

Background Document to Accompany “Keeping the Land: A Land Use Strategy for the Whitefeather Forest and Adjacent Areas, June 2006”

Document Title: Woodland Caribou Conservation and the Whitefeather Forest and Adjacent Areas Land Use Strategy, June 2006.

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1. Introduction and Purpose

This document has been prepared by the Ontario Ministry of Natural Resources (OMNR) to supplement the discussion of woodland caribou conservation in the *Land Use Strategy for the Whitefeather Forest and Adjacent Areas*. The Strategy itself does not specifically discuss woodland caribou at length; rather, Pikangikum First Nation sees woodland caribou as one aspect of their broader responsibility for sustaining all living ones on their lands and waters, one aspect of Keeping the Land. A draft summary of indigenous knowledge research on woodland caribou conducted by the Whitefeather Forest Management Corporation is available as a separate document.

The subject of woodland caribou conservation is of great importance to Pikangikum and the OMNR. Woodland caribou conservation has been considered throughout the three-year WFAA planning process. Initially, the planning team set out objectives to sustain the biological diversity and abundance of the Whitefeather Forest and Adjacent Areas and to contribute to the needs of species at risk. Considerable effort was then made to address these objectives as they relate to woodland caribou. This document highlights the efforts made and provides a summary of resulting direction. It describes information, advice, and considerations of the WFAA planning team as they prepared the Strategy. Information has been a key factor in making land use decisions. It will also be highly important to subsequent resource management planning, *e.g.* forestry, protected areas.

2. Context

The context for addressing woodland caribou conservation in the Strategy stems from the acknowledged responsibilities of both Pikangikum First Nation and MNR to address the conservation of biodiversity, including species at risk.

Pikangikum First Nation embraces ‘Keeping the Land’, a holistic approach to the protection, use and stewardship of the Whitefeather Forest that includes maintaining ecosystem health.

The Ontario Ministry of Natural Resources follows legislative and policy requirements including those arising from being signatory to the National Accord for Species at Risk, and those required to achieve ecosystem health goals stated in various policy documents including: *Protecting What Sustains Us: Ontario’s Biodiversity Strategy (2005)*, and *Our Sustainable Future (2005)*.

Species At Risk

Forest-dwelling woodland caribou (boreal population) are listed by the Ministry of Natural Resources as a *threatened* species (i.e. “at risk of becoming endangered if limiting factors are not reversed”) on the Species at Risk in Ontario list and are designated as Threatened nationally and protected under the federal Species at Risk Act (SARA).

As a signatory to the National Accord for the Protection of Species at Risk, Ontario is committed to prepare recovery plans for Endangered and Threatened species.

Ontario has committed to the conservation and recovery of woodland caribou through establishment of a Woodland Caribou Recovery Team and commitment to development of a Woodland Caribou Recovery Strategy.

3. Understanding Caribou

Pikangikum people have lived with woodland caribou for generations and have an intimate knowledge of caribou. Woodland caribou is a totem animal of Pikangikum people. Pikangikum Elders have taught that woodland caribou is a gift from the Creator to use for survival and to enrich the diversity that enhances their lives. The Whitefeather Forest Management Corporation (WFMC) and the Ontario Ministry of Natural Resources have both, separately and in collaboration, investigated the spatial distribution of woodland caribou and woodland caribou habitat in the Whitefeather Forest Planning Area.

In 2001, the WFMC began interviewing Pikangikum elders to document their knowledge of a range of natural and cultural values, including woodland caribou, in the Whitefeather Forest. Pikangikum continues to build and share their knowledge of caribou through ongoing partnerships in planning and research, such as the Whitefeather Initiative partnership with MNR, and the Whitefeather Forest Management Corporation (WFMC) research project in collaboration with Parks Canada caribou scientist Dr. Micheline Manseau focusing specifically on woodland caribou. This research recorded detailed knowledge of woodland caribou held by Pikangikum elders and used this knowledge gathered at the local scale (*i.e.* trapline areas) to describe woodland caribou habitat needs across the Whitefeather Forest Planning Area. OMNR has conducted aerial inventories and calving surveys, and compiled historical records of caribou sightings in the area. Together, these sources of information provide a good understanding of the spatial distribution of woodland caribou, both at present and in the past.

Pikangikum Elders are pleased with how their teachings have guided the WFAA planning process. They have set out management principles and objectives for the Whitefeather Forest and Adjacent Areas which stipulate that forest cover and diversity are to be sustained over time. Caribou habitat is to be sustained over time; this includes special habitats like winter habitat, calving areas, and travel routes. The Elders have said that direction for lands and activities must not interfere with the flow of caribou life over it. Forestry practices must comply with this intent. Pikangikum Elders have said they will guide this.

Although there is substantial information available on the ecological habits and needs of woodland caribou, from both Pikangikum Indigenous Knowledge and western science, it is also important to note that there are still many gaps in our knowledge of the species. Based on current knowledge, key information important to the land use strategy includes:

- All of the caribou located within the Whitefeather Forest and Adjacent Areas are of the subspecies *Rangifer tarandus caribou*, or woodland caribou (forest-dwelling ecotype).
- The woodland caribou population found within the Whitefeather Forest and Adjacent Areas is part of the contiguous distribution of the species in Ontario.
- Woodland caribou have life history strategies that are well adapted to large scale disturbances, especially those created by wildfire. In northwestern Ontario, their current habitat has been shaped primarily by fire, with a few, very large fire events accounting for the majority of the area burned. This fire regime is a result of both nature and man. It has resulted in a forest with large areas of recent fire disturbance, and large areas with little or no recent fire disturbance.

