

Protected Areas – Do They Work, and How Will we Know?



NUNAVUT MINING SYMPOSIUM

Michael Setterington, R.P.Bio.

Nunavut Mining Symposium

Iqaluit NU April 28, 2023



Summary

- Protected areas alone lacks strategy
- Protected areas make sense where habitats are at risk
- We don't know if Protected areas will be successful in Nunavut, because
 - We do not understand the “threats” of mining and roads
 - There might not be a way to measure success
- Understanding History, Process, Ownership and Rights is Important

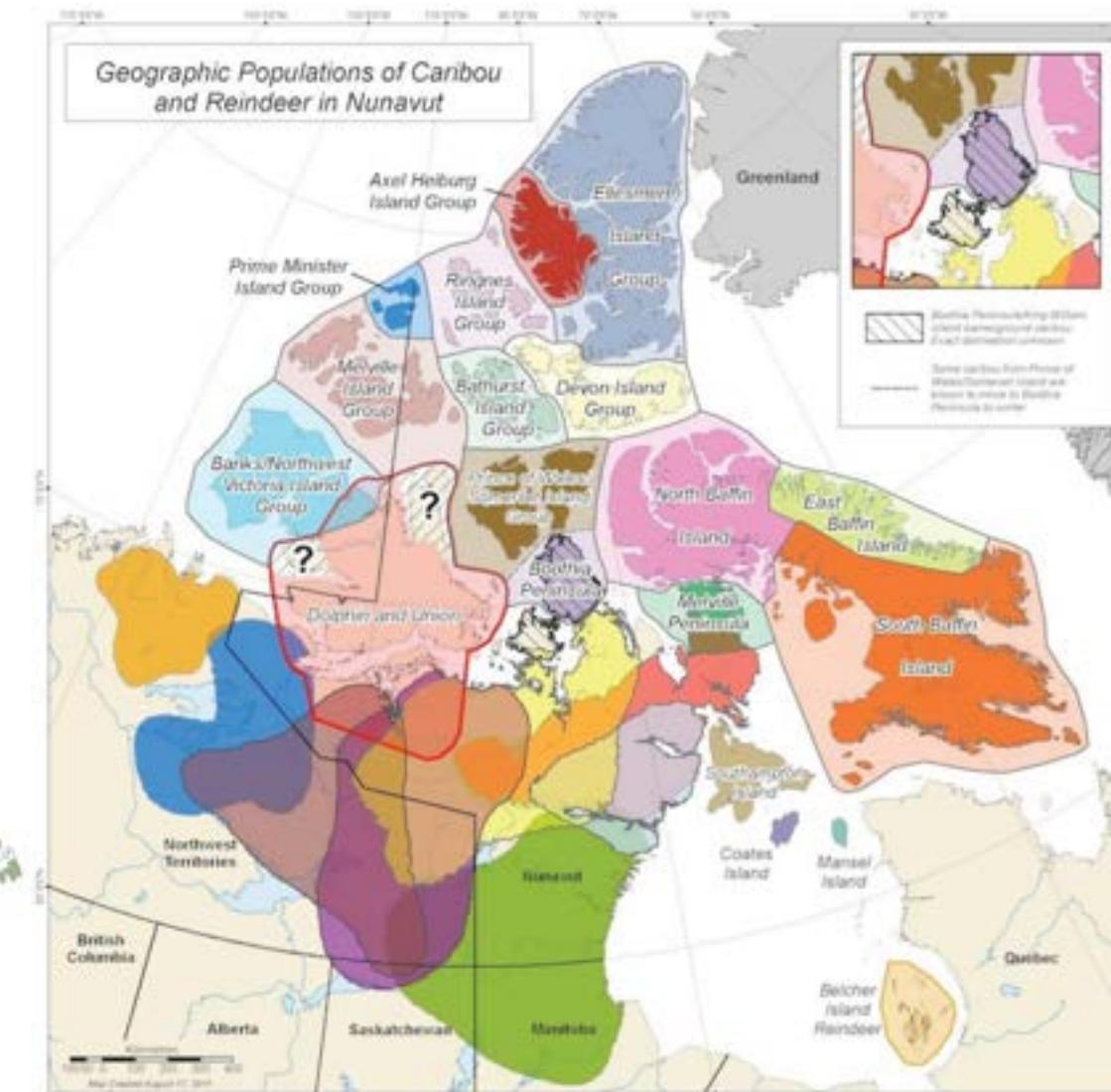
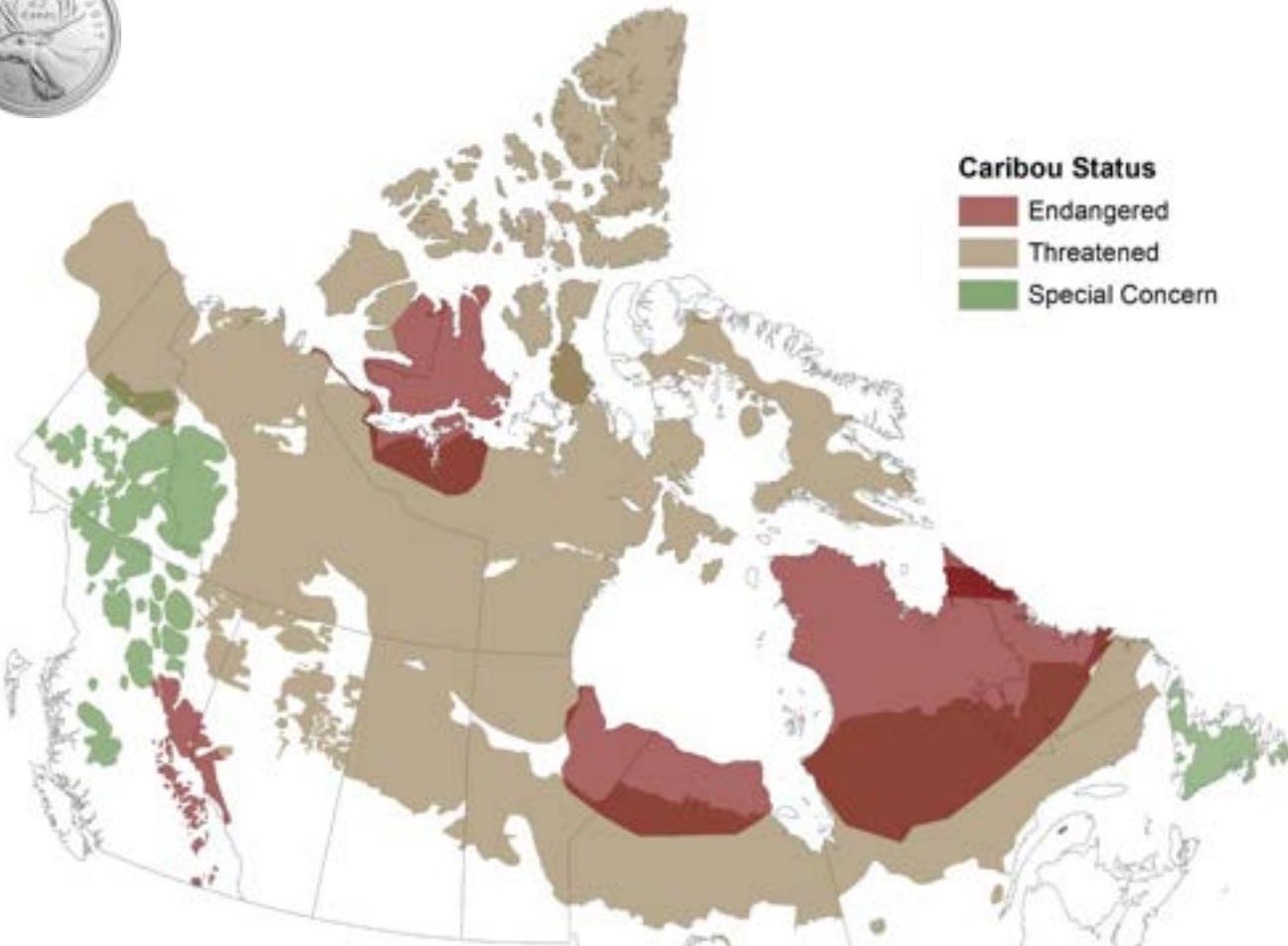




