

# Our Wildlife

## News from the Wildlife Division

Department of Environment & Conservation

Natural Heritage Branch

### Two distinctive caribou types share Labrador's landscape

**Caribou are an integral part** of the natural and cultural landscape of Labrador. Some people may be unaware, however, that there are actually two distinct types of caribou in Labrador. Although they are practically indistinguishable by appearance, sedentary (non-migratory) caribou and migratory caribou have amazingly different lifestyles.

Migratory caribou, represented in Labrador by the George River caribou herd, travel thousands of kilometres each year. They give birth far north of the treeline on a calving ground where fewer predators exist.

Caribou are at their most vulnerable during the first few hours of life, so avoiding predators such as wolves and bears during calving is crucial to their survival. Migratory herds spend their winters below the tree line, where winter food is more readily available.

By contrast, sedentary caribou do not move great distances between their winter and summer ranges. They have a different strategy for avoiding predators during calving: in late April and May they travel from their winter ranges and disperse throughout the range, making them more difficult for a predator to find.

Female sedentary caribou, unlike those of migratory herds, usually find a spot near water, such as an island or patch of forest in a treed bog, to calve. If a predator approaches, mother and calf will retreat into the water, as caribou are excellent swimmers.

Sedentary caribou are therefore restricted to latitudes where lakes have thawed by early June when they give birth. Sedentary caribou typically travel fewer than

60 km between their winter range and calving areas, and are usually found in the same home range year after year, although they may not calve or winter in exactly the same place each year.

The home range of sedentary caribou varies from about 250 km<sup>2</sup> to 2,500 km<sup>2</sup>, far less than the thousands of kilometres migratory George River caribou use.

Sedentary caribou are not just migratory animals that decided to stay put. They have adapted to living in the boreal forest below the tree-line year-round, making these adaptations after the retreat of the ice sheet many thousands of years ago.

A sedentary caribou will occasionally travel with migratory George River caribou for a few weeks or months, or a migratory animal may stay below the treeline after the winter, but this happens only very rarely.

### Special Issue: Labrador Caribou

#### Hunting in Labrador:

Labrador is divided into 18 Caribou Hunting Zones where George River caribou may be hunted.

Some of these zones have fixed hunting dates but are subject to immediate closure should protected caribou occupy the areas.

Openings and closures of other zones are determined by the presence and confirmation of sufficient George River caribou migrating through them.

Caribou movements in Labrador are monitored via satellite collars in partnership with the Province of Quebec.

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Labrador caribou. Photos: Isabelle Schmeizer



*If sedentary caribou disappear from an area, they will likely never return*

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**During the breeding period** migratory George River caribou are far to the north of sedentary caribou, and thus it is very unlikely that interbreeding occurs. As a result, sedentary and migratory caribou are genetically distinct.

### **Sedentary herds**

Habitat for sedentary caribou is largely intact in Labrador, and although caribou occur at low densities within forested regions outside of the known ranges of the primary herds, most caribou are contained within three main, well-studied sedentary herds: Lac Joseph, Red Wine Mountains, and Mealy Mountain.

The **Lac Joseph Herd** was documented as early as the late 1800s, and was first surveyed in 1975 with 3,050 caribou. This herd declined rapidly during the 1970s and 80s, and was estimated at only 445 caribou in 1986. Reasons for the decline are not certain, but over-harvest of adults and partial flooding of a calving ground by the Smallwood Reservoir were suspected. A 2009 survey indicates about 1,400 animals are currently in this population.

The **Red Wine Mountains Herd** is currently at high risk with fewer than 100 animals. This population was also described in the 1800s, and first censused in 1983, though a partial survey of caribou wintering in the Red Wine Mountains was completed in 1958. Numbers were stable between 610 and 740 caribou

throughout the 1980s, but declined rapidly during the 1990s. Only 87 animals were accounted for in 2003, and numbers continue to decline to the present day.

