SUMMARY OF THE SOUTH CANOL WEST EARLY-WINTER 2007 MOOSE SURVEY

5-11, 13 NOVEMBER 2007

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Yukon
Environment

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SUMMARY

- We conducted an early-winter survey of moose in the area west of the South Canol Road on November 5-11 and 13th, 2007. The main purpose of this survey was to estimate the abundance, distribution, and composition of the moose population.

- The South Canol West survey area is an important hunting region for Whitehorse and Teslin area residents. Increased access into the area is a concern as a result of recent mining interests in the Red (Slate) Mountain area. Potential mining exploration and development may result in additional access in the future.

- We attempted to count all moose in survey blocks covering about 24% of the area, and found a total of 412 moose, of which 148 were adult bulls, 203 were adult and yearling cows, 17 were yearling bulls, and 44 were calves.

- We calculated a population estimate of 1,620 ± 22% moose for the area, which is equal to a density of about 241 moose per 1,000 km^2 of total area. This is substantially higher than the Yukon-wide average, and similar to or higher than estimated densities for adjacent areas surveyed to date.

- We estimated that there were about 22 calves and 18 yearlings for every 100 adult cows in the survey area. This suggests that survival of calves was moderate in the summer and fall of 2007, and for calves born in 2006.

- We estimated that there were about 76 adult bulls for every 100 adult cows in the survey area, slightly above the Yukon average of 67 adult bulls per 100 adult cows calculated from other areas surveyed.

- Reported harvest of moose in the South Canol West survey area is within recommended allowable harvest rates. Estimated total harvest, however, is likely at or over the maximum allowable limit in some Game Management subzones along the South Canol Road.

INTRODUCTION

This report summarizes the results of the early-winter survey of moose in the South Canol West survey area (see Map 1), conducted on November 5-11 and 13th, 2007. The main purpose of this survey was to estimate abundance, distribution and age and sex composition of the local moose population.

Mining Exploration and Potential Resource Development:

In October 2005, an application for a bulk sampling program and land use permit for an access road was submitted by Tintina Mines Ltd. The company was planning to do underground exploration of a porphyry molybdenum deposit in a portion of their Red Mountain (Slate Mountain) mineral claim. Although the company suspended operations on the project in early December 2006, the overall rise in mineral prices since then suggests the potential for renewed interest in the area in the future. The main management concern that arose from the initial environmental screening of the project was access and the associated increase in harvest; interference or displacement of moose during critical periods of the year; loss of key habitat (post-rut areas, late-winter range); and cumulative effects of the mine or future resource development on the local and regional moose population. To date there had been no reliable and precise estimates of moose abundance, distribution and composition in the Slate Mountain area. The moose population survey proposed for the area in early-winter 2007 is to be used as a baseline to monitor the effects of potential and future mine development activities in the area and to help identify effective mitigation measures.

Previous Surveys

No past moose population survey information is available for the 2007 survey area. Early-winter intensive population surveys have been conducted adjacent to the area (see Map 2) in the Big Salmon region to the northwest in 1993 and 1998 (results in Ward and Larsen 1994; Yukon Fish and Wildlife Branch 1999); in the M'Clintock area to the west in 1999 (results in Yukon Fish and Wildlife Branch 2000); and in the southern portion of the Nisutlin area to the southeast in 1986 (Jingfors and Markel 1987), 1994 (Ward et al. draft report) and 2003 (report not available, results data only).

The southern two-thirds of the 2007 study area was stratified as part of the 2003 Nisutlin survey to gather preliminary information on moose distribution and abundance, but a complete census of moose was not done in the Nisutlin north portion of the area at that time (see Map

2). An extended stratification flight was attempted along the South Canol Road as part of the 1986 Nisutlin survey, but was not completed.

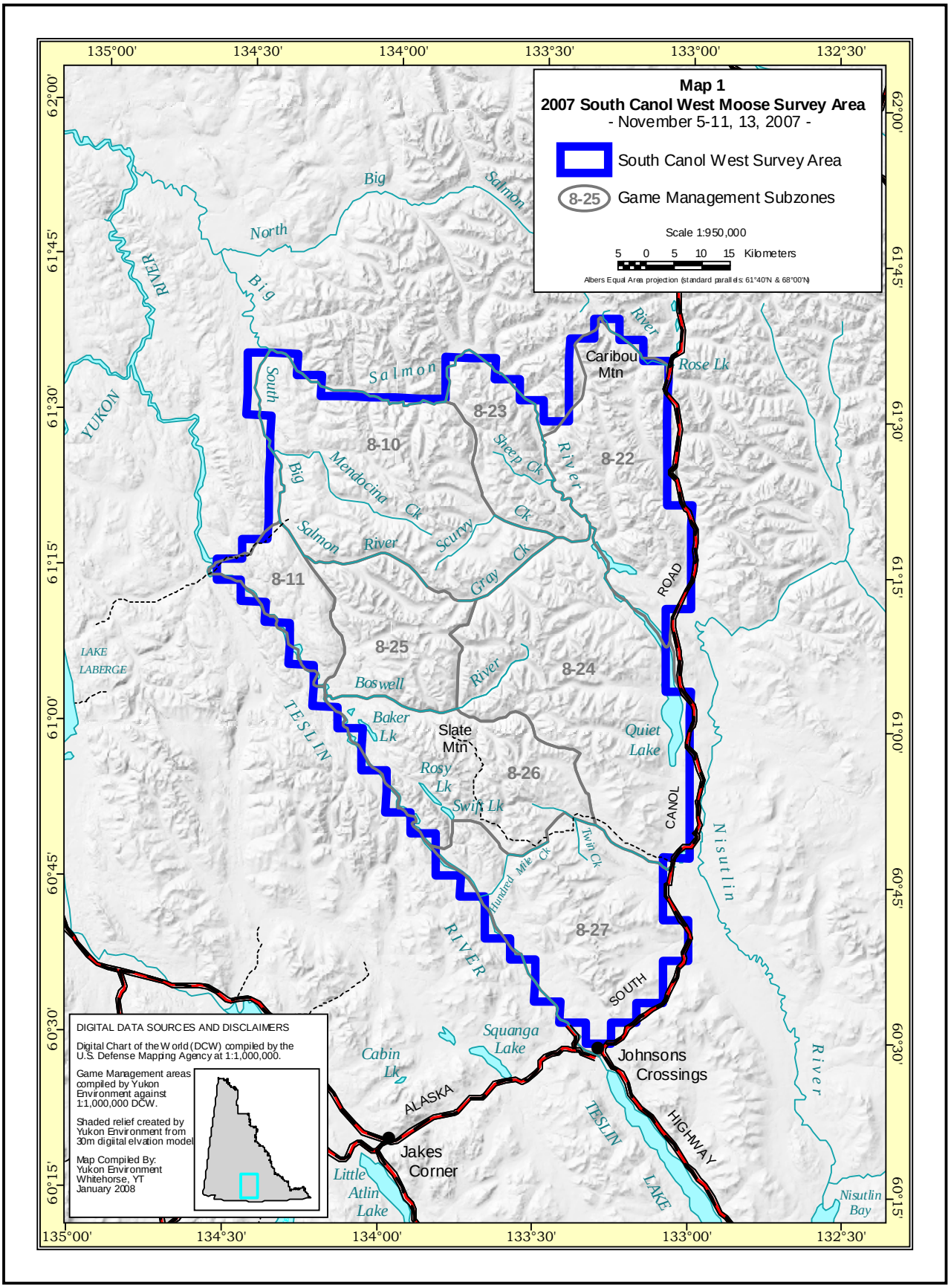
Other less intensive early-winter moose surveys were flown in the Nisutlin area to determine relative age and sex composition of moose in the southern portion of the South Canol West survey area in 2005 (Florkiewicz 2005) and southeast of the study area in 2004 (Florkiewicz 2004) and 2007 (Florkiewicz 2007).

