

Why are Caribou Populations Declining?

Caribou in the Southern Mountains National Ecological Area are considered threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and most populations are declining. Expert judgment says that, while the decline was likely caused by a variety of mechanisms, it is the direct mortality caused by predators that is now of the most immediate concern. Most biologists think predators are killing more caribou now than occurred historically because habitat alteration has allowed for:

- increased abundance of wolves' primary prey (e.g., moose, elk, deer); and
- a greater spatial overlap between wolves and caribou.

Testing the Predator Relationship

The time required to repair habitat conditions will be longer than the time to extinction forecasted for many herds, hence the need to speed up habitat rehabilitation and reduce predation on caribou.



Intensive efforts to reduce predators over large areas is known to reduce predation on ungulates enough so that prey populations can increase – but it is also known to be inefficient and the effect lasts for undesirably short periods before predators return to their original population sizes. We wanted to test the notion that a few trappers on their regulated, licensed trap lines could provide a relatively efficient reduction of predators, provided the attention of those specific individual trappers could be focused on areas of high caribou mortality. Outcomes of this test would allow for government to either accept or reject this method of predator reduction as a short-term means to capture as much benefit as possible from the longer-term habitat management. Stable caribou populations now mean there's a greater chance caribou will benefit from quality habitat later.

Regardless of how much effort we put into repairing habitat conditions, the turn-around time for deforested areas to return to suitable northern caribou range is still around 70 years. Existing predation rates have become so high that these caribou will most likely become extinct well before that time unless we take action now, before it is too late.

Study Area

Our study areas (see map) included the two recovery planning areas for the Wolverine and Chase caribou herds in north-central British Columbia, in the Omineca Mountains on the west side of Williston Reservoir, north to the Ingenika River.

Research Methods

In the Chase study area, regulated trapping was guided to specific portions of the trapline predicted to have high caribou mortality from predation. Predation risk was predicted from habitat modeling and monitored observations of wolves. The Wolverine study area was the research control, where no incremental trapping effort was employed. Monitoring of results was conducted through:

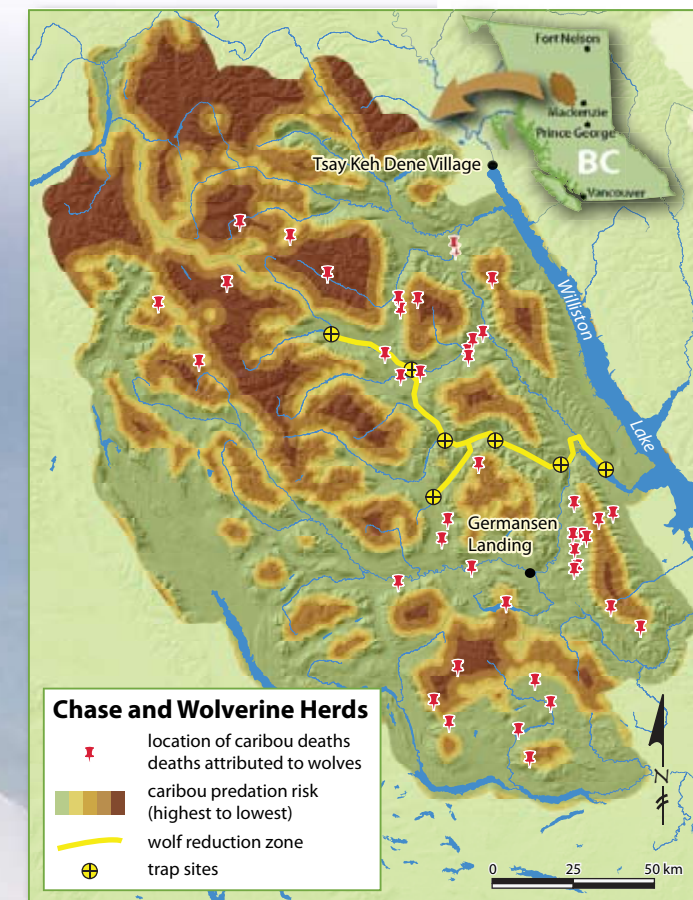
- 1) aerial telemetry of radio-collared caribou, wolves, and non-caribou ungulates (primarily moose);
- 2) regular population surveys of caribou and moose; and
- 3) investigations of caribou mortalities to determine timing and cause of death.