The **Mealy Mountain Herd**, our largest sedentary population, was first surveyed in 1958, when 2,600 caribou were counted. Like the Lac Joseph herd, this population also declined sharply to 207 animals in 1977. Following a hunting closure in 1976, the herd increased to 1,900 animals in 1987. Since then, it has increased slowly to 2,500 animals (2005 survey). Historical records indicate other herds, such as the Benedict Mountains and MacPhayden River herds, were once present but have since been extirpated due to over-hunting. Other small groups, such as animals in the Joir River area, may be remnants of once-larger herds like the St. Augustine herd.

### **Vulnerable to hunting**

Caribou gather into groups during the winter and are easier to find using modern snowmobiles, making them vulnerable to over-hunting. Hunting of sedentary caribou was legal until 1976, when populations in Labrador, as well as across Canada, began to decline.

All three sedentary caribou herds have been affected by over-hunting. For the last 25 years or so, George River caribou have often wintered within the range of Red Wine Mountains caribou (see map on Page 5). Sedentary herds, most often Red Wine Mountains animals, will often mix with George River caribou, even traveling short distances with them.



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**When this occurs** in an open caribou hunting zone, Red Wine Mountains caribou are sometimes killed, something referred to as 'incidental harvest.' Illegal hunting in the closed areas designed to protect the few remaining Red Wine Mountains caribou is further contributing to the herd's decline. Due to their low numbers, the loss of even a few animals can have a detrimental effect on the population.

Sedentary caribou are currently listed as *Threatened* under the Newfoundland and Labrador *Endangered Species Act* and under the federal *Species at Risk Act*. Consequently, it is illegal to harass, injure or kill a sedentary caribou. Only George River caribou may be legally hunted in Labrador, and only in areas where it is less likely that a sedentary caribou will occur.

Labrador caribou hunting zones are designed to maximize caribou hunting opportunities, while still protecting sedentary caribou. Hence, some zones on the periphery of sedentary caribou ranges are only open when high numbers of George River caribou are present, and hunting is prohibited in the core ranges of sedentary caribou herds altogether.

The migratory patterns of the George River herd have changed over the years. Their migration now brings them into areas that are very accessible by hunters, especially along the Trans-Labrador Highway.

**Up until the late 1980s**, hunters had to access the herd by either flying in, or by an extensive snowmobile trip. The George River population peaked at around 785,000 animals in 1993, from a population that was estimated to be no more than 5,000 in 1954. The last census in 2001 identified approximately 385,000 individuals, and recent observations indicate that the population may still be declining.

Most hunters accept the fact that the Red Wine Mountains herd should be protected from hunting until numbers reach a level that can accommodate a sustainable hunt. In the past, other sedentary herds in Labrador that have declined have recovered following hunting restrictions.



*The loss of even a few animals can have a detrimental effect on the population*



A no-caribou hunting zone that extends from Happy Valley-Goose Bay west to the Metchin River was established to ensure their protection. Unfortunately, illegal hunting does occur, and hunting of George River caribou has taken place in the no-hunt zone when animals from this migratory herd have been more accessible than in the open areas.

Because of their non-migratory nature, if sedentary caribou disappear from an area, they will likely never return. It is also possible that the range of the George River Herd will contract again and they will no longer be easily accessible by Labrador hunters.

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# Endangered Species Act and caribou recovery efforts in Labrador

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## The Labrador Woodland Caribou Recovery Team

has established a strategy for the recovery of sedentary caribou in Labrador, which can be found on-line at:

[http://www.env.gov.nl.ca/env/wildlife/wildlife\\_at\\_risk.htm](http://www.env.gov.nl.ca/env/wildlife/wildlife_at_risk.htm). Through this group, the province works in cooperation with aboriginal groups, federal agencies, and other stakeholders to explore options for protecting and recovering Labrador's sedentary caribou. The goal of the recovery strategy is to ensure sedentary herds are viable, self-sustaining wild populations distributed throughout their available current and historical ranges. Recovery efforts are focused in four main areas: recovery planning, stewardship and education; the identification of critical habitat and land-use planning; and research, monitoring and management. The involvement and support of all Labrador native groups is crucial to the success of the recovery of Labrador caribou.

