

**GNWT Response to:
WRRB IR#1**

Topic

Caribou (boreal and barren-ground) – Application of Assessment Endpoint and Measurement Indicators

Comment

The importance of the Assessment Endpoint is in determining the significance of impacts (incremental and cumulative). The Adequacy Statement Response (ASR; sec 4.6) states that “*Residual effects were determined to be significant if a VC is expected to no longer be: (1) self-sustaining, or (2) ecologically effective*”. The ASR (sec 4.1.2) describes self-sustaining populations as: “*healthy and viable populations, which are by definition robust and capable of withstanding environmental change and accommodating stochastic population processes*”, and “*an ecologically effective population differs from a self-sustaining population if the number of individuals needed to maintain ecological function is greater than the number required to maintain a viable population for the long term.*” The ASR (sec 4.2) describes how the ability of a species to tolerate disturbance is evaluated using the concepts of ecological adaptability and resilience; for boreal caribou: “*At Base Case, boreal caribou are predicted to be self-sustaining and ecologically effective with a low risk, but are near their resilience limits*”; for barren-ground caribou: “*Barren-ground caribou are expected to have the capacity to adapt and be resilient to existing natural and human-related disturbances and associated variations in habitat availability, which at Base Case are not limiting.*” However, the ASR also states that “*Due to the current low abundance and harvest restrictions of Bathurst caribou and Bluenose-East barren-ground caribou are considered unlikely to be self-sustaining and ecologically effective at Base Case*” which raises questions about why barren-ground caribou can be expected to be resilient and adaptable. Several parties, including GNWT, raised questions regarding the definition of the Assessment Endpoint for caribou in previous environmental assessments for barren-ground caribou (e.g. MVEIRB’s 2016 Reasons for a Decision Report for EA1314-01 Dominion Diamond Ekati Corp. Jay pit). Building on recent case studies is a useful step toward efficiency and effectiveness in environmental assessments.

Recommendation

1. Please summarize lessons that can be learnt about defining Assessment Endpoints for caribou from recent MVEIRB environmental assessments;
2. Please summarize evidence (demographic and habitat-related) supporting the statement that boreal caribou are “near” their resilience limits, and discuss the implications for the Assessment Endpoints and Measurement Indicators (see also IR#2);

3. Please describe (i) the implications for the TASR assessment if impacts are significant, given that barren-ground caribou herds currently can be considered neither self-sustaining nor ecologically effective; and (ii) relative to (i), please provide revised text for the Assessment Endpoints and Measurement Indicators and implications for proposed adaptive mitigation for barren-ground caribou (see also IR#2).

GNWT Response

Note: This response replaces a previous response to WRRB IR#1 which was included in [PR#142](#).

The assessment endpoint of self-sustaining and ecologically effective wildlife populations was most recently used in the assessment of the Jay Project (Dominion Diamond 2014). During the review of the Jay Project Developer's Assessment Report, several communities, regulatory agencies, and the Review Board indicated they had concerns with the application of this assessment endpoint for wildlife and specifically for caribou.

For example, the GNWT indicated that it had "concerns that the choice of assessment endpoint (self-sustaining and ecologically effective caribou populations) has been problematic as a benchmark against which to measure changes in the measurement indicators and that there was not a clear enough methodology to link changes in the selected measurement indicators to the endpoint" (GNWT 2015a). The Review Board further pointed out that the use of self-sustaining and ecologically effective populations as an assessment endpoint was "inadequate because impacts to caribou could be significant for other reasons, such as a diminished ability of Aboriginal people to successfully and sustainably harvest caribou" (MVEIRB 2016). Both of these points are important and each is addressed in turn in the following paragraphs.

Identifying ecological benchmarks or threshold values for measurement indicators that can be used to determine whether a population will or will not be self-sustaining or ecologically effective is challenging. However, the difficulty of the task should not preclude its undertaking as part of environmental assessments. Self-sustaining and ecologically effective populations are concepts (values) ingrained in conservation biology (Hunter and Gibbs 2007). These concepts are related to the abundance and distribution and ecological function of each Valued Component. Self-sustaining populations are healthy, robust populations capable of withstanding environmental change and accommodating random demographic processes (Reed et al. 2003). Protection of ecological effectiveness is aimed at preserving a species role in an ecosystem because interactions with other species are important for

maintaining ecosystem function (Soulé et al. 2003; Sabo 2008; Säterberg et al. 2013).

