment Yukon has prepared a report summarizing the results of all the flights. Using location information obtained from the Porcupine Caribou Herd monitoring program, the report includes maps showing areas where the range of the Hart River and Porcupine herds overlapped during the winter.

**Next steps:** Environment Yukon will continue to maintain active radio collars on caribou in the Hart River herd and monitor them during fall and winter. This allows in-season adjustment of regulations when necessary to protect the herd by managing the harvest.

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## ***Nahanni Caribou Herd - Fall Composition Survey***

**Environment Yukon Management Region:** Liard

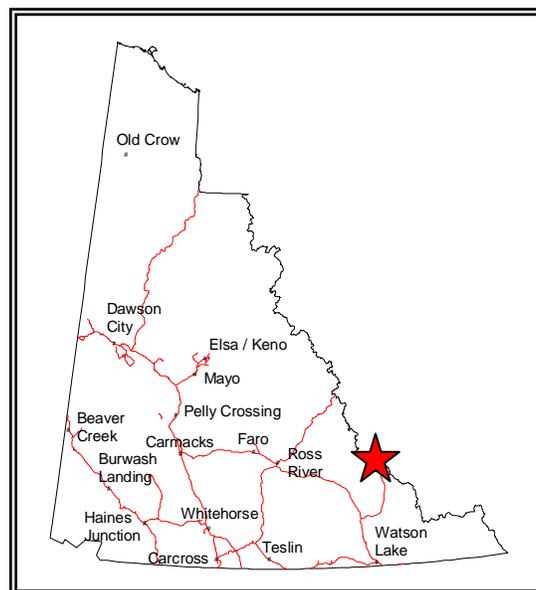
**Traditional Territories:** Kaska in the Yukon and Sahtu and Dehcho in the Northwest Territories

**Project leader:** Kathi Egli, Wildlife Technician, Environment Yukon

**Project funding partners:** Selwyn Resources Ltd.

**Management goal:** To sustainably manage the Nahanni caribou herd.

**Background:** There have been six composition surveys of the Nahanni caribou herd completed since 1995. Most of these surveys have shown a low calf to cow ratio. The average has been 17.5 calves/100 cows.



The herd is harvested in the Yukon and Northwest Territories by First Nations, residents and non-residents guided by outfitters. Local residents have reported an increase in the hunting pressure in recent years. No hunting restrictions are currently in place.

The Nahanni caribou herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

Both the Yukon and Northwest Territories governments share management responsibility for this herd that ranges across the two jurisdictions.

**Project objective:** To determine the composition of the Nahanni caribou herd (number of bulls relative to the number of cows, and percent of cows with calves) and its distribution.

**Project description:** The survey covered only one portion of what biologists believe is the herd's range. This is the portion with the greatest access. Access is via the Tungsten Road which was improved in 2001 and is open all year round.

In early October 2007, the survey team used a helicopter for six and a half hours to search for caribou in the Nahanni herd. The survey was completed in two days. The survey team counted the caribou they saw and classified each of them as being a cow, calf, immature bull or mature bull.

**Project results:** Biologists hoped to cover the southern portion of the Tungsten Road but were unable due to poor weather conditions.

The survey team was able to classify a total of 390 caribou in 31 groups. The calf to cow ratio was low at 17.4 calves/ 100 cows. A recruitment ratio of 26 calves/ 100 cows has been found to be the stable point for Yukon caribou herds. This data indicates that the Nahanni herd may be declining.

The bull to cow ratio was also low at 33.7 bulls/ 100 cows. There should be at least 30 bulls for every 100 cows to ensure that all females are bred in the rut. This data shows that this herd may be over harvested.

**Next steps:** This herd has low calf recruitment, a low bull to cow ratio, increased access, and a high harvest rate. Local people are letting biologists know they have concerns about the future of this herd. Wildlife managers in the Yukon and NWT are working together to develop a plan that will provide guidelines for the sustainable management of the herd.

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## ***Finlayson Caribou Herd - Fall Composition Survey***

**Environment Yukon Management Region:** Liard

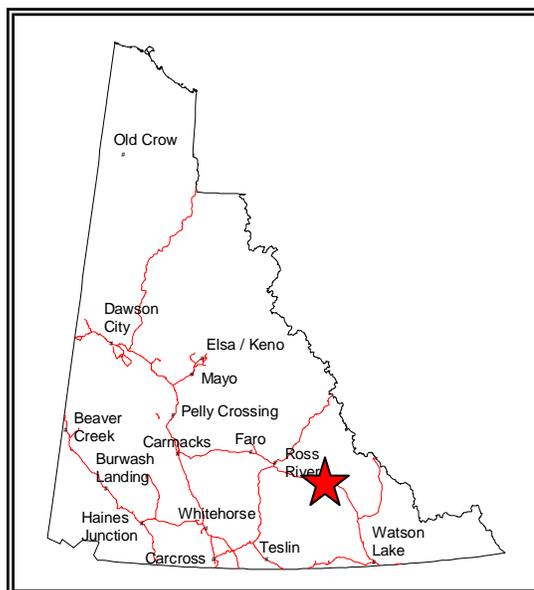
**Traditional Territory:** Kaska

**Project leader:** Kathi Egli, Wildlife Technician,  
Environment Yukon

**Project funding partners:** Selwyn Resources Ltd.,  
Yukon Zinc Corporation, Ross River Dena Council

**Management goal:** To sustainably manage the  
Finlayson caribou herd.

**Background:** The first population count for the  
Finlayson caribou herd was completed in 1982. At  
that time, Environment Yukon estimated the  
population to be between 2000 and 2500 caribou.  
This low count, combined with poor calf recruitment  
and high harvest rates, indicated that the population was seriously threatened.



Herd numbers increased to approximately 5900 animals after a program of wolf reduction and hunting restrictions were implemented as part of a recovery program from 1983-89.

In 1996, the Ross River Dena Council and Environment Yukon developed an Integrated Wildlife Management Plan for the Ross River Traditional Territory. This plan recognises the importance of doing regular surveys of the Finlayson caribou herd.

A winter census done in March 2007 found approximately 3000 animals in the herd. Biologists attribute the decline to low calf survival, a trend that has been seen since the mid-1990s.

The Finlayson caribou herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

**Project objective:** To determine the composition of the Finlayson caribou herd (number of calves and bulls relative to the number of cows).

**Project description:** From September 29 to Oct 1, 2007, the survey team completed low level helicopter flights over traditional rutting areas. Weather conditions and visibility were good in the southern part of the range, and it was easy to see tracks in areas where the caribou were active.

The survey team counted the numbers of bulls, cows, and calves in all groups of caribou seen. They also determined the age classes (mature or immature) of all the bulls they saw.

**Project results:** The survey crew classified a total of 1061 caribou in 68 groups. More caribou were seen in southern part of the range (947 on the south side of the Campbell Highway compared to 114 on the north side). Typically, during the rut, the caribou are very concentrated on the mountain plateaus south of the Campbell Highway and can be counted

efficiently. In the northern part of their range, the caribou are more spread out and due to poor weather this year the count was low.

The calf to cow ratio was 30.5 calves/ 100 cows. This is the highest recorded since 1993. In general, biologists believe that a ratio of 26 calves/ 100 cows indicates a stable to increasing population.

The bull to cow ratio was 45.5 bulls/ 100 cows which indicates a healthy sex ratio for this herd. There should be at least 30 bulls for every 100 cows to ensure that all females are bred in the rut.

Environment Yukon has prepared a file report. This report has been sent to NWT Government, Ross River Dene Council and Selwyn Resources.

**Next steps:** Environment Yukon will continue to monitor this herd. Another fall count is planned for early October 2008

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## ***Aishihik and Kluane Caribou Herds - Fall Composition Survey***

**Environment Yukon management region:** Kluane

**Traditional Territory:** Kluane, Champagne and Aishihik

**Project funding partners:** The Kluane and Champagne and Aishihik First Nation funded survey participants

**Project leader:** Lorne Larocque, Acting Regional Biologist, Kluane Region, Environment Yukon

**Management goal:** To sustainably manage the Aishihik and Kluane caribou herds.

**Background:** Environment Yukon has conducted annual fall composition surveys on the Aishihik and Kluane caribou herds for 15 years. The surveys were initiated as part of a recovery program for caribou in the region.



The draft 2007 -2011 Champagne and Aishihik Fish and Wildlife Management Plan outlines management actions associated with the Aishihik herd.

The caribou of the Aishihik and Kluane herds form part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

**Project objective:** To determine the numbers of animals in the Aishihik and Kluane caribou herds, the composition of each herd (number of bulls relative to the number of cows, and percent of cows with calves) and the herds' distribution.

**Project description:** From October 9-12, 2007, the survey team completed 14 hours of low level helicopter flights over traditional rutting areas. They counted the numbers of bulls and cows, and the number of cows with calves. Snow conditions were excellent for tracking and visibility. Aishihik caribou were found congregated in larger than average groups and were in lower more vegetated habitats than most previous years.

### **Project results:**

**Aishihik -** The survey crew located almost double the number of animals than found in previous fall composition counts. The total counted was 1475 (cows 829, calves 273, small bulls 244, big bulls 129). The calf to cow ratio was 32.9 calves/ 100 cows. The bull to cow ratio was also low at 45.0 bulls/ 100 cows which indicates a healthy sex ratio for this herd. There should be at least 30 bulls for every 100 cows to ensure that all females are bred in the rut.

**Kluane -** The survey crew counted a total of 135 caribou (cows 87, calves 17, small bulls 21, big bulls 10). The calf to cow ratio was 19.5 calves/ 100 cows. The bull to cow ratio was also low at 35.6 bulls/ 100 cows.

**Next steps:** Environment Yukon will continue to conduct fall composition surveys on these herds.

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## ***Southern Lakes Caribou - Census (Carcross and Ibex herds)***

**Environment Yukon Management Region:**  
Southern Lakes

**Traditional Territories:** Carcross/Tagish, Kwanlin Dün, Teslin Tlingit, Taku River Tlingit, Ta'an Kwäch'an, and Champagne and Aishihik.

**Project leader:** Rob Florkiewicz, Regional Biologist, Southern Lakes Region, Environment Yukon

**Project funding partners:** Ta'an Kwach'an Council, Kwanlin Dun, Carcross/Tagish First Nations, Laberge Renewable Resources Council, Teslin Tlingit Council have all contributed to the Southern Lakes Caribou Recovery Program over the years.

**Management goal:** To recover and cooperatively manage caribou populations in the Southern Lakes region.

**Background:** The Southern Lakes caribou population is made up of the Carcross, Ibex, Atlin and Laberge herds. Their range spans the Yukon-B.C. border.