- Caribou populations tend to decline in areas where there are increases in the proportion of younger forest, reductions in the amount or size of tracts of older conifer forest and increases in predator numbers or hunting efficiency.
- Winter range for woodland caribou consists of large patches of older conifer forests (typically 60 or more years of age) with little deciduous underbrush, and which may contain abundant ground cover of "caribou" lichens, which are an important winter food source.
- Preferred winter food sources focus on two terrestrial lichens, *Cladina rangiferina* ("wahpahkahmik") and *Umbilicaria mammulata* ("wahkoonuhk"), and one arboreal lichen, *Bryonia spp.* ("weesahpaynjahk").
- Alternate habitats and future habitats are as important to the long term sustainability of caribou populations as existing habitat. Maintenance of self sustaining populations requires a thoughtful integrated approach to providing a continuous supply of caribou habitat through time.
- Woodland caribou show some affinity for traditional wintering areas, however, aging stands, and natural disturbances such as fire and blowdown force shifts to alternate winter habitats, provided the forest conditions are suitable.
- Younger successional forests, clearcuts, and recent burns are not generally used by woodland caribou in the winter.
- Snow-free season habitat may include areas of mixed and hardwood stands, but woodland caribou continue to be strongly associated with mature coniferous forests.
- Summer diet consist of forbs, deciduous leaves, lichens, fungi, grasses, and sedges. Snow-free season habitat may overlap winter habitat in some areas.
- Observation of radio-collared woodland caribou within the greater Red Lake MNR Administrative District has demonstrated avoidance of younger forests (such as recent burns) and a preference for adjacent muskeg or lowland spruce areas during travel or migration. Large lakes are an important part of spring migration routes, the ice apparently providing some measure of protection from wolves.
- Cows tend to have traditional calving sites and generally calve individually. These sites often consist of islands or peninsulas, including hummocks (*i.e.* raised "islands") in large peatland and muskeg areas where these outcrops perform a similar protective function as islands within lakes.
- The spring/fall migration distance for cows moving between winter habitat areas and calving areas may exceed 40 kilometers locally.

4. Information, Analysis and Findings

Throughout the planning process, from 2003 to 2006, the planning team reviewed available information and continued to gather new information about woodland caribou in general, and within the planning area specifically. The joint effort to collect and summarize this information was completed by Pikangikum First Nation and the Ontario Ministry of Natural Resources. The goal was to develop an understanding of woodland caribou use and needs in the vicinity of the Whitefeather Forest and Adjacent Areas. Woodland caribou biological information, current and historic distribution, movement patterns, and the availability of current and future habitat in the planning area were evaluated and summarized.

4.1 Information Sources:

This table lists caribou-related information relevant to the WFAA from all sources. This list is not a referenced database, but is provided to share with the reader the variety and extent of information considered during development of the Strategy. Requests for information source or references may be directed to the MNR Red Lake District office.

Table 1: Information Used

Activity	Year	Description of Information
Caribou Sightings	1993 - present	Includes reports from public to MNR offices, MNR staff sightings, and forest industry sightings of woodland caribou reported in the area. These sightings were actively solicited by MNR.
Fire History Data	1926-present	MNR records and maps of fires 100 ha or greater within the area.
Forest Resource Inventory (FRI)/Eco-site Data	2001 2003 (Raw data 2000)	The Ministry of Natural Resource completed FRI/Eco-site mapping for the Valhalla Adjacent Area. This work was completed in the year 2001. Whitefeather Forest FRI/Eco-sites data from 2003 were produced by Whitefeather Forest Management Corporation. This work covered the Whitefeather Forest, and the Crossland and Blondin Adjacent Areas. Photos interpreted were taken in the year 2000, These data were used to estimate capable(future potential) & suitable habitat (current condition), and woodland caribou habitat tract analysis (See Section 3.2 below under “Capable and Suitable Winter Habitat Mapping” and “Habitat Tract Mapping” for a methods description).
Satellite Imagery	Created: 2005 Raw Data: 2000	False colour infrared and true colour images were created from Landsat Thematic Mapper (Landsat TM) bands available from the GeoGratis website (Natural Resources Canada). The colour and apparent texture of these images allow the identification of young or old forests, hardwoods vs conifers, wet and rocky areas. Roads and other features are also visible.

Background Document: Woodland Caribou Conservation and the
Whitefeather Forest and Adjacent Areas Land Use Strategy, June 2006.

