



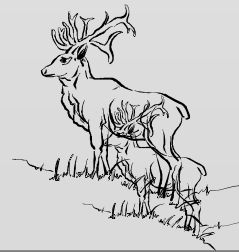
Tłch'ádíi hé Gots'edı – Living with Wildlife: Caribou Predators and Competitors

Colin Macdonald,
Science Advisor
Northern Environmental Consulting
April 2022

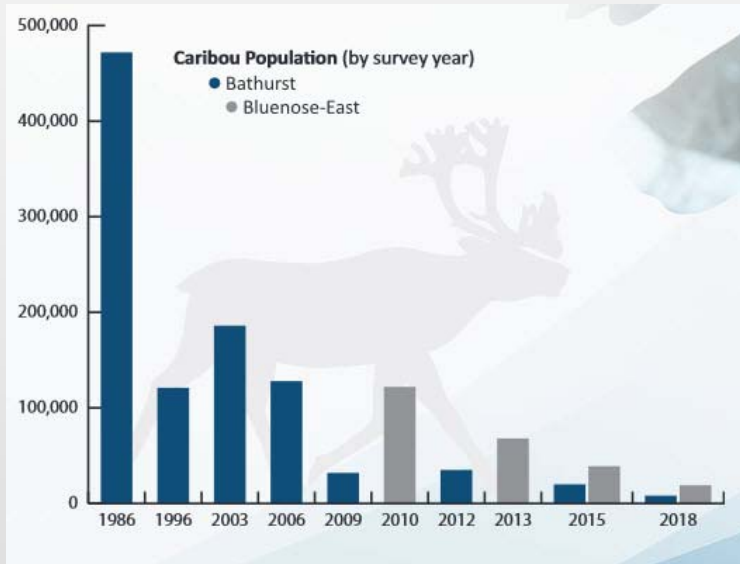


Background

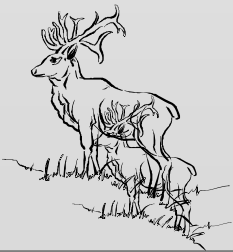
- The Bluenose-East and Bathurst herds have declined in the last 20 years and there is concern that they will continue to decline,
 - Bathurst: 8,200 (down from 20,000 in 2015)
 - Bluenose-East: 19,300 (down from 39,000 in 2015)
 - Bluenose-West: 21,000 (stable)
(data from ENR website – October 2021)
- Predation by wolves may be a major factor slowing the recovery of the herds leading ENR to harvest wolves by ground harvesting.
- We reviewed several studies that asked the questions about how effective wolf control is to support barren-ground herd



Measuring the Status of the Caribou Herds



- Abundance – the total number of individuals (usually adults) in the herd.
- Adult Female Survival (improved in the last couple of years)
- Recruitment – the number of calves surviving until adults (usually the spring following calving).
- Calf:Cow ratio – gives a measurement of how many calves have been born during calving
- Mortality due to predation and harvesting.



Latest Status of the Bluenose-East Herd - 2021



Abundance	✓
Cow Survival	✓
Pregnancy Rate	✓
Recruitment	✓
Body Condition	✓
Calf:Cow Ratio	✓
Bull:Cow Ratio	✓
Wolf Control	continuing

Source: ENR report (J. Adamczewski) to the ACCWM meeting 2022.



Caribou and Predators



Caribou

- Barren-ground Caribou
 - Bluenose-East
 - Bluenose-West
 - Bathurst
- Boreal Caribou
- Northern Mountain caribou