As part of its monitoring effort, the Wildlife Division tracks the locations of individual sedentary caribou and George River caribou by fitting them with satellite collars. This information helps to determine which areas are important to caribou and their survival, and informs management decisions. Since it is not possible to put collars on every animal in a given herd, and because only female caribou wear collars, this information does not reveal the location of the entire herd.

The team was deeply concerned in the winter and fall of 2009 when several collared Red Wine Mountains caribou were in close proximity of illegal hunting that occurred in the core of this endangered herd's range. Currently the recovery team is working to prepare an updated strategy for 2010-2015.

American naturalist John Muir said: "When we try to pick out anything by itself, we find it hitched to everything else in the universe." The disappearance of sedentary caribou would diminish Labrador's natural and cultural landscape. Everyone can do their part by respecting hunting regulations and only hunting caribou in open hunting zones. This will go a long way to ensure that this iconic animal remains a part of The Big Land.

- David Elliott, Tony Chubbs & Isabelle Schmelzer

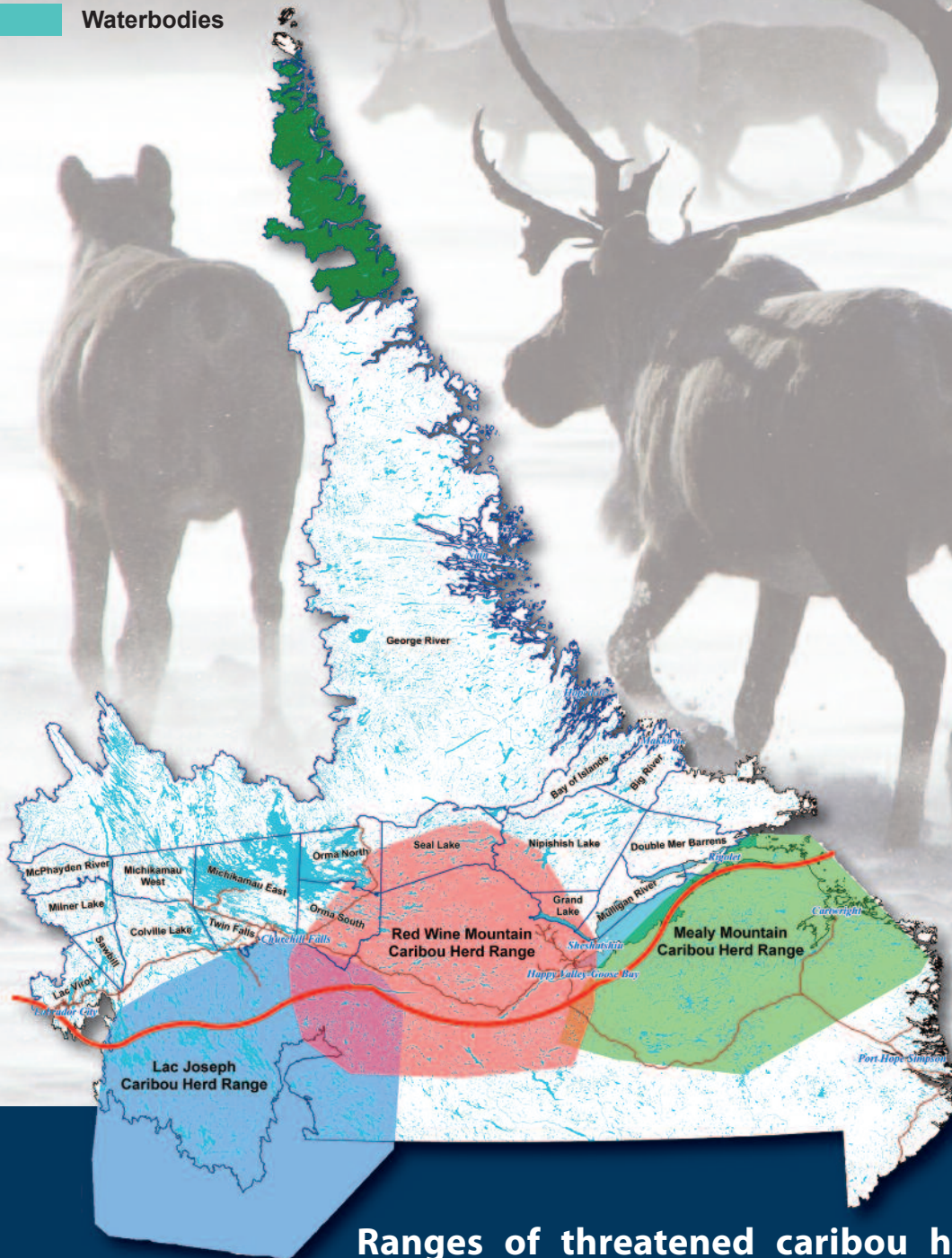
*"When we try to pick out anything by itself, we find it hitched to everything else in the universe."*