Activity	Year	Description of Information
Classified Satellite Imagery	<p>Landcover 28 – 1996</p> <p>Landcover 2000 - 2000</p>	<p>Landcover 28 is a mosaic of Landsat TM satellite images covering the province of Ontario which is also classified into 28 unique vegetation and water classes.</p> <p>Landcover 2000 is a similar classified mosaic covering all of Ontario and is also classified into unique vegetation classes.</p> <p>These data were used to determine the species composition (mature conifer forest vs young age classes), and to assist in the evaluation of habitat potential of the Paungassi and Little Grand Rapids traplines adjacent to the western edge of the Whitefeather Forest. They were also used for preliminary habitat evaluation of the Whitefeather Forest and Adjacent Areas prior to FRI completion.</p>
Caribou Habitat Classification	Caribou Habitat Extrapolation Created 2005 (raw data ~2000)	To prepare a rough estimate of caribou habitat for Woodland Caribou Provincial Park , Landsat 7 imagery was first classified. Then the classes were correlated with FRI-based habitat models found in one part of the image for the adjacent forest where FRI data were available. These values were then extrapolated to Woodland Caribou Provincial Park which does not have FRI information.
Pikangikum Indigenous Knowledge Documentation	<p>2002</p> <p>2004</p> <p>2006</p>	<p>The Whitefeather Forest Management Corporation conducted interviews with Pikangikum elders and senior trappers to document a range of natural and cultural values, including woodland caribou, in the Whitefeather Forest. Database of results shared with OMNR.</p> <p>Draft report on indigenous knowledge and science-based research conducted in cooperation with Dr. Micheline Manseau of the Natural Resources Institute and the University of Manitoba. The report describes Pikangikum First Nation Indigenous Knowledge of woodland caribou use in the Whitefeather Forest as well as information based on western science data.</p> <p>Draft final report on woodland caribou research, “Keeping Woodland Caribou on the Land”, with detailed discussion of indigenous knowledge results. The report is accompanied by a series of five maps depicting research results. The final report will include both indigenous knowledge research (included in the draft report) and a fuller discussion of the science-based habitat modelling work of Micheline Manseau.</p>
Little Grand Rapids Indigenous Knowledge Mapping	2003 - 2005	Little Grand Rapids First Nation provided values mapping to Woodland Caribou Provincial Park staff for traplines within Woodland Caribou Provincial Park and for the area west of the Whitefeather Forest and Adjacent

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Activity	Year	Description of Information
		Areas where the traplines are assigned to people from their First Nation.
Ontario Wolverine Project Report (unpublished)	2004	Documentation of wolverine distribution (2002 -2004) in the Red Lake District noted woodland caribou presence/activity information in the Whitefeather Forest and Adjacent Areas.
Calving Area Inventory Work – Woodland Caribou Provincial Park (WCPP)	2001-2003	Documentation of calving lakes and summer refuge areas within the park including the northeast corner adjacent to the WFAA.
Calving Island Documentation (1979, 1997) Species at Risk Project Report (2003)	1979 1997 2003	In spring/summer 1979 a two day site inspection of islands and points of land within Nungesser Lake was completed. Interviews with guides and fishermen on the lake were also conducted. All caribou sign was recorded and marked on a map. In summer 1997 the islands and peninsulas of Nungesser Lake were searched for woodland caribou sign such as scat, hair, tracks on beach, beds, and any remains. Overstory and understory vegetation, % lichen, blowdown, soil type, and any human disturbance of sites were recorded. Human activity on the lake was also noted. In 2003 MNR and Whitefeather Forest Management Corporation conducted an inventory of calving islands for selected lakes within the Whitefeather Forest and Adjacent Areas planning area. Evidence of caribou use on islands and peninsulas was assessed using the same techniques as previous surveys. Woodland caribou sightings, especially of cow/calf pairs, were documented, and a description of the habitat on islands was recorded.
Winter Aerial Inventory	Winter 1949 Winter 1950 Winter 1968 Winter 1981 Winter 1983 Winter 2002 Winter 2003	Olive Lake Area surveyed (within Valhalla Adjacent Area) Peisk Lake Area surveyed (within Valhalla Adjacent Area) Simkin (1968) aerial transect survey across Red Lake District. Aerial survey to assess expansion of WCPP with respect to caribou values. Aerial survey prior to regulation of WCPP. In winter of 2002 a two-phased survey of winter habitat was conducted for the area from the Manitoba/Ontario border to the boundary of the Red Lake and Sioux

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Activity	Year	Description of Information
	Winter 2006	<p>Lookout MNR administrative districts. The winter distribution of woodland caribou across the planning area was first assessed by flying transects with fixed-wing aircraft. A more intensive survey was then conducted in areas that showed high densities of woodland caribou. This second evaluation was conducted in the winters of 2002 and 2003 by helicopter with the objective of assessing woodland caribou population size, and composition (age, sex).</p> <p>The area from the Manitoba/Ontario border to the boundary of the Red Lake and Sioux Lookout MNR administrative districts was covered again. Five kilometre transects were surveyed during fixed-winged flights. These flights were followed by intensive helicopter-based surveys of identified caribou concentration areas within the Whitefeather Forest and Adjacent Areas.</p>
Radio Collaring Studies for Woodland Caribou	1995, 1997	<p>This study was targeted at the Trout Lake and Red Lake Forests which are located within the Area of the Undertaking. In 1995, 3 female caribou were collared with the objective of assessing wintering areas and habitat use by females including calving areas. In 1997 an animal (a bull no. 1616) was collared within the Red Lake Forest. This animal utilised habitat within the Whitefeather Forest and Adjacent Areas and as such provided information about caribou use of the planning area. Due to its close proximity to the Whitefeather Forest and Adjacent Areas, other findings from this study were also of relevance to Strategy development.</p>
Red Lake District Wintering Habitat Potential	1991	<p>This was a mapping project to describe potential wintering areas for caribou within the entire Red Lake District south of the 11th baseline. As such, the southern portion of the Whitefeather Forest and Adjacent Areas Planning Area was included. Information incorporated included soils, forest resource inventory, disturbances (e.g. blowdown, fire), and aerial photography. The resulting layers were then used to describe potential wintering areas for woodland caribou and to plan caribou habitat mosaics.</p>
<p>West Patricia Land Use Plan (WPLUP) Woodland Caribou Report (George Hamilton, August 1979)</p> <p>WPLUP density map</p>	1979	<p>This inventory assessed the winter distribution of caribou within the West Patricia Planning Area in support of the West Patricia Land Use Planning process. Transect surveys across the entire planning area were conducted to establish caribou range divisions and a relative density map. Areas were categorized as having high, medium, or low caribou density. More intensive survey work was then conducted in some selected wintering areas.</p>

