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POINTS OF  
INTEREST

- Reports produced by Wildlife Infometrics can be obtained in digital format by sending an email to: [wild\\_info@wildlifeinfometrics.com](mailto:wild_info@wildlifeinfometrics.com)
- The total count for caribou obtained this year was the highest recorded for the area
- Prescribed burning - a tool used to restore ecosystem health providing benefits to plant and wildlife populations

TERRESTRIAL LICHEN AND CARIBOU WINTER RANGES

Mountain pine beetle attacks on lodgepole pine forests have led to significant changes in the understory communities of these stands in recent years. A common trend observed after attack is a decline in terrestrial lichens as the ecosystems are being dominated by dwarf shrubs. This is of concern for those who manage habitat for woodland caribou because during winter, caribou forage primarily on lichens. Previous studies indicate that prescribed burning may help redirect plant succession enhancing lichen habitat.

In order to determine how effectively a prescribed burn restores terrestrial lichen conditions, a multi-year study has been undertaken.

Because the rate of lichen recovery after a prescribed burn is too slow to know whether or not the technique is effective, other indicators of rehabilitation success must be determined. These alternate indicators would allow biologists to determine whether treatments have been effective in a shorter amount of time, and would allow treatments to be refined or applied to other areas before the short-term supply of terrestrial lichens becomes critically low.

This study was initiated with a literature review and a small-scale post-burn vegetation survey to determine how naturally-burned forests recover. This step identified potential indicators for monitoring the effectiveness of prescribed burning. Monitoring methods and recommended photo-plot-based surveys were also analyzed.

It was determined that a post-burn terrestrial lichen successional trajectory could be indicated by the abundance of several plants or plant groups that establish immediately following fire. A monitoring protocol was developed to guide pre- and post-treatment assessments to help identify treatment effectiveness.

In 2008 and 2009 one 45 ha treatment site was selected, baseline data was collected, site preparation completed, and an adaptive management plan was prepared documenting treatment activities. Burn ignition is scheduled for fall 2009, and post-treatment results will be collected in 2010 and again in 2013. Information from this project will help guide the use of prescribed burning as a tool for managing the supply of terrestrial forage lichens in low-elevation caribou winter ranges.



*High-quality high-elevation habitat is critical to caribou survival.*



*Terrestrial lichen sample plots.*



**PREDATION RISK FOR CARIBOU**

Many factors are currently influencing the downward trends in caribou populations, including climate change, habitat loss, and predation. If short-term changes are not implemented, this trend could wipe out entire caribou populations in BC's central interior. A multi-year study has been undertaken to determine how reducing wolf predation will affect the population trends for the Chase caribou herd.

Over the past three years, a local, licensed trapper was provided with information to assist in the annual removal of specific wolves known to cause predation-related deaths of caribou in the treatment herd area. The study included monitoring the status and distribution of radio-collared caribou and wolves in the Chase treatment area and an adjacent control area occupied by the Wolverine herd. Moose and caribou mortalities were investigated within the two areas to determine location, timing, and cause of death. We estimated potential juvenile recruitment and total animals in February, neonatal calf survival in June, and subsequent calf sur-

vival in November. Seventy-three groups of caribou were observed recording 475 individuals for the Chase test area, and 378 for the Wolverine control area. Calf recruitment was estimated in late winter and was much higher for the Chase test area at 15 percent, compared to the Wolverine control area at 11 percent.

Interestingly, trapping is actually a restoration of an older lifestyle; a "tried and true" practical approach first adopted by Aboriginal people and original settlers. If proven successful, broader application will present opportunities for the trapping community in BC to become part of the solution to recovery of woodland caribou.

A wolf scat survey was also undertaken within the Chase treatment area and Wolverine control area. A significant relationship was found between scats per kilometre and the amount of ungulate habitat within the sampled watersheds. This survey provides information to identify relationships between wolf density and predict predation risk for caribou.



**OTHER IMPORTANT INITIATIVES WE HAVE BEEN WORKING ON**



**Modelling Caribou High-elevation Winter Range**

Caribou survival is dependent on their access to high quality habitat, especially during winter. For this reason it is important to protect as much critical caribou habitat as possible, especially as the mountain pine beetle has extensively changed the landscape.

Over three years, models have been developed to predict the location of high-quality high-elevation winter range for woodland caribou in north-central BC. The candidate areas were described by ecoregion and ecosection, biogeoclimatic unit, wildlife

management unit, and resource management zone. These areas, in conjunction with the management rules developed for them, were then analyzed to consider the potential impacts of timber harvesting, guide outfitters, and trappers.

Recommendations to designate additional areas of land necessary for the over-winter survival of woodland caribou were developed. In addition to areas already set aside in parks (more than 60 percent), an additional 886,103 ha were recommended for protection in the Fort St. James and Mackenzie Forest Districts. Most of this high-elevation habitat is in the Alpine Tundra and Subalpine Parkland.

