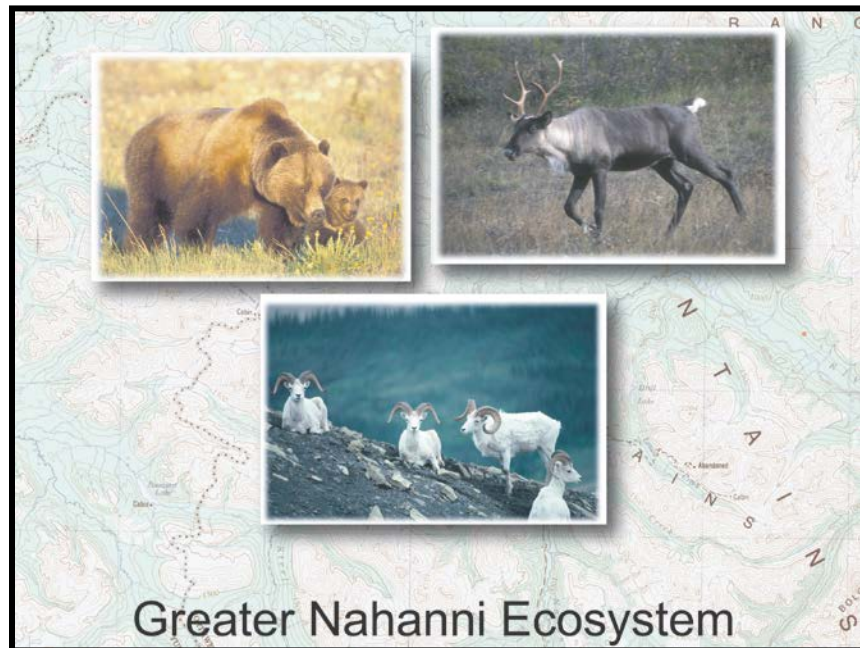


## Sahtu Conservation Zones

Around Nááts'ihch'oh National Park Reserve:

A Scientific and Conservation Commentary



**WILDLIFE CONSERVATION SOCIETY CANADA**

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**June 16, 2015**

## **Introduction**

During 2002-2006, Dr. John Weaver, Senior Scientist for Wildlife Conservation Society Canada, conducted field research on grizzly bear, Dall's sheep, and woodland caribou throughout the South Nahanni River watershed -- including the headwaters area known as *Nááts'ihch'oh*. The purpose of the studies was to inform decisions about new boundaries for Nahanni National Park Reserve which was too small and too far for such wide-ranging and vulnerable animals.

In 2006, Dr. Weaver published the WCS Canada *Conservation Report Big Animals and Small Parks: Implications of Wildlife Distribution and Movements for Expansion of Nahanni National Park Reserve*. This scientific report provided much pertinent data for these species throughout the South Nahanni River watershed. The detailed information served as the basis for the recommendation to protect the entire watershed.

In June 2009, the Government of Canada announced a massive expansion of Nahanni National Park Reserve to 30,000 km<sup>2</sup> in the traditional territory of the Dehcho First Nations portion (lower 80%) of the South Nahanni watershed.

Subsequently, in April 2010, we provided more detailed maps for these species in our submission to Parks Canada on the proposed boundaries of Nááts'ihch'oh National Park Reserve (NANPR). In August 2012, the Government of Canada announced the establishment of Nááts'ihch'oh National Park Reserve in the headwaters of the South Nahanni River watershed in the traditional territory of the Sahtu Dene and Métis. Unfortunately, the boundaries of NANPR left out several areas that are critical to the South Nahanni caribou herd and other key areas for grizzly bears and Dall's sheep. The Sahtu Land Use Plan (finalized on August 8, 2013) retained its earlier designation of the areas excluded from the new Park Reserve (Zone 41) as a *Proposed Conservation Initiative* (PCI) because the final boundary had not been legislated. The Plan recognized the outstanding value of these excluded areas for ecosystem integrity, populations and seasonal ranges/habitat of large wildlife (e.g., caribou), and watershed protection for the headwaters of the South Nahanni River watershed. Following some small adjustments (20 km<sup>2</sup>) in the initial boundary, the Government of Canada legislated the final boundaries for Nááts'ihch'oh National Park Reserve in December 2014. Now, the Sahtu Land Use Planning Board (SLUPB) is considering re-zoning options for the remaining 2,702 square kilometres that were not included in the Nááts'ihch'oh National Park Reserve.