Southern Lakes Caribou Recovery Program began in 1993. A management action plan developed as part of the Recovery Program includes the employment of game guardians, land use and habitat evaluations, and voluntary and licensed harvest bans on caribou in these herds. Partners in the recovery of the Southern Lakes caribou have been the Carcross/Tagish, Kwanlin Dun, Ta'an Kwach'an, Champagne/Aishihik, Teslin Tlingit and the Taku River Tlingit First Nations, and Yukon and British Columbia governments.

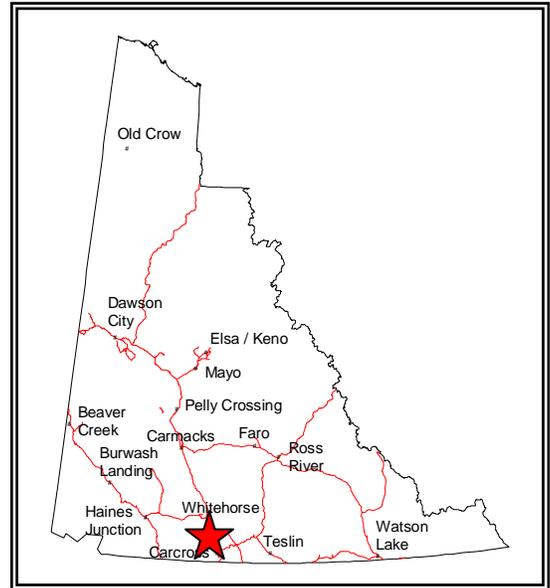
When the Recovery Program began, biologist believed there were only about 200 caribou in the Ibex herd and about 250 in the Carcross herd. The objective of the Southern Lakes Caribou Recovery Program is to reach and maintain a population of 2000 animals within the Carcross and Ibex herd ranges.

A collaring program began in 1994. Over the years, there have been 49 caribou radio-collared in Carcross herd (2 males and 47 females) and 20 collared female caribou in the Ibex herd. Currently there are 7 active collars in the Carcross range and fewer than 7 in the Ibex range.

Census surveys conducted in 1998 and 2003 determined that the implementation of the recovery plan had been effective. The last census, conducted in 2003 showed that caribou numbers had increased to approximately 1100 animals.

In recent composition counts suggested the recovery program may be within two to three years of achieving the objective of 2000 caribou. This, combined with interest in harvesting these caribou, reinforces the need to determine the current population status.

Discussions on a sustainable harvest strategy with partner First Nations are in the early stages. Understanding the herd size is key to setting the baseline for discussions on harvest sharing and allocation.



The Carcross and Ibex caribou herds are part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

**Project objective:** To obtain information on population size, distribution and composition (the numbers of bulls, cows, and calves) in order to evaluate the progress of the herds' recovery.

**Project description:** Between February 17 and 29, 2008, survey crews used both fixed wing aircraft and helicopters to complete a census of the Ibex and Carcross herds. A combination of standard survey techniques was used to divide up the area into blocks and to determine which blocks to survey intensely.

Using two helicopters over 7.5 days, two survey crews noted the location and recorded the number of bulls, cows, and calves in each group located in the predetermined survey blocks.

Environment Yukon also completed telemetry flights before and after the census to look at the movement of the collared caribou over the two week survey period.

**Project results:** Environment Yukon is currently compiling the results of the census and drafting the survey reports associated with each of these herds. Preliminary results suggest that the Carcross herd has been stable at about 750 caribou since the census in 2003 while the Ibex herd has grown over that same time, to about 850 animals.

**Next steps:** Results from the sampled blocks will be used to estimate the caribou population for the study entire area. Environment Yukon will prepare a report on the survey and present the results to the relevant First Nations' Lands and Resources departments and Renewable Resources Councils. Information from the census will be added to a report on the general status of caribou in the Southern Lakes region. It will also be added to a larger Regional wildlife Assessment Report.

Environment Yukon will continue to monitor the Southern Lakes caribou herds as directed by the recovery program. The program requires a census every five years.

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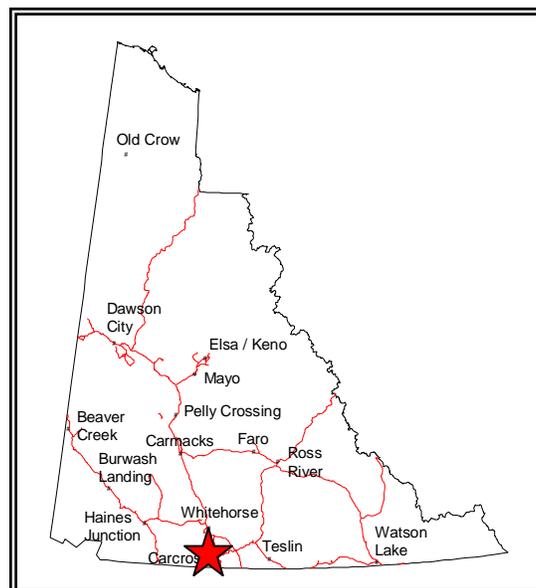
## ***Southern Lakes Caribou Herd - Fall Composition Survey (Carcross and Ibex herds)***

**Environment Yukon Management Region:**  
Southern Lakes

**Traditional Territories:** Carcross/Tagish, Kwanlin Dün, Teslin Tlingit, Ta'an Kwäch'än, and Champagne and Aishihik.

**Project leader:** Rob Florkiewicz, Regional Biologist, Southern Lakes Region, Environment Yukon

**Project funding partners:** Ta'an Kwach'an Council, Kwanlin Dun, Carcross/Tagish First Nations, Laberge Renewable Resources Council, Teslin Tlingit Council have all contributed to the Southern Lakes Caribou Recovery Program over the years. Kwanlin Dun First Nation provided in-kind support the 2007-2008 survey.



**Management goal:** To recover and cooperatively manage caribou populations in the Southern Lakes region.

**Background:** The caribou in the Southern Lakes region consist of the Carcross, Ibex, Atlin, and Laberge herds. Their range spans the Yukon-B.C. border.

Southern Lakes Caribou Recovery Program began in 1993. A management action plan developed as part of the Recovery Program includes the employment of game guardians, land use and habitat evaluations, and voluntary and licensed harvest bans on caribou in these herds. Partners in the recovery of the Southern Lakes caribou have been the Carcross/Tagish, Kwanlin Dun, Ta'an Kwach'an, Champagne/Aishihik, Teslin Tlingit and the Taku River Tlingit First Nations, and Yukon and British Columbia governments.

When the Recovery Program began, biologist believed there were only about 200 caribou in the Ibex herd and about 250 in the Carcross herd. The objective of the Southern Lakes Caribou Recovery Program is to reach and maintain a population of 2000 animals within the Carcross and Ibex herd ranges.

Environment Yukon has conducted fall composition surveys annually since 1994 for the Carcross herd and since the mid 1980's for the Ibex herd.

A collaring program began in 1994. Caribou are radio-collared to determine their annual range use and distribution. Radio-collared caribou demonstrated herd affiliation and areas where the caribou could be counted in the fall and where winter range concentrations occurred for census surveys that are generally conducted every 5 years. Census surveys establish the total population estimate and are used to evaluate recovery status and success.

Environment Yukon annually monitors caribou distribution and calf survival to evaluate whether there are significant changes in range use, caribou numbers and group sizes and whether the population is predicted to be increasing stable or declining based on the survival of calves of the year.

The Carcross and Ibex caribou herds are part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a 'special concern' designation under national Species at Risk legislation.

**Project objective:** To determine the composition for the Ibex and Carcross caribou herds (number of bulls relative to the number of cows, and percent of cows with calves) and its distribution, as part of a long-term recovery strategy.

**Project description:** On October 1, 2007, biologists used a fixed-wing aircraft to access the status and location of the radio collars on the herd in preparation for the survey.

On October 3, 2007, the survey crew used a helicopter for 6 hours to survey the Ibex herd and part of the Laberge herd. The Laberge area surveyed to the northeast of Whitehorse was included because these animals winter with the Carcross herd and will be included in the census in March 2008. A helicopter was also used for 6.5 hours on October 5 to survey the Carcross herd. Overall, weather and snow conditions were good. However, weather conditions did prevent a survey of Mt. Byng.

**Project results:** The majority of caribou were seen above treeline distributed among the traditional rutting ranges for these herds. Some animals were also observed and classified where seen within some of the adjacent shrub dominated habitats.

In the Carcross/ Laberge herd, the survey crew counted 472 caribou – 262 cows, 65 calves, 64 immature bulls, 75 mature bulls and 6 unclassified – in 33 groups. These numbers give a ratio of 25 calves / 100 cows. Of the bulls that were seen, 54% were mature.

In the Ibex herd, the survey crew counted 429 caribou – 251 cows, 69 calves, 50 immature bulls, 58 mature bulls and 1 unclassified – in 29 groups. These numbers give a ratio of 27 calves / 100 cows. Of the bulls that were seen, 54% were mature.

**Next steps:** Environment Yukon will continue annual monitoring of the Southern Lakes caribou herds as directed by the recovery program.

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# Grizzly Bears

## *Kluane Region Grizzly Bear Population Assessment*

**Environment Yukon Management Region:** Kluane

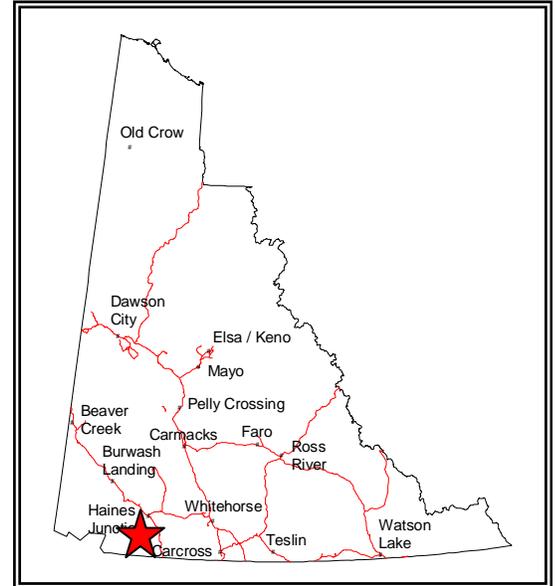
**Traditional Territory:** Champagne and Aishihik

**Project leader:** Ramona Maraj, Carnivore Biologist,  
Environment Yukon

**Project funding partners:** Champagne and Aishihik First  
Nation; Alsek Renewable Resources Council

**Management goal:** To maintain a sustainable grizzly bear  
population in the Kluane region.

**Background:** The draft 2007 -2011 Champagne and  
Aishihik Fish and Wildlife Management Plan identifies a  
number of local community concerns regarding the  
management of the grizzly bears in the Kluane region. The  
draft plan states that a better understanding of the bear population is needed to be able to  
make better management decisions. In addition, the Alsek Renewable Resources Council has  
been asking for a population assessment of bears in the region for over a decade.