July 1978, on Thelon River (above the Hanbury junction) by Cameron Hayne

Caribou at risk...





Government of Nunavut, Department of Environment. Undated. Working together for caribou: Nunavut caribou strategy, undated. Version Submitted to the Nunavut Planning Commission for the Draft Nunavut Land Use Plan. 30 pp



Reason for ranking is risk to recovery

“Evidence [science and traditional]... suggests that most [barren ground] herds have undergone natural fluctuations in numbers in the past...”

but

“...available demographic data indicate no sign of rapid recovery at this time and cumulative threats are without historical precedent.”

COSEWIC Barren Ground Caribou Status Report 2016



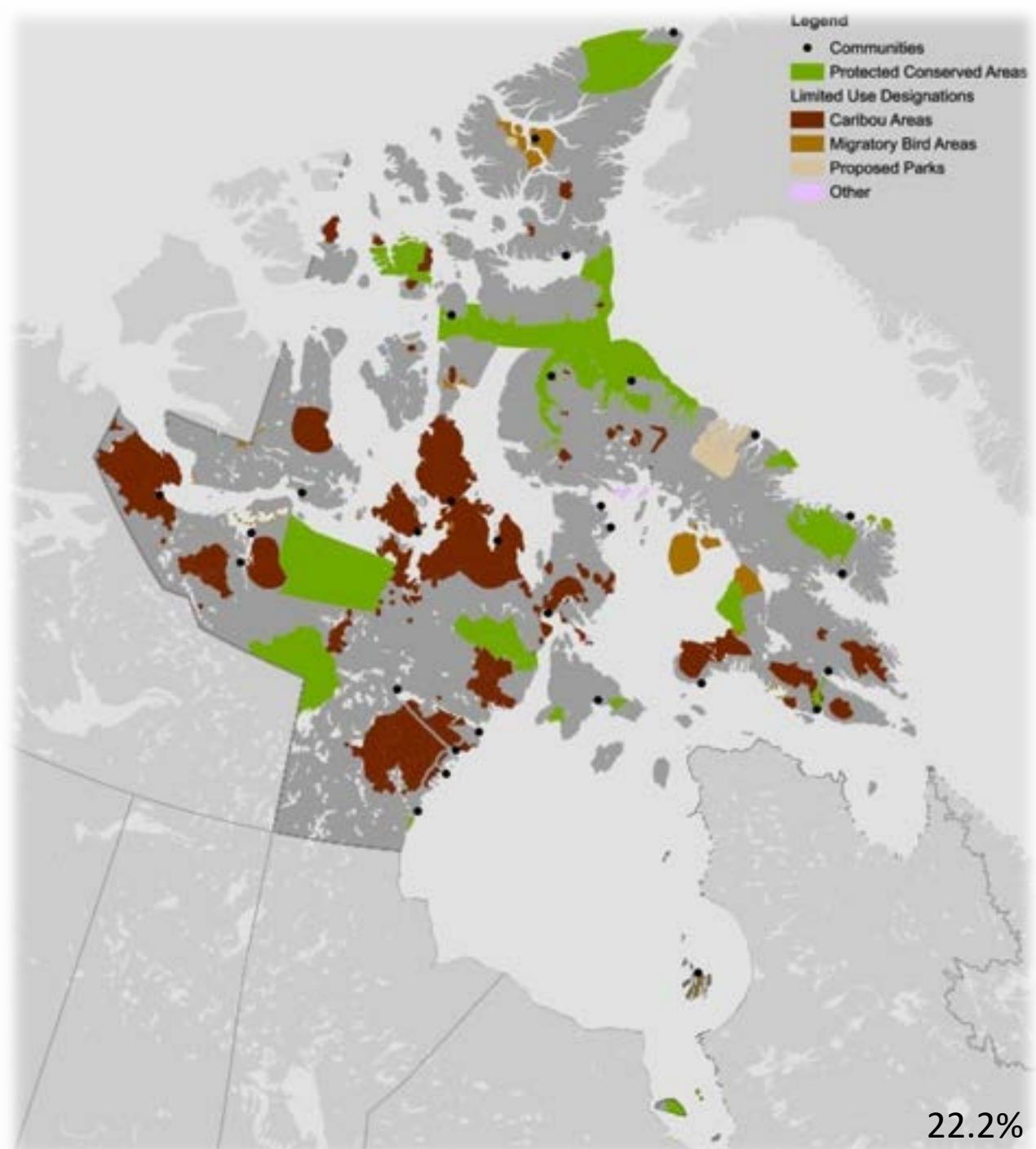
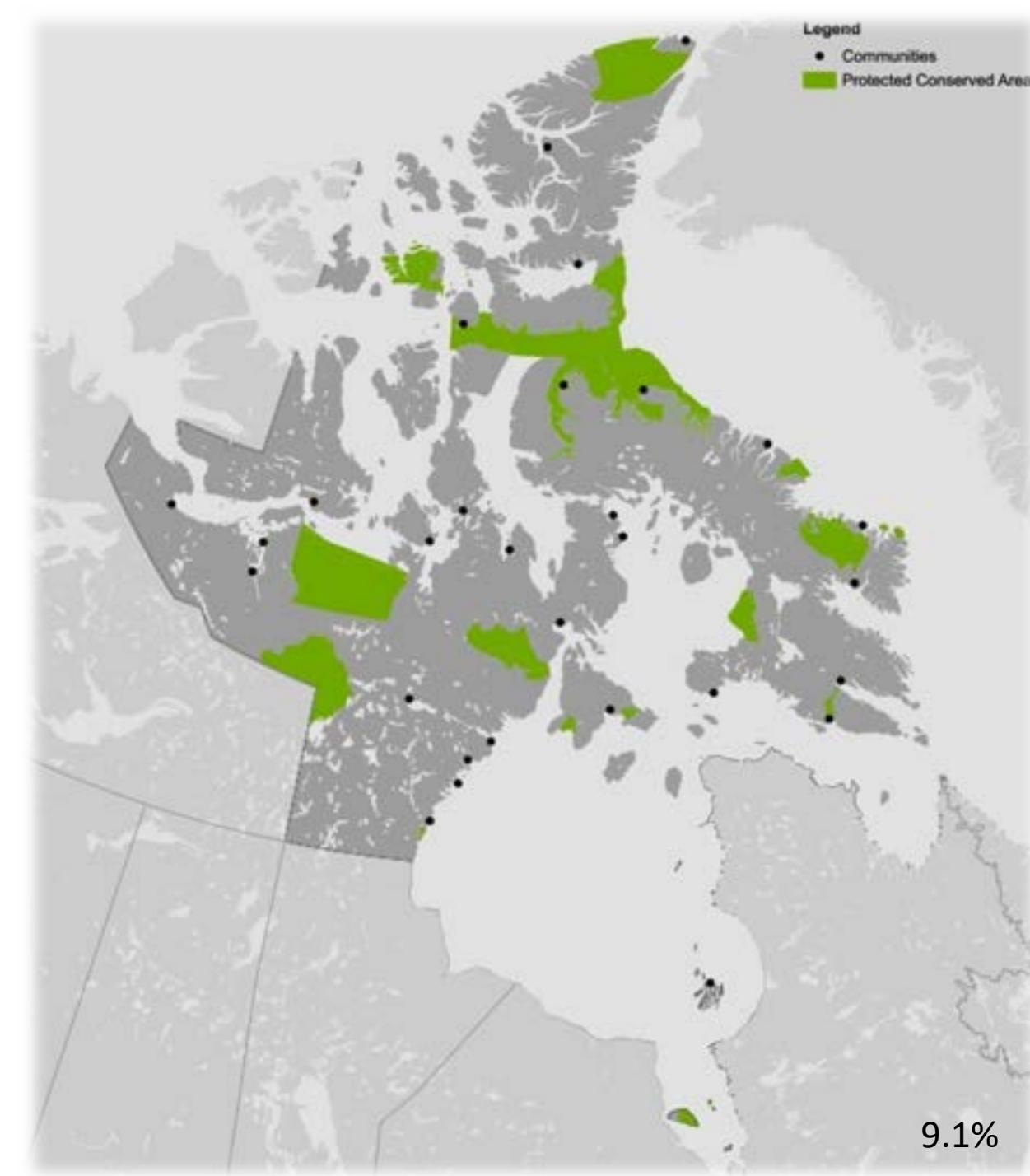
Nunavut Land Use Plan Options and Recommendations