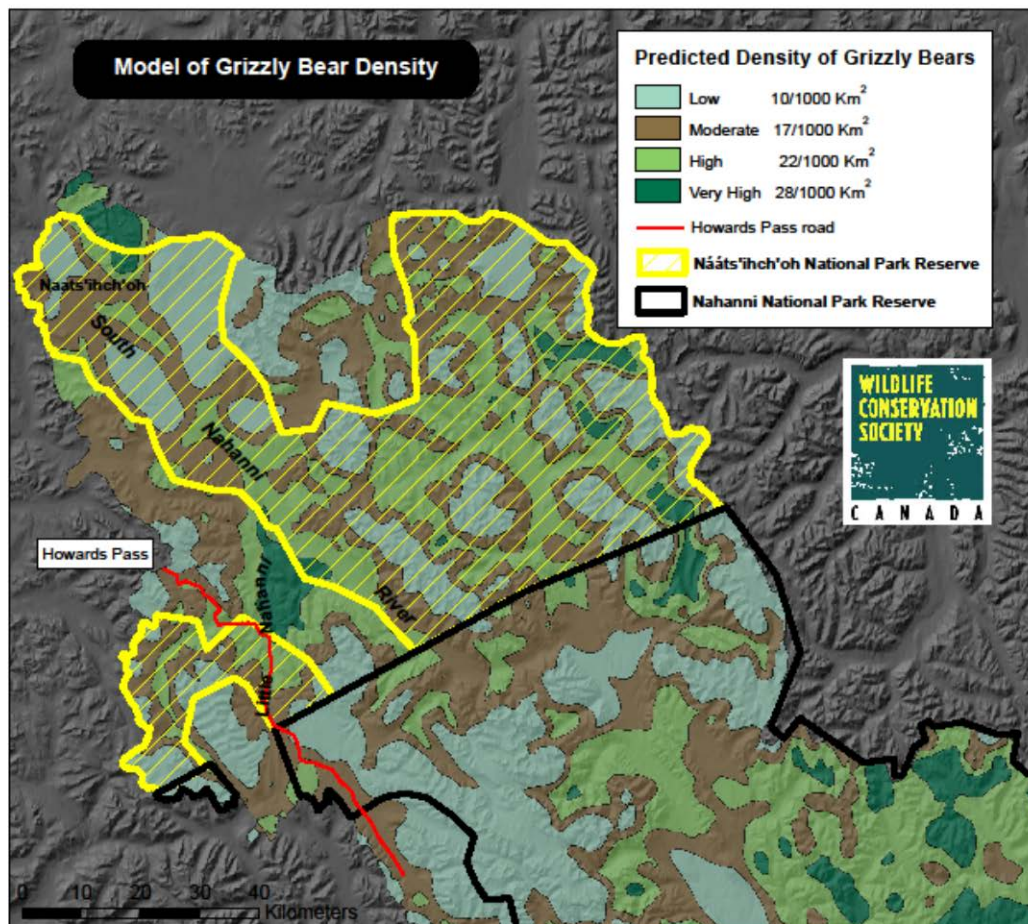
In this document, we present key findings from field studies conducted by Dr. Weaver on grizzly bear, Dall's sheep, and woodland caribou (Weaver 2006), as well as other caribou locations (2008-2010, kindly provided by Dr. Troy Hegel, Yukon Department of Environment). We map and describe important areas for these wildlife species in the Nahanni headwaters or Nááts'ihch'oh, with special attention to the Little Nahanni River sector in the southwest portion of the region.

Specifically, we highlight several key areas excluded from the final boundary of Nááts'ihch'oh National Park Reserve: (1) Howard's Pass on the Yukon border, (2) Lened Ridges and Plateau east of the Little Nahanni River, and Mac Creek Plateau west of the Little Nahanni River. For discussion purposes, we depict key wildlife areas and locations on a base map which shows areas excluded from the new Park. (Maps for these species in reports by Haas and Wilson [2012] and the Sahtu Land Use Planning Board

[2015] were reproduced or developed from our original reports and data.) Please note on these maps the location of the Howards Pass route relative to the key areas for these wildlife, especially caribou and grizzly bear. These data were collected during a period when the route was an ATV-type trail, which received little use by humans except occasionally during hunting season. Upgrading of the route to a gravel haul road began in 2011 and continues today.

## **Grizzly Bear**

The model of grizzly bear density indicates that grizzly bears occur in varying density across the Nááts'ihch'oh region (Figure 1, Map 6 in SLUPB 2015). Areas of moderate to very high density contribute importantly (>20%) toward supporting the conservation goal for grizzly bears in the Greater Nahanni Ecosystem (Weaver 2006). One notable area of very high density centers on the Little Nahanni River near the confluence of Steel and South Lened Creek tributaries (Figure 1). During the 2004 grizzly bear survey, we detected grizzly bears at 6 of 7 survey stations between Howard's Pass and the Little Nahanni River, including all 3 stations along the Howard's Pass route. Due to the particular confluence of numerous stream valleys there, grizzly bears seem to funnel through this 'hub' area of the Little Nahanni.