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Activity	Year	Description of Information
Caribou Hunter Interviews	1958-1965	The Department of Lands and Forests had First Nation trappers fill out a survey which reported caribou hunting success on their traplines. This information was then used to assess relative abundance and biological data for both the west and central Patricia areas.
Historical trapline records that identified caribou abundance	1951 - 1953	Trapline interviews were conducted to assess caribou abundance and were then compared with district inventory work. A 1951 relative abundance map showing caribou/mile ² was then prepared.
Distribution and Abundance Map – Historical Survey Data	1951 (pre)	<p>This map was based on transect surveys designed to assess the relative abundance of caribou within the MNR Red Lake and Sioux Lookout Districts. Information from trapline reports was also utilized to produce this map.</p> <p>The comments of D. Simkin – <i>Preliminary Report on Woodland Caribou in Ontario</i> Sept 1965 are worthy of note. He indicated that until 1956 few systematic surveys over large areas had been conducted in Ontario. As such, although deVos and Peterson (1951) had reviewed and summarized the available data references to caribou numbers and distribution in Ontario to 1951, due to a lack of survey information the summary may not have been accurate or complete, although it was the best available at the time.</p>

4.2 Analysis and Findings

Analysis of information, both qualitative and by use of analytical tools where feasible, helped the planning team understand the role of the Whitefeather Forest and Adjacent Areas in providing long-term caribou habitat. The analysis and findings are organized in two parts:

- A. Description of the conservation planning tools used and the resulting maps of suitable and capable winter habitat, and habitat tract mapping.
- B. A broad discussion of geographical areas presently supporting caribou within the Whitefeather Forest and Adjacent Areas.

A) Conservation Planning Tools:

Suitable and Capable Winter Habitat Mapping

Estimated suitable (presently available) and capable (future potential) winter habitat maps were produced for the Whitefeather Forest and Adjacent Areas to provide insight into present and future woodland caribou winter habitat availability. Forest Resource Inventory (FRI) and ecosite information were the primary data source. The FRI consists of polygons that contain specific information about tree cover and vegetative communities. Polygons were attributed with ecosite information generated from photointerpretation, which includes additional information about estimated soil types and broad classes of vegetative cover.

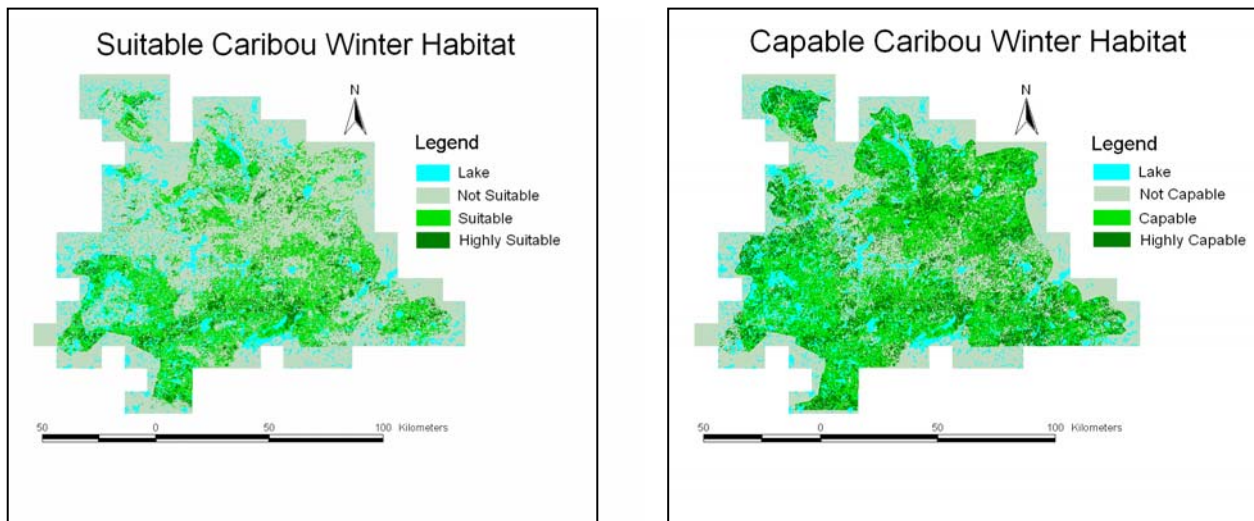


Figure 1: Present (suitable) and potential (capable) caribou habitat for the WFA

Suitable caribou winter habitat was mapped for the Whitefeather Forest and Adjacent Areas according to the methodology outlined in the *Forest Management Guidelines for the Conservation of Woodland Caribou: A Landscape Approach* (Racey et al. 1999). This approach applies an expert model habitat matrix to the forest resource inventory (FRI). Values of 0, 1, or 2 are assigned to each polygon based on the ecosite and age of the polygon, where 0 indicates not used (not suitable), 1 indicates used (suitable) and 2 indicates preferred (highly suitable) use.