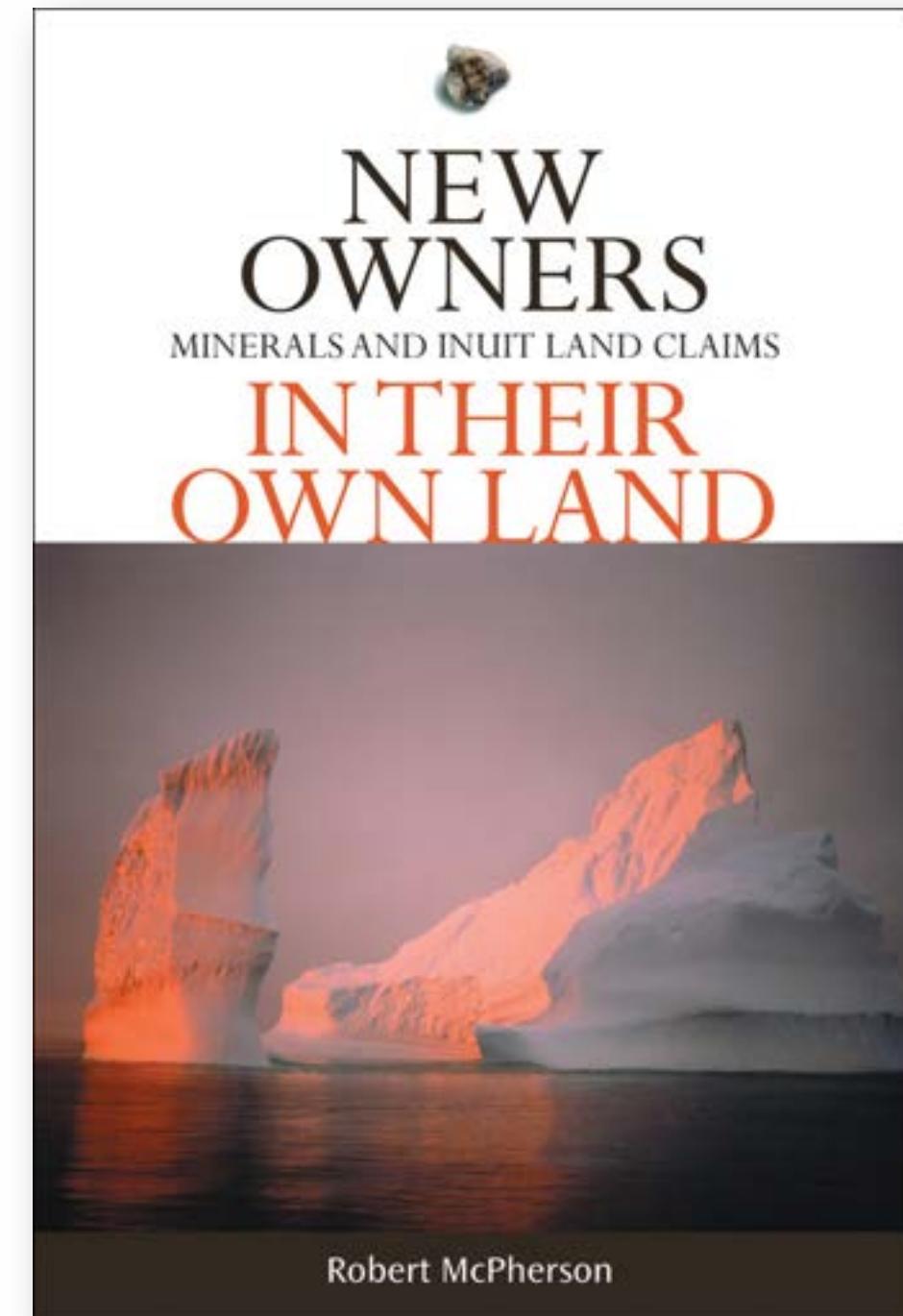
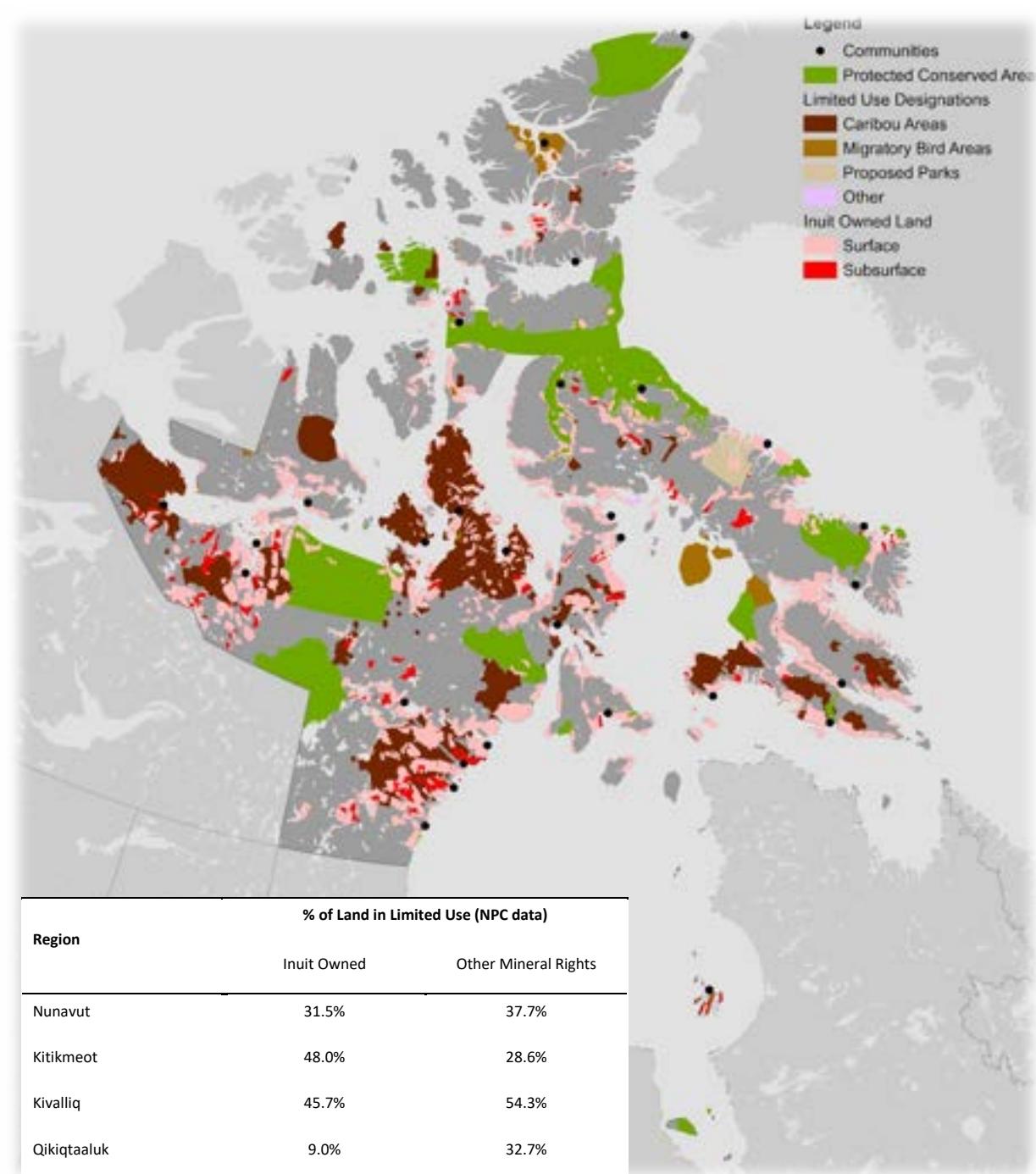


