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Ontario Conservation Centre

OFAH FILE: 408C
February 15, 2012

Recovery Planning
Environment Canada
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Subject: **Recovery Strategy for the Woodland Caribou, Boreal Population (*Rangifer tarandus caribou*) in Canada**

On behalf of the Ontario Federation of Anglers and Hunters (OFAH), its 100,000 members, subscribers and supporters, and 675 member clubs, we have reviewed the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population, in Canada* (hereafter referred to as the Recovery Strategy) and have some serious concerns.

As a provincial organization, our questions and concerns are focused on the boreal caribou herds of Ontario; however, many of our comments, questions and concerns are based on methodology and decision-making processes, and therefore, can be applied to all boreal caribou populations in Canada.

The OFAH comments in this submission are separated into two parts: the COSEWIC designation, and the Recovery Strategy. This was done because we believe that the deficiencies of the 2011 Recovery Strategy are indicative of an inappropriate designation of boreal caribou under the Species at Risk Act (SARA). Therefore, the first part of our submission addresses the designation of woodland caribou (boreal population; hereafter referred to as boreal caribou) by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The second part of our submission will provide a more detailed explanation of how the current knowledge of boreal caribou demographics in Canada, and Ontario in particular, is insufficient to support the designation of Ontario's boreal caribou as "threatened" under SARA. Our comments in Part II will also outline our concerns with the risk assessments presented in the Recovery Strategy, and the underlying methodologies used for the assessment used in the *Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou (Rangifer tarandus caribou), Boreal Population, in Canada* (hereafter referred to as the Scientific Assessment).

PART I: THE COSEWIC DESIGNATION

The COSEWIC Designation: In 2002

In 2002, COSEWIC designated the woodland caribou (boreal population) as "Threatened" under SARA. The COSEWIC designation was based on a 'decreasing' trend in local populations (herds), as well as 'declines' in the extent of occurrence, area of occupancy and number of extant locations of boreal caribou. This information is summarized in the 2002 *COSEWIC Assessment and Update Status Report on the Woodland Caribou (Rangifer tarandus caribou) in Canada* (hereafter referred to as the COSEWIC Assessment Report).

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Local Population Trends
Of the 52 local populations identified in 2002, only 12 were considered to be declining. Six local populations were stable, one was increasing and the population trends of 33 herds were unknown. Therefore, at the time of designation, the population status of more than 63% of boreal caribou herds was unknown. In other words, only 23% of boreal caribou herds were known to be declining. The percentage of decline over the past 20 years was 'unknown' with quantitative local population declines only identified for Labrador local populations.

Extent of Occurrence and Area of Occupancy Trends
The percentage of decline in the extent and area information (i.e. extent of occurrence, area of occupancy and number of extant locations) were said to have declined from historical values, although quantitative local population declines were only identified for a few local populations. A comparison of ranges with 'historical' values seems to be inappropriate, when the quantitative criteria for COSEWIC designation for population trends are based on more recent information (i.e. past three generations).

Absence of Ontario Data
The 2002 COSEWIC designation was based on indicators that did not include data for Ontario or Quebec boreal caribou herds. Of the 57 local populations identified in the 2011 Recovery Strategy, more than a quarter of them are within Ontario and Quebec (26.3%). Therefore, the COSEWIC designation was made in the absence of information from more than a quarter of Canada's boreal caribou herds. The COSEWIC Assessment Report states that the only Ontario boreal caribou population estimates used in the designation "*are essentially guesses.*"

The COSEWIC Designation: Ten Years Later
The OFAH recognizes that herd-specific data has been collected in the decade since boreal caribou were listed as threatened under SARA; however, this new information for Ontario's boreal caribou herds illustrates that data deficiencies still exist. Six of the nine Ontario local populations still have no demographic data. Of the three populations that have some demographic data, two have population estimates and trends. Estimates are only a snapshot in time (i.e. one year), and the two trends available for Ontario herds are based on three years (or less) of data.