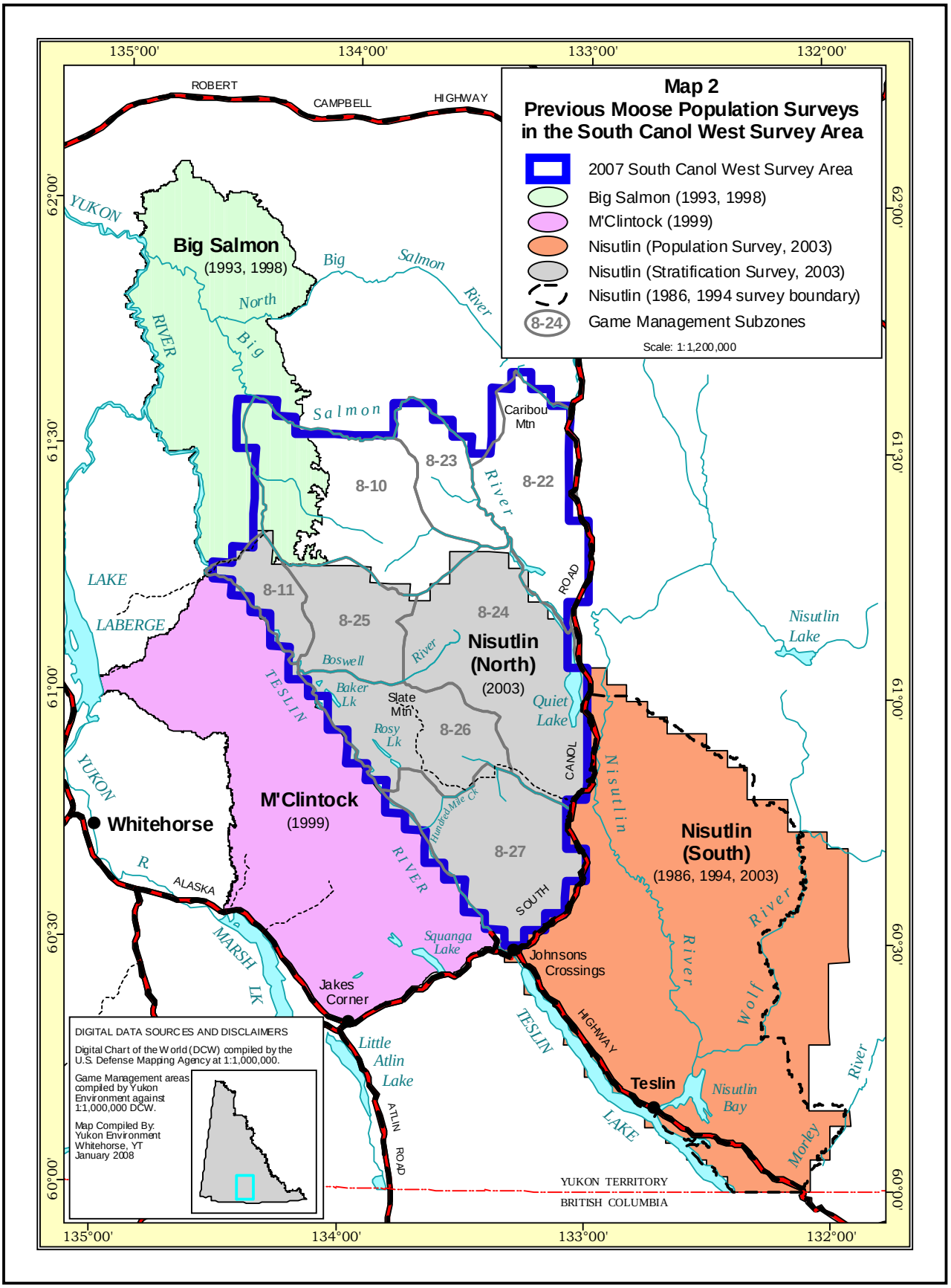
We conducted annual low intensity late-winter surveys to measure recruitment of calves in the Big Salmon area from 1993 to 1999 (results in Ward and Larsen 1994, Ward and Larsen 1995, and Yukon Fish and Wildlife Branch file reports). Survey information from these surveys overlapped the western edge of the 2007 study area south to Hundred Mile Creek. We also flew late-winter recruitment surveys in the Nisutlin area, southeast of the study area in 2003 and 2004 (reports not available, results data only).