*- John Muir*



# Legend

- GRCH Southern Limit
- Roads
- Caribou Management Areas
- Torngat Mountains National Park
- Waterbodies



**Ranges of threatened caribou herds in Labrador shown with George River Caribou Herd extension zones and southern range limit of GRC herd. Some caribou also occur at low densities outside of the main ranges below the treeline. For instance, sedentary caribou have been documented in Colville Lake, Sawbill Lake, and Michikamau East extension zones, and the Joir River area.**

# Caribou Stewardship in Labrador

## Unique challenges, unique caribou

**The George River** caribou herd has numbered in the hundreds of thousands and migrates annually into Labrador. To look at, these caribou are very similar to caribou of the sedentary (non-migratory) herds, which occur at very low densities. The sedentary herds are listed as Threatened under the federal *Species at Risk* and the provincial *Endangered Species Acts*, and are protected from hunting.



Stewardship facilitators also represent their communities on the Labrador Woodland Caribou Recovery Team, playing a crucial role in facilitating the exchange of information between the recovery team and their communities.

- Gerry Yetman

Both deliberate and accidental harvesting of protected herds has contributed to their decline over the years. The Wildlife Division, in partnership with the provincial Department of Natural Resources and the aboriginal communities of Labrador, has been implementing a stewardship program to encourage local responsibility towards the recovery of these caribou.

## Labrador Species at Risk Stewardship Program

With financial support from the Government of Canada's Habitat Stewardship Program for Species at Risk, and the Wildlife Division, aboriginal stewardship facilitators were hired to work within their communities to encourage local responsibility for the conservation of these protected animals.

Understanding the differences in the dynamics of migratory and non-migratory populations is essential to accepting the need for conservation. Stewardship facilitators deliver this information in a variety of venues, be it a formal classroom setting, in a kitchen over a cup of tea, or at a hunting camp. Information is also provided through brochures, posters, and signs, and via various media outlets such as newspapers, radio and TV.



Biologists regularly monitor and conduct research to assist in management and recovery of caribou populations. Caribou occur in low densities across The Big Land, and are long-lived, which makes them difficult to study in a landscape as vast and remote as Labrador's.

Nonetheless, research and monitoring programs focused on both the migratory George River herd and the threatened sedentary populations have been ongoing since the 1960s.

## Wildlife-habitat relationships on Labrador's landscape

**Boreal caribou** require large areas of suitable habitat in order to persist at densities below which they become easier for predators to find. Aboriginal and traditional knowledge and scientific studies have identified areas that are important to caribou (e.g. Wilson and Knight Lakes for calving, open lichen woodlands for wintering) and have noted how changes in the landscape or environment caused by human activities and wildfires have affected caribou. Levels of range disturbance in Labrador are quite low; generally at least 85% of each range is currently still intact (free of industrial developments and recent forest fires).

Because their ranges are not heavily fragmented by industrial activity, caribou are able to move freely within them and select habitats as they choose. In addition, low levels of range disturbance have been shown to be linked to high levels of calf survival. However, numerous future projects including forestry, hydro-electric (the Lower Churchill and Romaine River developments) and mining sectors are proposed or underway within the ranges of sedentary caribou, and identifying critical habitat in advance of these developments will be essential to conserve boreal caribou in Labrador.