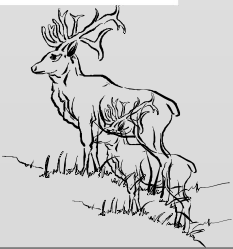
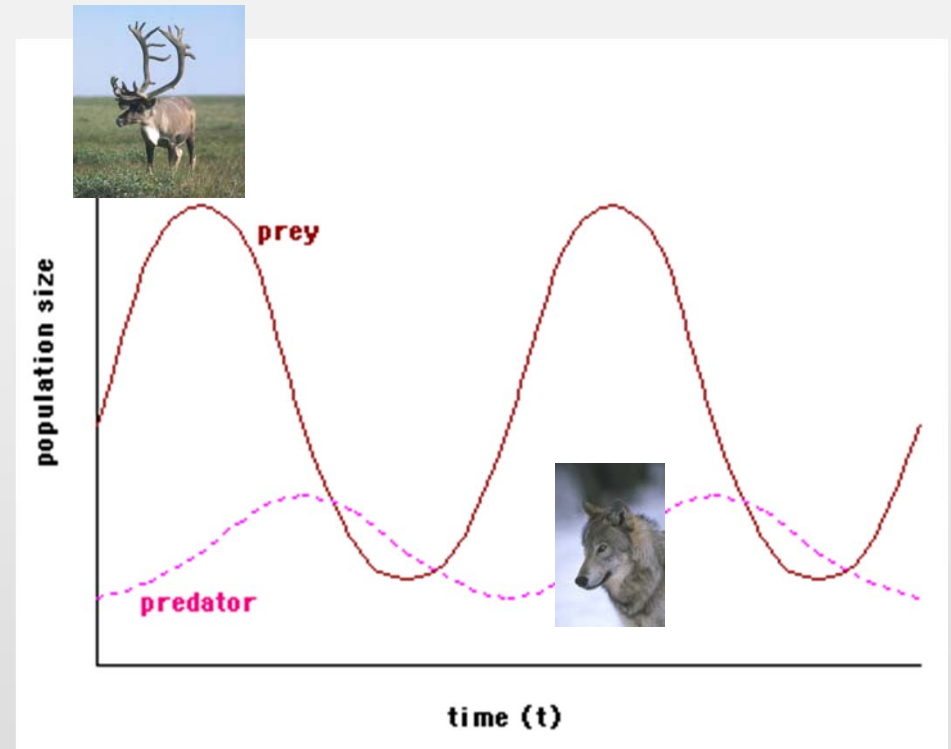
Predators

- Wolf
- Grizzly bear
- Black bear
- Wolverine
- Lynx
- Golden eagle



Predator- Prey Relationship

- Prey species go through cycles where the populations grow to fill the capacity of their habitat.
- The numbers of prey depend on the amount of food, water, and nesting/denning/calving sites.
- Predator follow the numbers of prey and fall back in numbers when the prey numbers fall.









Review of Projects on Predation from Scientists

Trophic cascades from wolves to grizzly bears in Yellowstone

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No statistical support for wolf control and maternal penning as conservation measures for endangered mountain caribou

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Predator-dependent functional response in wolves: from food limitation to surplus killing

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Predator control may not increase ungulate populations in the future: A formal meta-analysis

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Abstract

1. Human-dominated landscapes are being recolonized by large carnivores, thereby increasing conflicts worldwide via predation of livestock and harvested wildlife such as ungulates. Recent meta-analyses have shown that predator control (hereafter, predator removal) has mixed success in reducing livestock predation. Yet, it is unknown how effective predator removal is in decreasing predation on un-

FORUM

Wolves trigger a trophic cascade to berries as alternative food for grizzly bears

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Wolf Control Methods



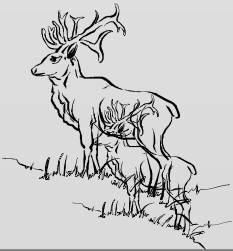
Controlling wolves - Shooting, trapping, snaring, poisoning

Transplanting wolves – moving adults to new territory

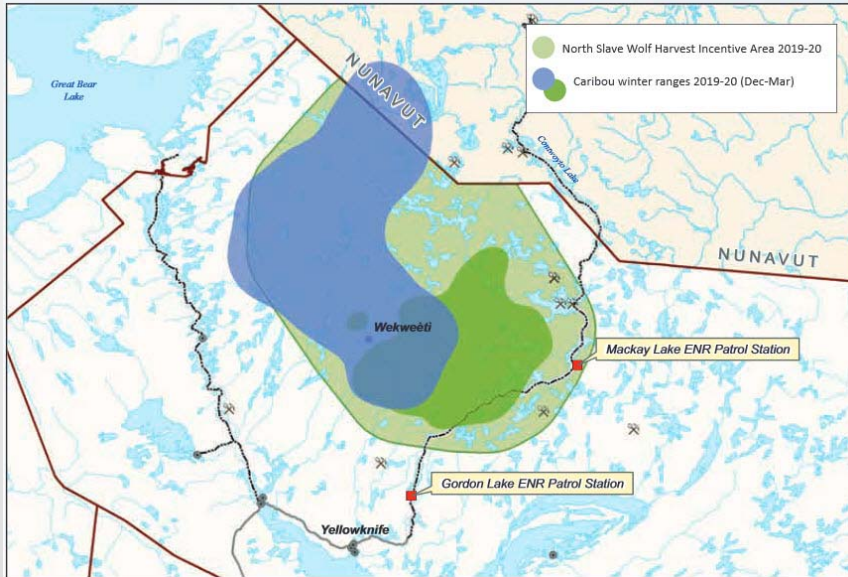
Reducing reproduction – not effective.