Community Involvement

The Teslin River, Nisutlin River and South Canol areas of the Teslin Tlingit traditional territory have been important community hunting areas and identified as areas of management concern in the 2001 and 2005 community based fish and wildlife planning meetings. Low intensity early and late winter surveys have been identified as important activities to track annual distribution and recruitment of moose along these corridors. At least one community, First Nation or Renewable Resource Council (RRC) representative has been involved in each of the monitoring activities.

In 2006, the Teslin RRC and Teslin Tlingit Council sponsored a fish and wildlife regulation change that refined game management subzone boundaries. This change was needed to ensure that any change in hunter harvest on moose, as a result of improved access, was captured early enough that the community could respond if needed.


Map 1
2007 South Canol West Moose Survey Area
- November 5-11, 13, 2007 -
South Canol West Survey Area
8-25 Game Management Subzones
Scale 1:950,000
5 0 5 10 15 Kilometers
Albers Equal Area projection (standard parallels 61°40'N & 68°00'N)
DIGITAL DATA SOURCES AND DISCLAIMERS
Digital Chart of the World (DCW) compiled by the U.S. Defense Mapping Agency at 1:1,000,000.
Game Management areas compiled by Yukon Environment against 1:1,000,000 DCW.
Shaded relief created by Yukon Environment from 30m digital elvation model
Map Compiled By:
Yukon Environment
Whitehorse, YT
January 2008
8-10
8-11
8-22
8-23
8-24
8-25
8-26
8-27
Caribou Mtn
Slate Mtn
Rose Lk
Quiet Lake
Rosy Lk
Swift Lk
Baker Lk
Squanga Lake
Cabin Lk
Little Atlin Lake
Jakes Corner
Johnsons Crossings
Nisutlin Bay
LAKE LABERGE
TESLIN LAKE
ALASKA HIGHWAY
CANOL ROAD
SOUTH NISUTLIN RIVER
YUKON RIVER
Big Salmon River
North Big Salmon River
South Big Salmon River
Mendocina Ck
Sheep Ck
Scurvy Ck
Gray Ck
Boswell River
Twin Ck
Hundred Mile Ck
135°00'
134°30'
134°00'
133°30'
133°00'
132°30'
62°00'
61°45'
61°30'
61°15'
61°00'
60°45'
60°30'
60°15'


Map 2
Previous Moose Population Surveys in the South Canol West Survey Area
2007 South Canol West Survey Area
Big Salmon (1993, 1998)
M'Clintock (1999)
Nisutlin (Population Survey, 2003)
Nisutlin (Stratification Survey, 2003)
Nisutlin (1986, 1994 survey boundary)
8-24 Game Management Subzones
Scale: 1:1,200,000
135°00'
134°00'
133°00'
132°00'
62°00'
61°30'
61°00'
60°30'
60°00'
ROBERT CAMPBELL HIGHWAY
YUKON
Big Salmon (1993, 1998)
Big Salmon River
North Big RIVER
Salmon River
Caribou Mtn
8-23
8-10
8-22
LAKE LABERGE
8-11
8-25
8-24
Nisutlin (North) (2003)
Boswell River
Baker Lk
Slate Mtn
Rosy Lk
8-26
Quiet Lake
TESLIN
CANOL ROAD
Nisutlin Lake
YUKON
Whitehorse
M'Clintock (1999)
Hundred Mile Ck
8-27
RIVER
SOUTH
Nisutlin (South) (1986, 1994, 2003)
Nisutlin River
Wolf River
ALASKA
MARSH LK
Squanga Lake
Johnsons Crossings
Jakes Corner
Little Atlin Lake
ATLIN ROAD
TESLIN HIGHWAY
Teslin
Nisutlin Bay
LAKE
Morley River
YUKON TERRITORY
BRITISH COLUMBIA
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Digital Chart of the World (DCW) compiled by the U.S. Defense Mapping Agency at 1:1,000,000.
Game Management areas compiled by Yukon Environment against 1:1,000,000 DCW.
Map Compiled By: Yukon Environment Whitehorse, YT January 2008

STUDY AREA

The South Canol West survey area covers about 6,735 km². It includes Game Management Subzones (GMSs) 8-10, 8-11, and 8-22 to 8-27 (see Map 1). The southern portion of the region (GMSs 8-11 and 8-25 to 8-27) was originally a part of the 2003 Nisutlin survey, which was expanded to the north in 2007. The border runs south of the Big Salmon River and Caribou Mountain area to Johnsons Crossing, and east of the Teslin and South Big Salmon rivers to the South Canol Road (Map 1).

The majority of the study area (about 4,920 km²) is considered suitable moose habitat, except for approximately 27% of the area, which includes large water bodies (more than 0.5 km²) and land over 1,524 m (5,000 feet) in altitude. The study area includes the Big Salmon Range which forms the more rugged northern part of the Pelly Mountains ecoregion (Yukon Ecoregions Working Group 2004). The ecoregion is described as a rolling plateau with numerous mountain peaks, dissected by several small rivers and creeks. Much of the area lies above treeline which is dominated by shrub and dwarf shrub tundra, with coniferous or mixed forest at lower elevations (Yukon Ecoregions Working Group 2004). Very few forest fires have been recorded in the study area. Most of these were relatively small older fires occurring between 1946 and 1989, with the exception of a very small fire (0.2 km²) in the Twin Creek area in 2004.