Capable caribou winter habitat was also mapped on the Whitefeather Forest and Adjacent Areas. Capable winter habitat is any polygon that may become suitable winter habitat should it eventually become old enough (without burning or timber harvest). Values of 0, 1, or 2 are assigned to each polygon based on the ecosite irrespective of age. 0 indicates the area is not able to become suitable (not capable), 1 indicates an area that either is, or could eventually be, suitable (capable), and 2 indicates an area that is, or could eventually become preferred (highly capable).

This is comparable to the technique used to map suitable and capable caribou habitat in the province's forest management planning process. Where it is available, occurrence data of caribou winter use tend to match quite well with the suitability model. Although the model hasn't been tested directly, recent empirical studies provide results quite similar to this matrix and lend confidence in its use.

This preliminary use of habitat modeling for woodland caribou helped confirm the presence of substantial, relatively evenly distributed capable and suitable habitat within the Whitefeather Forest and Adjacent Areas. This knowledge about habitat distribution for woodland caribou within the planning area was used by the planning team to assist with determining area dedications.

Habitat Tract Mapping

By delineating habitat tracts, a clearer picture of forest harvest opportunities emerges. Habitat tract mapping allowed the planning team to contemplate potential harvesting scenarios using a mosaic approach, as currently used in the Area of the Undertaking. The mosaic approach is used to design forest harvesting strategies that will provide a continuous supply of large useable patches of winter habitat for caribou. The findings of habitat mapping suggest that sufficient suitable caribou habitat can be maintained within a managed forest scenario on the WFAA landbase.

B) Whitefeather Forest Geographical Areas Description

The planning team set out to describe current and past use of the Whitefeather Forest and Adjacent Areas Planning Area by woodland caribou. Both Indigenous Knowledge and western science were used. Collection of new data on woodland caribou winter distribution and movement patterns was also completed. Current information and historical records were used to identify areas where caribou displayed some measure of fidelity over the past 50 years. This information was then compared with current FRI/Eco-site data to identify and project areas of preferred winter habitat.

What follows is a discussion of geographic areas in the WFAA as they support woodland caribou. The planning team considered this as one of many layers of information as they designed the final land use areas. Therefore, the geographic areas listed here do not necessarily directly correspond to final land use areas. The main Strategy document describes the final land use areas.

Valhalla Adjacent Area

The Valhalla Adjacent Area contains sections that are heavily used by woodland caribou as winter habitat, and areas that are used for calving. This area has been intensively surveyed with aerial flights occurring in every decade since the 1950s. All of these surveys have revealed areas

of heavily used woodland caribou winter habitat. Change has been documented as some historical data show heavy use in the southern portion near Peisk Lake, which no longer occurs. That section (approximately 60 000 ha) burned in 1986, greatly decreasing its value as winter habitat. Survey information suggests that woodland caribou have shown a high degree of fidelity for some of the remaining winter habitat sections within this area. Taking a broader perspective, the Valhalla Adjacent Area is part of a large contiguous wintering habitat section that extends westward to Larus and Sabourin Lakes in Woodland Caribou Provincial Park, and northwards to Roderick Lake in the Lake Country dedicated protected area.

Survey results from the 2002 winter habitat survey show heavily used winter habitat areas east of Big Shell Lake (115 caribou in 15 000 ha), in the Odin Lake Area (80 caribou in 20 000 ha), and in the Valhalla Lake Area (27 caribou in 21 000 ha). The area east of the Big Shell Lake and the Odin Lake area had the first and second highest woodland caribou densities observed during the 2002 winter survey respectively. The minimum population estimate from the 2002 winter survey for this area was 212 animals, a figure that is comparable to the estimate of 192 animals recorded in the West Patricia Land Use Plan survey of March 1979 and 255 animals in the 2006 winter survey.

Calving areas have been identified on Odin Lake, George Lake, Wagin Lake, Trough Lake, and within the Trough Lake Peat Land. Although these calving sites occur within the Valhalla Adjacent Area, movement of caribou to calving sites outside of this area does occur. Specifically, caribou movement northwards to calving sites in the Cairns/Roderick Lake Complex of the Lake Country have been suggested by 2002 aerial survey information. Spring movement of woodland caribou from the Valhalla Adjacent Area to calving areas in Trout Lake, and Nungesser Lake have been documented during the spring and fall through: direct sightings of animal movement across the Nungesser road, aerial observation of caribou moving across Little Vermillion Lake and congregating on Trout Lake, and through annual reports by tourist operators on Nungesser Lake describing single file movement of caribou out on the lake in April (over the ice). Finally, movement of woodland caribou from the Valhalla Area southeastwards to Hammel Lake have been recorded by MNR staff, and substantiated through tracking of a radio-collared animal in 1997.

