

Cumulative effects on migratory tundra caribou: *towards a CE mindset*

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Dec 5, 2012

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Outline

- What are cumulative effects ?
- How do CE assessments differ from other (project) effects ?
- Why assessments based on CE have been a problem to implement?
- Elements of a CE assessment
- Developing a CE Mindset

What are cumulative effects:

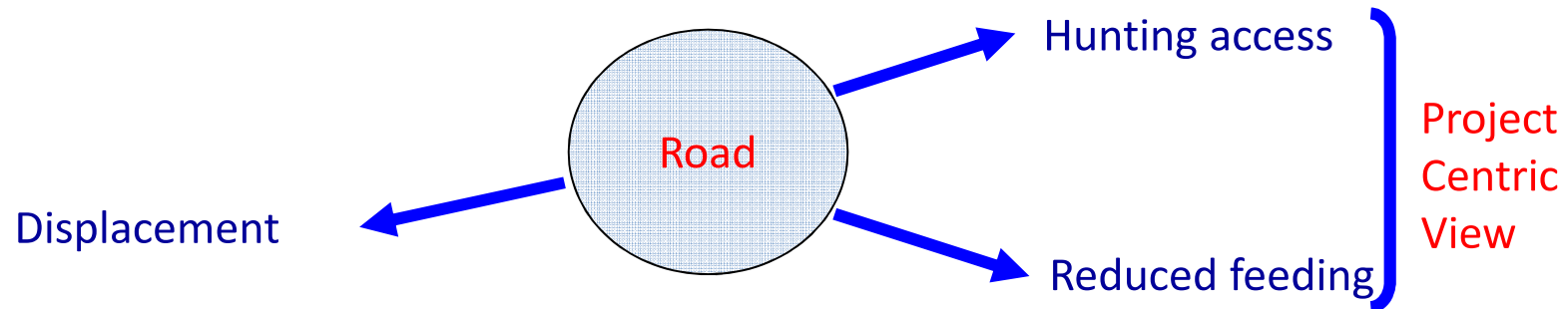
- > The impact on caribou populations which results from the incremental impact of a project when added to other past, present, and reasonably foreseeable future projects regardless of what agency or person undertakes such other actions.
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Types of Cumulative effects -

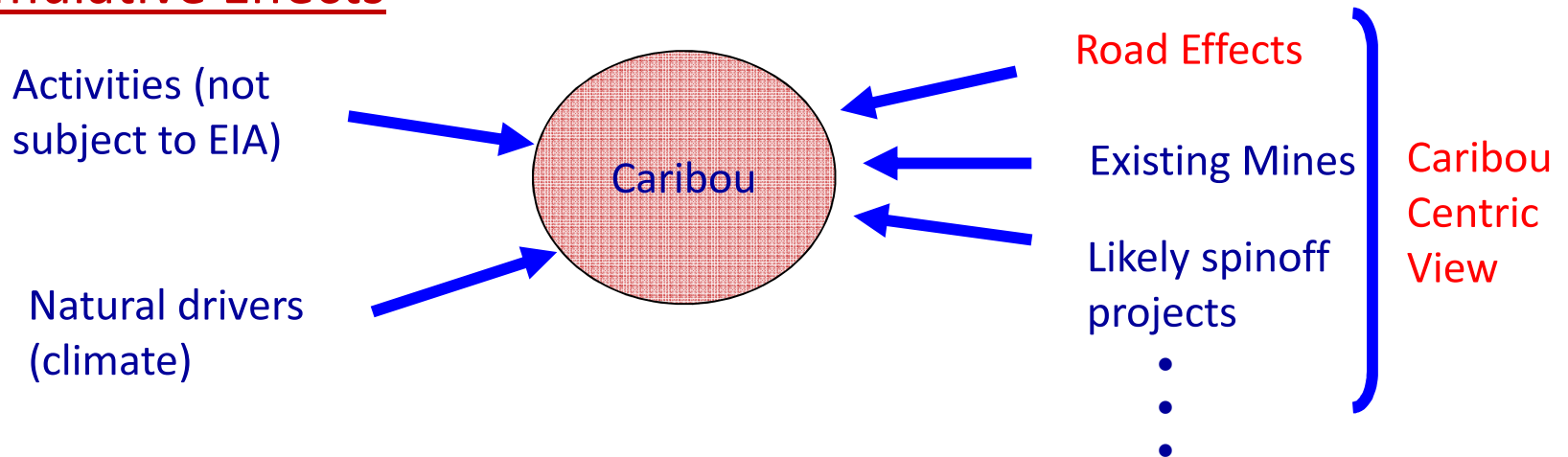


“Project / Activity” & Cumulative effects:


