

Aishihik Caribou and Moose Recovery Program Summary

WHY did the program take place?

The Yukon government closed the licensed hunting season for Aishihik caribou in 1991 and placed moose on permit in 1993 followed by full closure in 1994, in response to local concerns over declining caribou and moose populations. Inventories for both species in 1992 indicated numbers had decreased since 1981.

The Aishihik recovery program was the first to take place once the *Yukon Wolf Conservation and Management Plan* was put in place. To limit predation on the caribou and moose, the Yukon government led an experimental program to reduce the number of wolves through lethal and non-lethal methods. Comprehensive monitoring for caribou, moose, sheep and wolf populations were also key elements of the program.

WHERE did the program take place?

The 20,000 km² Aishihik study area in southwest Yukon included the Ruby Range Mountains and portions of the Nisling River and Aishihik basins. The area is bounded to the west by the Kluane Wildlife Sanctuary and Kluane National Park.

WHO was involved?

The Yukon government carried out the recovery program in consultation with Yukon residents, First Nations (particularly Champagne/Aishihik), communities and wildlife management advisory groups. Researchers, university professors and the public were involved in the study design and in the post study evaluation.

WHAT was done?

This project was an experimental study to determine whether reducing wolf numbers could increase caribou, moose and sheep populations. Researchers compared caribou with three other areas (Wolf Lake, Ibex, and Chisana herds), wolves with Mayo, Tatchun Hills, and Wolf Lake populations and moose with Big Salmon, Mayo, and Ladue River populations. Dall's sheep was compared with sheep in the Rose Lake area.

Wolf numbers were manipulated in three phases:

- They were shot from helicopters each winter from 1993-1997;
- Surgical sterilizations occurred between 1993 and 1997 (14 wolves from 7 packs);
- An experimental immune-contraceptive vaccine was applied to 11 females between 2000 and 2003.

These methods resulted in a reduction of wolf numbers by 80% -- from 28 wolf packs in 1992 to 7-20 packs during the reduction period. A total of 157 wolves were killed over the period 1993-1998 in the Aishihik caribou herd's range. As well, 32 wolves were trapped during this period.

Biologists captured and radio-collared 229 caribou in all study herds for ongoing monitoring. They captured 216 cow caribou during winter to determine pregnancy rates in each herd. Moose were counted at the beginning of the program and one year after wolf reduction ended.

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What were the outcomes?

The Aishihik caribou herd's adult sex ratio changed from 29 bulls for every 100 cows (pre-1993) to 52 bulls/100 cows by 1997. Increased recruitment rates (calf:cow ratio) during wolf control compared to before was not observed in control populations. However, Aishihik was the only herd that showed a sustained increase in annual recruitment during treatment. Overall it was concluded that the Aishihik caribou population was positively affected by the removal of wolves from the system.

Moose numbers stopped declining and rapidly increased between 1992 and 1998. Moose recruitment in the Aishihik region increased from 10% to 19% although comparison populations also had elevated recruitment during this time. The change in moose numbers was explained through adult survival rates that increased from 80% to 98% in the treatment area between the two survey periods.

There was no detectable change in Ruby Range sheep numbers over the study period.

Current situation

The Aishihik herd size was estimated to be 2044 caribou in 2009. It has increased by approximately 5% per year since 1997. This increase has occurred in the presence of a recovering wolf population, an increasing wood bison population, and a modest bull-only harvest by licensed hunters which began in 2002.

The Champagne & Aishihik First Nation have voluntarily stopped their harvest of the herd. Permits are now in place for moose and caribou in the Aishihik area.

Lessons learned

- Lowered wolf predation was more important than reducing hunting to increase moose numbers.
- Predation limits ungulate populations below their range carrying capacity in the Yukon
- These are complex systems making it challenging and costly to design and test manipulation of ecological systems over large geographical areas.
- Wolf reduction should be accompanied by substantial harvest reduction in order to achieve successful recovery. Maximum harvest rates by hunters should be set conservatively at 2% for caribou and 5% for moose. **(Note that 5% for moose is the upper limit for a healthy population under YG management guidelines)**
- Wolf predation can be reduced using a combination of lethal and non-lethal techniques.
- Wolf fertility control can be effective in reducing the rate of increase of wolves over a large area. **(Note that effectiveness can be enhanced by ensuring new dominant mating pairs are treated as old dominant pairs are replaced.)** Surgical sterilization is safe (more challenging for females), does not change wolf territorial behaviour and is more publicly acceptable than killing wolves.
- Immune-contraception vaccine is not yet a reliable technique to prevent pregnancy in wolves.
- Program researchers recommended using habitat enhancement and trapping to sustain higher ungulate densities and avoid the need for wolf reduction
- **Annual changes in weather patterns also influences caribou calf recruitment and should be considered in any future programs.**
- The Aishihik area represents a multi-predator prey system. However, even with bears in the area, wolf reduction resulted in an increase in prey numbers.