Recommendation: The COSEWIC designation for Ontario's boreal caribou should be reviewed immediately.

Recommendation: Ontario's boreal caribou herds should be designated as Data Deficient under SARA.

Part II of this submission will show why Ontario's (and potentially other jurisdictions) boreal caribou herds should be designated as data deficient.

PART II: THE RECOVERY STRATEGY

The Status of Boreal Caribou Herds in Canada

Herd-specific Status for the Likelihood of Self-sustainability
The Recovery Strategy clearly illustrates the results of the risk assessments (likelihood of self-sustainability) for each boreal caribou local population (herd). A colour-coded map of Canada is used to present a herd-specific status of self-sustainability. Of the 57 boreal caribou herds in Canada, 17 are considered to be self-sustaining (very likely or likely), seven are as likely as not to be self-sustaining and 33 are non self-sustaining (unlikely or very unlikely). Of the nine Ontario boreal caribou herds, five have been designated as self-sustaining, two as likely as not to be self-sustaining and two as not self-sustaining.

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In the end, the Recovery Strategy categorizes all boreal caribou herds into one of two status categories: self-sustaining and non self-sustaining. This is accomplished by removing the *as likely as not self-sustaining* status from seven herds and counting them as *non self-sustaining*. This is inappropriate because some of these populations will be targeted for habitat restoration and population management actions where there has been no demonstrated need.

1. **What is the specific rationale for why the *as likely as not* populations were considered to be non self-sustaining (as opposed to self-sustaining)?**

Population and Distribution Objectives

The Recovery Strategy assesses the 40 non self-sustaining boreal caribou herds to assign management priority levels. Twelve herds have been targeted to achieve self-sustainability status in order to maintain "connectivity" across Canada, and the remaining 17 populations are to be "stabilized." This prioritization approach does not effectively identify those populations that have the most critical need for management. This approach actually prioritizes a need for management action in one of the *as likely as not* herds (Northwest Territories South) over many populations that were considered to be very unlikely and unlikely to be self-sustaining.

2. **The Recovery Strategy recognizes that local populations (herds) are the appropriate scale for management. Therefore, what is the specific rationale for using connectivity between distinct local populations as the primary basis for assigning management priority levels?**
3. **Why can inter-herd considerations (i.e. connectivity) trump intra-herd persistence (i.e. likelihood of sustainability) when assigning management priority levels?**
4. **What empirical evidence exists to show that Canada's "meta-population" of boreal caribou has ever been "connected?"**

<u>Herd-specific Risk Assessment</u>

In general, the OFAH does not support the methodologies used to arrive at these risk assessments presented in the Recovery Strategy and supporting Scientific Assessment. Please note that it was unnecessarily difficult to review the specific methodologies and rationale used to make the risk assessments because some background information (i.e. Appendix 7) was not made available with the Scientific Assessment.

Communication of Uncertainty, Assumptions and Data Deficiencies

Although self-sustainability status assignments are very clearly illustrated in the Recovery Strategy, there is no recognition of the variability that exists for the availability and quality of herd-specific demographic data on which these assessments are based. Appendix D states that the approach "*explicitly incorporated the effects of uncertainties and data quality in the assessment process.*" Our specific concerns with how the Scientific Assessment approach "*incorporated the effects of uncertainties and data quality*" will be addressed (see *Certainty of Data* on page 4).

The Scientific Assessment provides greater details on methodology and rationale as to how risk assessments were determined, including discussions on levels of certainty and decision-making strategies. Unfortunately, this is a separate document and is only cited as a reference in the Recovery Strategy. Even if the average reader referred to this document, the high degree of technical information and terminology makes it challenging to read and understand. Although we can appreciate the challenges of making a highly technical document like the Scientific Assessment more accessible to the general public, we would expect that the Recovery Strategy would clearly communicate data deficiencies, assumptions, uncertainty and other significant limitations that influence overall confidence in the risk assessments. This was not adequately done in the Recovery Strategy.