Residents of the Haines Junction area are encountering more grizzly bears than in the past. This increase in sightings has led many people to believe that the population is on the rise and to call for more hunting opportunities. In contrast, there is considerable existing scientific research that indicates the grizzly bear population in the Kluane region may be in decline. This discrepancy in the appraisal of the population's status has produced differing opinions as to what management approaches are necessary and justifiable.

A study is needed to determine population size, understand why cub survival is exceedingly low in the region, assess the age structure of the population, understand the role of immigration and emigration in affecting the population dynamics of the region, and understand the mechanisms that affect the discrepancy between local knowledge of bears and scientific information.

In May 2002, COSEWIC reexamined and confirmed their designation of the northwestern population grizzly bears as a 'species of concern' but the federal government has not yet added them to the List of Species at Risk in Canada. There is considerable international attention directed toward how agencies in Canada are managing this species.

**Project objective:** To obtain updated population information needed by Environment Yukon and its partners to sustainably manage grizzly bears in the Kluane region.

**Project description:** Subject to ongoing community consultation, a combination of methods will be used over the course of the study including the collection of traditional and local knowledge as well as scientific (biological) information. Scientific studies include collaring bears to monitor their movements, obtaining biological samples to age the bears and assess their

health, and using DNA sampling grids to determine the size and genetic structure of the population.

2007-08 was the first year of a multi-year study. Work related to the study in this initial year focused on field work preparation (for the summer 2008), establishing mechanisms for community involvement and developing strategies for communicating study results and activities to a broad range of audiences.

**Project results:** No field work was conducted in 2007-08. Funding in this first year of the project was used to purchase 40 collars.

Environment Yukon developed a draft Strategic Communication Plan to guide the development and delivery of information related to the study.

A Partners Working Group was formed consisting of representatives from the Champagne and Aishihik First Nation, the Alsek Renewable Resources Council, and Environment Yukon to facilitate community involvement and contribute to the development of the study design.

**Next steps:** Environment Yukon plans to deploy 35 to 40 collars if support for the project is received from the community. Collared bears will be monitored on a regular basis.

Environment Yukon will continue to implement the actions identified in the communication strategy and participate in the Partners Working Group.

Champagne and Aishihik First Nation and the Alsek Renewable Resources Council will be coordinating the formation of a Community Working Group to provide advice to the Partners Working Group.

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# Sheep

## ***Ruby Range Dall Sheep Survey***

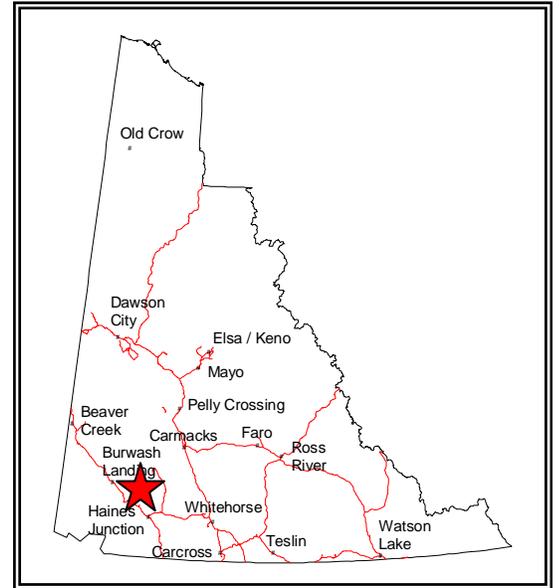
**Environment Yukon Management Region:** Kluane

**Traditional Territory:** Kluane

**Project leader:** Jean Carey, Sheep and Goat Biologist, Environment Yukon

**Management goal:** To sustainably manage the sheep population in the Ruby Range

**Background:** Sheep in the Talbot Arm area of Kluane Lake have been surveyed on a regular basis since the 1970s. These surveys have provided Environment Yukon enough information to look at population trends as well as population size. The information from this area is being used as a reference to better understand sheep populations in areas that are surveyed less frequently.



Very good lamb production and adult survival in the 1980s allowed sheep numbers in the Talbot Arm area to increase. However, in the early 1990s numbers dropped quite drastically as a result of hard winters. Numbers have increased since, but are not at the levels they were in the 1980s.

The area is hunted by First Nations, residents, and non-residents. The number of rams harvested in any season varies. More sheep are taken by licensed hunters when there are more full curl rams in the population.

The last survey in this area was attempted in 2004, but forest fires prohibited its completion.

**Project objective:** To update population information for sheep in the Ruby Range.

**Project description:** Environment Yukon conducted helicopter surveys on July 12 and 13, 2007. The survey covered the east side of Kluane Lake between Raft Creek and Cultus Creek, and as far west as Gladstone Lakes. This year the survey area was extended beyond the area that has been counted in the past to include neighbouring mountain blocks. This was done in order to obtain a broader picture of the overall population.

The surveys took a total of 13.9 hours to complete and were conducted in good weather conditions.

The survey crew counted the number of sheep in the area, recorded their sex and age group and mapped their locations.

**Project results:** The survey crew counted a total of 690 sheep within the original long-term count area - 426 nursery sheep (ewes, yearlings or 2-year-old-rams), 99 lambs and 165 rams. The number of adult sheep seen in this area is comparable to 1989, and is almost 200 more than was seen in the mid 1990s. Most importantly, the number of nursery sheep seen was

similar to the early 1980s when the population was able to increase to its highest observed numbers.

When the areas adjacent to the long-term count area are included, the totals are 991 sheep, of which 603 were nursery sheep, 130 lambs and 258 rams.

There were 23 lambs/100 nursery sheep seen in the long-term count area and 22/100 overall. As a general guide, an average of 25 lambs/100 nursery sheep is needed each year to maintain a population. This means that the overall population size this year likely decreased slightly.

Biologists believe that it is possible for numbers to return to 1980 levels in a few years, if conditions remain good. To reach these levels, about 165 lambs need to survive every year. Given the current population size, a very high ratio of lambs to nursery sheep is needed to reach that number. However, as the population gradually increases and there are more ewes in the population, the ratios won't need to be as high.

Environment Yukon has prepared report summarizing the results of the survey.

**Next steps:** The results of the survey have been presented to the Asi Keya Renewable Resources Council. Environment Yukon will use the results of this survey to adjust the computer model used to help understand population trends.

As long as no concerns arise in the meantime, Environment Yukon intends to count this area again in 2010.

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## ***Pelly Mountains Stone Sheep Survey***

**Environment Yukon Management Region:** Liard

**Traditional Territory:** Kaska

**Project leader:** Jean Carey, Sheep and Goat Biologist,  
Environment Yukon

**Management goal:** To sustainably manage the sheep population in the Ketza River mine area of the Pelly Mountains.

**Background:** The area in the vicinity of the former Ketza Mine property was the focus of a relatively comprehensive sheep population and habitat study in the late 1980s. A second population survey was carried out in 1995. Both studies compared the sheep populations in the area around the mine to an area with similar habitat to the east. Survey results indicated that the sheep were not negatively affected by the mine or associated activities.



In the last 10 years, ongoing mining activity and increased access routes have continued to expand within the sheep range. The affect of this increased level of human disturbance on local sheep populations is unknown. However, reports from people familiar with the area indicate that sheep numbers have declined and/or the populations have been displaced.

This survey is being conducted in response to these concerns. It also fulfills the monitoring component of an ongoing government research program investigating the effects of the Ketza River Gold Mine on the distribution and composition of the sheep population.

**Project objective:** To updated population information for sheep in the Ketza River area of the Pelly Mountains.

**Project description:** Environment Yukon conducted a helicopter survey on July 25 and 26, 2007, within three Game Management Subzones in the Ketza River area. The surveys took a total of 10.4 hours to complete and were conducted in ideal weather conditions.

The survey team counted the number of sheep they saw, classified them by sex and age group and mapped their locations. This information is used to estimate the composition of the sheep population and determine its distribution.

The brown coats of Stone sheep make them more difficult for survey crews to spot than white Dall sheep. An added challenge to counting these animals is that they are typically at a lower density than Dall sheep. A report from someone flying in the area in December suggests that a survey during early winter when sheep are congregating for the rut may prove to be a better time to count them. Late winter surveys for Stone sheep have been tried elsewhere in the Yukon, but the mottled snow on the winter range provided perfect camouflage for the sheep.

**Project results:** The survey crew counted a total of 163 sheep. Of these 98 were unclassified nursery sheep (ewes, yearlings, or 2-year-old-rams), 36 as lambs and 29 as rams.

The estimated overall population size in 2007 shows a slight increase since 1995, but is similar to the estimate from 1988. In large part, this was due to a greater number of nursery sheep and lambs seen in the headwaters of Ram and Porcupine Creeks. Fewer animals were spotted near the mine site. However, the pilot indicated that he had seen sheep in the area on the previous day. Despite efforts to find this band of sheep, they were not seen.

In the Yukon, an average of 25 lambs/100 nursery sheep is required each year to maintain a stable population. Using the results of the survey, biologists have estimated that there were 44 lambs/100 nursery sheep seen in the combined area of two of the game management subzones and 34 lambs /100 nursery sheep in the third. This is a good number of lambs to find in a population.

Environment Yukon has prepared report summarizing the results of the survey.

**Next steps:** An analysis of the current and past distribution is underway.

Environment Yukon will be working with consultants hired by the mining company (Yukon-Nevada Gold Corp) to monitor the sheep population now that the mine is going back into production.