- Wolves are the main predator of barren-ground caribou. On average, a single wolf can eat 23-29 caribou per year.
- ENR target is to kill 65-80% of wolves in the North Slave Incentive Area

Note: wolves have been almost wiped out in the U.S. and were placed on the Endangered Species List in the late 1960's. In 2020 they were taken off the list and hunting resumed.



ENR's Wolf Control Program



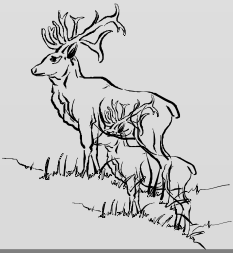
2019-2020 Wolf (dìga) reduction¹



- Enhanced support for wolf harvesters
- Wolf reduction – based on the Ungulate Biomass Index
- Monitoring, research and assessment – wolf condition and numbers.

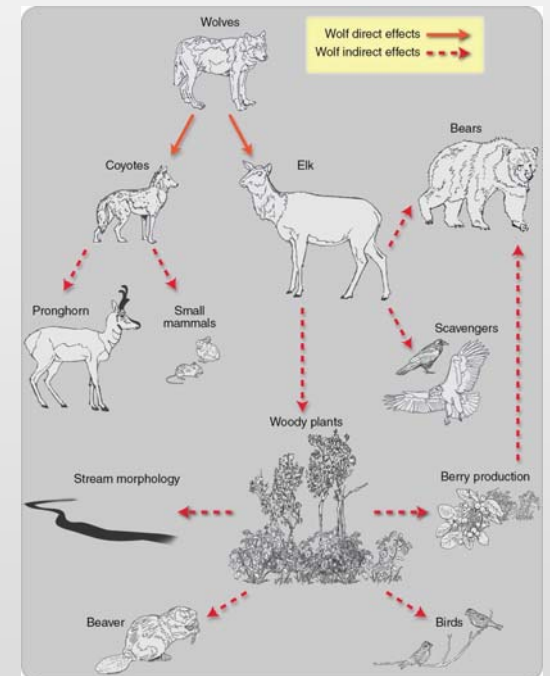
2022 Update²- survey indicated 89 wolves but Index indicated 142 wolves in region of 3 overlapping herds,
From January to April 2021 – 135 wolves harvested in North Slave wolf harvest incentive area.

¹ – ENR website April 2022 ² – Draft ENR report (K. Clark 2022)

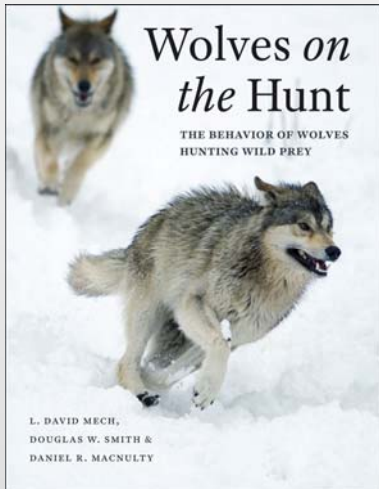


The Role of Wolves in an Ecosystem

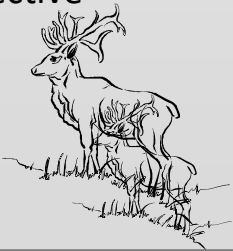
- Wolves and bears are “apex” predators, meaning that they are at the top of the food chain and feed on caribou, moose, etc.
- In some studies, the removal of wolves has a large impact on the whole ecosystem by allowing their prey to overpopulate,
- There are no studies examining the impacts of reducing wolf population by 85% on other species in the NWT.



What Does the Science Say About Wolf Control?



- Wolves have been controlled for a long time to increase moose and caribou populations for sport hunting and indigenous harvesting, and to protect livestock.
- Overall, studies couldn't determine if wolf control made a difference because of the number of changes going on in the environment (climate, weather, competition between moose and caribou),
- Wolf control has resulted in prey increases only when wolves were seriously reduced (about 80% over a large area for at least four years).
- Control needs to occur for a long time. This is usually at least four years, some programs in Alaska have been conducted up to seven years.
- One study looked at 65 studies of wolf predation and showed that control was effective in some places but not in others.