The Lake Country

Areas of winter habitat use, summer habitat use, calving sites, and travel corridors have all been observed in the Lake Country. Mapping of winter habitat for the entire Lake Country is available from the 1951 survey which reported high density use, the 1978 WPLUP survey that reported low density use, and the 2002 and 2006 aerial surveys which noted the occurrence of woodland caribou in mature coniferous forests throughout the area. The low densities observed in the 1978 survey may have been related to transect widths that could have missed key areas. Various large fires have occurred in the Lake Country with specific events in 1935, 1983, and 1995. Some of these fires may have contributed to the lower densities observed in 1978 as well. Although this area has not been as heavily surveyed as the Valhalla Adjacent Area (mentioned above), several locations have been determined as important to woodland caribou.

Heavily used winter habitat areas include McCusker Lake, Roderick Lake, and Donaldson Lake. Cairns Lake, Roderick Lake, Keeper Lake, and McCusker Lake all have documented summer habitat and calving sites. Finally, Indigenous Knowledge values mapping from Little Grand Rapids First Nation shows summer use and various travel corridors within the Lake Country.

Silcox and Mamakwash Lake Area

Use of this area by woodland caribou has remained significant over the past 50 years. Four surveys of winter habitat use have occurred during this time with populations recorded as being of medium density in 1979 to abundant in 1951, 2002, and 2006. Radio collaring data from 1997 also shows use of this area. During the 2002 winter survey, caribou tracks to the north, in the Conover Lake area which is just outside of the Whitefeather Planning Area, were also observed. Summer use of the Mamakwash Lake Area has been reported and it is expected that calving takes place on islands in this lake.

Seasonal movements to and from this area are not well understood. Nungesser Lake has many calving sites and is located to the south through connected mature forest. The distance between the Silcox and Mamakwash Lake Area and Nungesser Lake is within the average spring/fall travel distance (recognized locally as approximately 40 kilometers) for cows moving between winter and calving habitats. Although Mamakwash Lake also has calving areas, the proximity of Nungesser Lake, together with its connection to the area through mature forest allows speculation that movement of woodland caribou between the two sites may occur.

McInnis and Old Shoe Lake Area,

Before a series of fires that occurred between 1976 and 1996, the area east of McInnis Lake area was reported to have important wintering habitat for woodland caribou. Since that time however, surveys of winter habitat have indicated low density in 1979, and low to moderate density in 2002. Given its history of heavy use before the fires, this area could emerge as an important area of winter habitat for woodland caribou again in the future, given an appropriate space of time.

On the west side of McInnis Lake mature timber is prevalent. The aerial survey data of 2002 found wintering caribou in this area. The aerial survey of 2006 found tracks which also confirmed winter use by woodland caribou in this area. Finally, this area was modeled as having suitable winter habitat through FRI/Ecosite based winter habitat mapping.

The Old Shoe Lake Area was identified as having utilized woodland caribou winter habitat through 2002 and 2006 aerial surveys.

Sampson Lake

Indigenous Knowledge of calving on muskeg islands is reported in the Sampson Lake area. Mapping data from 1951 showed winter use of the southern edge of the Sampson Lake area, however, this area burned in 1988. The 2002 aerial winter survey showed no wintering activity within the burned area.

Blondin and Crossland Adjacent Areas

Both the Blondin and Crossland Adjacent Areas contain woodland caribou winter habitat. Woodland caribou use of the Blondin Adjacent Area was observed during the 2002 winter aerial survey, in an area north of Birch Lake (Birch Lake is located within the Trout Lake Forest). Finally, periodic sightings of caribou have been recorded throughout the Crossland Adjacent Area with summer use of Crossland Lake being reported by a local tourist operator.

Other Areas Information:

- Nungesser Lake has documented calving areas.
- The Stout Lake Area has been reported as a summer calving area through documentation of Indigenous Knowledge.
- Woodland Caribou Provincial Park, which borders the Whitefeather Forest and Adjacent Areas Planning Area, has had high woodland caribou densities over the past 50 years.
- Information on woodland caribou calving areas was particularly important for identification of protected areas. Known or suspected calving areas have already been noted above in the area descriptions: a summary list is provided here:
 - Valhalla Area: Odin Lake, George Lake, Wagin Lake, Trough Lake, and within the Trough Lake Peat Land (Species at risk Project Report (2003));
 - Lake Country: Cairns Lake, Roderick Lake, Keeper Lake, and McCusker Lake (Species at risk Project Report (2003) and Pikangikum IK (2003-2005));
 - Mamakwash Lake (Caribou Sightings (1987-present))
 - Stout Lake (Pikangikum IK)
 - Nungesser Lake (Calving Island Documentation (1979, 1997), and Caribou Sightings (1993-present))
 - Sampson Lake Area (Pikangikum Indigenous Knowledge Documentation (2004))

5. *Input and Advice to the Planning Team*

The WFAA planning team invited input and advice on woodland caribou conservation throughout the process, and in a variety of defined opportunities (See Box below). The team encouraged sharing of views between First Nations, MNR policy and science specialists, environmental group representatives, and academic researchers.

