

ᐅᐃᐱᐅ 2015

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 ለመግባታችን ይዘጋጁ፡  
 ስልክ፡ (867) 975-7300  
 ኢሜል፡ [receptionist@nwmb.com](mailto:receptionist@nwmb.com)  
 ዌብሳይት፡ [www.nwmb.com](http://www.nwmb.com)





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The image displays two logos side-by-side. On the left is the Nunavut logo, featuring a white silhouette of a polar bear standing on a blue base, with a white star in the upper left corner, all within a blue circular frame. Below the bear is the word 'Nunavut' in a stylized blue font. On the right is the Nunavut Tunngavik Corporation logo, which is a circular emblem with a yellow border. Inside the circle, there are three distinct sections: the top section shows a blue sky with a white star, the middle section shows a white igloo on a blue base, and the bottom section shows a white walrus on a blue base. The words 'NUNAVUT TUNNGAVIK' are written in a blue, stylized font around the top inner edge of the circle. Below the circle, the word 'Nunavut' is written in a stylized blue font.











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▷σ<sup>b</sup>β<sup>c</sup>γ<sup>q</sup>: αCC▷Δ<sup>c</sup>, Trailmark Systemx Incorporated

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10



**Figure 2.1**  
**Annual Ranges by Subpopulation**

**Legend**

- Community
- Tree Line
- Road
- River/Stream
- Lake

**Density \*\***

5  
4  
3  
2  
1

↑ Increasing Density

\*\* The density for each subpopulation is represented in a unique colour, the intensity of which indicates an increase in relative density.

**Area of Detail**

0 50 100 150 200  
kilometres

**Projection:**  
Canada Lambert Conformal Conic

**Data Sources:**  
Government of Nunavut, Government of Northwest Territories, Natural Resources Canada, GeoBase®, National Topographic Database.

**Annual Home Ranges\***

- Ahiak
- Bathurst
- Beverly
- Bluenose East
- Bluenose West
- Cape Bathurst
- Dolphin & Union
- L'Orillard
- Qamanirjuaq
- Wager Bay

\* Official home ranges and calving grounds are from the following publications: Nagy, J. A., D. L. Johnson, M. C. Lantis, M. W. Campbell, A. E. Desrosiers, A. Kelly, M. Dumont, D. Abene, and R. Croft. 2011. Subpopulation structure of caribou (*Rangifer tarandus* L.) in arctic and subarctic Canada. Ecological Applications (doi:10.1890/1051-0761.110.1).

**DRAFT**

March 5, 2015

[illegible]



**Qamanirjuaq Caribou Movements (Km / Day)**

Mean Kilometers / Day

30  
25  
20  
15  
10  
5  
0

1-Jan 10-Jan 19-Jan 28-Jan 6-Feb 15-Feb 4-Mar 13-Mar 22-Mar 31-Mar 9-Apr 18-Apr 27-Apr 6-May 15-May 24-May 2-Jun 11-Jun 20-Jun 29-Jun 8-Jul 17-Jul 26-Jul 4-Aug 13-Aug 22-Aug 31-Aug 9-Sep 18-Sep 27-Sep 6-Oct 15-Oct 24-Oct 2-Nov 11-Nov 20-Nov 28-Dec

Early Winter

Late Winter

Spring Migration

Calving

Post-Calving

Warble and Bot Fly Emergence

Late Summer

Fall Migration & Rut

High Movements Due To Insect Harassment

Wolf Pups Are Born

Day & Month 1993 - 2007

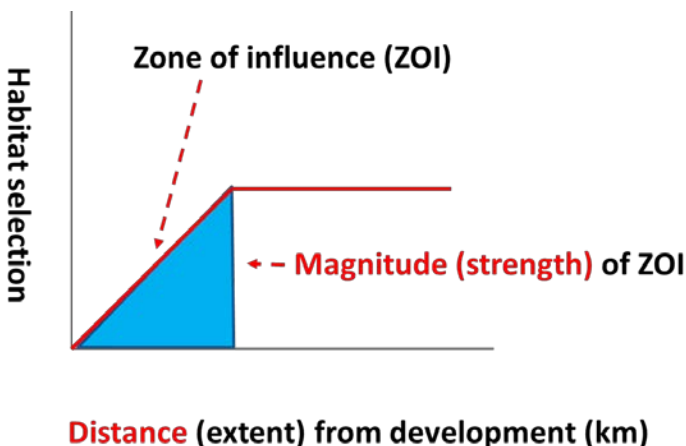
[illegible]