## OTHER IMPORTANT INITIATIVES WE HAVE BEEN WORKING ON, CON'T

### Dust mitigation on Williston Lake

Mechanical tilling was done in the spring of 2008 to reduce dust levels on Williston Reservoir. We set up three test sites to monitor potential deleterious effects of the dust control activity. Water samples were tested throughout the summer for in situ turbidity and total suspended solids. A benthic invertebrate survey was completed in August 2008 to determine if the treatments affected their density.



There was no indication that turbidity or total suspended solids were impacted by the dust mitigation treatment. Although benthic invertebrate density was slightly higher at treatment sites, the difference was insignificant and densities at all sites were generally very low.

### Where's the Wildlife?

British Columbia has seen significant ecological changes due climate change and the unprecedented mountain pine beetle epidemic. It is anticipated that these forces will have major impacts on sustainable forest management. To help with this planning, a habitat



supply models were developed to predict the needs of sensitive and threatened wildlife species. The model considered the needs of wolverine, fisher, caribou, and grizzly.

The goal of this project is to produce fine-resolution maps of occupancy probabilities for the wildlife and to develop protocols for forecasting the supply of habitat under different forest management scenarios. These maps will help plan sustainable forest management.

### Learning from a Prescribed Burn

Rubyrock Lake Provincial Park was established in 2001 in part to preserve herb-grassland meadows on Cunningham Lake. In order to maintain this unique feature, reintroduction of fire was recommended. A burn plan was finalized in May 2008 to reduce the litter layer and overall stand density, and to improve wildlife habitat. A vegetation assessment was done in the spring of 2008 prior to the burn. The burn area included 2,768 ha of forest and meadow. Though 500 ha were ignited, it was estimated that fire intensity was hot enough on only 400 ha to cause mortality of aspen.

After vegetation green-up in late July a post-fire vegetation inspection was undertaken to determine the burn effectiveness.

This project provided a valuable learning tool for resource specialists, and can be built on for subsequent activities at this site and others in the region.

### Caribou in the Muskwa-Kechika

In some areas of the Muskwa-Kechika, there has been little to no information collected on caribou, so a study was undertaken to evaluate potential caribou habitat. Aerial reconnaissance of the Upper Pelly Special Wildland Zone and the Finlay-Russell Protected Area was done in March of 2009. Most of the area along the flight line was unsuitable winter range for caribou, but was likely high-value calving and summer range. A relatively small area

of high-valued winter range was found and 80 caribou in three groups were encountered. Based on this success it is recommended that further work be done here to enhance the accuracy of BC's caribou inventory.

### Prescribed Burning in the Peace

Natural and man-made fires have always been part of the BC landscape. These fires have been effective in enhancing wildlife habitat, clearing land for other uses, and regenerating the forests. The Ministry of Forests and Range and Ministry of Environment have been involved in prescribed burning programs in the Peace Region for decades. Area First Nations and guide outfitters have also historically used burning to enhance wildlife populations, and continue to do so.

To date prescribe burning has been assumed to be successful in enhancing some ungulate populations by producing abundant forage, although there has been no quantification of positive, or negative effects on wildlife or plant species. To develop burn programs and ensure effective use of available resources, a more thorough understanding of the interactions among fire, plant species, ungulates, and predators is necessary. Hence, the Ministry of Environment is undertaking a prescribed burning research program to quantify its effects on wildlife and habitat. We have completed a gap analysis to determine the research priorities and proposed a research program to evaluate the use of prescribed burning in the Peace Region. This information will also provide guidance for ecosystem restoration projects being completed in other regions of the province.



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## MANY THANKS . . .

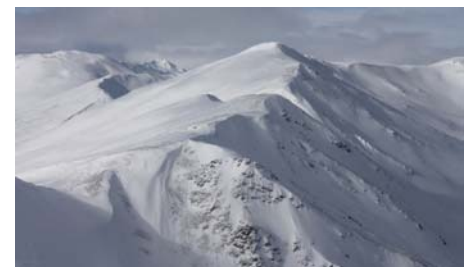
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Abitibi Bowater, and Conifex (Fort St. James), BC Hydro Peace Williston Fish and Wildlife Compensation Program, BC Hydro & Power Authority (Burnaby), and Bulkley Valley Centre.



Wildlife Infometrics Inc. was established April 2002 in Mackenzie, British Columbia. With our full time staff ranging from 6 to 10 employees, we focus on the collection, management, and interpretation of data concerning aquatic, avian, and terrestrial wildlife resources values. Our strength is turning collected data into information that can be easily used by industrial resource developers. Our motive is the promotion of conservation conscious development. To that end, we offer project development, data collection, data management, and data and information transfer services to clients from a variety of government and business sectors.



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