The following section highlights input and advice provided. The planning team heard that it is important to be aware of possible threats to woodland caribou conservation as land uses and areas are considered, noting that the cumulative effects of threats could be of larger significance than any one factor considered alone.

Key advisory messages on threats and management direction included the following:

- Acknowledge that it will require a concerted effort and long-term commitment to keep woodland caribou on the landscape. Woodland caribou populations are extremely sensitive to many anthropogenic activities and influences.
- Learn from experiences that have occurred within the Area of the Undertaking regarding woodland caribou conservation and continue to employ an adaptive management approach.
- Think large scale and long-term to manage landscapes for woodland caribou.
- Recognize that protected areas will not be big enough on their own to maintain viable populations: ecologically-sound habitat management must be present across the entire landscape. Design protected area boundaries to accommodate natural and prescribed wildfire patterns supporting the use of fire in habitat management. In larger protected areas, include areas of suitable (presently available) winter habitat and numerous patches of capable (future potential) winter habitat.
- Ensure a continuous supply of caribou habitat at appropriate spatial scales and age classes, and ensure connectivity of appropriate habitat.

Selected Opportunities for Providing Advice to the Planning Team about Woodland Caribou Conservation

Caribou Workshops

The Ontario Ministry of Natural Resources and Pikangikum First Nation hosted two workshops in Thunder Bay; one on November 22nd and 23rd 2004, and one on November 22, 2005. These events were attended by over 20 participants including both researchers and practitioners from government, environmental non-government organizations, and universities.

Protected Areas Working Group (PAWG) meetings

These meetings included members of the MNR, environmental groups, and First Nations. Although the main purpose of these meetings was to discuss protected area development within the Northern Boreal Initiative area, much advice regarding woodland caribou conservation was provided and discussed.

Open Houses

Open houses were held on June 4 and 5 2003, June 15 and 16, 2004, and November 2 and 3, 2005 to discuss the Strategy with the general public. Specifics including background information, strategic direction, and planning principles were broadly shared at these meetings. Comments received during or as a result of, these open houses were considered during development of the Strategy.

EBR Postings and Other Comments

Input provided as a result of Environmental Registry postings was considered during development of the Strategy. Also, concerns voiced through other written submissions were considered.

- Avoid fragmentation or reduction in size of winter habitat tracts; both can be detrimental to woodland caribou survival.
- Establish a wide buffer around highly capable caribou habitat to decrease the impact of roads, forestry activities, and other developments on both present and future habitats.
- Reduce the need for, and strategically plan required primary roads and access corridors for utilities to avoid and reduce negative effects on woodland caribou populations (i.e. reduce fragmentation, avoid woodland caribou wintering habitat and calving areas, minimize roads).
- Recognize that predation is often considered the primary limiting factor for woodland caribou populations. Predation rates may be influenced by forest habitat alterations (habitat fragmentation) because these may increase the abundance of other ungulate species and their associated predators and diseases. The introduction of parasites, such as the meningeal worm of white-tailed deer, can reduce woodland caribou populations. Roads may directly facilitate travel by wolves (the main predator of woodland caribou) into caribou habitat and contribute to increased predator efficiency.
- Where secondary or tertiary roads are required, promote active decommissioning and limit access to regenerating areas except where required to achieve regeneration objectives.
- Develop direction for the regeneration of forested areas to provide suitable future woodland caribou habitat. Describe the desired future forest conditions, monitor success of silvicultural methods, and adapt accordingly.
- Acknowledge that management strategies will have a level of uncertainty associated with their success, requiring monitoring and use of an adaptive management approach. Some cautions noted with respect to strategies recommended in the Draft Strategy are:
 - A silviculture strategy of prescribed burning has some uncertainties associated with it and may require ongoing refinement of practices and research to ensure successful results. A comprehensive silviculture strategy will be required to ensure that the forest condition and structure which will sustain caribou is produced through management.
 - Re-establishment of the old, lichen rich conifer stands that are important as winter habitat for woodland caribou will require careful planning and implementation.
 - Access strategies (including the restriction of human access to areas following completion of forest harvesting or other commercial use) can be difficult to implement but may be very important from a caribou conservation perspective, especially if social pressures develop to keep these roads open or available for other purposes. Road networks that are not decommissioned after operations have been completed could contribute to fragmentation, continuing human disturbance, and enhanced predator access in prospective future woodland caribou habitat.
 - There are limitations to the ability of models to accurately predict future suitable winter habitat for woodland caribou.
 - There is a time lag, possibly of more than 30 years, between the initial human impact on woodland caribou habitat, and the subsequent loss of the population. This time lag can make assessment of the success of management practices for conservation of woodland caribou challenging.
 - A zone of disturbance can extend several kilometers from actual disturbances, thus buffering should be considered as disturbances are planned.

- Encourage Pikangikum / OMNR collaboration on the continued development of successful management and conservation approaches for woodland caribou.
- Consider that other environmental factors, including climate change, may influence woodland caribou populations. For instance, changes in the frequency and severity of forest fire may reduce the availability of the old, lichen-rich coniferous forest that woodland caribou rely upon for winter habitat. Climate change may also present conditions which allow white-tailed deer to expand northward, with resulting implications for moose, caribou and wolves.