METHODS

We have adapted a relatively new survey technique, developed by Jay Ver Hoef with the Alaska Department of Fish and Game (Kellie and DeLong 2006), to survey moose. Field sampling portions of this new geospatial technique are similar to those used in the stratified random block method (Gasaway et al. 1986) we used prior to 1999, except that we count moose in square rather than irregularly shaped survey blocks. This new technique offers the ability to employ more current population estimation procedures.

The new technique involves six steps:

1. The survey area is divided into uniform rectangular blocks about 17 km² in size.

2. Observers in fixed-wing aircraft fly over all the blocks, and classify (or "stratify") each block as having either high, medium, low, or very low expected moose abundance, based on local knowledge, number of

moose seen, tracks, and habitat. This is called the "stratification" portion of the survey.

3. We combine these categories of blocks into high and low "strata", and then randomly select a sample of blocks in each stratum for inclusion in the following steps.

4. We try to count every moose within the selected blocks (the "census" part of the survey) using helicopters at a search intensity of about 2 minutes per km^2. We classify all moose seen by age (adult, yearling, or calf) and sex. Yearling cows are often difficult to distinguish from adults, so we classify all cows as adults, and later estimate the number of yearling cows that were present among the older cows based on the number of yearling bulls we saw.

5. To estimate the number of moose that we missed during step 4, we include a step from the stratified random block technique where we re-fly a portion of some of our selected survey blocks at twice the search intensity (about 4 minutes per km^2). This information is used to develop a "sightability correction factor" to be incorporated into our population estimate.

6. We use computer programs to estimate the total number of moose in each age and sex category in the entire survey area based on the numbers of moose counted in the blocks during the census. The "sightability correction factor" is applied to the total number to account for moose that we overlooked.

Generally, the more blocks that are searched during the census portion of the survey (step 4), the more precise and reliable the resulting population estimate.

The geospatial technique has the advantage of being easier operationally to fly, is flexible for small area estimation, and provides good population estimates, often with greater precision than the stratified random block method. The stratified random block technique, however, allows us to determine and apply a sightability correction factor to our estimated population data to allow for moose that are missed. Depending on the difference in precision of the population estimate, or if a sightability correction factor is calculated during the survey - will determine which population estimation technique will be used.

In the harvest section of this report, total moose abundance in each Game Management Subzone (see Table 4) is estimated by multiplying the average moose density in the high and low stratum blocks by the number of high and low stratum blocks per Game

Management Subzone respectively. This is a change from past reports where survey area wide moose density was applied to each Game Management Subzone.

WEATHER AND SNOW CONDITIONS

Weather and snow conditions were almost ideal during the 2007 survey. Temperatures were mild, ranging from -16°C to -4°C, and winds were mainly calm to moderate, with a few days of strong winds at the beginning and midpoint of the survey period. We were able to fly on all but one day due to fog, although we had to work around low-hanging fog in valleys and open water areas for most of the census portion of the survey; and a few days were cut short because of low visibility due to snow. Snow depths were intermediate, between 30 cm and 60 cm in the majority of the study area, with some low snow areas (less then 6 cm) in the northwest and a few high snow areas (greater than 90 cm) in the central portion and northeast edge of the survey area. We generally had complete snow coverage for good tracking and sighting of moose, with a few brown south facing slopes on the bluffs along the Teslin River.

RESULTS AND DISCUSSION

Stratification (Identification of High and Low Moose Density Blocks)

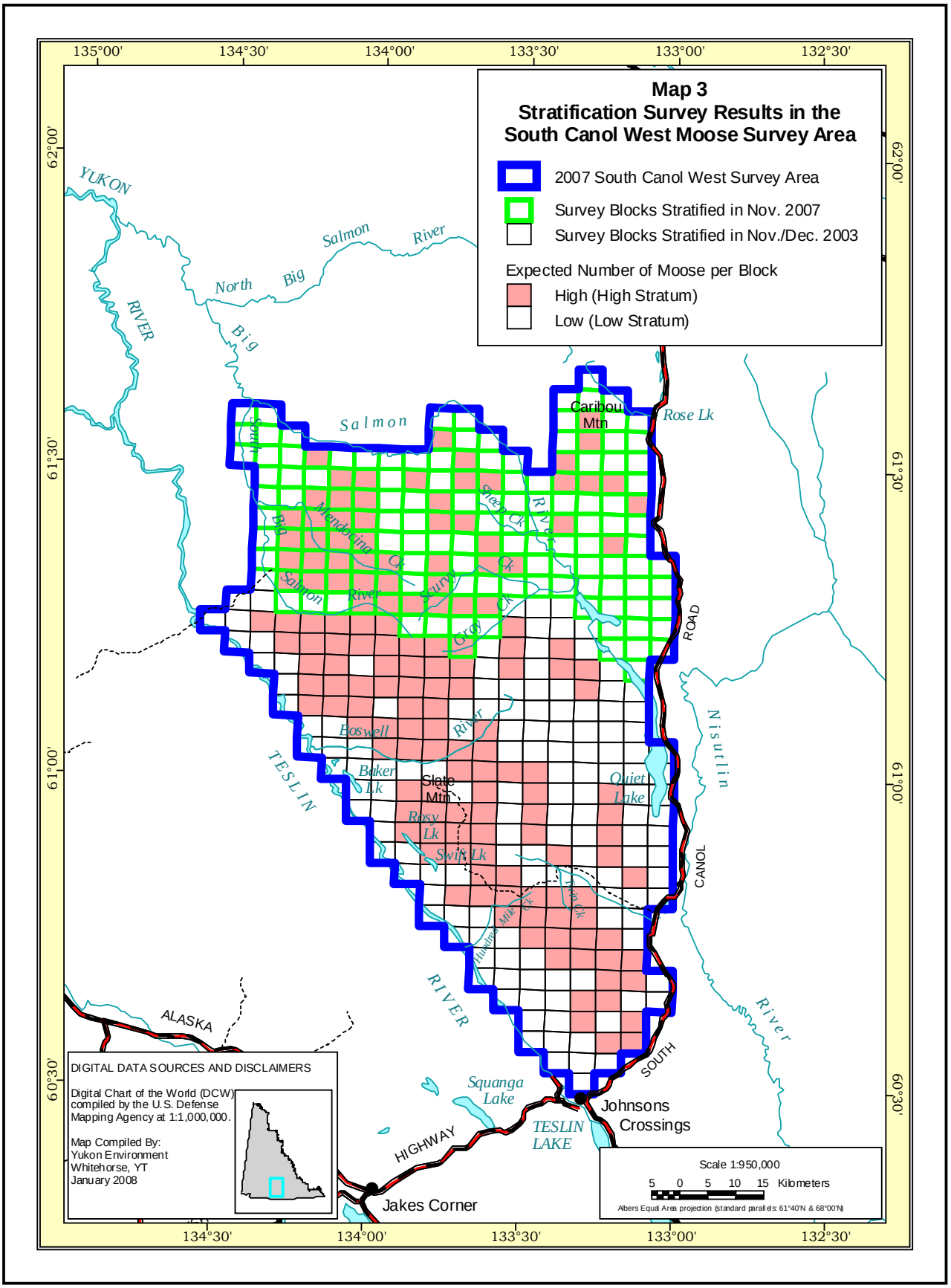
In 2007, we used the original high and low strata per block data from the 2003 Nisutlin stratification survey for the southern portion of the study area (see Map 3). We then stratified the northern part of the study area using a 4-seat Cessna 206 aircraft with pilot and 3 observers, on November 5-6th. We were unable to fly a few blocks in the Sheep Creek area west of the Big Salmon River due to high winds, but we were able to classify these blocks later with the helicopter during the census portion of the survey. Overall, we averaged 0.06 minutes per km^2 during stratification flights of the northern portion of the study area.