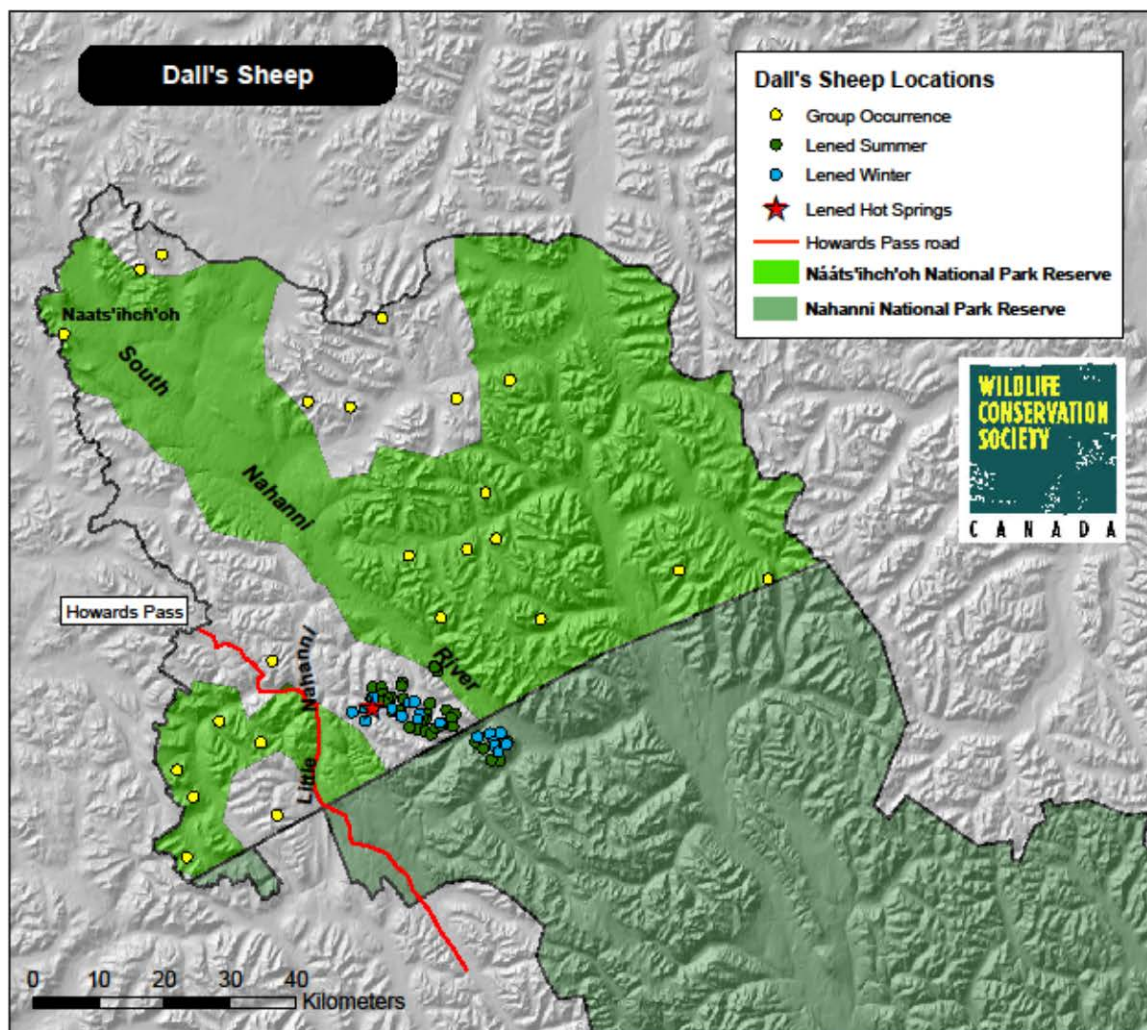


**Figure 1.** Model map of grizzly bear density in the Nááts'ihch'oh region based upon extensive sampling across the Greater Nahanni Ecosystem (from Weaver 2006).