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# Mountain Goats

## *Tungsten (Nahanni Range) Road Area Mountain Goat Survey*

**Environment Yukon Management Region:** Liard

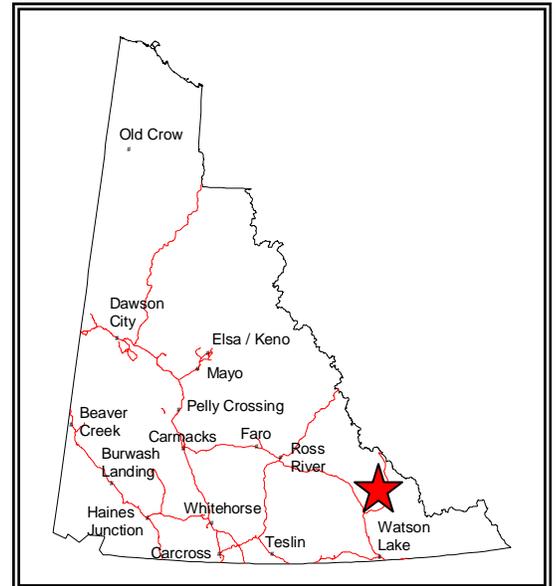
**Traditional Territory:** Kaska

**Project leader:** Jean Carey, Sheep and Goat Biologist, Environment Yukon

**Management goal:** To sustainably manage the mountain goat population in the South-east Yukon

**Background:** The mountain goats found in the southeast Yukon are at the very northern limit of their range.

The last time the block in the Anderson Creek-Hyland River was surveyed was 1984; the area around Mt. Hunt had not been counted since 1982. Prior to that, a region-wide all-species survey was done in 1975. The only available population information for goats in this area was obtained from surveys done in 1975 and 1983.



Mountain goat herds are extremely vulnerable to overharvest which can result in rapid and often critical population declines. The southeast Yukon is the only area open to goat hunting without a limited-entry permit. Hunting of goats is currently permitted in two of the game management subzones in the Tungsten Road area. Resident hunters can harvest one goat between August 1 and October 31. Yukon First Nation members and non-resident hunters accompanied by a guide are also entitled to harvest goats within this area.

**Project objective:** To update population information for goats in the Tungsten Road area.

**Project description:** Goats are difficult to count. Rather than fleeing from aircraft, a goat will hide in cliffs or vegetation, making them extremely difficult to locate. Winter counts give biologists the benefit of using tracks to help locate them.

Environment Yukon conducted helicopter surveys from March 19 to 21, 2008 between the East Arm of Frances Lake and the Hyland River. The surveys took a total of 19.7 hours to complete and were conducted in a variety of weather conditions.

The survey team counted the number of goats they saw. In many cases, adult goats could not be reliably classified according to sex or age class. As a result, it was only possible to categorize the observed goats as being either kid or non-kid.

Total counts are snapshots and give us a good picture of what is there on the day of the survey, but unless they are done frequently it is hard to determine anything regarding trends.

**Project results:** A total of 99 goats were observed in the 2 subzones surveyed: 84 adults and 15 kids.

Goats in these two areas are likely different populations. More information about seasonal goat distribution in this area is needed to confirm. Survey analysis is not yet complete.

Biologists are not able to determine population trends for this goat population as the surveys have been conducted too many years apart. Counts need to be obtained on a regular basis to detect broad population trends over years.

Environment Yukon is preparing report summarizing the results of the survey.

**Next steps:** Environment Yukon will use the information from this survey to revise the goat population estimate and distribution map. There are also plans to review the goat harvest strategy. Recent research done in Alberta suggests that a population of at least 100 goats is needed to sustain a harvest of one animal.

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# Furbearers

## ***Beaver Distribution and Abundance Assessment***

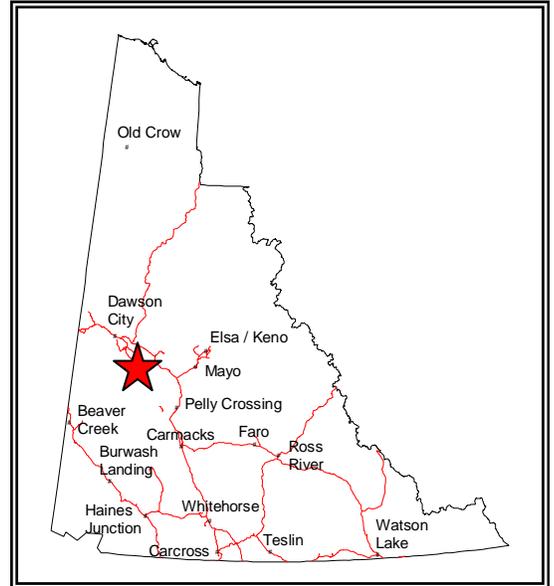
**Environment Yukon management region:** Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leader:** Val Loewen, Habitat Inventory Coordinator, Environment Yukon

**Management goal:** To develop a technique to assess high quality beaver habitat.

**Background:** In the early 1980s, Environment Yukon completed aerial surveys of streams throughout much of the southern Yukon in order to assess beaver activity, distribution and abundance. Biologists used the number of beaver food caches they recorded during the surveys to create maps identifying the quality of beaver habitat on various stream segments. Environment Yukon conducted a similar type of survey in the Dawson region in 1989.



Based on these surveys, stream reaches with moderate to abundant numbers of food caches were entered into the Wildlife Key Area inventory database as key areas for beaver. Because over time, beavers change their surrounding environment by cutting down trees, the habitat quality may decrease. Therefore, this approach to identifying key areas may not be appropriate over time.

This study is one of the activities Environment Yukon is conducting in preparation for land use planning in the Dawson area.

**Project objective:** To assess beaver distribution and abundance in the Dawson area and develop a model of habitat selection by beavers. Environment Yukon hopes that this model can be used to generalize habitat quality in other areas with similar ecological characteristics that have not been surveyed.

**Project description:** From October 1 to 3, 2007, the Environment Yukon survey crew, consisting of two observers, used a fixed-wing aircraft to survey the selected areas for 20 hours over three days. The surveys were conducted in October because at this time of year there are no leaves on the trees and little snow covering food caches. In total, 1609.31km of stream were surveyed in the Dawson area.

For comparative reasons, the 2007 survey included many of the same stream segments surveyed in 1989. New streams were added based on local knowledge and a map assessment of a stream's potential for use by beavers. Navigation was done visually and a GPS was used to mark waypoints for all food caches, lodges, dams (active or inactive) and other wildlife sightings.

**Project results:** The density of beaver colonies in all surveyed streams was very low at 6.8 km of stream per colony. Only a few of the surveyed streams were ranked as being excellent to good beaver habitat quality (less than 3 km/colony). These included Clinton, Eldorado and Rosebute creeks, the North McQuesten River, the North Klondike River, and sections of the Klondike River.

Where there was overlap in the streams surveyed, the overall beaver colony density was very similar at 4.6 and 5.1 km of stream per colony in 1989 and 2007 respectively. In both years, the McQuesten River and the Klondike River had the highest density of beaver colonies, although not necessarily the same sections of the rivers. In general, there was no consistent trend in differences between the years. Some streams remained about the same while others either increased or decreased in beaver activity. Some of the cases were quite dramatic. For example, Dominion Creek had a beaver colony density of 26.08 in 1989 but increased to 3.26 in 2007. Sixty-Mile River to Matson Creek also shifted in favour of beaver from 46.00 to 5.11 in 1989 and 2007 respectively. However there was also a shift to less beaver colonies in 2007 as compared to 1989, such as in the case in Flat Creek where the density of beaver colonies went from 3.56 in 1989 to 45.99 in 2007.

Environment Yukon developed a computer model using available digital data to test the predictability of the presence of beaver colonies.

**Next steps:** Environment Yukon will assess the beaver habitat selection model to determine whether it can be used more widely or whether additional work needs to be done.

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# Freshwater Fish

## *Peel Watershed Fisheries Investigations*

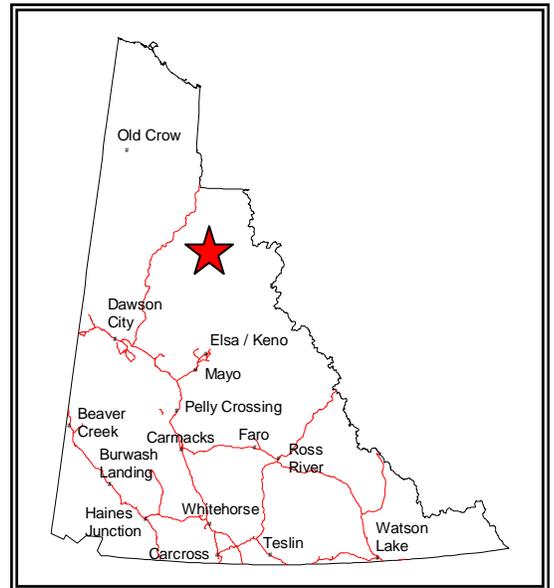
**Environment Yukon management region:** Northern Tutchone

**Traditional Territory:** Na-Cho Nyäk Dun

**Project leader:** Susan Thompson, Fisheries Biologist, Mark O'Donoghue, Regional Biologist, Northern Tutchone Region, Environment Yukon

**Management goal:** To identify priority fish conservation areas to support land use planning in the Peel Watershed.

**Background:** The Peel Watershed Planning Commission requires information on fish population distribution, status and habitat use of the area to support land use planning and decision-making across the region. In recent years, Environment Yukon (Fisheries Section) has been actively engaged in fisheries assessments to address identified data gaps and deficiencies.



Environment Yukon currently has three years of site-specific data for some areas of the watershed. Past field work by Environment Yukon has looked at fish species diversity and abundance in various headwater lakes and streams in Tombstone Territorial Park and along the Dempster Highway, as well as within various lakes in the Peel Watershed. Fish distribution within small stretches of the Bonnet Plume River and tributaries has also been studied.

Field sampling and fish population and habitat suitability modeling are the most cost effective approaches to gather the short-term information needed to support planning efforts.

Information gathered in this study will go towards developing and verifying a watershed fish habitat suitability model that can be used to identify areas of importance to fish.

**Project objective:** To sample fish and collect information related to habitat features in select tributary streams in the Peel watershed.

**Project description:** The focus of the 2007 field work was on small tributary streams to the Blackstone, Wind, Bonnet Plume and Snake river watersheds. Field work followed similar techniques as those used in 2006. Sampling was done in July and August before the fish moved into the main-stem where they are difficult to catch. Environment Yukon crews used electro-shocking, minnow trapping, seining, angling, gill netting and visual observation to determine fish presence. Some biological samples were taken for genetic analysis.

The collection of benthic invertebrates, water quality, and hydrology and morphology data was done according to standard methods. These data are important for the development of the habitat suitability classification model.

**Project results:** The following species were caught: Dolly Varden within the Snake drainage; Dolly Varden and Arctic Grayling within the Bonnet Plume drainage; Dolly Varden, Arctic Grayling and slimy sculpin within the Wind drainage; and Dolly Varden, Slimy sculpin and Arctic Grayling within the Hart drainage.