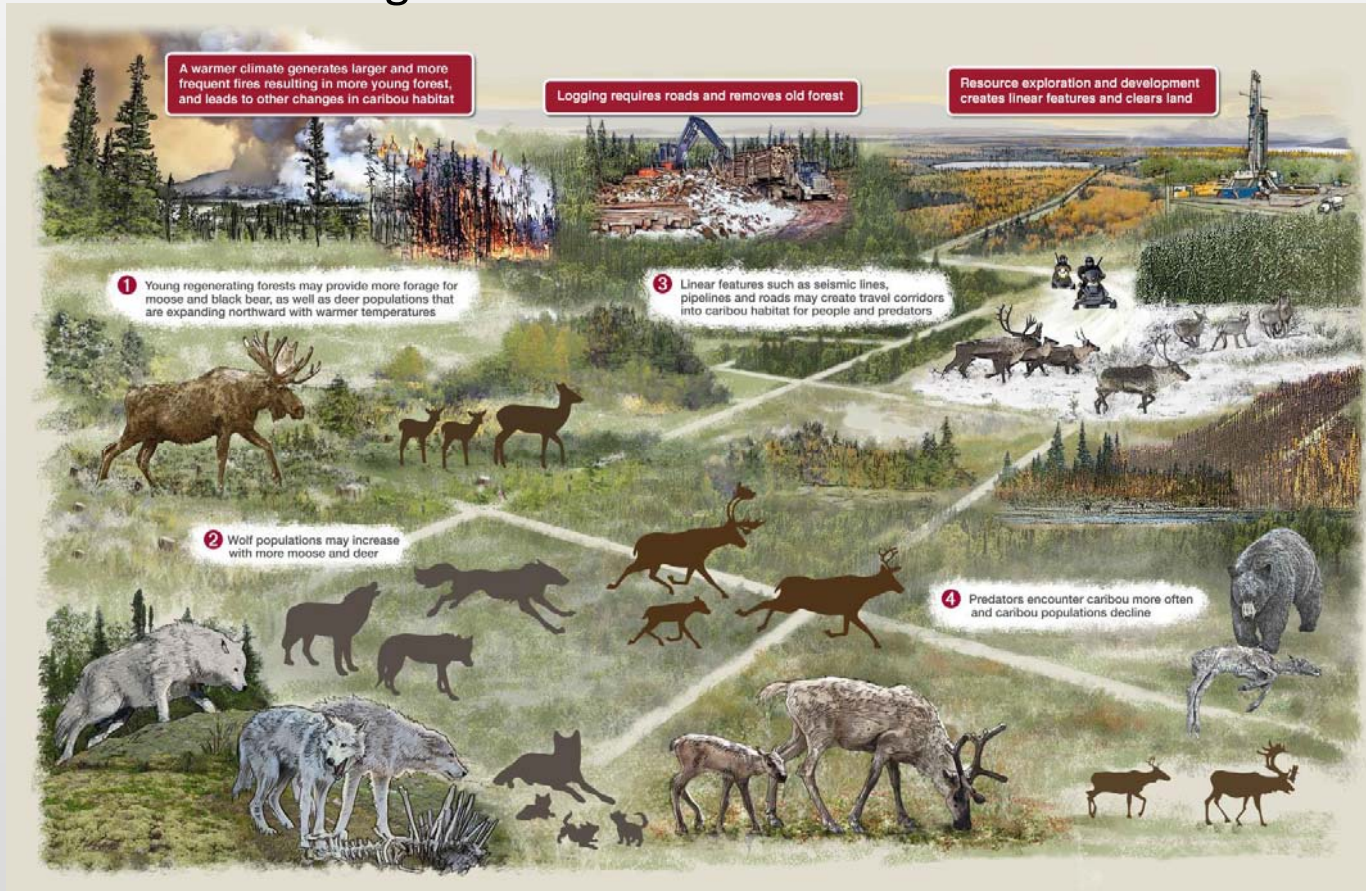


Conclusions

- Caribou and the apex predator wolves and bears have co-existed in northern Canada for thousands of years, and all play important roles in northern ecosystems,
- Mortality on caribou females and calves occurs from natural causes, harvesting and predation.
- To be effective, predator control programs must show that the predators are reducing the herd and that the program is effective enough (>65% of the wolves) and long enough in duration (usually several years) to see positive changes in the herd.
- There is little information on the impacts of wolf predation on barren-ground caribou herds in the NWT, but the need to do anything necessary to support the declining herds, particularly the Bathurst herd, adds urgency to removing all known threats to the herds.
- Some studies of predator control programs show a slight improvement in recruitment, calf:cow ratios, and total herd numbers with wolf control, but several studies show no improvements to caribou populations at all.