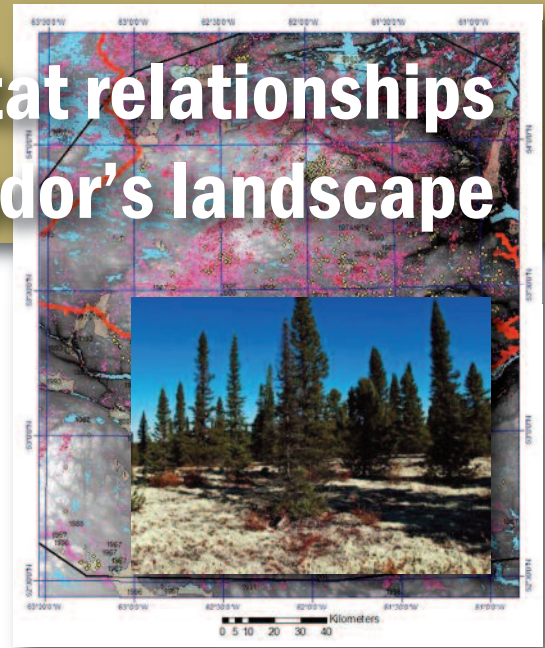
**In addition to** human-caused changes to their habitat, caribou must also contend with changes in climate, and natural events such as fires that can remove large tracts of habitat. Biologists are working to identify high-value caribou habitats throughout the ranges of the threatened herds so these may be managed in a manner that promotes continued use by caribou.

Over the past two years, the Wildlife Division has been compiling and mapping environmental and land-use information that depicts ecological (forest structure), geographic (elevation, terrain ruggedness) habitat (vegetation, snow depth, % burned areas) and anthropogenic (density of roads, industrial footprint) conditions throughout the range of the threatened herds. These are then combined with data collected from caribou wearing radio collars, and analyzed to determine if caribou are avoiding or selecting certain habitats. Because caribou use different ranges during the winter than during calving and post-calving, seasonal habitat selection is being investigated.

The results have already been useful—for example, caribou prefer old, open, lichen-rich forests or lichen barrens during winter. These habitats make up only about 15% of the total range of the Red Wine Mountains herd, but account for 45% of all winter locations.

To learn more about what makes a good winter habitat for caribou, biologists have been visiting winter range sites and measuring the amount of lichen present, and how much is removed during grazing. These sites are being revisited during the winter to measure snow depth, as caribou must crater through snow to reach the lichen below. Caribou are unique in that they can easily digest lichen (unlike moose or other members of the deer family). Identifying lichen-rich areas and habitats likely to be used by caribou will be an important part of describing critical winter habitats for caribou.

This information can be collected by visiting sites in the field, and taking measurements. However, caribou occur over large areas, and this can be an expensive and time-consuming work. Instead, it is hoped that lichens can be mapped throughout caribou ranges using satellite imagery. Fieldwork is then undertaken at specific places to make sure what is measured on the image is actually what's on the ground. If successful, this promises to be an exciting new development, as this technique has never before been applied below the treeline. Initial results are promising. The development of remote sensing technologies combined with traditional biological fieldwork has greatly facilitated our ability to examine animal-habitat interactions over broad landscapes.



Although range condition in Labrador is generally good, the Wildlife Division is working to identify critical and recovery habitat, including preferences during particular seasons. Field information is combined with satellite data (above). Below: Lichens are the preferred winter food of Woodland Caribou. Photos: Isabelle Schmelzer



# Monitoring Labrador's caribou populations

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## How are populations monitored?

Many people have heard about or seen collars on caribou. These collars collect information about many of the places a caribou wearing them has been. All collars transmit a radio frequency that can be picked up with a receiver; each caribou has its own frequency, like a radio station. In the early 1980s, the only way to find a caribou wearing a radio collar was to search for it with an antenna and receiver from an airplane. In the intervening 30 years, the collars have improved greatly, and will now collect and store locations taken several times a day, and transmit these to a satellite every few days.