6. Putting it all together: Development of Land Use Designations and Strategic Direction

The Strategy provides considerable direction to sustain and support woodland caribou. Some highlights of this direction are provided below.

During preparation of the Strategy, the planning team carefully considered all the available information, Indigenous Knowledge, advice, and cautions. Woodland caribou information was applied in basically two ways:

- 1) Land use areas were initially defined through consideration of objectives and desired opportunities as they best fit with land and resource capabilities. Woodland caribou habitat and use information was considered as a value, or informing layer that influenced scenario development by the team. For example, knowledge of caribou calving areas could result in an adjustment to a recommended dedicated protected area boundary to include this value.
- 2) Woodland caribou habitat and use information, plus the advice and knowledge of caribou needs supported the planning team's assessment of the manner in which proposed land use areas would support the needs of woodland caribou.

Recognizing that protected areas could not be big enough on their own to maintain viable populations, the team attempted find a balance of strategically-placed protected areas with other land use areas, and to provide direction for ecologically-sound habitat management across the entire landscape. Assessment of the adequacy of this direction was provided by Pikangikum, through views founded upon Indigenous Knowledge, and by MNR, through views of science advisors, supported by experience and the results of conservation planning tools.

As a result, the planning team considers that the WFAA Land Use Strategy recognizes and supports the needs of woodland caribou conservation and recovery by:

- ✚ Providing a vision of Keeping the Land and ecosystem sustainability
- ✚ Describing a broad objective to sustain the biological diversity and abundance of the Whitefeather Forest and Adjacent Areas.
- ✚ Describing a specific objective to contribute to the needs of species at risk
- ✚ Recognizing that the entire Whitefeather Forest and Adjacent Areas is woodland caribou habitat, as is all the surrounding boreal forest, and that such habitat for woodland caribou always has, and always will, change over time.

- ✦ Committing to continue harmonizing Pikangikum First Nation Indigenous Knowledge with western science ecological knowledge through partnerships, research, planning, management and monitoring of success.
- ✦ Providing guiding direction for resource management to ensure a continuous supply of caribou habitat, emulate a landscape-scale natural disturbance pattern, protect calving areas, strategically plan access, and provide direction and monitor success of regeneration to suitable habitat, all within an adaptive management framework.
- ✦ Providing for conservation of high use wintering habitat areas to be managed through application of a deferral of harvesting to retain caribou occupancy of the area until suitable habitat is available nearby.
- ✦ Describing a specific objective to retain remoteness which is complementary to sustaining woodland caribou by minimizing fragmentation, buffering activity effects, contributing to the continuous supply of habitat and maintaining a natural disturbance regime. Remoteness is achieved through strategies such as designation of protected areas, designation of development areas where existing access is available and best capabilities exist, minimizing development of secondary and tertiary roads in enhanced management areas and rehabilitating some roads back into forest cover after harvesting.
- ✦ Recommending the use of a strategic access approach before development activities commence, considering objectives achievement, synergies, and long-term interests.
- ✦ Designing Dedicated Protected Areas for approximately 35% of the planning area that include most of the known calving sites in the WFAA; providing several larger protected areas that contain both suitable and capable habitat; using natural boundaries conducive to maintaining natural fire patterns; and providing a gradient of use between protected areas and industrial land use activities.
- ✦ Contributing to landscape scale protection, resulting in an approximately one million hectares of regulated protected areas on the west side of the Whitefeather Forest (Woodland Caribou Provincial Park, the Lake Country proposed Dedicated Protected Area and Manitoba's Atikaki Provincial Park).
- ✦ Recommending the use of an adaptive management approach, including learning from the existing experiences elsewhere, and moving forward to carefully monitor the success of new activities and modify management directions accordingly.
- ✦ Encouraging the establishment of eco-cultural tourism opportunities throughout the landbase. Such activities could promote awareness of woodland caribou conservation practices, and communicate them to the public through direct contact with First Nation people who are intimately familiar with both the species, and with the management practices in use within the Whitefeather Forest and Adjacent Areas.

In conclusion, the Strategy expresses a joint commitment, by Pikangikum First Nation and MNR, to the conservation of woodland caribou through its objectives to sustain biodiversity and meet the needs of species at risk. The Strategy allows for the application of existing policy and acknowledges higher level management direction that will guide future decisions for specific land use activities. These activities will include conservation measures to provide effective protection for caribou habitat during forest management.

The land use strategy direction for commercial forestry allows for the conservation of woodland caribou through its commitment to maintaining forest cover and composition of the areas with its

diversity and abundance sustained over time with a desired outcome of healthy, self-sustaining fish and wildlife populations the special needs of species at risk. This strategic direction will be carried forward in resource management planning, environmental assessment, and consideration of development applications.

While the Strategy will be a strong contributor to conservation achievements, woodland caribou conservation is addressed at a broad landscape scale, and direction and management action to achieve this must ultimately be provided through from many sources, including species at risk recovery plans (recovery strategies and subsequent action plans), science, research and information projects, wildlife management policy, resource management planning, and habitat management guidance. The land use strategy is designed to acknowledge and complement these efforts and to create an opportunity to collaboratively develop and implement new efforts in caribou conservation while also providing for sustainable land and resource use opportunities.

7. Select References:

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