Changes in the Northern Environment



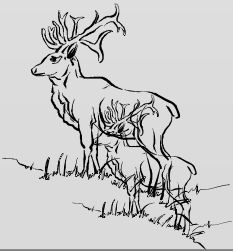
Source: ENR – Recovery Strategy for Boreal Caribou



Direct Competition Between Caribou and Muskox

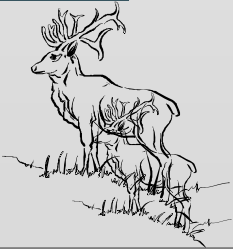
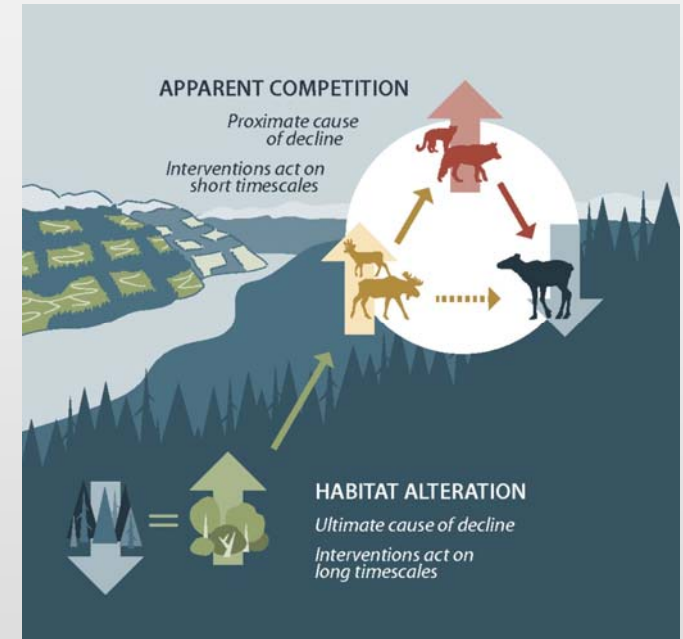


- People in communities observe caribou decline as muskox increase which might show competition between the two species for habitat,
- Science studies haven't been able to show any connection,
- Some studies show that muskox and caribou feed on slightly different foods in the same area so they don't compete for food (lichens versus other plants) and should be able to co-exist but don't.
- It is possible that muskox change the quality of the habitat to make it unsuitable for caribou but there are no studies that show that.

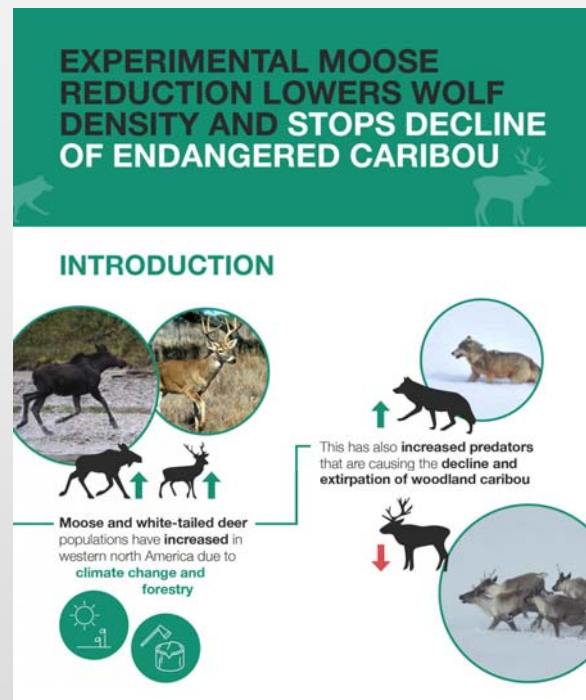


Apparent Competition Between Caribou and Other Species

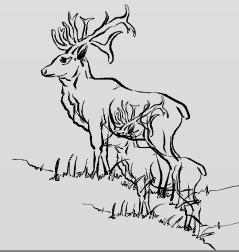
- Predators and prey usually follow the same cycles of high and low populations,
- Studies show that when they are available, wolves prefer moose but when the moose population declines, they switch to caribou,
- This keeps the wolf population too high and may have a large impact of the caribou herd,
- This leads to recommendations to hunt more moose to keep the wolf population down, which benefits the caribou population.
- In the NWT, this may occur if wolves choose between barren ground caribou herds (e.g, the Beverly), moose or boreal caribou.



Apparent Competition Between Caribou and Other Species



Serrouya et al. (2017), Experimental moose reduction lowers wolf density and stops decline of endangered caribou. *PeerJ* (2017).



Conclusions

Predation and Caribou

- Continue to monitor caribou populations for signs of elevated stress from predators,
- Use predator control only when it is established that they directly impact a declining herd,
- Encourage research on the role of predators in the north and the potential impacts of predator removal,

Competition

- The level of direct competition between caribou and muskox is unclear but research is continuing,
- Apparent competition may be occurring between all 3 caribou ecotypes and other large ungulates which may impact caribou abundance.



ENR Harvest Guide 2022