A biologist can download this information from the satellite directly on to their computer. When data from many collared caribou from the same herd is collected over several years, it can be used to describe the range of that herd and the distribution of caribou throughout it during different seasons. In addition, by monitoring how long a caribou wearing a collar is alive, biologists collect important information on survival. Similarly, when an animal dies, a biologist can visit this location, retrieve the collar and also attempt to determine the cause of death. Each year, satellite collars are replaced (if necessary) or deployed onto new caribou. Approximately 100 caribou are currently wearing satellite radio collars in Labrador.

## Classifications

While the telemetry program is an important component of monitoring, several other activities are part of every monitoring program. Each year, biologists visit groups of caribou when they are aggregated and/or well-mixed, and count the number of adults and calves, noting the number of males and females. This process is called a 'classification.' If enough caribou are classified, this data describes the structure of a population; for example, the proportion of calves and their mothers in the population, an important determinant of population growth, can be determined. This information can be used to inform future management. For instance, if the proportion of calves per adult females is low, it is possible the population may decline in the future. Since adult females produce calves that can in-

crease the herd and replace other animals that have died, the most important factor in population growth of caribou herds is the survival of adult females. For this reason, it is important to limit sources of mortality in adult female caribou, including hunting, especially when the population is small and declining, as in the Red Wine Mountains herd.

## Surveys

Populations in Labrador are surveyed every few years to determine population size. Given the large area over which caribou occur, this expensive venture takes months to plan and several weeks to carry out. This is why surveys cannot be completed every year.

In March 2009 a survey of the Lac Joseph population was undertaken, in addition to an adjacent area to the east (from the Minipi River to the end of Winokapau Lake).

Survey lines were spaced about 10 kilometers apart, and after 130 hours of flying close to 6,000 km of transects, the survey team completed the census. From this data, a population size of 1,413 caribou was estimated for the Lac Joseph herd using statistical analysis and mathematical equations.

The information collected shows that caribou occurred at a density of three animals per 100km<sup>2</sup>. Since this is about half the density observed during the previous survey in 2001, and because fewer animals were observed during the survey, biologists are concerned that this population has declined since 2001. Because sedentary caribou aggregate into small groups during the winter, it may appear as though they are more abundant than they actually are.

A survey of the herd range is the best way to estimate how many caribou there actually are. Other surveys have shown that the Mealy Mountain herd is made up of 2,500 caribou, and that there fewer than 100 caribou remaining in the Red Wine Mountains population.

The compilation of all the data obtained from collared caribou, as well as classification and populations surveys, provides wildlife biologists with the key ingredients necessary for effective management of our valuable and important woodland caribou herds.

- Isabelle Schmelzer

# 2010 GEORGE RIVER CARIBOU HERD CENSUS



The Province of Newfoundland and Labrador is participating with other organizations in efforts to determine the current status and health of the George River caribou herd.

This work will include a review of current management approaches and methods, and will be informed primarily by a planned census of the George River caribou herd scheduled to be completed in 2010.

"Caribou in Labrador provide considerable ecological, economic and recreational values to the residents of Newfoundland and Labrador as well as many visitors to Labrador," said Environment and Conservation Minister Charlene Johnson. "It is incumbent on us as a managing authority to ensure we have up-to-date, accurate information on the status and trend of the herd. This government will ensure appropriate management measures are developed in response to this information as caribou are an important part of our culture and heritage."

In collaboration with the Newfoundland and Labrador Departments of Environment and Conservation and Natural Resources, the Nunatsiavut Government, and the Institute for Environmental Monitoring and Research, the survey will be

lead by biologists from the Government of Quebec in co-operation with the University of Laval.

The work will involve collaring as many as 80 caribou, both males and females, from the George River herd, and subsequent surveys to determine population information such as the number of animals in the herd, the number of calves in the fall of the year, and the ratio of males to females in the herd. Up-to-date, accurate information on the status and trend of the herd will ensure appropriate management measures are developed, and will assist conservation officers from the Department of Natural Resources in enforcement efforts.

## Crucial work

This work is considered crucial to understanding the dynamics of this caribou herd, which forms such an important component of the Labrador landscape. The George River caribou herd decreased from a high of approximately 785,000 in 1993 to 385,000 in 2001. Recent pre-

liminary evidence and observations from local people suggest that the population may be continuing its decline.