Draft – 2021

Land Use planning...

- Nunavut Agreement, Article 11
- Nunavut-wide planning process started in 2007
- DRAFT Plans:
 - 2012,
 - 2014,
 - 2016 and
 - 2021
- Fairly caribou-centric plan







Post-calving aggregation of the Porcupine herd of barren-ground caribou, Yukon. Lee Harding

Threats and Protection...



The Government of Nunavut says...

*"Despite what some parties are claiming, area-based protections are the **currently accepted mechanism** to protect caribou and caribou habitat from development impacts. This is **supported by scientific evidence** and caribou experts across the world."*

Government of Nunavut submission to the Nunavut Planning Commission, February 24, 2023

Yes, protected areas are a "... **currently accepted mechanism**...",

No, this is not "... **supported by scientific evidence** ..."



Evidence — Protected Area Effectiveness?

“While studies show that protected areas prevent habitat loss, there is a surprising lack of evidence for the impact [of protected areas] on species’ populations...”

“We show that the mere designation of a protected area does not necessarily bring benefits to populations”

Wauchope et al 2022. Protected areas have a mixed impact on waterbirds, but management helps.
Nature 605 (7908):103–107.

“... neither the indicator of areal extent, ...[nor the data], tells us if protected areas are ‘achieving’ their conservation objectives.”

Chape et al 2005. Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets.
Philosophical Transactions of the Royal Society B: Biological Sciences 360 (1454):443–455.



Evidence – Threats of Disturbance?

“There is no evidence that disturbance activities or habitat alteration have affected [migratory caribou] productivity”

“There are no examples where physical features of corridors or associated disturbances have affected [migratory caribou] numbers or productivity”

Bergerud et al (1984) *The Buffalo of the North: Caribou and Human Developments. Arctic*

We aren't saying anything different now ... (+ 34 years)

*“We demonstrate that human disturbances have broad negative effects on caribou **behavior**, but whether this could translate into population decline **remains to be investigated.**”*

Plante et al (2018) *Human disturbance effects and cumulative habitat loss in endangered migratory caribou.*
Bio. Cons.



Caribou Population Drivers

Limiting Factors

- Starvation (lack of forage, over grazing on range)
- Accidents (e.g., drowning)
- Hunting mortality
- Weather
- Disease and parasites
- Predation
- Differential mortality of males and females

Regulation Factors

- Pregnancy rates
- Summer calf mortality
- Winter calf mortality
- Adult mortality
- **Foraging carrying capacity**
- Winter starvation
- **Range fecundity** and calf survival

(Bergerud et al 2008)



Perspectives on Threats

Science perspective...

- Disturbances from human activity
- Climate-mediated habitat and weather changes
- Over-hunting
- Predation
- Pathogens and insects (may intensify under a warmer climate)

Inuit perspective...

- Predation
- Hunting
- Insects
- Development
- Climate change
- Disease
- Pollution

COSEWIC Barren Ground Caribou Status Report 2016

TMAC 2017. Caribou Workshop 3, Hope Bay Project. FEIS V2-C2.