## Dall's Sheep

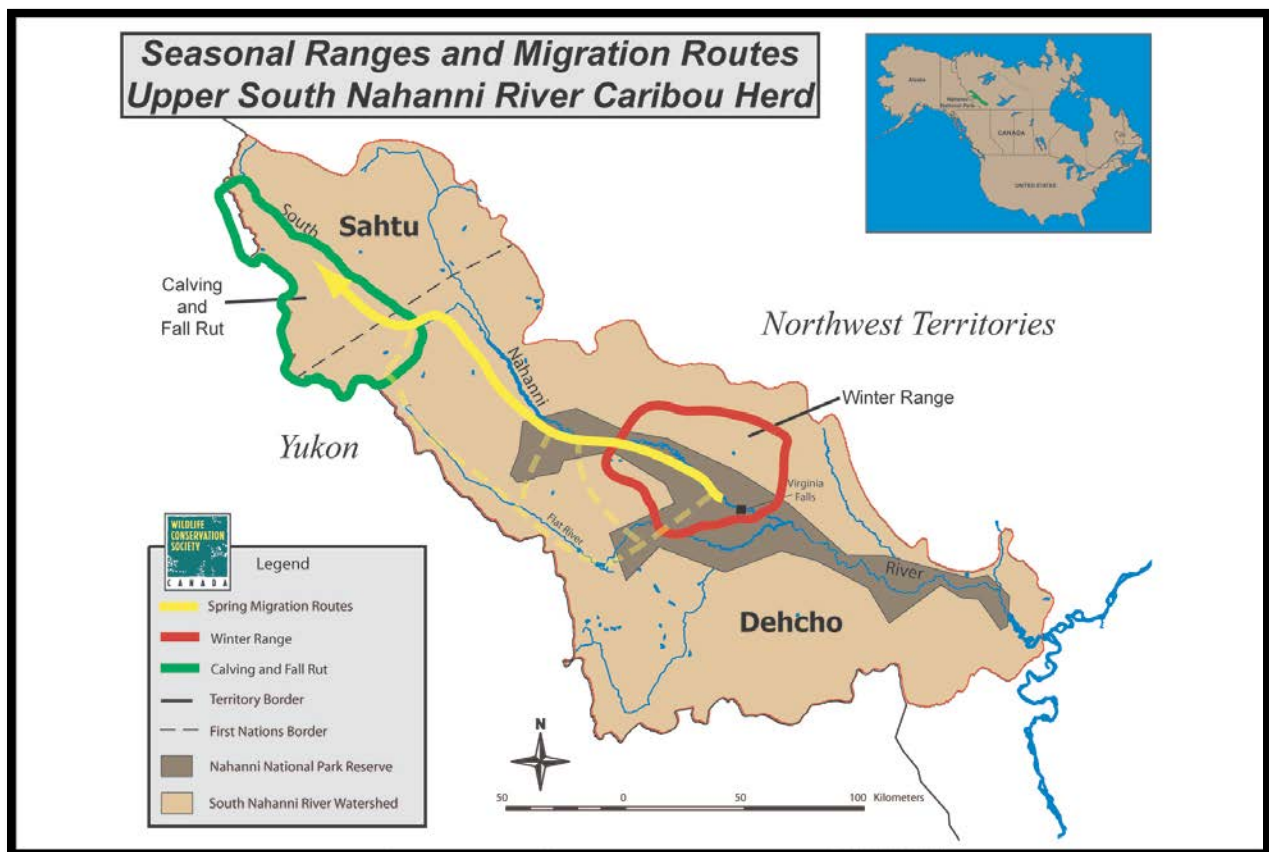
Dall's sheep occur in scattered groups across the Nááts'ihch'oh region, including the Little Nahanni River area (Simmons 1982, Weaver 2006) (Figure 2, Map 5 in SLUPB 2015). Known groups occupy the Lened Ridges and the northeast end of Bologna Ridge to the south (Envirocon 1980). Here, sheep have been observed during both summer (lambing period) and winter. Some of these sheep exhibit the unique Fannin pelage color (plate 7-1 in Envirocon 1980). Notably, most of the sheep on Lened Ridge localized their activities near the Lened hot springs and made heavy use of that mineral lick during summer (Envirocon 1980). Mineral licks strongly influence the focal centers and movements of Dall's sheep ewes/lambs during summer in Alaska and Canada (reviewed by Nichols and Bunnell 1999), including the Mackenzie Mountains (Simmons 1982).