Proposed road effects on caribou



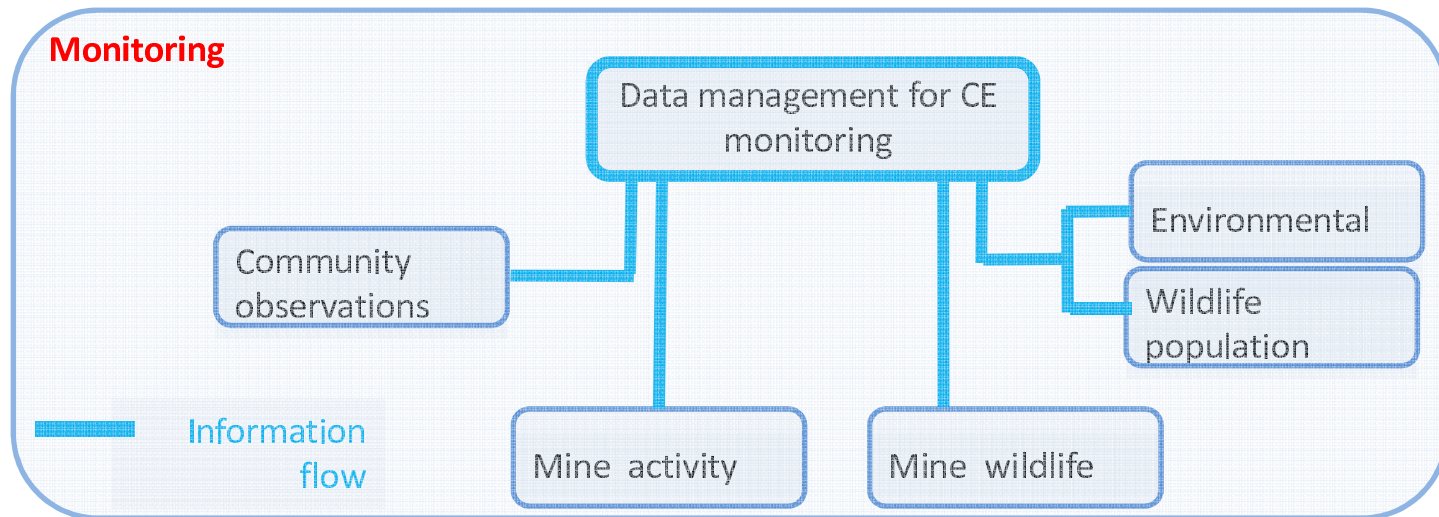
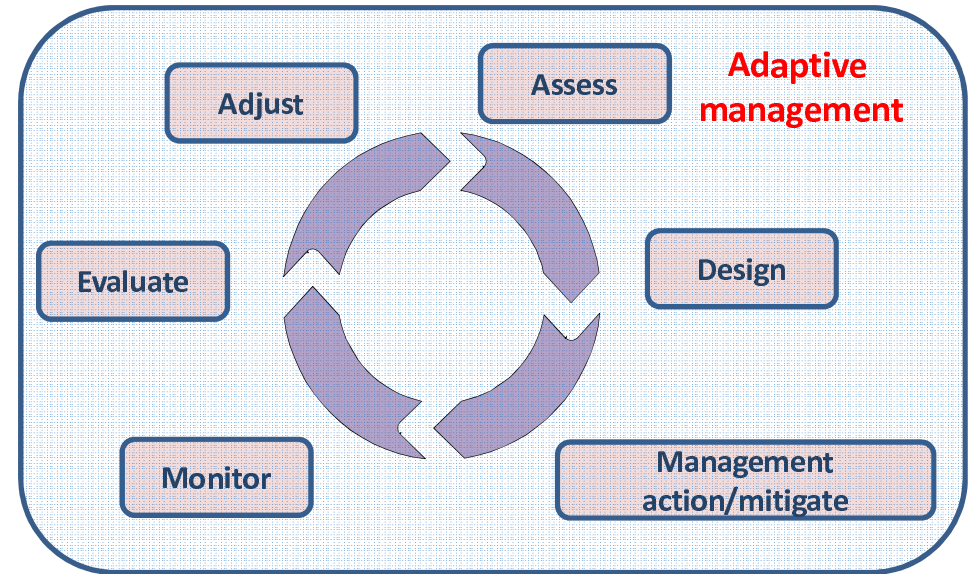
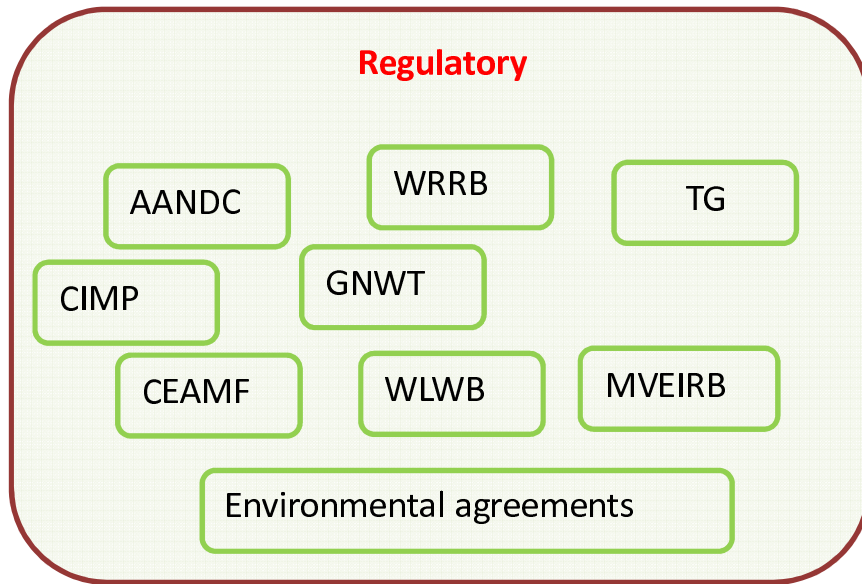
Cumulative Effects