Achieving self-sustaining and ecologically effective populations is a primary goal of most species conservation, protection, or recovery plans. For example, achieving a self-sustaining population is the goal for the recovery strategy of woodland caribou (EC 2012). Similar goals are identified in plans developed for other species such as burrowing owls (AESRD 2012) or wolverines (EC 2014), and the 2011-2015 barren-ground caribou management strategy (GNWT 2011) includes management principals of herd health and persistence (i.e. ability to be self-sustaining). Environment and Climate Change Canada (ECCC) provides guidance about how much habitat is sufficient within a cumulative effects context, and the guidance focuses on maintaining sufficient habitat to achieve long-term species persistence and a wide range of ecological functions (EC 2013).

Although defining the precise point at which a population loses its self-sustaining and ecologically effective status is not easy, there is no reason to exclude this central conservation paradigm from environmental assessment. No alternative conservation-based assessment endpoints were proposed as part of recent MVEIRB environmental assessment reviews. This point was recognized by the GNWT in its final technical report for the Jay Project. The GNWT stated that, in the absence of specific targets for acceptable levels of change for barren-ground caribou, the assessment approach of using a weight of evidence to determine whether populations were self-sustaining and ecologically effective was “generally sound”, even though the GNWT did not agree with all conclusions stemming from the analysis (GNWT 2015b).

Another important lesson that can be learned about assessment endpoints as an outcome of recent MVEIRB decisions is that the distinction between maintaining self-sustaining and ecologically effective populations and maintaining ecosystem services needs to be more clearly explained in environmental assessments. Maintaining self-sustaining and ecologically effective wildlife populations is an appropriate assessment endpoint and basis for significance determination from a conservation perspective. This assessment endpoint, which is based on ecological science, is not sufficient for ecosystem services (such as wildlife harvest or viewing opportunities). Because ecosystem services are the benefits people obtain from the environment, determining the significance of adverse effects to ecosystem services is a social science question.

Maintaining self-sustaining and ecologically effective wildlife populations should help maintain ecosystem services, such as the continued opportunity for consumptive use of animals by people or wildlife viewing opportunities, but this will

not always be the case. Answering questions about whether ecosystem services have been adequately maintained, such as whether the number of animals available for harvest is sufficient, ought to be undertaken by integrating societal values and perspectives. Typically, this will be undertaken as part of the cultural or Traditional Land Use assessment, which considers changes in human use of natural resources. Ecological science can provide information about the magnitude of change, but community input and social science are required to determine whether changes to ecosystem services are significant.

The second aspect of this information request from WRRB is to provide evidence that boreal caribou are approaching a limit where a self-sustaining population would be retained. In the case of boreal caribou, where a measurable target has been set for self-sustaining caribou populations by ECCC (i.e., 65% undisturbed habitat), the approach to determining whether or not a VC population will be self-sustaining is simplified. Consequently, evidence supporting the conclusion of the Adequacy Statement Response that boreal caribou in the NT1 range may be approaching the limit for a self-sustaining population is primarily associated with the amount of undisturbed habitat in the NT1 range. At the Base Case, undisturbed habitat in the NT1 range was estimated at 66.8%, which is above but near the critical threshold of 65% needed for boreal caribou populations to be self-sustaining with moderate risk (EC 2012).

The third aspect of this information request from WRRB is to provide more information about whether the impacts of TASR contribute to the lack of a self-sustaining and ecologically effective population of barren-ground caribou in the Base Case (i.e., would the Project contribute to an existing significant adverse cumulative effect). As noted in the ASR (Section 4.4.2.2) and in responses to WRRB IR#3 and #6 ([PR#134](#)), collar data and Traditional Knowledge ([PR#28](#)) indicate that barren-ground caribou will have a distribution that interacts with the Project only when populations are near peak abundances. Furthermore, even though the road may extend the length of the potential winter harvest season, harvest restrictions for barren-ground caribou are likely to be in place until the population is better able to sustain harvest. The Project would not contribute to the significant adverse cumulative effect identified for barren-ground caribou in the Base Case.

References

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