**Figure 2.** Occurrence of Dall's sheep across the Nááts'ihch'oh region and seasonal occurrence in the Lened area.

## Woodland Caribou

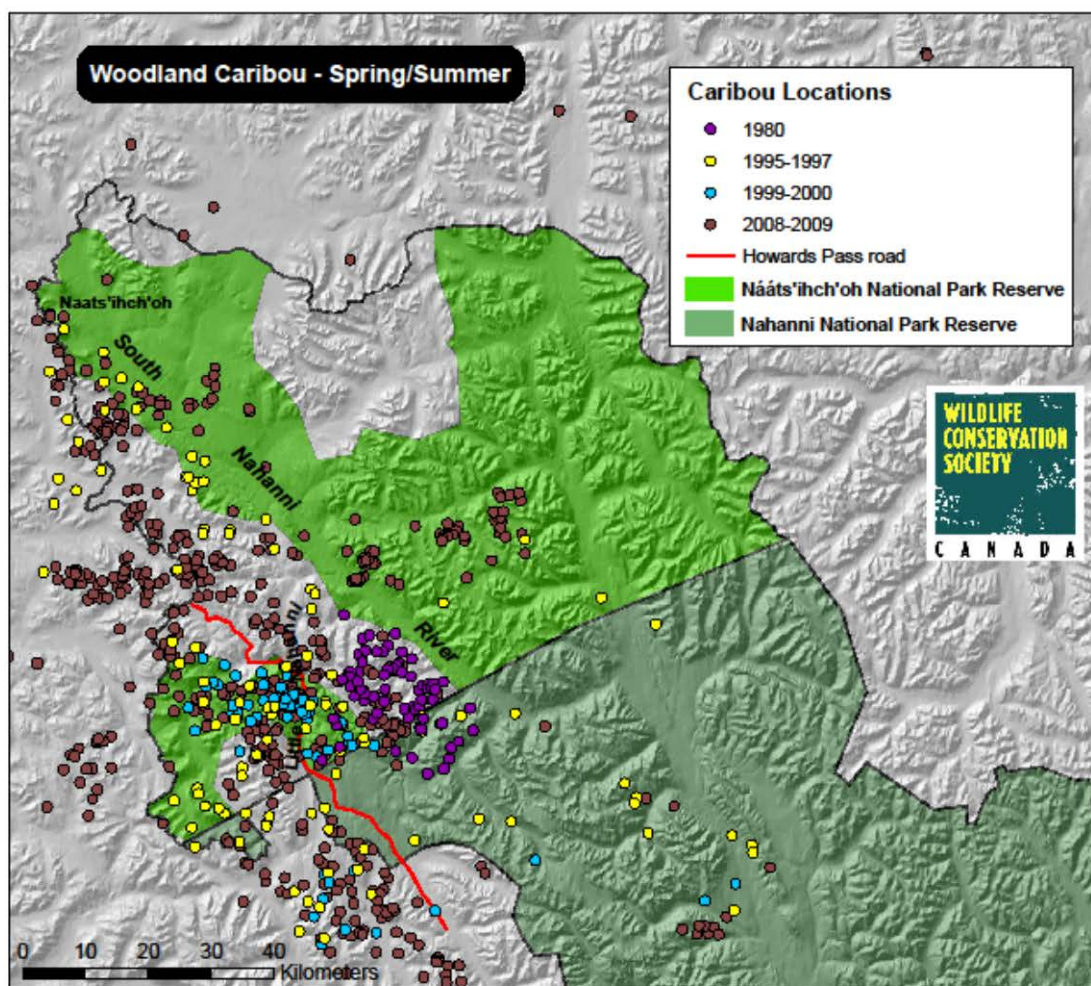
The headwaters region (Nááts'ihch'oh) of the South Nahanni provides the crucial calving and breeding grounds for the upper South Nahanni herd that spends the winter in the area above famed Virginia Falls (Figure 3). This herd is part of the Northern Mountain caribou unit recently assessed by COSEWIC as *Special Concern* (2014). In spring (April-May), most of the herd migrates northwest up the South Nahanni River valley. Near the border of the Sahtu area, many caribou turn west up toward the Little Nahanni River. Other caribou continue northwest along the main South Nahanni River almost to the very headwaters near Nááts'ihch'oh (Mount Wilson). In early October, caribou carry out breeding (rut) in the headwaters of the Little Nahanni River. Afterwards, they begin their trek back south to the wintering areas near Virginia Falls. The round-trip distances (280-480 km) rival the longest reported for woodland caribou (Weaver 2008). Thus, the Nááts'ihch'oh region is an integral component of the annual range and population ecology of the South Nahanni caribou herd.



**Figure 3.** Seasonal ranges and likely migration route of the upper South Nahanni caribou herd that winters above Virginia Falls and migrates to the Nahanni headwaters (Nááts'ihch'oh) for calving, rearing and breeding.