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The level of uncertainty and the assumptions that are made in order to arrive at apparently conclusive status assessments needs to be communicated in a clear, transparent and traceable manner. The absence of herd-specific certainty statements in the Recovery Strategy will cause the majority of readers to place too much confidence on a designated 'status' without fully understanding the quality and quantity of data that is used. The status of some boreal caribou herds is based almost entirely on the percentage of disturbance within their unsubstantiated range boundaries without any herd-specific demographic data (see *Habitat as an Indicator of Population Growth* on page 5 for more details). Therefore, we question the scientific validity and defensibility of your status determinations.

A lack of clear and comprehensive messaging can have significant implications on the public's perception of the status of boreal caribou. Premature self-sustainability assessments that are based on insufficient herd-specific data can ultimately result in increased political pressure and a greater likelihood for mismanagement. It is essential that boreal caribou management is necessary and targeted so that it does not compromise the many other ecological, economic and social benefits that the boreal forest provides.

Certainty of Data

One of the 'key findings' highlighted in Appendix D of the Recovery Strategy was that, *"range-specific disturbance-based management thresholds can be derived from a generalized disturbance-population growth function in conjunction with range-specific information."* Unfortunately, range-specific information is unavailable or limited for many of the boreal caribou herds in Canada (especially in Ontario), so the overgeneralized disturbance-population growth function is the sole or primary indicator used in risk assessments. Our concerns regarding the disturbance-population growth function are outlined on page 6 (see *Disturbance-Recruitment Relationship*).

The risk assessments for six of the nine Ontario herds were developed using *"limited evidence"*. In other words, there is no demographic data available for these herds, and therefore, the assessments were based solely on the habitat indicator of population growth because *"it is the only indicator available for this range."* One Ontario herd risk assessment was determined using *"some evidence"*. The level of certainty is considered to have increased for this herd because a population estimate was available; however, the risk assessment is still based *"primarily on the habitat indicator of population growth."* This occurs because a single population estimate does not reveal trends over time. Until additional population data is available for those herds with *"some evidence,"* we recommend that the certainty of risk assessments should be as low as herds with *"limited evidence."* As a result, seven of the nine Ontario boreal caribou herds were assessed with a low level of certainty and used habitat as the primary or sole indicator for population growth. Our specific concerns associated with the habitat indicator for population growth are discussed below (see *Habitat as an Indicator of Population Growth*).

We would argue that even when a reported trend and population size is available for a given caribou herd (assigned *"considerable"* certainty in the Recovery Strategy), there is not actually any greater certainty in the data used for the risk assessment. For example, many of the herds deemed to have *"considerable evidence"* only have partial (two of three) or low (no) agreement among the indicators. The Kesagami herd in Ontario was designated as very likely to be non self-sustaining, although there was no consistency among the indicators. The habitat indicator suggested that habitat condition was as likely as not (closer to likely) to support a self-sustaining population, and the population indicator of quasi-extinction also suggested a high likelihood of persistence. The population indicator for population growth suggests that the Kesagami herd is very unlikely to be self-sustainable; however, demographic data that is limited to a three-year period (1999-2001) more than a decade ago is biologically insufficient to assign *"considerable"* certainty, and make a conclusive statement regarding population trends. Despite having a lambda (λ) for these three years, the data are only considered to be a population trend because the requirement for a reported lambda (more than three years over the last ten years) is not met.

Requirements for a Reported Lambda

From a biological perspective, the requirement for a reported lambda is completely insufficient, especially considering that SARA requires a more than 30% reduction in population size over three generations (approximately 20 years for boreal caribou). We can appreciate the challenges associated with managing populations with limited or no data, but we cannot support the current inadequate low-level requirements needed for 'high certainty' in the data. There are many factors that contribute to boreal caribou population growth rates, many of which will vary from year to year. Therefore, it is inappropriate to put a high level of confidence on data that is collected over short periods of time.