12







[illegible][illegible][illegible]
$$h^a \sigma^b \sigma^c \quad \text{and} \quad \sigma^a \sigma^b \sigma^c \quad \text{and} \quad \sigma^a \sigma^b \sigma^c.$$
[illegible][illegible][illegible][illegible]



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[illegible]

The diagram illustrates the Caribou Response Zones around an Exploration site. It features a central black dot labeled "Exploration site" within a green box. This site is surrounded by three concentric circular zones:

- Zone of influence (caribou response distance):** The innermost zone, shaded in purple.
- Buffer zone:** The middle zone, shaded in light blue.
- Early Warning zone:** The outermost zone, outlined in orange.

Four blue double-headed arrows originate from the "Exploration site" and point towards the boundaries of the four response zones. Four pink arrows point from the text labels to their respective zones: "Aerial monitoring survey area" points to the Buffer zone, "Zone of influence (caribou response distance)" points to the purple zone, "Exploration site" points to the central dot, and "Early Warning zone" points to the orange boundary.

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18







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፲፱፻፶፯፡ ፱፻፷፱ ለኢትዮጵያ ፲፱፻፷፱ ስርዓት ልማት፣ የድርጅቱ ፅረጥና ስብሰባ

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- [illegible]

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10. ᐅᕐᓂᕐ ᐊᓯᓗ ᐅᕐᓂᕐ ᐊᓯᓯᕐᓂᕐ ᕐᓗᕐᓯᐸᐸᐸᐸ ᐊᓯᓗ ᕐᓗᕐᓯᐸᐸᐸᐸ - ᐃᓯᓯᐸᐸᐸᐸᐸᐸᐸᐸᐸᐸ -  
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- [illegible]



6.  $L\Gamma\Gamma^c \triangleleft^L L \triangleleft^L \Gamma\Gamma^c$

- [illegible]



[illegible]











Δ<sup>c</sup>C<sub>2</sub>P<sub>2</sub>N<sub>2</sub>I<sub>2</sub>:

- [illegible]

[illegible]

$\nabla^{\pm} \Delta^{\pm} \approx r J n^{\pm} r$ :

- [illegible]

Δ'ΕΡΕΥΝΗΤΩΝ:

- [illegible]

፲፱፻፶፱ ለጥቅምት ፳፱ ቀን (ከጥቅምት ፳፱ - ከጥቅምት ፳፱)

$\Delta^{\frac{1}{2}} \Delta^{\frac{1}{2}} = r J n^2 r$ .

- [illegible]