We classified 156 (39%) of the 404 survey blocks as having high expected moose abundance and 248 (61%) as having low expected abundance of moose (Map 3). Most of the blocks with higher expected moose numbers were located in the subalpine areas in the Big Salmon Range which runs northwest and southeast through the study area.

Coverage

We counted moose in 95 of the 404 blocks, flying about 24% of the total area (see Map 4). Our original intention was to only count 70

blocks, so we randomly selected 42 blocks from the High stratum, and 28 from the Low stratum. After completing the count in 59 of these blocks on 10 November, however, the precision of our population estimate was still fairly low, so we randomly selected another 2 High and 23 Low-stratum blocks to get a more precise estimate. It took about 43.6 hours to count moose in these blocks, for a total search intensity of about 1.65 minutes per km^2. Survey intensity was the same in low-abundance and high-abundance blocks (1.65 minutes per km^2). This is somewhat lower than the normal search intensity for census surveys (2 minutes per km^2), but the relatively large proportion of non-habitable terrain in the study area required less coverage and lower search time overall. We needed an additional 6.2 hours to recount survey blocks to calculate our sightability correction factor. Another 26.3 hours of helicopter time was used in ferrying between survey blocks; to remote fuel caches at Quiet Lake and Squanga Lake airstrip; and back and forth to Whitehorse. Total flight time (survey and ferry time combined) was 76.1 hours.