5. **How many risk assessments are based on 'high certainty' population data that are in reality equal to or less than a single generation for boreal caribou?**
6. **How was the minimum requirement (greater than three years of data) assigned for reported lambda values?**

Habitat as an Indicator of Population Growth

The use of habitat as the sole or primary indicator for population growth is completely unacceptable. To determine the habitat indicator for population growth, total percent disturbance of a herd range is the only measure that is required. This means that no actual herd-specific demographic data is used. Risk assessments are assigned for six of nine Ontario herds without any direct scientific data regarding population demographics. This is completely unacceptable, because it lacks scientific validity and defensibility.

First and foremost, many boreal caribou populations are not limited by habitat. Effective boreal caribou management cannot be based on an assumption of how disturbance influences herd-specific population growth rates. There are many factors that influence caribou productivity, and the contribution of each can vary dramatically from herd to herd depending on the biotic and abiotic conditions they are faced with. The limiting factors for each herd must be studied and understood before sweeping generalizations can be made about how to manage the population. The role of limiting factors is discussed in greater detail in *The OFAH Alternative Approach to Managing Woodland Caribou (Boreal Population) in Ontario*, which we have attached to this submission.

The OFAH is concerned with the use of range-specific total disturbance as a metric for the habitat indicator of population growth. We are encouraged to see that there was some consideration for separating anthropological and natural (fire) disturbance, as well as some consideration for how habitat conditions will change over time, and contribute to the likelihood of self-sustainability; however, there are other potential factors that may limit the use of broadly-defined disturbance to estimate a habitat indicator of population growth for caribou herds. All disturbances are not created equal when considered from the perspective of boreal caribou habitat requirements.

For example, caribou habitat management has been ongoing in some areas of Ontario for decades. In a percent total disturbance scenario, a managed caribou habitat block would be grouped together with all other types of disturbance. These caribou habitat management blocks were created with temporal and spatial considerations for boreal caribou needs, whereas many other disturbances will not. These generalizations of disturbance are inappropriate, especially when they are being used as an indicator for boreal caribou population growth.

Definition of Habitat versus Range

This strategy inappropriately considers boreal caribou habitat range as synonymous with the herd range area. Boreal caribou habitat should not be synonymous with the 'herd range' area. Firstly, some of the 'herd ranges' in the Recovery Strategy have not yet been accurately delineated. Also, not all habitats within a 'herd range' will be occupied or utilized by boreal caribou to the same extent. Therefore, the proportion of habitat types will influence the overall herd-specific productivity. In reality, it is not only the proportion of habitats that is important to consider, but also their spatial and temporal arrangement (size, proximity, linkages, etc.); however, for the purposes of illustration, we will only focus on the proportion of habitat types. Using the Recovery Strategy approach, disturbance may occur in areas where habitat is not suitable (or not as suitable) for boreal caribou, but would still be included in the total disturbance estimate used to calculate the habitat indicators. In other words, disturbance in critical boreal caribou habitats (e.g. calving areas or winter refuges) are considered to have the same impact on caribou population growth rates as habitats that are not preferred or used (e.g. mixed hardwood stands). Therefore, similar to disturbance, it is inappropriate to generalize boreal caribou habitat the way it is done in the strategy.

In summary, using disturbance and/or habitat as an indicator of population growth is likely a gross oversimplification of boreal caribou productivity that does not reflect the true relationship between ecology and disturbance.

Disturbance-Recruitment Relationship

The model used to determine the habitat indicator of population growth is based on a disturbance-recruitment relationship from a meta-analysis of 24 boreal caribou populations from across the country. Appendix D of the Recovery Strategy describes the disturbance-recruitment relationship as one of the key findings of the 2011 Scientific Assessment.