Why cumulative effects assessments are difficult

- Currently existing tools (and training) rooted in Project level assessment, need for comprehensive tools.
 - How to link different impacts (e.g. reduced feeding in spring, increased hunting access in fall, CC trend to deeper snow)
- Need to present impacts to match management action and/or mitigation options 
- Complex to monitor CE predictions and mitigation effectiveness (natural variability noisy) – have to pick most appropriate indicators
- Need to identify thresholds of acceptable activity – how much is too much
- Decision-making and management of cumulative effects not straight forward:
 - Implications for data - collection, management, sharing.
 - Implications for governance - **extraordinary collaboration** .


THE 3 SOLITUDES



CE Process



- Data gathering
 - Present natural environment
- Quantifying effects
 - Intensity, duration, location and timing of impacts
 - Scenarios for future – including climate change
- Assessing effects
- Recommendations and governance
 - Applying mitigations, developing and implementing thresholds
- Monitoring predictions and evaluating mitigation

Developing a regulatory framework for cumulative effects on caribou

- Shift from project specific thinking to focus on caribou (as a VEC).
- Use same indicators to assess cumulative effects as you use to assess management actions. 
- Apply consistent tools to assess CE so that we can build a generalized CE approach
- Link the “3 Solitudes” by all adopting a CE Adaptive Management Process

..so what do we need to do to develop a CE Mindset?

ACTIONS:

- # 1 Bring environmental data together ✓
- #2 Use data to better understand caribou ✓
- #3 Identify stressors and types of impacts ✓
- #4 Assess impacts ✓
- #5 Manage human activity and caribou to mitigate impacts ✓
- #6 Monitor management actions and mitigation and adjust 
- #7 All CE stakeholders cooperate in actions # 1-6 



Need impacts quantified at
appropriate level for management

Feeding time disrupted

- ➔ Reduced food intake
- ➔ Reduced energy/protein balance
- ➔ Reduced calf growth
- ➔ Reduced calf survival
- ➔ **Reduced herd productivity**

“SHOW ME THE BODIES”

Caribou herd and cumulative effects monitoring & management