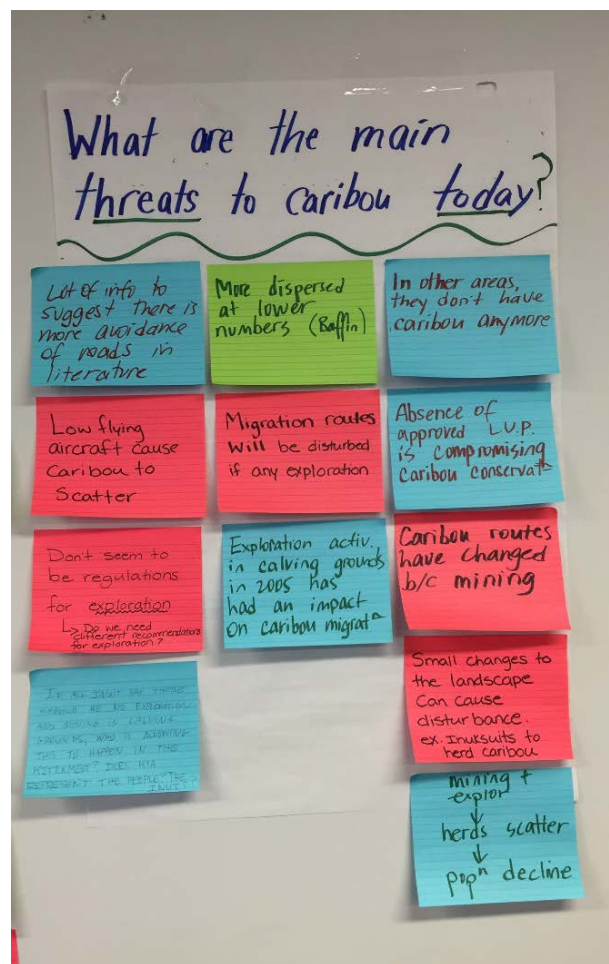


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ፍጥነት፡

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[illegible]



# Challenges

compliance  
w/ protection  
measures is  
underfunded

CHALLENGE  
Existing mineral  
claims in areas  
that should be  
protected

challenge to  
demonstrate  
cause → effect  
(see Cameron et al)

HTOs lack  
staff & technical  
expertise to  
participate in  
screenings, etc.

How can we best  
integrate results from  
collar data with IQ?

How can we bring  
both together?

not 'one size'  
fits all - need  
some flexibility  
adaptability

How to access  
IQ/TEK

↳ not always  
written down  
(oral tradition)

Conflict: Inuit  
want to protect  
but also may want  
to develop on  
I.O.L.s

correlation  
vs.  
cause

healthy habitat =  
healthy populat<sup>ns</sup>  
BUT  
interactions w/ spp  
changing env  
changing human use

-enforcement

Youth not  
following trad.  
rules about  
caribou.

What gives?  
Are there 2  
Set of rules:  
one for Inuit  
one for Industry  
re calving grounds

## How can calving grounds be protected?

GN fully  
supports protect<sup>n</sup>  
on calving grounds  
(core  
econ vs. env  
important)

How can we protect  
caribou?  
A: Exclude development  
on calving grounds  
complete develop

CPM mobile  
do not protect  
calving grounds

If you allow  
explor<sup>n</sup> on calving  
grounds, you are  
saying 'yes' to  
development.

What happens  
when development  
happens on calving  
grounds → see  
Griffiths et al.

How do we  
accommodate  
changes in  
calving grounds?

need to define  
and decide  
on calving vs.  
post calving  
workshop

Q: Did you find  
any scientific  
studies of physical  
displacement from  
mining dev on calv.  
grounds

## How can key caribou habitat be protected?

Rules re crossings  
can inform rules  
re calving grounds

water crossings  
impt.  
→ needs  
updating

What habitat  
protection is in  
place in  
special areas?

Is it possible to  
use results of  
historical surveys  
and/or TK to  
delineate calving  
grounds? or do  
we use collar data?

Two main ecotypes:  
1) Mainland migratory  
2) Tundra wintering

→ Can some recommendations  
apply to both?

Caribou gathering  
Need to stop exploration  
in calving grounds.  
If you let exploration  
How can you say  
that the company  
can't develop??



## What actions need to be taken to better manage caribou?

- Are there issues with marking all areas?
- proposals must be risk sensitive
- Need to consider what is happening in other areas/jurisdictions
- We have to do something → doing nothing is still a decision
- seems like our own organizations are not doing our job → need somebody to blame somebody to monitor
- caribou need shared management → cross boundary
- duty to consult - w.r.t. development on calving grounds - judicial review
- Disconnect between RWOs/HIOs and RIAs → Need a communications plan
- Triggers for review (via WRB) re permit applicants Not necessarily relevant to caribou (ie. man hrs, fuel storage)
- Inadequate notice - proper disclosure - adequate time to respond
- How are we going to turn these good intentions into something real??