> *"Nearly 70% of the variation in caribou recruitment across twenty-four study areas spanning the full range of boreal caribou distribution and range condition in Canada was explained by a single composite measure of total disturbance (fire + buffered anthropogenic), most of which could be attributed to the negative effects of anthropogenic disturbance."*

Although the disturbance-recruitment relationship explains 69% of the variation in recruitment, it is likely that a larger and more geographically representative sample size would increase variability and produce a weaker relationship that would be less robust. The addition of more data points representing low to moderate disturbances will add to the variability that is already observed at the lower level disturbances. In addition, there is insufficient longitudinal representation of herds across the country. For example, there is limited representation of herds from central Canada in the analysis (only one from Ontario and none from Manitoba).

7. **Given that Ontario's boreal caribou herds are not adequately represented in the disturbance-recruitment relationship, how is their self-sustainability assigned in the Recovery Strategy with any level of certainty?**

Meta-analysis of Boreal Caribou

The Recovery Strategy states: "*Local populations have been identified as the appropriate ecological unit for conservation and management of boreal caribou.*" Therefore, we find it inappropriate that the risk assessments presented in the Recovery Strategy are based on a meta-analysis. We do not believe that a meta-analysis is an appropriate function for estimating herd-specific life-history information. This is especially true when no herd-specific data is available, and the estimates are based solely (or primarily) on generalized disturbance estimates. Given the differences in conditions across the entire range of boreal caribou in Canada (from the Northwest Territories to British Columbia to Labrador), it is not biologically defensible for herd-specific assessments, recommendations and management actions to be based on a meta-analysis. The following examples illustrate the influence of herd-specific variability on a meta-analysis.

Herd-specific Variability: Geographic (Ecozone) Conditions

The ten herds with the lowest recruitment used in the meta-analysis are located in the boreal plain and taiga plain ecozones. Although, these herd ranges were also associated with a higher level of total disturbance, the disturbance-recruitment relationship of the herds in these ecozones may represent a confounding variable.

8. **Is it possible that demographic variables in the boreal plain and taiga plain ecozones show greater impacts at lower levels of disturbance relative to herds from other ecozones?**

If ecozone or other geographic relationships are biasing the disturbance-recruitment function, it would provide support for not using a meta-analysis approach for determining herd-specific risk assessments.

Herd-specific Variability: Non habitat Limiting Factors

Some individual herds are designated as unlikely to be self-sustainable despite high recruitment levels (as shown in the disturbance-recruitment relationship). The 'unlikely self-sustainable' risk assessment for the Red Wine Mountain herd is not congruent with a population that has high recruitment and low disturbance throughout its range; however, the Red Wine Mountain herd provides an illustration of how a generalized disturbance-recruitment relationship can be misleading when other factors can significantly limit boreal caribou productivity. In the case of the Red Wine Mountain herd, First Nation harvest is known to be a contributing factor for the sustainability assessment. If no demographic data was available for this herd, a habitat indicator of population growth would have determined that this population was likely to be self-sustainable. In this hypothetical scenario, the appropriate management actions would not be taken to conserve this population.

9. **How many of the 24 boreal caribou populations with "limited" or "some" evidence could have inappropriate risk assessment results?**

Population Objectives

The Recovery Strategy states that the initial recovery steps for non self-sustaining populations are "*to stabilize local populations by halting the decline in population size.*" Although this would be a reasonable objective for the Recovery Strategy, this appears to be contradictory to the meta-analysis approach used to determine risk assessments for boreal caribou herds. This further emphasizes the fundamental flaws in the designation of boreal caribou herds throughout Canada.

Strategic Direction for Recovery

The OFAH agrees with the assignment of a priority level for the threats or limitations included in Table 4 of the Recovery Strategy. As described previously, the types and contributions of limiting factors will vary from herd to herd across Canada. Therefore, a generalization of management action priority for the entire country is inappropriate. This should be assessed on a herd-by-herd basis.

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Mortality Management

The Recovery Strategy states: "*It is anticipated that mortality management will be necessary to prevent the extirpation of non self-sustaining boreal caribou local populations until sufficient habitat is restored to support self-sustaining local populations.*" In previous submissions to Environment Canada and the Ontario Ministry of Natural Resources, the OFAH has requested that predator management (i.e. wolves, black bears, etc.) and unregulated boreal caribou harvest must be key considerations for herd-specific population and management objectives.