Finding a species adds to the information on fish distribution and species diversity in different drainages. Fish move throughout water systems. If a fish species is not captured during a sampling program it does not necessarily mean it is absent from the system.

**Next steps:** Further sampling is scheduled for the summer of 2008. The data collected by Environment Yukon will continue to be used in conjunction with past survey results to develop a fisheries habitat-values map for use in the Peel Watershed Regional Land Use planning process.

Dr. Eric Taylor, University of British Columbia will be conducting genetic analysis of select samples provided by Environment Yukon. This analysis will be used to confirm the presence of Dolly Varden in the Peel Watershed.

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## **Braeburn Lake Whitefish Monitoring**

**Environment Yukon Management Region:** Northern Tutchone

**Traditional Territory:** Little Salmon/Carmacks

**Project leader:** Nathan Ferguson, Fisheries Technician, Environment Yukon

**Management goal:** To investigate and assess the potential causes of lake whitefish decline in Braeburn Lake and learn about lake whitefish population dynamics in a small Yukon lake.

**Background:** According to local residents there has been a noticeable decline in lake whitefish in Braeburn Lake since 1998. Such a decline can affect the harvest of this species. A decline also has implications within the fish community as lake whitefish is a prey species for higher level predators. Suggested causes for the whitefish decline include changes in water chemistry, sewage inputs and water level changes due to beaver dam removal. Other potential factors may be over-harvest, impacts on deposited eggs by in-stream vehicle traffic and changes in water temperature regimes.

The *2004-2009 Community-based Fish & Wildlife Management Plan for the Little Salmon/Carmacks First Nation Traditional Territory* identified a need to find out why the lake whitefish population in Braeburn Lake appeared to be declining. During this planning process, the Environment Yukon agreed to do a whitefish study that collects local knowledge about whitefish spawning areas, monitors water quality and counts juvenile whitefish.

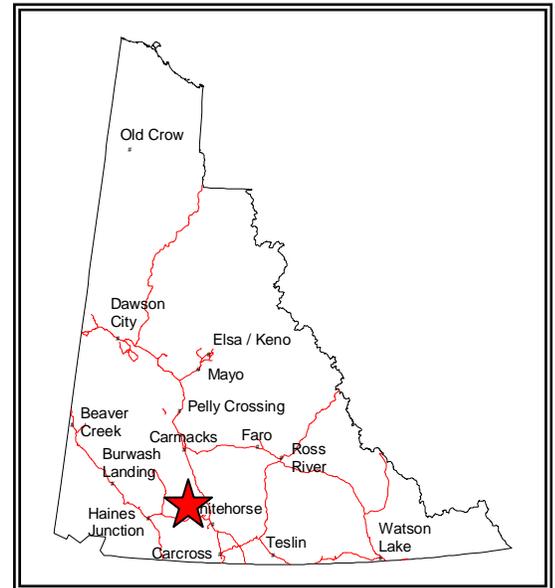
Field work began in late 2005. To date, activities have included monitoring lake whitefish spawning activities, spawning duration, egg dispersal, the timing of fry emergence, juvenile abundance and distribution. Measurements of water chemistry and temperature have also been recorded at different times of year. The study is focusing on determining if adult lake whitefish numbers are low compared to similar Yukon lakes as well as to historical records. Environment Yukon is also trying to gain an understanding of lake whitefish population structure and the factors affecting recruitment success within Braeburn Lake.

Recent work has resulted in the collection of valuable information about lake whitefish spawning behaviour in Klusha Creek.

**Project objective:** To sample and monitor the lake whitefish in Braeburn and Little Braeburn lakes to obtain information on the factors that may be causing their decline.

**Project description:** The field work began in late April 2007 with the crew testing the water chemistry and taking temperature readings. The crew also checked the status of egg development and conducted a survey on Klusha Creek.

During the summer months, the lake whitefish population in Braeburn and Little Braeburn lakes were sampled using beach seining, electro-fishing, minnow trapping, trawling techniques and



small mesh netting. Each of these methods provides different types of information about the population abundance, distribution and age structure. Water chemistry and temperature measurements continued.

During the early winter, field work included the identification and monitoring of lake whitefish spawning areas.

Environment Yukon contracted a resident from the Braeburn Lake area to monitor lake whitefish spawn timing, peak and duration and traffic across Klusha Creek.

**Project results:** Data analysis of water chemistry, temperature, spawning timing and duration is underway. Information collected on the traffic crossing Klusha Creek is being used to determine its effect on lake whitefish eggs and fry.

**Next steps:** Once the data analysis is completed, Environment Yukon will prepare a data report for distribution to interested parties.

Future activities include the continued monitoring of traffic at the Klusha Creek crossing. Environment Yukon also will pursue options to mitigate the destruction of lake whitefish eggs at this location.

A community meeting is planned to further investigate perceived lake whitefish decline as well as to ask about starting a domestic harvest sample collection system.

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## Old Crow Freshwater Fish Assessment

**Environment Yukon Management Region::** Northern Yukon

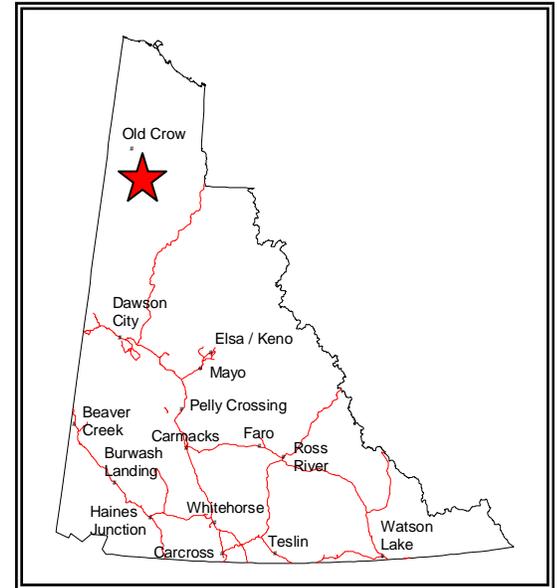
**Traditional Territory:** Vuntut Gwich'in

**Project leader:** Susan Thompson, Fisheries Biologist and Dorothy Cooley, Regional Biologist, Environment Yukon

**Project funding partners:** The Yukon Fish and Wildlife Management Board's Old Crow Community Steward worked with the field crew for a week.

**Management goal:** To identify and sustainably manage freshwater fish in the Vuntut Gwich'in Traditional Territory.

**Background:** In the North Yukon Fish and Wildlife Management Plan, the Yukon Government and the Vuntut Gwich'in First Nation (VGFN) are assigned a task to "check out freshwater fish species and assess various streams, creeks and lakes". Past scientific information for the region is limited and traditional knowledge from Elders is not readily available since they do not go out on the land as much as in the past. Although freshwater fish are no longer harvested as much as they used to be, the community still views fish as a critical resource, especially in years when caribou or other game is scarce.



The action item in the Plan gives few details, stating only that there is a need to "keep track of fresh water fish species and populations for management purposes". During discussions of a mid term review of the plan in 2003, interest in potential stocking and assessing freshwater fish in the river was recorded. Researchers were advised to concentrate on areas close to town that are important for local fishing activity.

On March 8, 2006, a joint meeting was held with representatives of VGFN, North Yukon Renewable Resources Council, the Old Crow Community Steward, Environment Yukon and several community members to discuss the objectives and priority areas for study and develop a 3-year strategy to assess freshwater fish in the region. The second year of strategy implementation was 2007.

There are several other ongoing research initiatives in the area. Where possible, the field work is coordinated with work by Parks Canada in Vuntut National Park, with Fisheries and Oceans, Canada, the Old Crow Community Steward and the International Polar Year project leaders (2007 – 2009) working on the Old Crow Flats. Information collected also contributes to ecological monitoring activities in the region.

**Project objective:** To gather data on freshwater fish distribution and use of creeks, streams and lakes in selected areas of the Vuntut Gwich'in Traditional Territory, in order to update general information on species present and relative abundance, and to document various biophysical parameters important to fish.

**Project description:** The priority lakes were selected by Elders at various meetings. Priority lakes and streams are generally those which are fished. Environment Yukon selected additional

lakes as there is value in assessing un-fished lakes and streams to gather information of species presence.

Field work took place from August 5<sup>th</sup> to 10<sup>th</sup>, following some of same field techniques as in 2006. Methods included minnow trapping, angling, gill netting and visual observation. The field crew sampled eight lakes and set minnow traps on three major streams. They also undertook some water quality testing and collected information on lake depth where possible. The bottom of lakes and streams were sampled to determine the presence of invertebrates.

**Project results:** Northern pike, Arctic grayling and ciscoes were caught in the netting program. No fish were caught in the minnow trapping.

**Next steps:** The Fisheries Biologist will analyse all the harvested fish to determine age, stomach contents, and, in the case of the ciscoes, determine what species they are. Results of the survey will be summarized in a small brochure and data report for distribution to residents of Old Crow.

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## ***Fisheries Assessment Surveys***

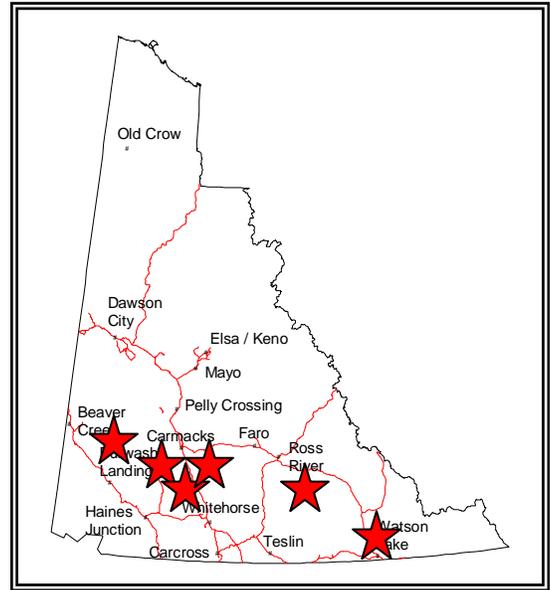
**Environment Yukon Management Region:** Multiple (selected lakes throughout the Yukon are sampled once every 5-years)

**Traditional Territory:** Multiple

**Project leader:** Susan Thompson, Fisheries Biologist, Environment Yukon

**Project funding partners:** Depending on the lakes surveyed, funding partners have included individual First Nations and Parks Canada (Kluane National Park).

**Management goal:** To maintain a sustainable population of fish in Yukon lakes by assessing and monitoring the status of stocks and their habitats over the medium to long-term.