Map 3
Stratification Survey Results in the
South Canol West Moose Survey Area
2007 South Canol West Survey Area
Survey Blocks Stratified in Nov. 2007
Survey Blocks Stratified in Nov./Dec. 2003
Expected Number of Moose per Block
High (High Stratum)
Low (Low Stratum)
135°00'
134°30'
134°00'
133°30'
133°00'
132°30'
62°00'
61°30'
61°00'
60°30'
YUKON
RIVER
North Big Salmon River
Big Salmon
Caribou Mtn
Rose Lk
Meadowing Ck
Swan Ck
Grotto Ck
ROAD
Boswell River
TESLIN
Baker Lk
Slate Mtn
Rosy Lk
Swift Lk
Quiet Lake
Nisutlin
CANOL
Hackett River
ALASKA
SOUTH
Squanga Lake
TESLIN LAKE
HIGHWAY
Johnsons Crossing
Jakes Corner
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5 0 5 10 15 Kilometers
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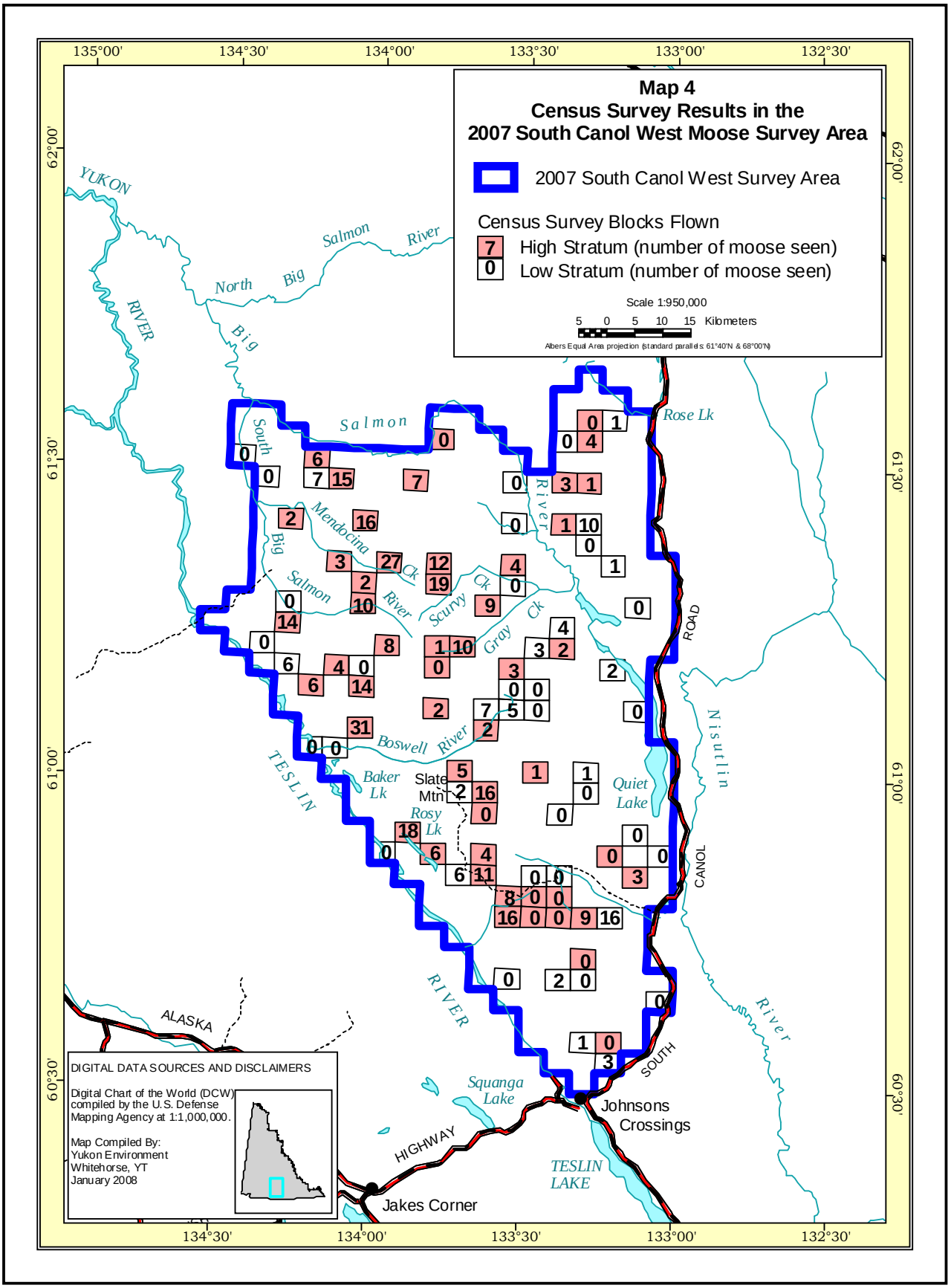
Map 4
Census Survey Results in the
2007 South Canol West Moose Survey Area
2007 South Canol West Survey Area
Census Survey Blocks Flown
High Stratum (number of moose seen)
Low Stratum (number of moose seen)
Scale 1:950,000
5 0 5 10 15 Kilometers
Albers Equal Area projection (standard parallels 61°40'N & 68°00'N)
135°00'
134°30'
134°00'
133°30'
133°00'
132°30'
62°00'
61°30'
61°00'
60°30'
YUKON
RIVER
North Big Salmon River
Big Salmon River
South Big Salmon River
Mendocina Ck
Scurvy Ck
Gray Ck
Boswell River
Baker Lk
Slate Mtn
Rosy Lk
Rose Lk
Quiet Lake
Nisutlin River
TESLIN RIVER
ROAD
CANOL
SOUTH
ALASKA
HIGHWAY
Squanga Lake
TESLIN LAKE
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Digital Chart of the World (DCW) compiled by the U.S. Defense Mapping Agency at 1:1,000,000.
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Yukon Environment
Whitehorse, YT
January 2008

Observations of Moose

We counted a total of 412 moose, 148 of them adult bulls, 203 adult and yearling cows, 17 yearling bulls and 44 calves (see Table 1). We observed an average of 394 moose for every 1,000 km² in the high-abundance blocks, and 105 moose per 1,000 km² in the low blocks.

Table 1. Observations of moose during the November 2007 survey in the South Canol West survey area.

	High Blocks	Low Blocks	Total
Number of Blocks Counted	51	44	95
Number of Adult Bulls Observed	124	24	148
Number of Adult and Yearling Cows Observed*	159	44	203
Number of Yearling Bulls Observed	14	3	17
Number of Calves Observed	38	6	44

* Adult and yearling cows cannot always be reliably distinguished from the air, so they are counted together. Assuming that equal numbers of males and females are born and that they survive about equally well until they are yearlings, the number of yearling cows and bulls observed during the survey should be about equal. Note: we use this assumption to estimate the total number of adult cows in the survey area by subtracting the number of yearling bulls observed from the total number of cows counted; and use twice the number of yearling bulls counted as the estimated total number of yearlings observed during the survey. This estimate of adult cow and total yearling numbers is used in the calculation of data presented in Table 2 below.

Distribution and Abundance of Moose

Moose were widely distributed in the survey area, and we found them in a variety of habitats. As expected for early winter, subalpine willow flats and creek draws with abundant willows generally had good numbers of moose in them. Forested lowlands and lower-elevation slopes typically had few moose in them.

Due to the similarity in precision of the estimation results when using the geospatial or stratified random block population estimation technique, we decided to use the “sightability correction factor” or SCF pooled results of the stratified random block technique. Based on our

census counts, we estimate that there are a total of 1620 ± 22% moose in the survey area (see Table 2). This includes a sightability correction factor of 11% for moose missed during the census portion of the survey.

Table 2. Estimated abundance of moose in the South Canol West survey area in November 2007.

	Best Estimate ± 90% Confidence Interval*	Estimates within 90% Confidence Interval*
Estimated Total Number of Moose**	1,620 ± 22%	1,268-1,972
Adult Bulls	571 ± 23%	442-701
Adult Cows	749 ± 25%	559-939
Yearlings	133 ± 39%	81-185
Calves	167 ± 31%	116-218
Density of Moose (per 1,000 km²)		
Whole Area	241	
Moose Habitat Only***	329	

* A "90% confidence interval" means that, based on our survey results, we are 90% sure that the true number lies within this range of numbers. Our best estimate is in the middle of this range.