In general, the OFAH supports the described management approaches for mortality management (predation and hunting); however, we recommend that the level of priority will need to be much higher for some boreal caribou herds. The aforementioned Red Wine Mountain herd serves as an example of when hunting (First Nation harvest) should be prioritized as an urgent management action (as opposed to the medium priority that resulted from the meta-analysis in the Recovery Strategy).

Habitat Management

The OFAH is concerned with the descriptions for the following habitat management approaches included in the Recovery Strategy:

1) *"Manage habitat within and between boreal caribou ranges, to maintain connectivity where required;"* and,
2) *"Undertake coordinated actions to reclaim boreal caribou habitat through restoration efforts (e.g., restore industrial landscape features such as roads, old seismic lines, pipelines, cut-lines, temporary roads, cleared areas; reconnect fragmented ranges)."*

In general, the OFAH does not support habitat management in areas where boreal caribou do not currently exist or forest road decommissioning as a method of caribou management. These issues are addressed in more detail in the attached *OFAH Alternative Approach for Managing Woodland Caribou (Boreal Population) in Ontario.*

Population Monitoring

Given the enormous knowledge gaps associated with demographic data that we have described, population monitoring should be given the highest priority for management action. This information is critical for the appropriate management of boreal caribou herds.

10. How can habitat management be given an urgent priority, especially for those populations not limited by habitat or where limiting factors have not been empirically identified?

Conclusions

In conclusion, the OFAH has outlined some of our primary concerns with the Federal Recovery Strategy for boreal caribou. We believe that the challenges and inconsistencies that we have highlighted in the scientific modeling and resulting risk assessments are due to the fundamentally flawed approach of using meta-analysis. The individual boreal caribou herds of Canada are faced with a diversity of biotic and abiotic conditions. Geography, climate, soil and anthropogenic use of the landscape are some of the main contributing factors that underlay the variable productivity and persistence of individual boreal caribou herds.

The Recovery Strategy recognizes that boreal caribou should be managed on a herd-specific basis, yet its risk assessments and recommendations for management actions are largely based on a meta-analysis approach. There is no sound biological rationale that justifies using a metapopulation approach for managing Canada's boreal caribou.

We believe that our concerns with the Recovery Strategy and Scientific Assessment ultimately result from the inappropriate and unnecessary designation of Ontario's boreal caribou herds as "*Threatened*" under SARA. We do not disagree that some of Canada's individual boreal caribou herds may require additional management attention to achieve self-sustainability; however, it is unnecessary and ecologically inappropriate to designate (under SARA) and manage all boreal caribou herds as a "*Threatened*" species. The OFAH concerns outlined in this submission emphasize this point.

We look forward to receiving answers to the questions we have posed in this submission, as well as receiving an explanation of how you propose to address our concerns. Furthermore, we trust that the following recommendations will be given serious consideration.

Recommendation: The COSEWIC designation for Ontario's boreal caribou should be reviewed immediately.

Recommendation: Ontario's boreal caribou herds should be designated as "*Data Deficient*" under SARA.

Yours in Conservation,

Matt DeMille

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Attach.

cc: Canadian Wildlife Federation and Affiliates
Federation of Northern Ontario Municipalities
Mining Association of Ontario
Mining Association of Canada
Northwestern Ontario Associated Chambers of Commerce
Northwestern Ontario Municipalities Association
Ontario Forest Industries Association
Ontario Prospectors Association
Prospectors and Developers Association of Canada
Marc Rondeau, Director, MNR Species at Risk
Deb Stetson, Manager, MNR Wildlife Policy Section
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Angelo Lombardo, OFAH Executive Manager
Dr. Terry Quinney, OFAH Provincial Manager of Fish and Wildlife Services
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