**Background:** Environment Yukon has been conducting assessments of fish stocks since 1996. Each year about 10 to 15 different lakes are selected for study. Lakes are surveyed at approximately 5-year intervals.

Stock assessments focus on lake trout which are considered an indicator species. Lake trout are the most sought after by harvesters and are the most sensitive to environmental factors and exploitation because of their ecology and biology. Lake trout are a slow growing and late mature species with a high longevity and low reproductive rate. Ongoing regular monitoring of important stocks is necessary if changes are to be detected and management actions initiated in a timely manner. Once lake trout stocks decline recovery can take many decades.

The location of the assessments is determined by a number of factors. Many important lake trout lakes are assessed once every five years. In some other cases, lakes are given priority because of concerns from First Nations and local Renewable Resources Councils, or because of commitments made as part of the management planning process. Road accessible and remote fishing lodge lakes with relatively high levels of fishing effort and harvest are often included as well. In addition, a number of unexploited remote lakes are surveyed to get baseline information on populations in lakes where little or no fishing occurs.

Environment Yukon has surveyed 117 different lakes. Some of these have been surveyed two or three times each since the program began. The surveys allow Environment Yukon to establish resource capacities and respond to changes to ensure healthy stocks and sustainable harvest opportunities.

**Project objective:** To maintain an ongoing assessment of fish populations in Yukon lakes using catch per unit effort methods.

**Project description:** Beginning in early June 2007, field crews conducted surveys on Wellesley, Braeburn, Little Braeburn,; Little Fox, Simpson, Twin, Watson, Ken, Frank, and Lynne lakes. These lakes were last surveyed in 2002. The sampling is done at this time of year because the water temperatures are relatively cold (6-10<sup>o</sup>C) and lake trout are in shallow water.

Crews spent one or two days on the smaller lakes and from a week to two weeks on larger lakes conducting netting, water quality and other biological sampling as required before and after fish capture. Crews follow the same techniques they have used in previous years. The field crew set standard gangs of small-mesh gillnets along shorelines at regular intervals for a period of one hour. These mesh sizes are used because fish are caught by the teeth. This makes it easier and safer to release them without harm. Consistency is most important, with crew members performing the same tasks at each site selected in an unbiased manner and using standard methods.

**Project results:** An analysis of the information is underway. By looking at the number of fish caught over a set amount of time, biologists can use different calculations to determine fish abundance. This information makes it possible for them to make comparisons of the fish populations over time and between lakes. Long-term information is used to determine changes that may be occurring due to human use and impacts, as well as by environmental factors such as climate change.

**Next steps:** The analysis of the information will continue. All information will be entered into a fisheries management database. Stock assessments will continue on a rotational basis and/or as required.

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# Rare Species

## *Field Survey of Invertebrates in the Dawson Land Use Planning Area*

**Environment Yukon Management Region:** Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leader:** Tom Jung, A/Manager and Senior Wildlife Biologist (Biodiversity), Environment Yukon

**Project funding partners:** Canadian Wildlife Service, Environment Canada

**Management goal:** To improve the understanding of ecological (biodiversity, wildlife and habitat) values in the Dawson Regional Land Use Planning region, in support of anticipated land use planning activities.

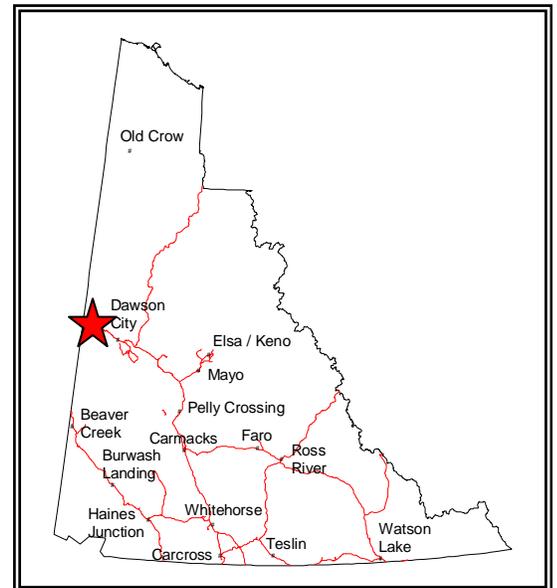
**Background:** The Yukon Land Use Planning Council has identified the Dawson Region as one of eight proposed land use planning regions in the Yukon. This survey is part of a broader initiative to assess ecological (biodiversity, wildlife and habitat) values in the Dawson Regional Land Use Planning region. The eco-regional planning approach requires information on species and/or communities that are endangered, rare, or of limited distribution.

The area included in the survey is located in the unglaciated region of the north known as Beringia. Beringia covered parts of the Yukon, Alaska and Russia. Many insects and other invertebrates survived in this area during the last ice age. As a result, many species found in Beringia occur nowhere else.

**Project objective:** To obtain additional and possibly new information regarding the distributions and habitats of invertebrates, especially rare endemic Beringian insect species, in parts of the Dawson Regional Land Use Planning area of the Yukon.

**Project description:** The information obtained in this survey supports land use planning initiatives in their efforts to protect the environment and manage natural resources sustainably. The project area included two parts of the Dawson Regional Land Use Planning area: the Top of the World Highway west of Dawson, and a mountainous area four to seven km west of Mt. Klotz (Tatonduk River watershed), 150 km northwest of Dawson.

The field work was done in late June 2007. Two entomologists were contracted to complete the survey. Collection methods included aerial netting, pan traps, aquatic dip-netting and netting by hand.



**Project results:** Four classes of animals were collected including snails (Gastropoda), centipedes (Chilopoda ), spiders (Arachnida ) and insects, for a total of 618 specimens. Among the insects, 55 butterfly species and 28 moth species were collected and identified. Butterfly data has been added to a master database of Yukon butterflies.

The dragonflies (order Odonata) and butterflies and moths (Order Lepidoptera) were identified to the species level. The remaining 400 additional specimens in the other insect orders and the remaining classes were sent to the Royal British Columbia Museum. The museum is distributing the specimens to appropriate experts for identification.

The survey identified the presence of one of the rarest butterflies in the Yukon, *Euchloe naina*. This butterfly was previously known only from Windy Pass on the Dempster Highway which has much the same ecosystem as Mount Klotz. The specimen found at Mount Klotz is a significant extension to the known distribution.

**Next steps:** The information obtained in the survey to update species' conservation ranks. Information will also contribute to what is known about the species' ecology and distribution. Information will be entered into appropriate databases.

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## ***Field Survey for Rare Plants in the Dawson Land Use Planning Area***

**Environment Yukon Management Region:** Northern Yukon

**Traditional Territory:** Tr'ondëk Hwëch'in

**Project leader:** Jennifer Line, Botanist, NatureServe Yukon, Environment Yukon

**Project funding partners:** Canadian Wildlife Service, Environment Canada

**Management goal:** To improve the understanding of ecological (biodiversity, wildlife and habitat) values in the Dawson Regional Land Use Planning region, prior to the implementation of any land use planning activities.

**Background:** This survey is one of the activities being conducted by NatureServe Yukon. NatureServe Yukon provides objective, comprehensive and broadly accessible information on plants, animals and ecological communities that are of conservation interest. NatureServe Yukon is building a database to store knowledge on species and communities at risk or of conservation interest. This information will be made available for use by any interested party for decision-making, research and educational purposes.

The Yukon Land Use Planning Council has identified the Dawson Region as one of eight proposed land use planning regions in the Yukon. This survey is part of a broader initiative to assess ecological (biodiversity, wildlife and habitat) values in the Dawson Regional Land Use Planning region. The eco-regional planning approach requires information on species and/or communities that are endangered, rare, or of limited distribution. Some plants have been collected in this area in the past, but they lack any associated information.

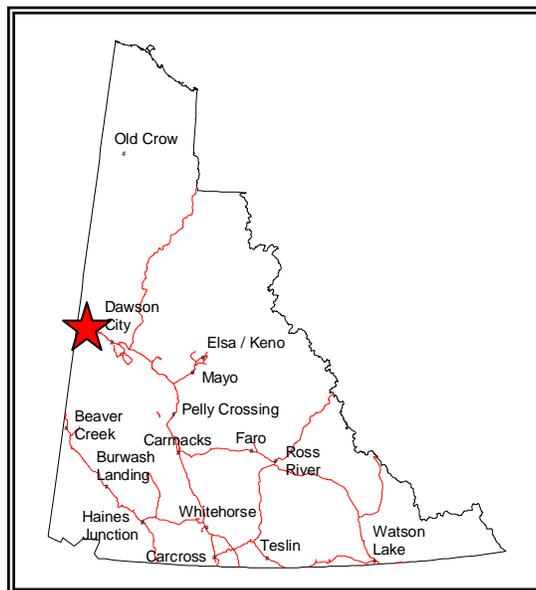
The area included in the survey is located in the unglaciated region of the north known as Beringia. Beringia covered parts of the Yukon, Alaska and Russia. Many plants survived in this area during the last ice age. As a result, many species found in Beringia occur nowhere else.

Federal and territorial legislation requires the protection of rare and endangered species, and their critical habitats.

**Project objective:** As part of the NatureServe Yukon program, to obtain information regarding the distributions and habitats of rare plants in parts of the Dawson Regional Land Use Planning area of the Yukon. The information obtained in this survey supports Environment Yukon and other land use planning agencies in their efforts to protect the environment and manage natural resources sustainably.

### **Project description:**

The field work was done between June 22 and 26, 2007, in the Mount Klotz area, northwest of Dawson. Three botanists took part in the field work, following established methods for collecting rare plants. They conducted an inventory, collecting representative plant specimens for all species found in the area. When a rare plant was found, details about population size and



health, as well as habitat notes were recorded. A partner project collected the information needed to determine and map the plant communities and habitat in the same area.

**Project results:** The botanists recorded over 240 plant species during the survey, with 17 species being of conservation interest to NatureServe. Many of the rare species recorded at Mount Klotz are Beringian in origin, restricted in Yukon to the Ogilvie, British and Richardson Mountains. Examples include Porcupine River Thimbleweed (fewer than 5 populations in Yukon); Cushion Saxifrage, Walpole Poppy and Macoun's woodroot. These records provide much-needed context for the distribution of these species, since there have been few botanical surveys conducted within Beringia.

Botanists are processing the plant collections. Specimens that are difficult to identify are being sent to specialists for confirmation. These collections will be deposited in the Yukon Government Herbarium.