** Estimated numbers provided are based on a pooled "sightability correction factor" or SCF. In this survey, a SCF of 1.11 was applied to correct estimates of moose abundance for animals that were missed by the survey crews (see step 5 of methods section for a description of how the SCF is calculated).

*** Suitable moose habitat is considered all areas at elevations lower than 1,524 m (5,000 ft), including water bodies < 0.5 km² in size.

The estimated density of moose in the survey area is 241 per 1,000 km² of total area (see Table 2). This is substantially higher than the Yukon-wide average of 158 moose per 1,000 km² of total area, and similar to or higher than estimated densities for adjacent areas surveyed to date. In 2003 we estimated 202 moose per 1,000 km² of total area in the Nisutlin South River survey to the southeast (see Map 2). In the M'Clintock survey area to the west, there were 246 moose per 1,000 km²

in 1999; and 193 moose per 1,000 km^2 of total area in the 1998 Big Salmon survey to the northwest (Map 2).

Ages and Sexes of Moose

Calf survival to the early winter was moderate in the 2007 survey area. Based on our survey results, there were an estimated 22 calves for every 100 adult cows (see Table 3). In general, about 25-30 calves per 100 cows are considered necessary to maintain stable moose populations in areas with typical mortality rates. Calves made up an estimated 10% of the population in 2007. Six percent of cow-calf groups contained twins.

Yearlings represented about 8% of the estimated population in the survey area (see Table 3). There were an estimated 18 yearlings per 100 adult cows, or about 9 per 100 adults. Depending on mortality rates, about 10-20 yearlings per 100 adults are required for maintaining stable populations (Yukon Fish & Wildlife Branch 1996).

Table 3. Estimated composition of the moose population in the South Canol West survey area in November 2007.

	Best Estimate	Estimates within 90% Confidence Interval*
% Adult Bulls	35%	32-39%
% Adult Cows	46%	42-50%
% Yearlings	8%	6-11%
% Calves	10%	8-13%
Bulls per 100 Adult Cows	76	63-90
Yearlings per 100 Adult Cows	18	11-24
Calves per 100 Adult Cows	22	16-29
% of Cow-Calf Groups with Twins	6%	1-12%

* A "90% confidence interval" means that, based on our survey results, we are 90% sure that the true number lies within this range of numbers, and that our best estimate is in the middle of this range.

Overall, calf and yearling recruitment in the South Canol West survey area suggests a stable to slowly decreasing moose population.

We estimate that there were about 76 adult bulls for every 100 adult cows in the survey area (see Table 3). This is somewhat higher than the Yukon-wide average of 67 bulls per 100 cows in areas that have been surveyed, and well above the minimum level of 30 adult bulls per 100 adult cows set out in our Yukon Moose Management guidelines to ensure that the majority of adult cows are bred during the rut (Yukon Fish & Wildlife Branch 1996).

Harvest

Moose harvest fluctuated in the late 1970s and early 1990s in the 2007 South Canol West survey area (Game Management Subzones 8-10, 8-11, 8-22 to 8-27; Map 1). The highest number of moose harvested per year was about 40 moose in 1982 and again in 1991, with considerably fewer moose harvested between this period (see Figure 1). A more consistent level of moose harvest (17 to 31 moose per year) has occurred since the early 1990s, with the exception of a peak of 38 and 37 moose harvested in 2000 and 2005 respectively (Figure 1). The most current 5-year average reported harvest in the survey area (2003-2007) is 27.8 moose per year (see Table 4).

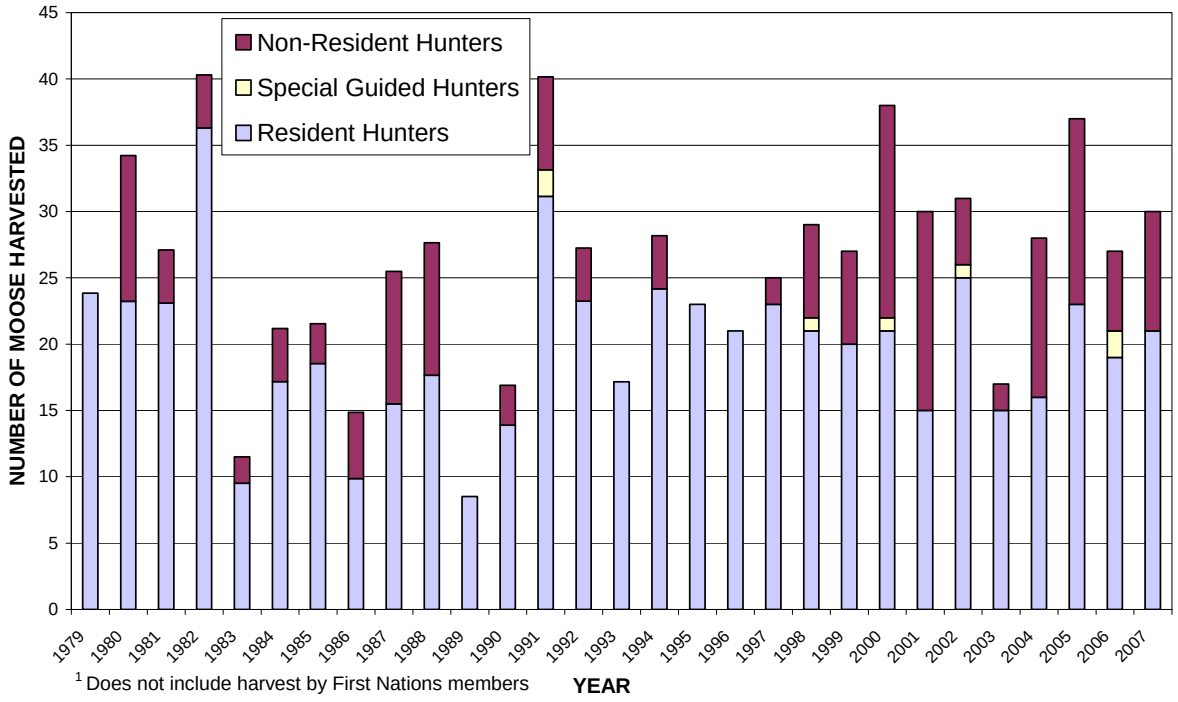
The current average annual reported harvest is about 1.7% of the 1621 moose estimated for these Game Management Subzones (Table 4). These numbers do not, however, include harvest by First Nations' hunters for whom we do not have reliable information. In the absence of harvest information for First Nations' hunters, we generally assume that their harvest is about equal to that by licensed resident non-First Nation hunters.