## How should caribou be monitored? By who?

- monitoring @ development is responsibility of company (w/ regulator & comm.)
- Lots of incursions along migration route & at water crossings. Can we incorporate into monitoring?
- measures need to be monitored regularly - are they effective?
- Monitor 3 zones - 20% buffer surveillance - outer 2 zones are info
- follow decision tree } monitoring
- When antlers fall they should be left alone. Lets younger generation know caribou were here.
- Whose responsibility is it for monitoring of CPM?
- Collars give you current info. Need IQ for trend over 100's years.
- popn size - popn structure - growth rate - health - dist. b + hab. use
- Q. How is harvest monitored in the NWT? A - Land claim harvest studies, monitoring Comm. Estimates
- AANDC and DIOs checks for permit compliance

## MPBILE CONS. MSRS

- buffer areas around protected areas (B.L.)
- critical → calv. prec. late low risk winter
- flexible predictable adaptable (incl. monitoring relevant to susceptibility)
- susceptibility (duration of exposure) & risk
- Is there sufficient resources for monitoring mobile caribou protection measures? Funding may not be the push for NWT CPM
- Sensitivity varies w/ herd dispersal, composition, season, insects, weather
- Sahtu Pilot Project - winter range - Bluewiner east "field test"

## Protected Areas

- collars alone w/out monitoring would have caused unneces. shutdowns plus openings
- How do you keep up-to-date with calving area boundaries (calving areas shift from year to year) → Current to Protected Areas 100% protection
- (protected areas) is mapping of calving up-to-date and reliable? How do you address mapping issue?
- caribou conserv. areas designated in monitoring
- concerns about fixed areas in CPM
- protected areas in LUP versus large national parks etc. (caribou vs. designated)

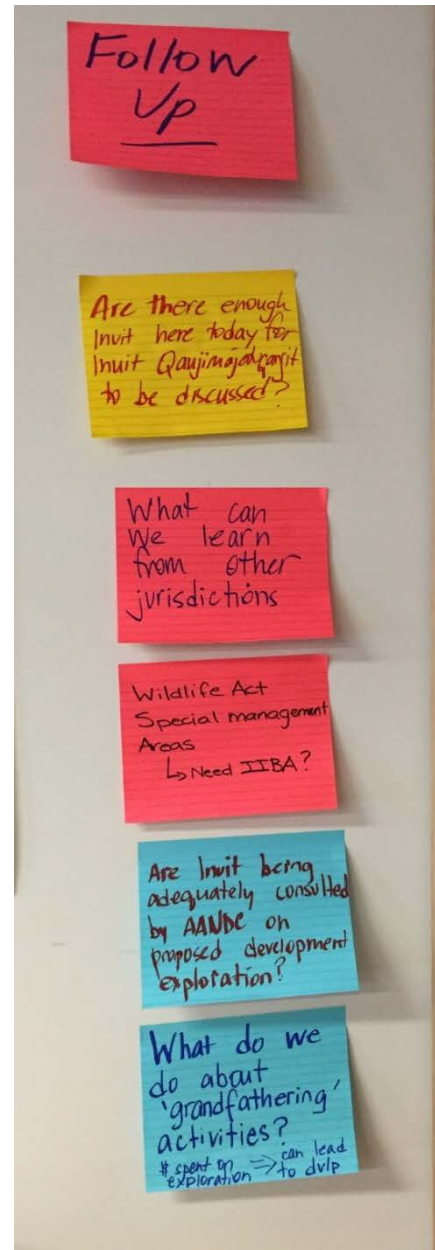
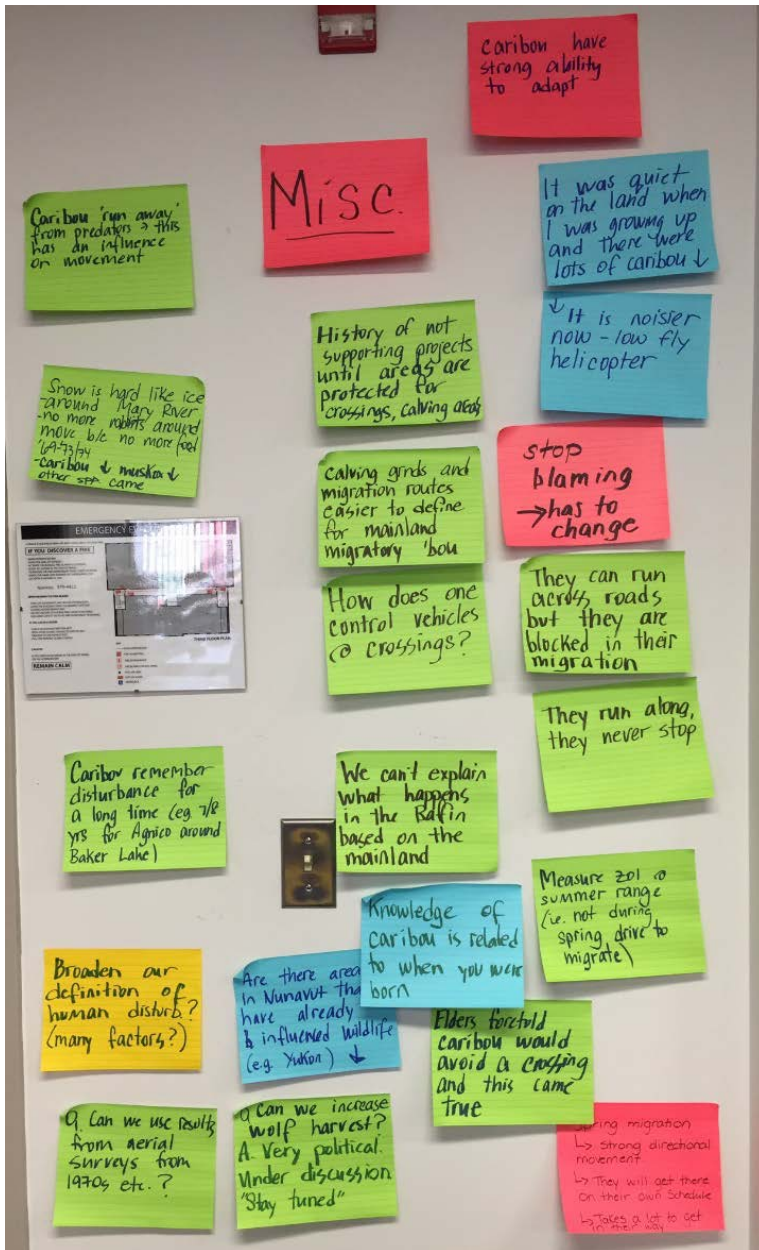
## Caribou Protection Measures