**Next steps:** The rare plant data will be entered into the NatureServe database and provide very useful conservation tools for the land use planning process. It will be used, together with the habitat data, to formulate a method to predict the distribution of rare plants in the Dawson planning region and throughout the Yukon. All of this information will enhance Environment Yukon's ability to conserve rare plant species.

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## ***Rare Small Mammal Inventory in Southern Yukon***

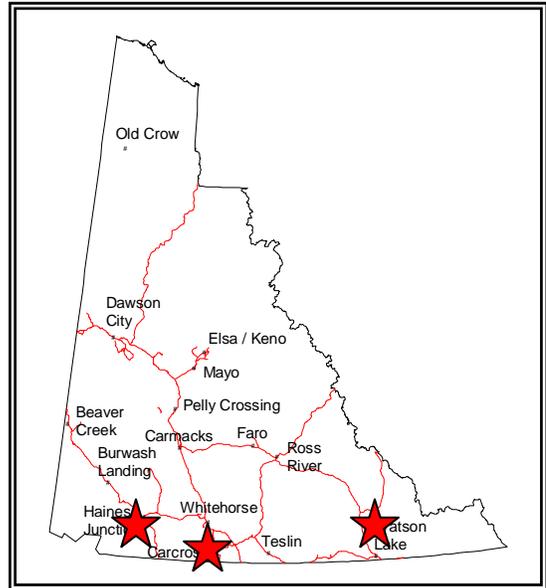
**Environment Yukon Management Regions:** Liard, Southern Lakes and Kluane

**Traditional Territories:** Kaska, Teslin Tlingit, Kwanlin Dün, Ta'an Kwäch'än, Champagne and Aishihik, Kluane

**Project leader:** Tom Jung, A/Manager and Senior Wildlife Biologist (Biodiversity), Environment Yukon

**Project funding partners:** University of Calgary, Parks Canada, Yellowstone to Yukon Conservation Initiative, Northern Research Institute

**Management goal:** To improve the knowledge of the diversity and distribution of mammals in the territory, particularly for species that are most likely to be impacted by climate warming and landscape change in the coming decades.



**Background:** Very little is known about bats and shrews in the Yukon. There is a lack of basic knowledge about what species occur here and where they can be found. These small mammals are nocturnal and require specialized expertise and equipment to survey and identify. Prior to 2004, only one species of bat, the little brown bat, was recorded from the Yukon, but at least four others were suspected.

Despite the lack of knowledge, forest-dwelling bats are considered very good indicators of forest health because of their reliance on dead trees for roosting and insects as food. They are considered very good indicators of climate warming because they may respond positively to longer and warmer summers.

**Project objective:** To obtain additional and possibly new information regarding the diversity, distribution and habitats of bats in the Yukon.

**Project description:** The information obtained in this survey supports conservation status ranking initiatives in the effort to protect the environment and manage natural resources sustainably.

Environment Yukon sampled bats near the communities of Watson Lake, Teslin, Whitehorse, and Haines Junction, for a two-week period in July 2007. Bats were live-captured using mist-nets (like those used for birds). Biologists took basic body measurements, recorded reproductive condition, and took samples for later DNA analysis to confirm species identification. They also monitored bat echolocation-calls to supplement the live-capture data. Local and outside experts also participated in the survey. Summer students were trained in the specialized techniques as well.

**Project results:** The survey found evidence of new species for the Yukon and significant range extension for other species. Most bats captured were little brown bats. Biologists captured five northern long-eared bats just north of Watson Lake. This represents only the second record of this species in the Yukon and a range extension of about 270 km.

In the Teslin Lake area, biologists obtained acoustic echolocation-calls that indicate the possible presence of the silver-haired bat and western long-eared bat in the area. If biologists are able to capture samples of these two species and confirm their presence, it will also be first records for the Yukon and significant range extensions for these species.

Biologists believe they may have caught yet another species new to the Yukon, in the Haines Junction area. Genetic testing is needed to confirm the species identification.

**Next steps:** The information obtained in the survey will be used to update species' conservation ranks and contribute to what is known about the species' distribution. It will also contribute to the baseline information that can be used to track changes in mammalian diversity and distribution as the climate warms. Environment Yukon will do further field sampling to confirm species presence and better define their distribution.

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## **British Columbia /Yukon Gyrfalcon Productivity Monitoring**

**Environment Yukon Management Region:** Southern Lakes

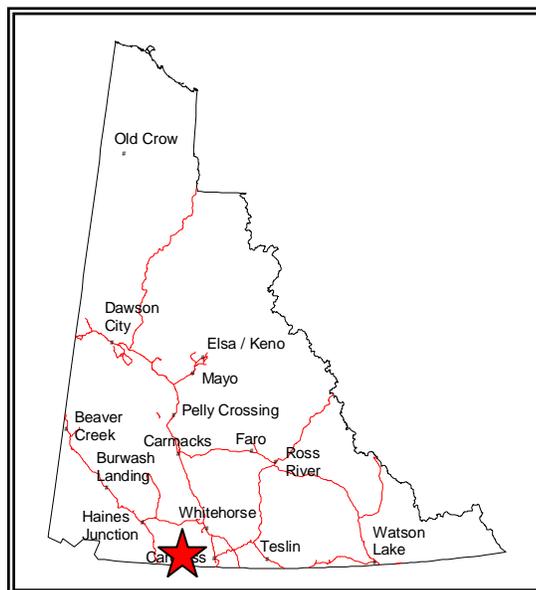
**Traditional Territory:** Kwanlin Dün, Champagne and Aishihik

**Project leader:** Rob Florkiewicz, Regional Biologist, Southern Lakes Region, Environment Yukon

**Project funding partners:** British Columbia Department of Environment, Northern Research Institute

**Management goal:** To support conservation and sustainably manage the Northern Coast Mountain gyrfalcon population.

**Background:** Gyrfalcons are the largest North American falcon. Their breeding range is mostly restricted to Alaska and the northern Canadian territories. The Northern Coast Mountain gyrfalcon population breeds in the mountains that straddle the BC/Yukon border between Tagish Lake and the Haines Road. In this region, there is a known population of 31 nesting areas where activity has been recorded over the last 25 or more years. The majority of these sites are situated in the Yukon.



Gyrfalcons are a highly prized bird for falconry. In the Yukon, gyrfalcon is one of the six species listed in the territory's wildlife regulations as "specially protected". The Yukon *Wildlife Act* prohibits the hunting or trapping of any specially protected wildlife. In BC, however, harvesting of gyrfalcons is permitted, under quota. The harvest for the entire province is restricted to immature birds with a maximum annual quota of 12.

The preferred location to capture gyrfalcons in BC has been in the mountain pass along the Haines Road during the fall/winter migration period. Road access to this area for BC falconers requires travelling back and forth through the Yukon, and therefore Yukon wildlife regulations apply to any harvest, transport, import and export of these birds or materials associated with their capture.

Surveys have been ongoing since 1983. The Yukon has supervised the surveys and borne the majority of the costs. The Province of British Columbia and the Northern Research Institute have supplied some additional funding and support.

In 1990, the BC and Yukon governments entered into a joint management agreement to limit the harvest from the Haines Pass area by both Yukon and BC falconers. The agreement allows for quotas of 0, 3 and 6 gyrfalcons from the area each year depending on the results of productivity surveys. In recent years, BC's portion of the annual quota from this population has been either 0 or 3 birds.

Results from the surveys are used to determine the level of harvest, if any, to be allotted for the Haines Road area to BC falconers (as per the joint management agreement).

Without the surveys there is no way to estimate the population's productivity and therefore no way to enable a harvest. Surveys also provide for improved population and habitat conservation and management.

**Project objective:** To determine the annual productivity of the North Coast Mountain Gyrfalcon population.

**Project description:** 2007 was the 4<sup>th</sup> year of the 5 year joint BC/Yukon/Northern Research Institute inventory project. In 2007, the survey area was expanded from 17 to 31 nest sites. As a result, surveys included all the sites known to be used for nesting within the Coast Mountain study area.

Yukon and BC biologists completed the helicopter surveys on June 15th. Favourable conditions allowed the aerial survey to be completed all in one day. A ground survey was conducted on June 17th by the BC bird specialist in the Haines Pass area of BC. A Yukon bird specialist banded chicks on June 19th. On June 20th, Yukon crews returned to selected eyries to band chicks and collect blood and feather samples for DNA analysis.

**Project results:** Thirty-one sites were successfully surveyed for productivity - 30 by helicopter and 1 on foot. This is a significant increase over the 15 to 17 sites regularly surveyed in previous years. Biologists determined the annual productivity index based on the number of nest with young, the number of productive nest and the number of occupied territories. Productivity estimates were determined for the full 31 sites of the expanded survey and compared against the regular survey subset (17 sites). Thirteen chicks were banded and feather/blood sampled in four eyries. This included three chicks at a BC eyrie. Samples of three adult feathers and one of egg shells were also obtained.

Due to this year's surveys, BC falconers have the opportunity to obtain capture permits for 3 gyrfalcons in the Haines Area in 2007. Environment Yukon prepared a written summary of the survey results.

**Next steps:** Planning is underway for the 2008 survey. Additional funds are available to complete the comprehensive survey including all nest sites. The results from this 5-year project (2004-2008) will be used by the Yukon and BC governments to re-assess and revise the existing co-management agreement between BC and the Yukon for this population.

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## ***Aishihik Wood Bison Herd Inventory and Monitoring***

**Environment Yukon Management Regions:** Kluane

**Traditional Territories:** Champagne and Aishihik, Little Salmon/ Carmacks, Kluane

**Project leader:** Tom Jung, A/Manager and Senior Wildlife Biologist (Biodiversity), Environment Yukon

**Project funding partners:** Canadian Wildlife Service and Champagne and Aishihik First Nation

**Management goal:** To sustainably manage the Aishihik wood bison herd in south-western Yukon.

**Background:** Wood bison are listed as a *threatened* species, under the federal *Species at Risk Act*.

The Government of Yukon reintroduced wood bison to the Nisling River area from 1986 to 1998. Since then the herd has grown at an estimated rate of 18 to 20% per year and now occupies an annual range of about 9,000 km<sup>2</sup>.

Community concerns over the potential and observed impacts of the herd on other species, the land, and traditional lifestyles led Environment Yukon and the Yukon Fish and Wildlife Management Board made a management decision to limit the size of the herd through hunting. Harvest of wood bison began in 1998. Since then, over 500 animals have been harvested.