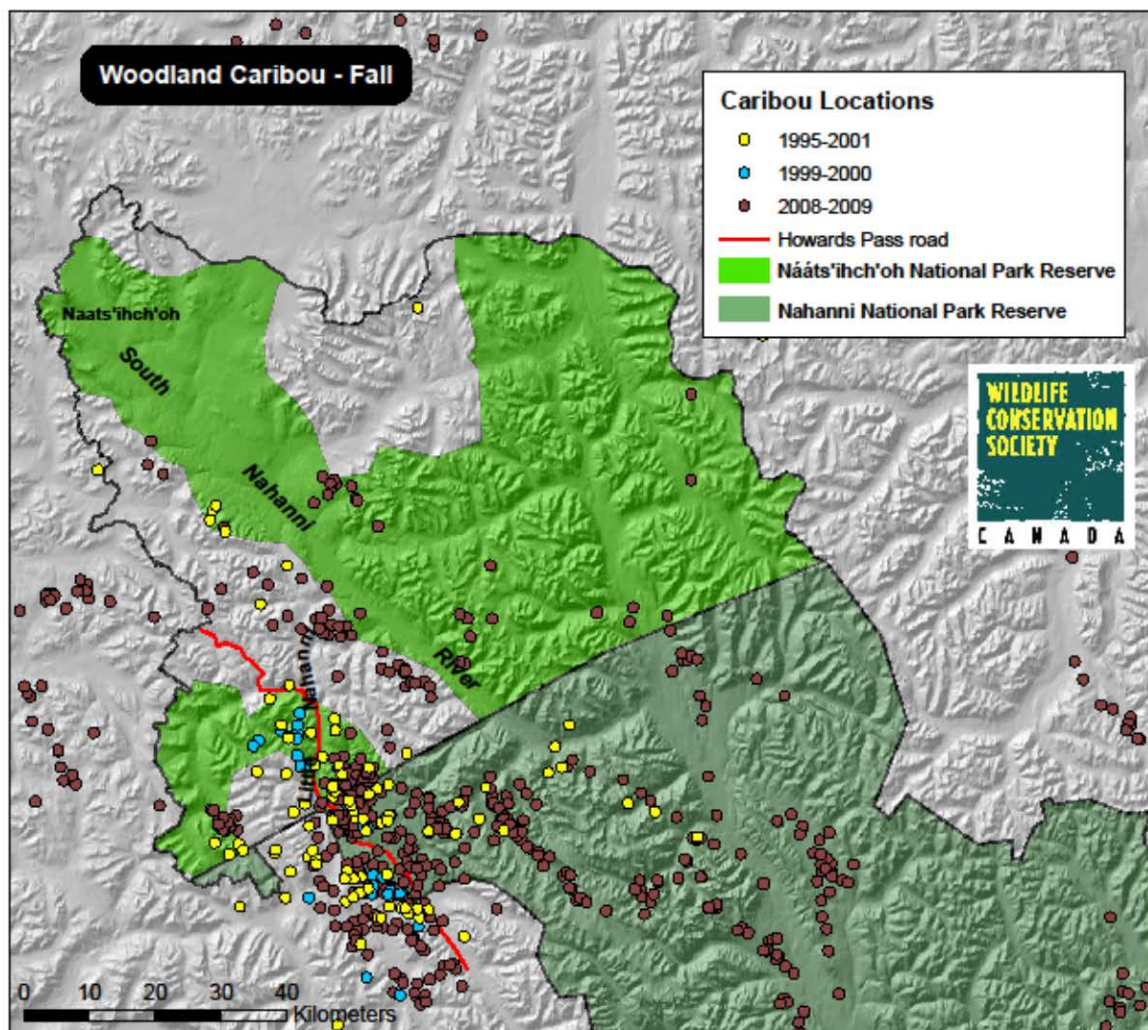


**Spring-Summer:** The principal calving grounds for the upper South Nahanni caribou herd are located in the area between Howards Pass and the headwaters of the Little Nahanni River (Mac Creek) (Figure 4). Other caribou locations during calving period are distributed along the Yukon border from near Cantung almost to Nááts'ihch'oh (Mount Wilson). Caribou occurred at elevations ranging from 1000 m to 1600 m in a diverse landscape of subalpine open woodland, spruce-lichen woodland, subalpine shrubland, and tundra types. During the post-calving period of the summer, these caribou appeared to concentrate mostly in the subalpine and alpine areas in the upper reaches of the Little Nahanni River and Steel Creek. The more frequent data from the animals with satellite collars confirmed that they were relatively stationary during the post-calving period. Data from 1995-2010 demonstrate that caribou exhibit remarkable fidelity to this area for birthing and rearing their calves (Weaver 2006, T. Hegel unpublished data). Caribou occurred throughout the Lened Ridges/Plateau unit in small bands during summer 1979-80 and used the Lend mineral spring lick intensively during May (Envirocon 1980). They occupied the Mac Creek Plateau throughout the summer down to its southern tip. Recent satellite telemetry has revealed that caribou also use the area around Howards Pass during the summer. Also note the extensive use by caribou along the Howards Pass route prior to its upgrade as a haul road.