If we make this assumption for the First Nation harvest, then the total estimated average annual harvest rate (including First Nation hunters) increases to about 2.9% of the estimated moose population. This is just below the annual allowable harvest rates of 3% to 4% that we generally set for stable moose populations of average density (Yukon Fish & Wildlife Branch 1996).

There is a concern, however, for high harvest rates in the more accessible portions of the area, particularly in some Game Management Subzones (GMSs) along the South Canol Road (see Map 1). Estimated moose harvest rates, adjusted for FN harvest, are near or greater than the 4% maximum allowable limit in GMS 8-24 (3.8%) and GMS 8-22 (5.9%). Harvest rates in excess of 5% can carry an unacceptably high

risk of initiating a population decline. In the absence of complete and reliable data, moose harvest in these areas should remain conservative.

Figure 1: Annual Reported Moose Harvest (1979-2007) in the South Canol West Moose Survey Area[1] (Game Management Subzones: 8-10, 8-11, 8-22 to 8-27)



[1] Does not include harvest by First Nations members

Table 4. Average Annual (2003-2007) Reported Moose Harvest and Allowable Harvest Summary for the 2007 South Canol West Moose Survey Area, Game Management Subzone (GMS) 8-10, 8-11, 8-22 to 827[1]

GMS	GMS Area (km^2)	Estimated Density[2] (moose/ 1000 km^2)	Total Estimated number of Moose	Average Resident Harvest	Average Non-Resident Harvest	Average (Special Guided) Harvest	Average Reported Harvest[3] (2003-2007)	Current Harvest Rate (% of total population)	3% Allowable Annual Harvest	4% Allowable Annual Harvest
8-10	1292.0	265	342.4	0.6	2.6	0.0	3.2	0.9	10.3	13.7
8-11	287.4	235	67.5	0.6	1.2	0.0	1.8	2.7	2.0	2.7
8-22	873.1	170	148.4	4.4	0.0	0.0	4.4	3.0	4.5	5.9
8-23	408.7	215	87.9	0.8	1.4	0.0	2.2	2.5	2.6	3.5
8-24	1457.4	190	276.9	4.8	1.0	0.0	5.8	2.1	8.3	11.1
8-25	565.7	390	220.6	0.4	1.4	0.0	1.8	0.8	6.6	8.8
8-26	784.9	275	215.8	2.8	1.0	0.0	3.8	1.8	6.5	8.6
8-27	1047.0	250	261.8	4.4	0.0	0.4	4.8	1.8	7.9	10.5
Total[4]	**6716.2**	**241.4**	**1621.3**	**18.8**	**8.6**	**0.4**	**27.8**	**1.7**	**48.6**	**64.9**

[1] Does not include harvest by First Nations' members.
[2] Based on 2007 South Canol West moose survey results.
[3] Includes only reported harvest. Does not include harvest by First Nations' members.
[4] Small differences in total area, average moose density, and total number of moose presented in the report for the South Canol West survey area, versus Table 4, are due to slight differences in game management subzone and survey area boundaries (see Map 1).

Other Wildlife Sightings

In addition to the 412 moose we counted during the 2007 survey, we also observed 53 moose outside of the sample units that were surveyed, or just outside of the survey boundary. The total number observed during the entire survey period was 465 moose. Other ungulates recorded during the survey included a total of 11 caribou; 3 between Scurvy and Gray creeks, 4 north of Mendocina Creek, 3 southwest of the study area just north of Cabin Lake, and 1 northwest of Baker Lake. One deer was also seen northwest of the Baker Lake area. Four wolves were found next to a moose kill site on Rosy Lake, and another pack of 4 wolves were seen near Rose Lake along the South Canol Road. A Red Fox was sighted northeast of the mouth of Dycer Creek and one wolverine was spotted on Scurvy Creek. A number of bird species were also seen; 1 Blue Grouse east of Swift Lake, 1 raptor east of Gunsight Lake, several ptarmigan were observed in alpine areas throughout the study area, and more than 60 swans, including a dozen pair with several young were on the Teslin River in the southwest corner of the survey area.

CONCLUSIONS AND RECOMMENDATIONS

- We estimate that there are about 1,620 moose in the 2007 South Canol West survey area. The estimated density is about 241 moose per 1,000 km^2 of total area, which is about fifty percent higher than the Yukon-wide average and similar to or higher than density estimates calculated for adjacent survey areas to the northwest in 1998, to the west in 1999, and to the southeast in 2003.

- Survival of calves was moderate in this area during the summer and fall of 2007, and for calves born in 2006. Overall calf and yearling recruitment in the South Canol West survey area suggests a stable to slowly decreasing moose population.

- The number of adult bulls, compared to the number of adult cows in the entire survey area, was above the Yukon-wide average for areas that have previously been surveyed, and well above the number generally considered sufficient to ensure that adult cows are bred during the rut.

- Reported moose harvest in the 2007 South Canol West survey area is currently within the normal annual allowable harvest rate recommended for stable moose populations of average density.

- We should closely monitor the status and harvest of this moose population, however, particularly in the more accessible portions of the area to ensure that estimated high harvest rates do not cause a decline in the population.

- We should continue discussions with affected First Nations and Renewable Resources Councils for managing harvest in this area to ensure that it does not exceed sustainable levels.

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