- Need to find a balance between protected areas and protection resources
- caribou protect. msrs vs. conservat. msrs
- Original CPM from 1930s conflict Baker Lake and AANDC → WUP, BACMB (proposed)
- Is dust causing the ZOI? → seems correlated How to suppress dust??
- 2000 Assessment of CPM - unknown protection - caribou protected vs. habitat
- Mapped areas 1) site monitoring 2) mitigation
- 2007 Assessment of CPM - WUP am. calv. grade pain C.P.A. - timing varies year to year
- Existing CPM in Nunavut - Keewatin LUP - N. Baffin LUP - West Kit LUP
- would have been required to US projects - CPM but no monitoring - WUP & BACMB ended - no independent data on compliance











▷ΔJ<sup>u</sup>L C: ΔC<sup>a</sup>σΔ<sup>q</sup>ρ<sup>a</sup>Δ<sup>q</sup>σ<sup>q</sup>Γ Λ<sup>q</sup>bC▷<sup>r</sup>C

[illegible][illegible]







▷ ΔJ<sup>a</sup><sub>L</sub> E: ΔC<sup>a</sup>σ<<sup>i</sup>p<sup>a</sup>ū<sup>i</sup>σ<sup>i</sup>Γ bΠL<sup>b</sup>νΠ<sup>c</sup>γ

$$\zeta^a \gamma^b \sigma^c \gamma^d \gamma^e \gamma^f \gamma^g \gamma^h \gamma^i \gamma^j \gamma^k \gamma^l \gamma^m \gamma^n \gamma^o \gamma^p \gamma^q \gamma^r \gamma^s \gamma^t \gamma^u \gamma^v \gamma^w \gamma^x \gamma^y \gamma^z \gamma^{23}$$

Δ<sup>α</sup>σ<sup>β</sup>ρ<sup>γ</sup>δ<sup>ε</sup>σ<sup>ζ</sup> bNL<sup>η</sup>ρ<sup>θ</sup> - D<sup>ι</sup>ρ<sup>κ</sup> 1

ጅልጊቢ 4, 2015

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