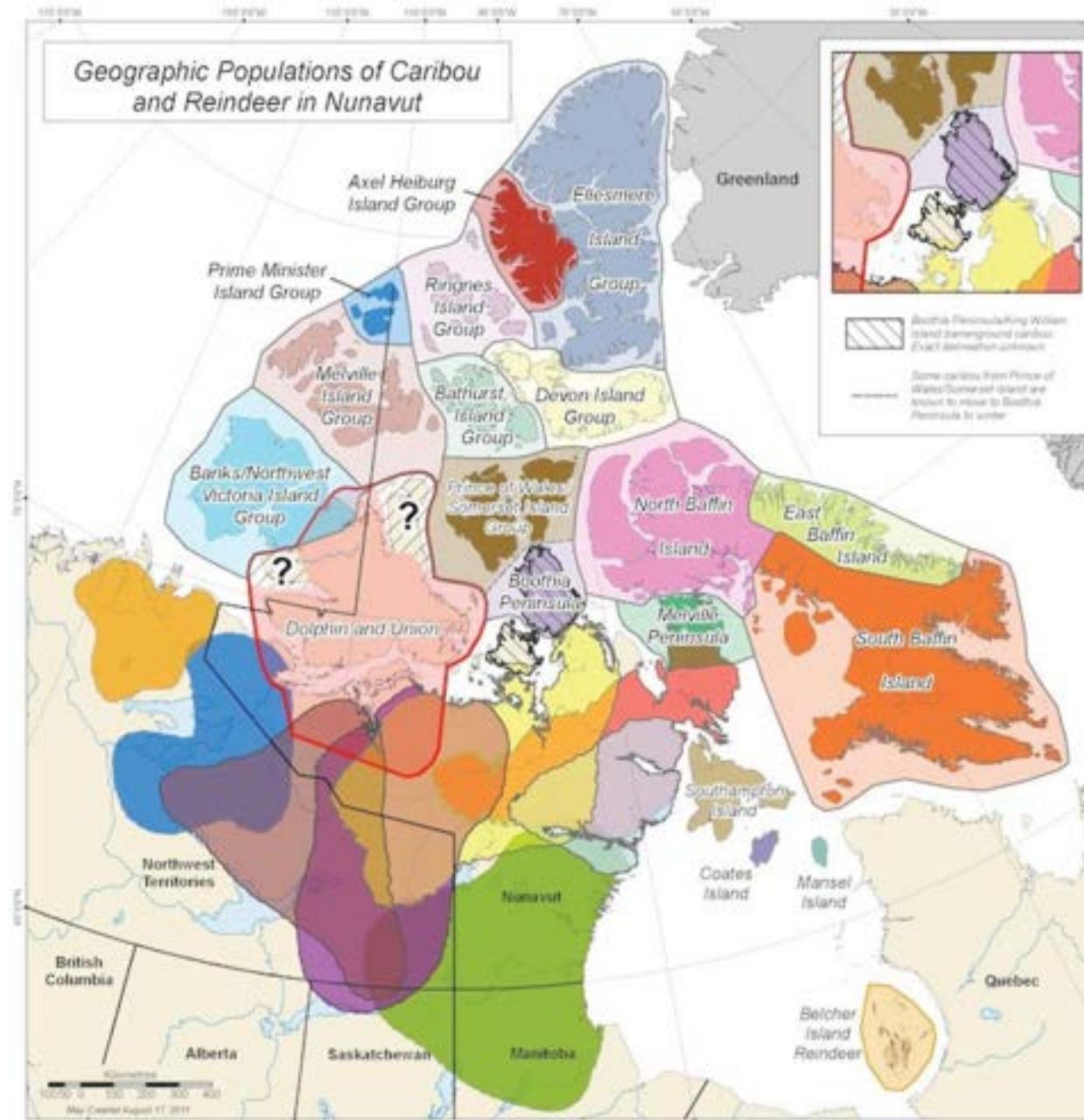
Measuring Effectiveness



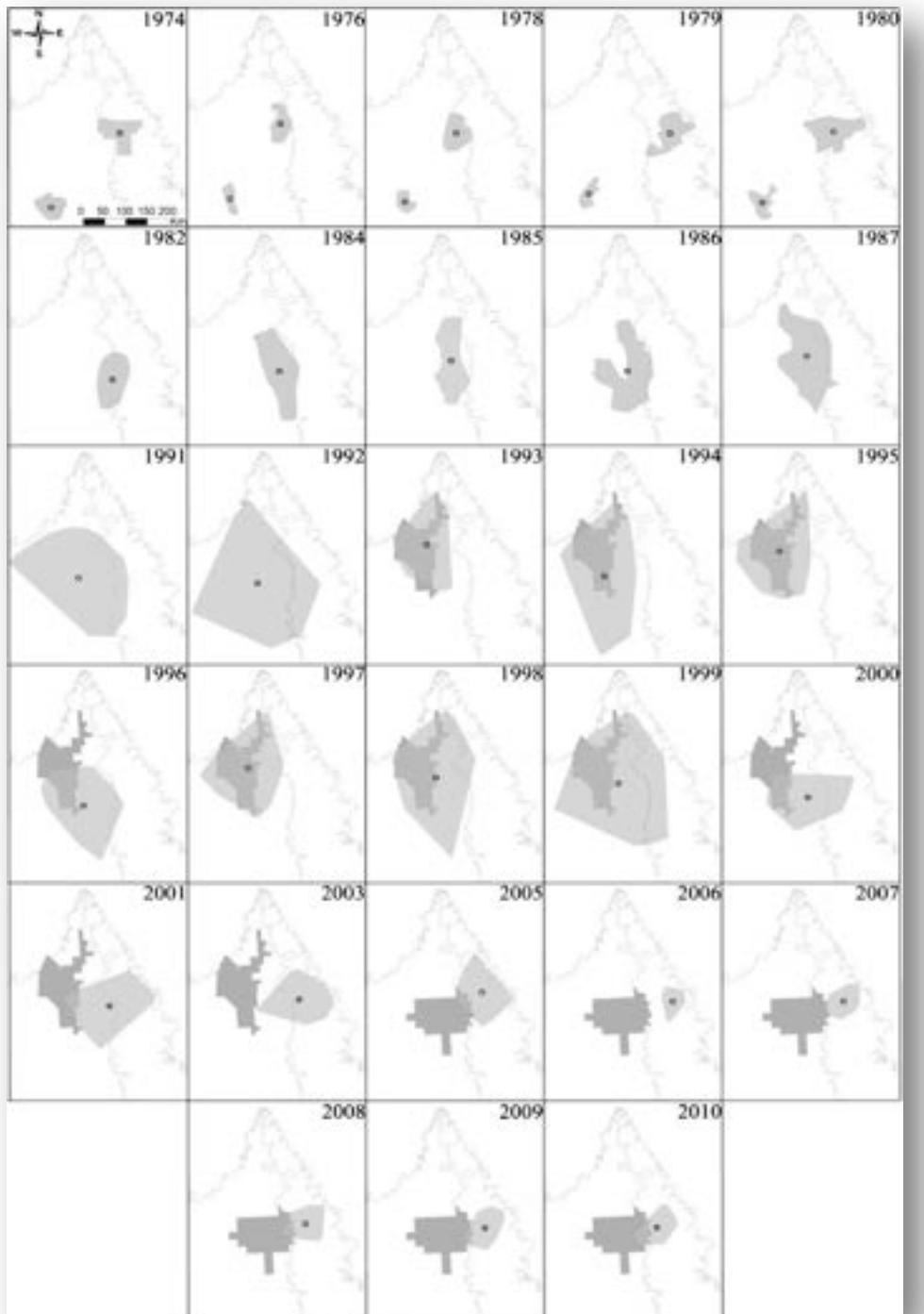
- What are the expected outcomes?
- If we agree on the outcomes, we might better focus our efforts.