Results

The following map shows the location of caribou deaths attributed to wolves (red location pins), the Chase and Wolverine herd boundary, and the model results of predation risk where light green areas are highest predation risk and progressively darker tan areas are increasingly safer areas for caribou. The location of the rivers in the Chase area that are being trapped as part of the wolf reduction zone and the trap sites are orange squares surrounding a black dot.

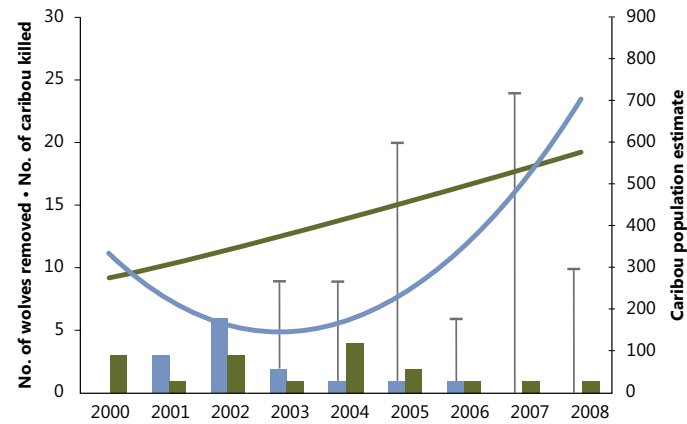
River valleys are significant movement corridors for both moose and wolves and thus high risk areas for caribou. Therefore trapping efforts were focused in these areas to test the effects of predator reductions.



In the following table we display the number of radio-collared caribou deaths due to wolves and number of wolves removed on traplines between study areas since 2000. We then compare these trends to trends in caribou calf recruitment and population estimates between study areas. These data are presented in the adjacent graph, with the number of known caribou deaths due to wolves in the Chase herd (blue bars) and Wolverine herd (green bars), and the population estimates shown in the respective line graphs.

The number of wolves removed on licensed traplines and caribou population statistics (mortalities, percent calves in spring, and population size) by caribou herd area and year.

Year	Caribou deaths due to wolves	Total deaths	Wolves removed	Percent calves in spring	Caribou population estimate
Chase					
2000	0	4	0	12	
2001	3	7	0		
2002	6	13	0	12	570
2003	2	6	7		
2004	1	3	8		
2005	1	4	19		
2006	1	2	5		
2007	0	0	24	14	561
2008	0	1	10	18	590
Wolverine					
2000	3	8	0	7	
2001	1	10	0		
2002	3	11	0	24	590
2003	1	2	0		
2004	4	5	0	19	468
2005	2	4	0		
2006	1	2	0		
2007	1	1	0	15	375
2008	1	1	0	15	388



The number of radio-collared caribou killed by wolves (histograms), number of wolves removed (bars), and caribou population size (lines) in the Chase (blue) and Wolverine (green) herd areas.

Conclusions

In the Chase herd area where wolves were removed, there was a decrease in the number of caribou deaths by wolves, and a slight increase in the population estimates and calf recruitment. Calf recruitment remained low in the Wolverine herd and the population size declined. These preliminary results are encouraging. As we collect more data we will be in a better position to make stronger conclusions about the efficiency, effectiveness, and practicality of using regulated trapping as a means to limit caribou mortality in places where habitat management will hopefully reduce the need for direct management of wildlife.

View the full technical report at:
www.wildlifeinfometrics.com/WII_Downloads/downloads.html

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Caribou & Wolves

Testing the Relationship