**Figure 4.** Locations of woodland caribou during summer in the Nááts'ihch'oh region 1980-2010.

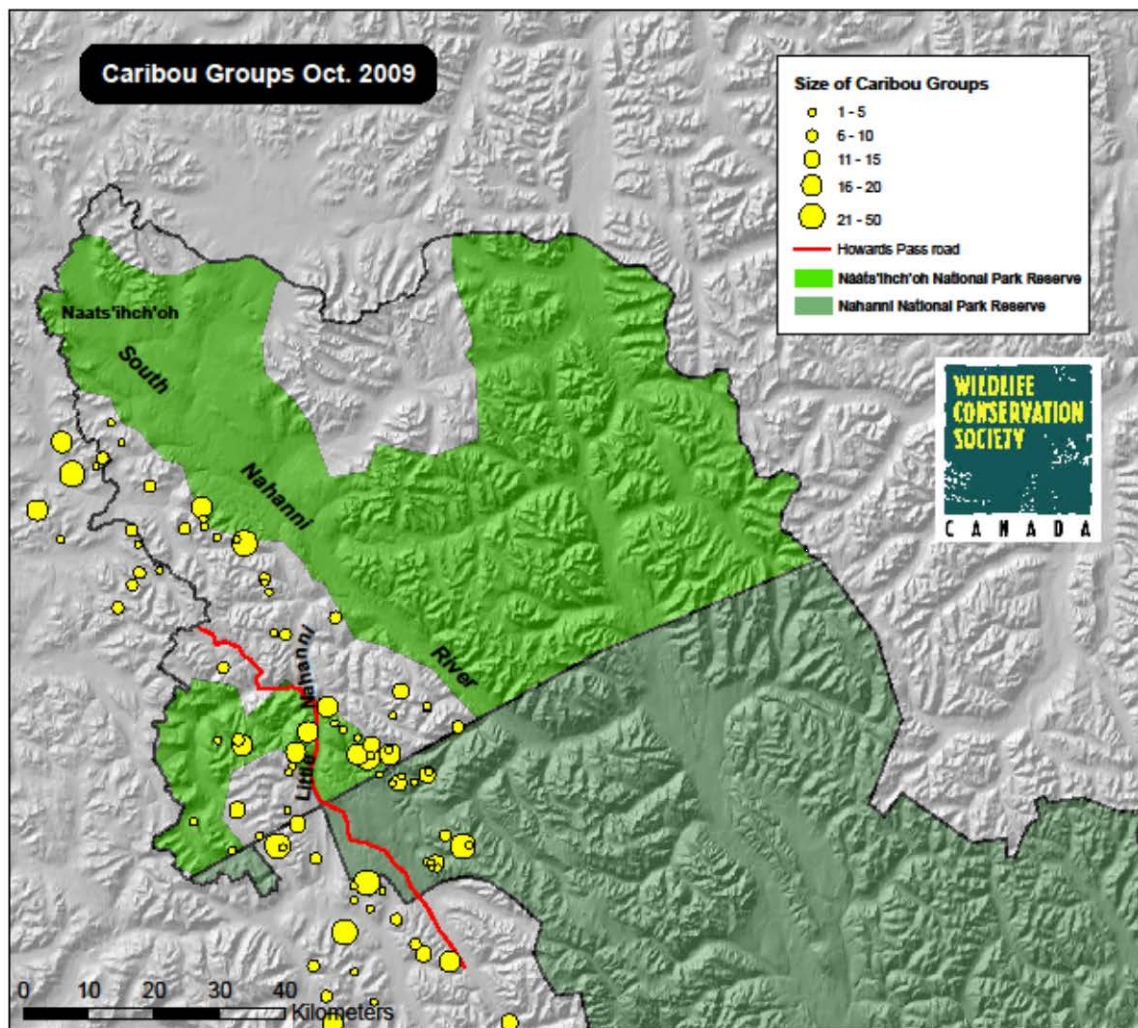
**Fall:** During the rut in late September and early October, groups of caribou (upwards of 100 animals in a group) aggregate in the same region for breeding (Figure 5). Compared to caribou distribution during summer, animals appear to shift south-eastward from the Yukon border into the Little Nahanni valley and from the Lened Ridges south-eastward to the Lened Plateau and Little Nahanni valley. On the Lened Plateau just east of the Little Nahanni River, approximately 100 caribou were observed in late August 1980 and 82 caribou there in October 1976. On the Mac Creek Plateau unit, another 130 caribou were sighted in October 1976 (Envirocon 1980). More recent data from 30 caribou tracked with satellite transmitters Oct 2008 – Feb 2010 (over 4000 locations) confirm these seasonal movements – with an even wider concentration of locations, including some during winter (T. Hegel, Yukon Department of Environment, *unpublished data*). The extensive use along the route to Howards Pass is also noteworthy.



**Figure 5.** Locations of woodland caribou during fall in the Nááts'ihch'oh region 1980-2010.



During October 7-9, 2009, Territory caribou biologists conducted a population survey of the South Nahanni caribou herd. They counted 926 caribou (sighting efficiency of 0.44) in 79 groups across the upper Nahanni and along Yukon border (Figure 6). Several large groups of caribou were observed: (1) northwest of Howard's Pass on both sides of the Territorial border, (2) on the Lened Plateau and the Little Nahanni River, (3) south end of Mac Plateau, and (4) on both sides of the Territorial border south of the Sahtu-Dehcho border (Figure 6). They documented extensive use along and in vicinity of the route to Howards Pass.



**Figure 6.** Location and size of woodland caribou groups observed during October 7-9, 2009 in the Naats'ihch'oh region.



