Summary Report on Comments Received on the *Proposed Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada*

Background

In the 2012 *Recovery Strategy for the Woodland Caribou, Boreal population* (Rangifer tarandus caribou) *in Canada*, critical habitat was identified in 50 out of 51 ranges. At that time, critical habitat was not identified in Saskatchewan's Boreal Shield range (SK1) due to a lack of data on population size and trend, and the uniqueness of the disturbance regime (i.e., high fire and low anthropogenic disturbance). As required under the *Species at Risk Act* (SARA), a schedule of studies was developed to address these key knowledge gaps and inform the identification of critical habitat in SK1.

Starting in 2014, the University of Saskatchewan collected three years of demographic data for boreal caribou in SK1. Using this data, as well as new data provided by the provinces and territories, Environment and Climate Change Canada (ECCC) completed additional analyses to place SK1 in a broader national context. The new analyses were used to identify boreal caribou critical habitat for SK1 in the proposed *Amended Recovery Strategy for the Woodland Caribou* (Rangifer tarandus caribou)*, Boreal Population, in Canada.*

The proposed Amended Recovery Strategy was posted on the Species at Risk Public Registry on June 28, 2019, for a 60-day public comment period that ended on August 27, 2019, as required under SARA. Prior to its posting, ECCC engaged with Indigenous communities, organizations and governments located within and adjacent to SK1, and consulted with directly affected stakeholders for input on the proposed amendments.

During the public comment period, five written submissions were received, one that was supportive of the proposed amendment and four that raised concerns with both the science and policy approaches used to identify critical habitat in SK1. The written submissions contributed valuable perspectives on the interests and concerns of partners and interested parties. The main comments received, as well as ECCC's response to those comments, are outlined in this document. Some of the comments were outside the scope of the amendment, and are not reflected below, but have been noted for consideration in future research, planning, and reports. The comments did not result in changes to the proposed Amended Recovery Strategy.

What We Heard and ECCC Responses

1. Probability of Persistence

Summary: Concern that a higher probability of persistence was selected for SK1 than for the other 50 boreal caribou ranges across Canada.

ECCC Response**:** Analyses completed by ECCC indicate that the SK1 local population is likely self-sustaining at current levels of disturbance (60% total disturbance), with a 71% probability of

persistence. The analyses also show that the SK1 local population is sensitive to small increases in anthropogenic disturbance and sensitive to small decreases in adult survival. For these reasons, a higher probability of persistence was selected for critical habitat identification in SK1 (71%) than was selected for the other 50 ranges across Canada (60%). Continued monitoring in SK1 will be necessary to ensure that future changes in range condition do not compromise the ability of the range to support a self-sustaining status, and will be critical with the increases in fire disturbance and changes in species' distributions (e.g. northward expansion of other ungulates) that are predicted to occur with climate change.

2. Publication of Science Used to Identify Critical Habitat in SK1 Range

Summary: Request for a full scientific report to allow stakeholders to conduct a more thorough review of the science used to identify critical habitat in SK1.

ECCC Response: A Science Summary Sheet[1] was published alongside the proposed Amended Recovery Strategy, to provide information on the analyses used to inform the identification of critical habitat in SK1. The Science Summary Sheet includes demographic information (e.g., adult female survival, calf recruitment, and population growth rate), figures, modelling equations, and statistical results. All of the methods used in the analyses for SK1 are documented in the *Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou* (Rangifer tarandus caribou)*, Boreal Population, in Canada: 2011 update*[2], which was used for the development of the 2012 Recovery Strategy.

A peer-reviewed paper[3] was published in April 2020 that includes a series of population modelling simulations and a further examination of SK1 as a case study, using a slightly different approach than that outlined in the Science Summary Sheet. The overall results in the April 2020 paper are consistent with the Science Summary Sheet and indicate that caution is warranted with respect to additional anthropogenic disturbance in SK1. There are some differences in model predictions, which are not unexpected given the different modeling approaches. To ensure national consistency, ECCC used the outputs from the model described in the Science Summary Sheet to inform the identification of critical habitat in SK1.

3. Use of All Published Scientific Studies

Summary**:** Request that additional published scientific research from localized studies be incorporated into the national-scale analysis to inform the identification of critical habitat in SK1.

ECCC Response: Analyses to inform the identification of SK1 critical habitat were completed at a national scale[1]. This approach requires datasets that are consistent to ensure that results reflect meaningful differences for boreal caribou local populations, rather than differences in data collection methods specific to local areas. ECCC notes that additional local research can help inform regional planning through development of range plans or similar land use plans.

4. Disturbed Habitat Calculation in SK1

Summary: Concern that the amount of disturbed habitat in SK1 is overestimated.

ECCC Response: Disturbed habitat calculations include both human-caused disturbance and fire. The area of disturbed habitat in SK1 was calculated using satellite imagery. ECCC's

[1] https://species-registry.canada.ca/index-en.html#/documents/1437
[2] https://species-registry.canada.ca/index-en.html#/documents/2248
[3] https://besjournals.onlinelibrary.wiley.com/doi/epdf/10.1111/1365-2664.13637

anthropogenic disturbance maps underestimate the amount of human disturbance in boreal caribou ranges because of the large scale of the satellite imagery. ECCC is aware of additional published works pertaining to mapping of post-fire residuals, however, these data are not consistent with the scale of the SK1 analyses (e.g., data do not date back 40 years).

5. Sensitivity Assessment for Anthropogenic Disturbance

Summary: Request for additional information to explain the sensitivity of SK1 to small changes in anthropogenic disturbance.

ECCC Response: ECCC analyses showed that the SK1 local population is sensitive to additional anthropogenic disturbance. Population modelling results, based on evaluation of different simulated disturbance scenarios, show that the probability of maintaining a self-sustaining population declines with increasing amounts of simulated anthropogenic disturbances. Additional methodology, including the equation used to estimate the effect of additional increases in anthropogenic disturbance and detailed output figures, are described in the Science Summary Sheet[1].

6. Population-Disturbance Relationship

Summary: Request for further explanation as to how the SK1 local population is able to tolerate higher levels of disturbance than the other local populations across Canada.

ECCC Response: SK1 has a unique disturbance regime (i.e., high fire and low anthropogenic disturbance) and appears to have a stable population trend with the current level of disturbance. The recovery strategy acknowledges that there is variation in the relationship between habitat disturbance and population condition. Some local populations may be more vulnerable to disturbance, whereas others may be able to tolerate disturbance levels that are >35%. The type of disturbance (anthropogenic vs. natural) can also influence a local population's tolerance. Continued monitoring in SK1 will be necessary to ensure that the range condition is able to support a self-sustaining status. The work completed for SK1 demonstrates the utility of the national modeling framework to accommodate for regional differences.

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