Hockings et al. 2006. Evaluating effectiveness : a framework for assessing management effectiveness of protected areas, 2nd edition. IUCN, International Union for Conservation of Nature.

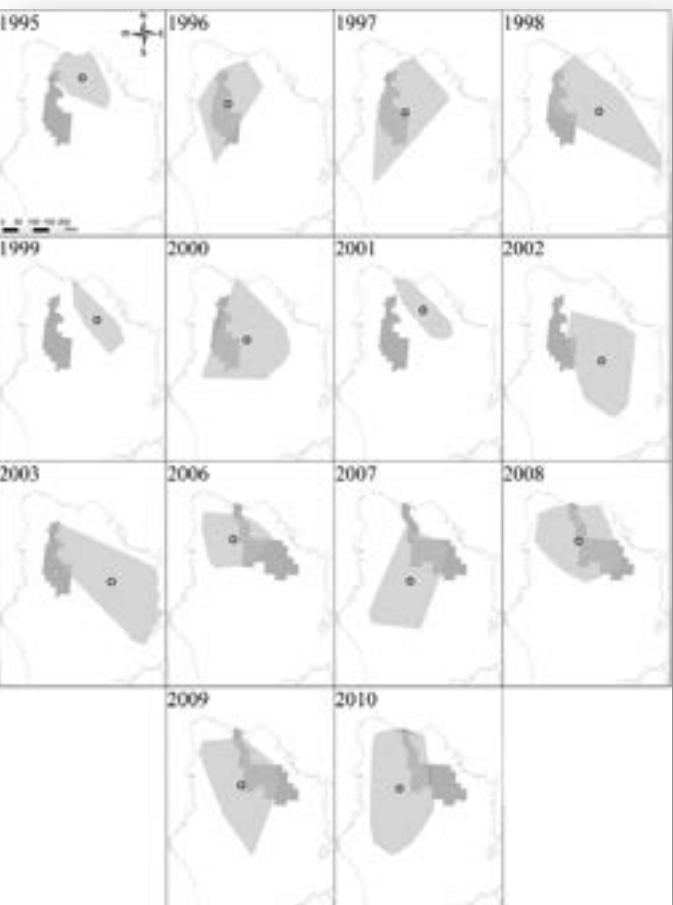




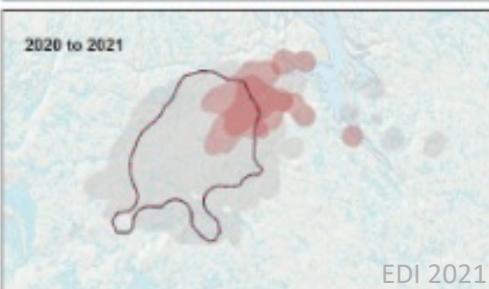
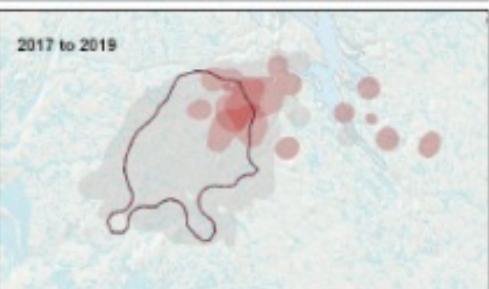
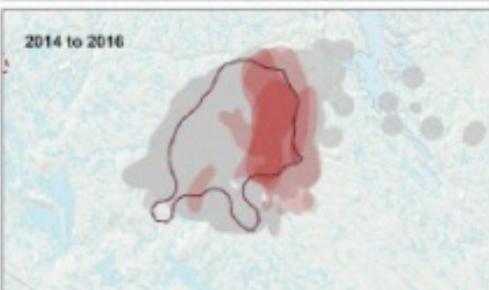
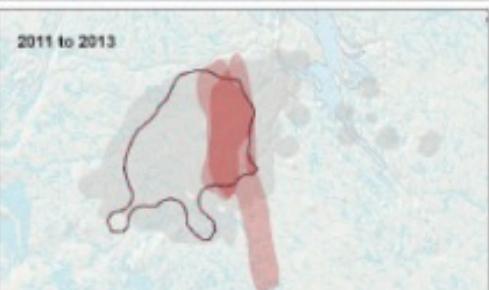
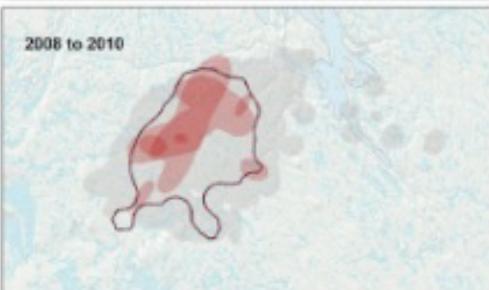
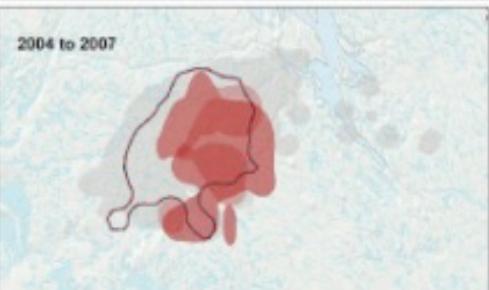
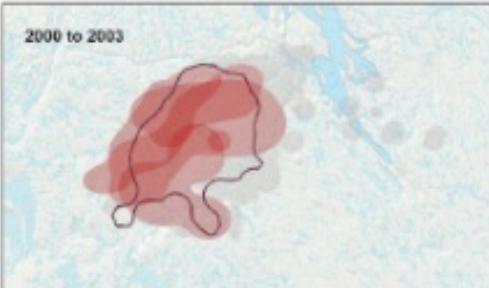
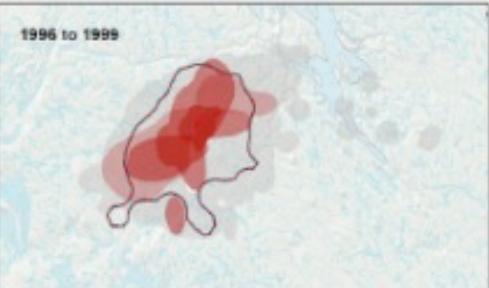
Government of Nunavut, Department of Environment. Undated. Working together for caribou: Nunavut caribou strategy, undated. Version Submitted to the Nunavut Planning Commission for the Draft Nunavut Land Use Plan. 30 pp



