Barren-Ground Caribou Protection — What Makes Sense?

Environmental Consultant's Perspective

Mike Setterington, R.P.Bio. CARMA 9 Whitehorse, YT March, 2018



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CARMA 2012: What are the research gaps?

- Significance criteria
- Measurable parameters of climate change and effects criteria
- Quantified Zones of Influence
- Harvest statistics
- Caribou population delineation
- Caribou response to disturbance

 identify adverse interactions
- Inuit and First Nation perspectives on "significance"

- Land use thresholds and updated land use plans
- Interpreting predictions of energetics models
- Population demographics
- Forage biomass/growth projections
- Tracking post EIS monitoring results from other northern projects
- Community-based monitoring
- Integration of traditional knowledge

CARMA 2012: Challenges

- Cumulative effects
- Incorporating climate change interactions
- Decision making under uncertainty
- Regulator's capacity and experience
- Incomplete land use planning
- Information gaps and regulator's conservative inclination

Who we are...

And what we do about caribou



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Professional Biologists

- EDI is Terrestrial, Aquatic and Water Science focused
 Living things and where they live
- EDI and others work on mining projects across north, all have caribou "issues"
- Kelsey Russell works for us...



Project	Location	Caribou Issue
Mary River Iron Mine	Baffin Island, eastern Nunavut	North Baffin: Low in 70 year <u>cycle</u> ; increased <u>knowledge</u>
Kiggavik Uranium Mine	Baker Lake, central Nunavut	Multiple herds: New <u>road</u> access through summer habitat, increased <u>harvest</u> pressure
Grays Bay Road and Port	Western mainland Nunavut	Bathurst : Road at edge of traditional <u>calving ground</u> Dolphin Union : Road in <u>winter range</u>
Casino Copper/Gold Mine	Central Yukon	Klaza herd: road access through winter range
Coffee Gold Mine	Central Yukon	Fortymile herd historical winter range
Northern Cross Yukon oil and gas	North Yukon	Porcupine herd: movement





College of Applied Biology (R.P.Bio.): Code of Ethics

- Provide objective, science-based, unfettered, forthright and intellectually-honest opinion, advice and reports in applied biology.
 - refuse to enter into agreements where compensation is contingent upon the conclusions or recommendations meeting the client's desired conclusions or recommendations;



R.P.Bio. Code of Ethics

- 3. Meet a professional standard of care by practicing applied biology with attention, caution, prudence, and due diligence.
 - due diligence means that ...the level of effort
 expended is appropriate to the task as defined
 by the activities undertaken and the potential
 risks; ...



R.P.Bio. Code of Ethics

- 5. Have regard for the health and safety of *the public* in the performance of professional duties.
 - identify and communicate the level of risk and appropriate measures for prevention or mitigation;



R.P.Bio: Principles of Stewardship

- 1. Take a comprehensive, holistic view
- 2. Maintain resilient ecosystems
- 3. Minimize harm, improve and enhance
- 4. Assess alternatives
- 5. Maintain future options
- 6. Learn and respond





What are the Threats?

- It depends...
- We have some ideas...
- But we're not really sure...
- We're *uncertain*, and we don't like to take *risks*...







The Precautionary Principle Challenge... is a pain in the @ss



Indecisions — uncertainty and risk



Eagle Plains Oil and Gas Exploration

[YESAB-DO]... [are] *unable to predict how the* [caribou] *will interact with the Project and as such is unable to determine the significance of adverse sociocultural effects related to the access to and use of the* [caribou]. February 2016

Casino Mine Project

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In evaluating whether the Project might significantly contribute to cumulative adverse environmental effects the Executive Committee focused on habitat quantity and quality. It did so by evaluating cumulative habitat loss and degradation due to human activities across the Klaza caribou range... the Executive Committee has determined that the project might contribute significantly to cumulative adverse environmental effects on the Klaza caribou herd. February 2016

Back River Project



Due to a high level of uncertainty regarding the efficacy and adaptability of measures designed to mitigate these effects [on caribou], the Board is not confident that these potential adverse ecosystemic and related socio-economic effects could be effectively mitigated over the life of the Project. June 2016



Solutions...

Good Science

- Focused professionals
- Incorporate traditional and science knowledge



Great Engagement

- Directly affected
- Knowledge holders willing to share
- Experience vs opinion







Good science...





Variables	Change from baseline		
Birth weight	-2.9%		
June calf weight gain	-4.7%		
Summer protein gain	-4.8%		
September fat weight	-5.9%		
Rut cow weight	-1.7%		
Rut calf weight	-3.2%		
Pregnancy rate	-6.4%		









Vehicle of Impact Unlikely Maybe Expected Scale of Impact Protection Measure Protection Measure Protection Measure Effect Measure Medium Caribou drinking contaminated tailings water Full-time monitoring of tailings area for caribou during migration Disturbance from vehicle/ truck traffic noise Establish minimum distance allowed area Regular sampling of water quality in tailings Fencing of tailings Fencing of tailings Fencing of tailings Installation of Inuksuk to direct caribou away Installation of Inuksuk to direct caribou away Fenforce speed		Likelihood of Occurrence						
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Medium Caribou drinking contaminated tailings water Full-time monitoring of tailings area for caribou during migration Disturbance from vehicle/ truck traffic noise Enforce speed Regular sampling of water quality in tailings area Regular sampling of water quality in tailings area Full-time monitoring of tailings Enforce speed Installation of Inuksuk to direct caribou away Fencing of tailings Fencing of tailings Enforce speed Installation of Inuksuk to direct caribou away Fencing of tailings Enforce speed Installation of Inuksuk to direct caribou away Vehicle collisions with caribou Enforce speed	Scale of Impact	Effect	Measure	Effect	Protection Measure	Effect	Measure	
Vehicle collisions Enforce speed with caribou limit	Medium			Caribou drinking contaminated tailings water	Full-time monitoring of tailings area for caribou during migration Regular sampling of water quality in tailings area Fencing of tailings Installation of Inuksuk to direct caribou away	Disturbance from vehicle/ truck traffic noise	Enforce speed limit Establish minimum distance allowed between vehicles	
						Vehicle collisions with caribou	Enforce speed limit	

What makes sense?

- Be cautious, but not too precautious
- Mining leaves a footprint
- Wildlife are managed
- Environmental assessment is transparent
- Multiple solutions, multiple participants





Observed and predicted effects of climate change on Arctic caribou and reindeer

Conor D. Mallory and Mark S. Boyce

- Summer Range Conditions
- Parasites and Disease
- Movement, Migration and Distribution

- Extreme Weather and Icing Events
- Winter Range Conditions

But on Pg 8, the paper's concluding paragraph...

"We also hasten to emphasize that our review has not considered any effects from anthropogenic disturbance, and that in many cases anthropogenic disturbance presents a much more immediate threat to Rangifer populations than does climate change"