"If the results of the 2010 census confirm a continued decline, new caribou management strategies may need to be implemented for the 2010 fall hunting season to address the issue," said Minister Johnson.



Above: Wildlife Division staff monitoring a George River caribou in Labrador. Photo: David Elliott. Top: George River caribou. Photo: Ted Pardy

## Our Wildlife

is the quarterly newsletter of the Wildlife Division. For more information, please contact:

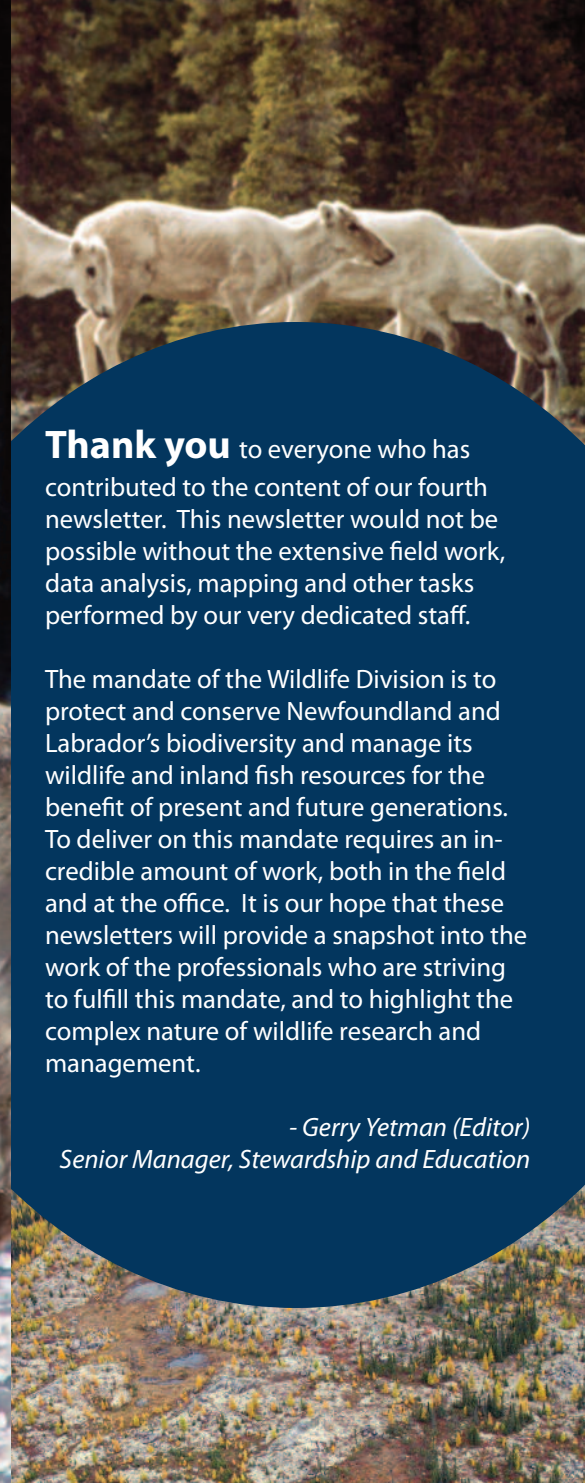
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**Thank you** to everyone who has contributed to the content of our fourth newsletter. This newsletter would not be possible without the extensive field work, data analysis, mapping and other tasks performed by our very dedicated staff.

The mandate of the Wildlife Division is to protect and conserve Newfoundland and Labrador's biodiversity and manage its wildlife and inland fish resources for the benefit of present and future generations. To deliver on this mandate requires an incredible amount of work, both in the field and at the office. It is our hope that these newsletters will provide a snapshot into the work of the professionals who are striving to fulfill this mandate, and to highlight the complex nature of wildlife research and management.

- Gerry Yetman (Editor)  
Senior Manager, Stewardship and Education

Department of Environment & Conservation

# Wildlife Division