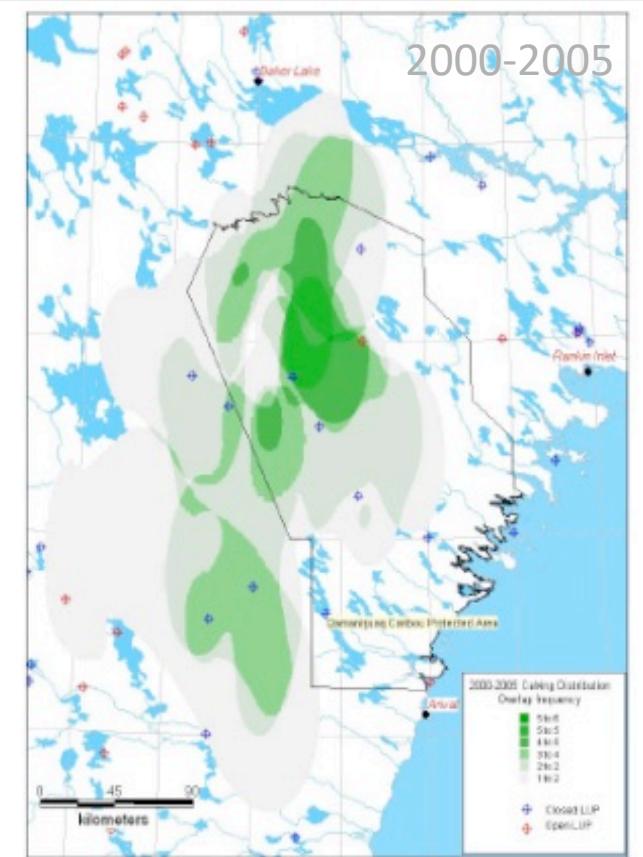
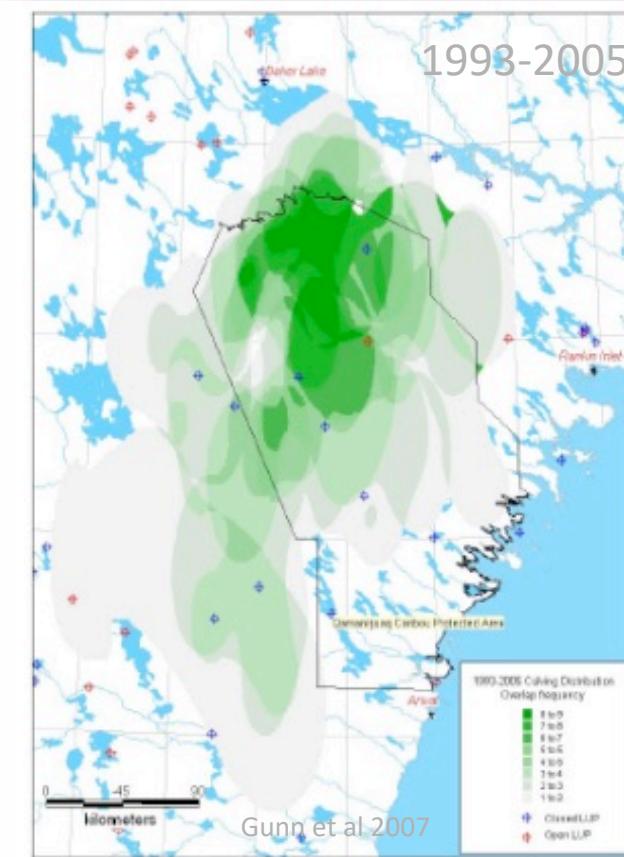
George (L) and Leaf River (R) Herd, Quebec
 Light grey = annual calving ground
 Dark grey = legal wildlife habitat



(Taillon et al 2012)



EDI 2021



Bathurst (L) and Qamanirjuaq (R)



Additional Measures

- Herd and ecosystem management, not on complete protection of specific components
- Provide convincing evidence, on a case-by-case basis, that protection is the only way of ensuring herd health if other measures are not working
- Focus on critical habitat wherever it is
- Bathurst Caribou Range Plan – *disturbance thresholds*



Summary



Prudhoe Bay, US Fish and Wildlife Service, National Digital Library

- Protected areas alone lacks strategy
- Protected areas make sense where habitats are at risk
- We don't know if Protected areas will be successful in Nunavut, because
 - We don't understand the "threats" of mining and roads
 - There might not be a way to measure success
- Understanding History, Process, Ownership and Rights is Important



Discussion?

Michael Setterington, R.P.Bio.
msetterington@edynamics.com
www.edynamics.com