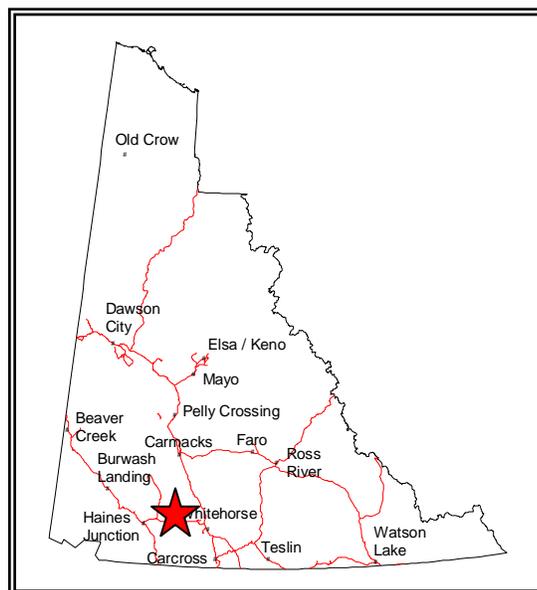
**Project objective:** To obtain information on the size, distribution, composition and movement of the Aishihik wood bison herd.

**Project description:** Environment Yukon conducted a census of the herd in order to estimate the population. The census also provided additional information that can be used to estimate survival rates, calf production values, and herd movement. All of this information is used by Environment Yukon to make management decisions.

Before starting the population census, biologists used a fixed-wing airplane to locate all radio-collared bison. This information was used to determine a survey area. Field crews then surveyed the area by helicopter in late July and counted all bison. Environment Yukon Conservation Officers, a biologist from Champagne and Aishihik First Nation, and a member of the Aisek Renewable Resource Council participated in the census.

From November 2007 to March 2008, Environment Yukon conducted monthly telemetry flights in a small plane to obtain location and survival information. This information is used to determine herd movement and distribution as well.

**Project results:** The survey crew counted a total of 875 bison during the census. The ratio of radio-collared bison to bison without radio collars was used to calculate the size of the herd. Biologists estimated a total of 1039 animals, including calves of the year.



Environment Yukon has presented the results of the survey to the Yukon Wood Bison Technical Team (including representatives from 3 First Nations and 3 Renewable Resource Councils), and senior officials in the Yukon Department of Environment, as well as in the local media. Location information has been shared with the public, including local hunters, through maps on the Environment Yukon website.

**Next steps:** Environment Yukon plans to conduct the next census in July 2009 in order to assess population trends and growth rates. Survival and movement information will continue to be collected for radio-collared animals for another two years. Population estimates and other additional data will then be used to develop population models to help evaluate various management options.

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# Elk

## ***Takhini Valley Elk Herd Census and Monitoring***

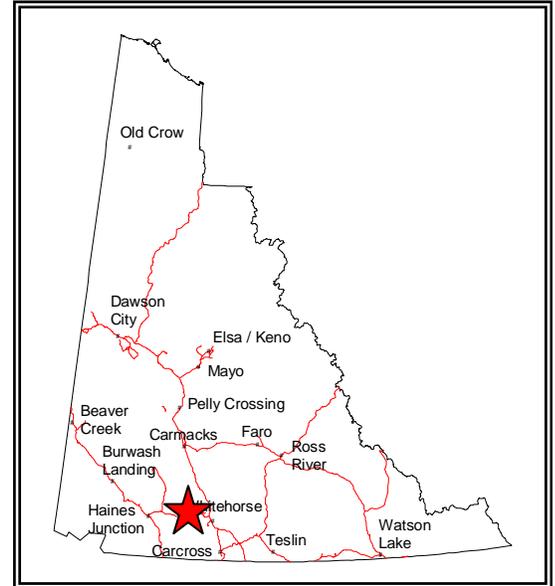
**Environment Yukon Management Region:** Southern Lakes

**Traditional Territory:** Champagne and Aishihik, Kwanlin Dün, Ta'an Kwäch'än

**Project leaders:** Rob Florkiewicz, Southern Lakes Regional Biologist; Rick Ward, Moose, Elk, and Deer Biologist; Tom Jung, Biodiversity Biologist, Environment Yukon

**Management goal:** To maintain a healthy, self-sustaining, stable population of free-ranging elk in the Yukon.

**Background:** With the exception of periodic sightings in the southeast Yukon, elk are not native to Yukon. The two herds currently occupying the Takhini Valley and Braeburn areas in southwest Yukon are the result of introductions from Elk Island National Park, Alberta in the 1950s and 1990s. Elk in Yukon are at the northernmost extent of their range in North America.



Takhini Valley elk herd mainly ranges in the Takhini Valley west of Whitehorse as far as the Aishihik River. The herd has been surveyed periodically since it was first introduced to the territory, but the first systematic and intensive survey did not occur until 2007.

Elk are emerging as a high profile ungulate species in Southwest Yukon due to their potential for wildlife viewing, increasing public pressure for a managed harvest, conflicts with agricultural interests, and their recently confirmed infestation with winter ticks. There are also concerns that elk may compete with native species such as moose and caribou for habitat and resources. As of March 31, 2008, elk were designated as specially protected wildlife under the Yukon *Wildlife Act*. However, regulation changes are currently being enacted to remove the specially protected species designation to allow a limited harvest.

Environment Yukon has initiated a monitoring program in order to obtain reliable estimates of abundance, distribution, movement patterns and habitat use. Environment Yukon uses a combination of aerial and ground-based surveys to monitor this herd. As part of this program, 15 conventional VHF radio collars were deployed on elk in the Takhini area: 12 on cows in March 2007 and 3 on bulls in September 2007.

In July 2007, the Yukon Elk Management Planning team released a draft Elk Management Strategy. The intent of the strategy is to provide a broad framework to guide elk management in the Yukon. The management strategy calls for elk to be maintained at current population levels, until steps are implemented to address human concerns and improved information on population size, range use, range carrying capacity, and effects on other wildlife species is gathered. It also recommends a limited harvest of elk.

**Project objective:** To determine the abundance, distribution, composition (proportion of cows, calves and bulls in the population) and movement patterns of the Takhini elk herd.

**Project description:** On September 26, 2007, the field crew completed a helicopter survey of elk within their known fall range in the Takhini Valley. The leaves had dropped from most aspen and the elk were highly visible. The survey took four hours to complete. The survey crew classified each animal they saw as a bull, cow or calf, and mapped their locations. This information is used to determine the abundance, composition, distribution and habitat use of the herd.

**Project results:** The survey crew counted 43 bulls 74 cows and 18 calves, for a total of 135 elk. They also located 14 of the 15 collared animals. Elk were distributed as single males or mixed age/sex groups of up to 16 individuals. Based on the observations of the survey and an estimate of the number of elk not seen during the survey, biologists believe that there are currently between 150 and 200 elk in the Takhini Valley elk herd.

Using the survey results, biologists calculated ratios of 58 bulls for every 100 cows and 24 calves per 100 cows in the herd. These ratios are within the range generally seen in healthy and stable ungulate (moose, elk and caribou) populations.

Environment Yukon has prepared a report summarizing the survey results.

**Next steps:** Results will be shared with the appropriate First Nations, Boards, Renewable Resources Councils, Elk Management Plan partners and interest groups through written reports and presentations at meetings. Future surveys will depend on whether or not changes have been observed in the population and on budget availability.

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## **Braeburn Elk Herd Census and Monitoring**

**Environment Yukon Management Region:** Southern Lakes

**Traditional Territory:** Little Salmon/Carmacks, Ta'an Kwäch'än

**Project leaders:** Rob Florkiewicz, Southern Lakes Regional Biologist; Rick Ward, Moose, Elk and Deer Biologist; Tom Jung, Biodiversity Biologist, Environment Yukon

**Project funding partners:** Little Salmon/Carmacks provided in-kind support

**Management goal:** To maintain a healthy, self-sustaining, stable population of free-ranging elk in the Yukon.



**Background:** With the exception of periodic sightings in the southeast Yukon, elk are not native to Yukon. The two herds currently occupying the Takhini Valley and Braeburn areas in southwest Yukon are the result of introductions from Elk Island National Park, Alberta in the 1950s and 1990s. Elk in Yukon are at the northernmost extent of their range in North America.

The Braeburn elk herd ranges along the North Klondike Highway between Fox Lake and Carmacks. Although no systematic or reliable surveys of elk in the Braeburn area have been conducted to date, previous estimates for this herd have been as high as 100 animals.

Environment Yukon has initiated a monitoring program in order to learn more about the abundance, distribution, movement patterns and habitat use of the elk in the Braeburn herd. In March 2007, conventional VHF radio collars were deployed on six female elk in the Braeburn area.

Elk are emerging as a high profile ungulate species in Southwest Yukon due to their potential for wildlife viewing, increasing public pressure for a managed harvest, conflicts with agricultural interests, and their recently confirmed infestation with winter ticks. There are also concerns that elk may compete with native species such as moose and caribou for habitat and resources. As of March 31, 2008, elk were designated as specially protected wildlife under the Yukon *Wildlife Act*. However, regulation changes are currently being enacted to remove the specially protected species designation to allow a limited harvest.

In July 2007, the Yukon Elk Management Planning team released a draft Elk Management Strategy. The intent of the strategy is to provide a broad framework to guide elk management in the Yukon. The management strategy calls for elk to be maintained at current population levels, until steps are implemented to address human concerns and improved information on population size, range use, range carrying capacity, and effects on other wildlife species is gathered. It also recommends a limited harvest of elk.

**Project objective:** To determine the abundance, distribution, composition (proportion of cows, calves and bulls in the population) and movement patterns of the Braeburn elk herd.

**Project description:** On October 1, 2007 the survey crew flew in a fixed-wing aircraft for 70 minutes. They classified each animal they saw as a bull, cow or calf, and mapped their locations. This information is used to determine the abundance, composition, distribution and habitat use of the herd.

**Project results:** The survey team counted four calves, 20 cows, eight bulls and one undetermined for a total of 33 elk. All six collars were located. Using the survey results, biologists calculated ratios of 20 calves for every 100 cows and 40 bulls for every 100 cows in the herd. Combining these survey results and an estimate for additional elk that are believed to be in the area but not observed during this monitoring flight, biologists believe that there are currently between 50 and 75 elk in the Braeburn herd. Subsequent flights were not conducted as the radio-collared elk did not disperse. Survey data is on file at Environment Yukon.

**Next steps:** Environment Yukon will continue to monitor the collared elk to learn more about range use and distribution. This work continues on a weekly basis to assess changes in range use and animal numbers. Pending direction from the Elk Management Plan and the Risk Management Workshop scheduled for early June 2008, additional monitoring may be required.

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