## **Synthesis for the areas excluded from Nááts'ihch'oh National Park Reserve**

The Little Nahanni River area from Howard's Pass south to the Sahtu-Dehcho border:

- provides critical calving/rearing range for the migratory South Nahanni caribou herd (Mac Creek Plateau, Lened Ridge, Howard's Pass, and Little Nahanni River valley);
- provides important breeding range for the South Nahanni caribou (east Lened Ridge/Lened Plateau, Mac Creek Plateau, and Little Nahanni River valley);
- sustains one of the few very high-density areas of grizzly bears in upper South Nahanni basin (Little Nahanni River valley and surrounding valleys);
- includes the only area in the Greater Nahanni Ecosystem that has both woodland caribou and a very high density of grizzly bears (Little Nahanni River valley and surrounding valleys); and
- sustains year-round use by Dall's sheep, with some unique color patterns (Lened Ridges).

In light of the documented use of these excluded areas by vulnerable wildlife, explicit protection of these excluded areas in the Land Use Plan is critical to maintain the ecological integrity and wildlife uses of the adjacent National Park Reserves.

## **Critical Conservation Concerns**

Grizzly bears, Dall's sheep, and woodland caribou are vulnerable to impacts from human activities and industrial developments, including road access (Nichols and Bunnell 1999, Boulanger et al. 2014; COSEWIC 2012, COSEWIC 2014 and references therein). Such impacts may include: (1) direct loss of key seasonal habitats from industrial development, (2) alienation or displacement from important sites at critical times by human activity, and (3) increased mortality (hunting and/or poaching) resulting from improved access. Of particular concern is new or improved access into remote areas, which can stimulate even more industrial development resulting in cumulative effects. Moreover, new or improved access can facilitate increases in hunting pressure unless adequately regulated and enforced, which is difficult in remote areas. Because they have comparatively low reproductive rates, both woodland caribou and grizzly bears have low resiliency to human impacts -- making it difficult for populations to rebound once they are in decline. Both species have proved challenging to conserve in Canada in the face of an expanding human footprint, and fare better in large areas secure from roads and industrial developments. Experience has demonstrated that proactive land use decisions that minimize major cumulative impacts is a preferable conservation strategy to one that relies on reactive mitigation measures, which may or may not be effective.

Roads, vehicle traffic, and associated human activity can have a variety of substantial effects upon species and ecosystems (see reviews of research findings by Trombulak and Frissell 2000, Gucinski et al. 2001, Forman et al. 2003, Coffin 2007, Fahrig and Rytwinski 2009, Beckman et al. 2010 and *hundreds* of references therein). These authors concluded that roads and associated human activities often have negative effects on behavior and abundance of animals and ecological processes.

- Road construction kills sessile or slow-moving organisms and high-speed roads increase collisions and mortality.

- Road placement can have long-term and long-distance impact on the structure and function of aquatic ecosystems.
- Road maintenance and vehicles introduce chemical contaminants that degrade air and water.
- Roads facilitate spread of invasive plants (weeds) and introduction of nonnative fish.
- Roads reduce available habitat due to direct removal or displacement.
- Roads reduce security for wildlife and increase risk of human-caused mortality.
- Road access leads to un-natural wildlife behavior, with more habituation and greater likelihood of getting accustomed to food/garbage left by people.
- Roads fracture connectivity for population and genetic exchange.
- At the larger scale of landscapes, increasing road density can lead to cumulative effects of multiple human activities.

Of particular concern is the extent of industrial mineral development that would be allowed in the all important Little Nahanni River region. Upgrade of the 80-km Howard's Pass route to a haul road and new road access into Lened could have significant impacts on each of these vulnerable species. Field studies have documented that the South Nahanni herd of caribou spends the winter near Virginia Falls in Nahanni National Park Reserve and migrates long distance (upwards of 170 km) to a specific area in the headwaters of the Little Nahanni River for calving and breeding. Caribou show a strong faithfulness to these seasonal locales. Because mother and calf survival are key factors that determine how well a given population is faring, conservation measures should include every effort to minimize disturbance and mortality when these animals are at their most vulnerable. Abundant evidence from caribou research elsewhere indicates that disturbance and displacement of mothers and their calves during this sensitive period negatively impact calf recruitment into the next generation, which can lead to population declines. Moreover, the grizzly bear model indicates a very-high density of grizzly bears in the area between Howards Pass and Lened Ridge.

## **RECOMMENDATIONS BY WILDLIFE CONSERVATION SOCIETY CANADA**

**WCS Canada recommends that all the area in the headwaters region of the South Nahanni River watershed excluded from Nááts'ihch'oh National Park Reserve be designated a Conservation Zone in the amended Sahtu Land Use Plan.**

The headwaters region of the South Nahanni River -- Nááts'ihch'oh -- is important to the ecological integrity of the remainder of the watershed and population well-being of the South Nahanni caribou herd. The Sahtu Land Use Planning Board can best secure the world-class legacy of protecting the Greater Nahanni Ecosystem for all time by safeguarding these remaining non-Park areas as **Conservation Zones**.

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