

# M&L IFPA update...

## News from the Morice & Lakes Innovative Forest Practices Agreement

In November 1999 BC's Minister of Forests signed an Innovative Forest Practices Agreement (IFPA) for the Morice and Lakes Timber Supply Areas in Northwestern BC. The Morice & Lakes IFPA is developing Sustainable Forest Management Plans using innovative approaches in public involvement, forest productivity and ecosystem-based management.

### Mountain Pine Beetle and the Woodland Caribou



Photo courtesy of Canadian Forestry Service

A long-term wildlife study partially funded by the M&L IFPA is looking at the effects that the mountain pine beetle epidemic is having on a herd of woodland caribou southwest of Burns Lake. The herd—numbering some 300-400 animals—moves through the Entiako and East Ootsa area of the Nechako Plateau during its spring and fall migration. During winter these caribou paw, or crater, through the snow to forage for terrestrial lichens, an essential part of their diet.

The lichens can be plentiful in the forest floor microclimate beneath mature lodgepole pine woodlands. But with the lodgepole pine die-off from the beetle epidemic, how are the lichens affected? Is the woodland caribou—a species listed as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)—seeing a reduction in an important part of its diet during the winter? What are the future implications for resource management and caribou habitat?

These are some of the questions that the study is trying to answer. Deborah Cichowski, a local wildlife biologist, has been involved with the study since it was initiated in 2001. "Before 2001, there was no information available on the effects of the mountain pine beetle epidemic on the woodland caribou and this food source," said Cichowski, who has been following this herd for some 20 years.



Photo courtesy Laurence Turney

The study was designed to gain an understanding of how terrestrial lichen species respond to both the mountain pine beetle and forest harvesting disturbances in the East Ootsa/Entiako. "Both harvesting and the beetle epidemic change the structure of the forest canopy," said Cichowski, whose consulting firm is aptly named Caribou Ecological Consulting. "Harvesting represents a rapid change while beetle-attacked forests are changing at a slower rate."

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### Allowable Annual Cut Increased in the Morice TSA

The Ministry of Forests and Range (MOFR) announced on February 1<sup>st</sup> that the Allowable Annual Cut (AAC) for the Morice Timber Supply Area (TSA) will be increased to 2.16 million cubic metres, an increase of 204,000 metres. In a separate but parallel decision the MoFR Regional Manager increased the AAC a further 200,000 cubic metres to a cumulative AAC of 2.36 million based upon beetle mitigation actions being taken by participants in the M&L IFPA.

The M&L IFPA had recommended a 1 million cubic metre AAC increase to minimize timber losses to deteriorating dead pine trees, and requested half of the increase for IFPA companies in its Forestry Plan submitted to the MOFR in January of 2007. Based upon extensive analysis the Forestry Plan details long term commitments to sustainable forest management (see table on Page 3) and outlines a harvest strategy to optimize the salvage of beetle-killed timber. The SFM commitments and beetle strategy represent the basis for the request for an AAC increase in the Morice TSA. The plan also details innovative practices and activities that the M&L IFPA partners have committed to within the TSA to ensure sustainable management of local forests.

"The plan provides both the rationale for an AAC increase using principles of sustainable forest management and provides partner companies with the means to deal with the mountain pine beetle epidemic," said M&L IFPA manager Jim Burbee. Statutory decision makers have many factors to consider beyond the biophysical factors driving the M&L IFPA recommendations. Only time will tell if the conservative AAC decision will be a lost opportunity.

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Patrick Williston of Gentian Botanical Research takes a photo-record of the composition of the forest floor in a lodgepole pine forest in the project study area.

Jim Burbee, general manager for the M&L IFPA, says the information gathered from the study will factor into resource management decisions in the IFPA area. “Partner companies are operating in caribou migration corridors and it’s important for resource managers to understand the ecology of these sites as the beetle epidemic progresses,” said Burbee. “They will need to know if harvesting affects this important caribou food supply.”

Cichowski is partnered with an ecologist, Patrick Williston of Gentian Botanical Research, and together they designed the study using innovative sampling techniques that would allow them to revisit the sites annually and monitor the prevalence of the lichens as the structure of the lodgepole pine forests evolved through the massive beetle epidemic. They established 79 permanent sample plots in both beetle-attacked areas and harvested areas. By taking several photos of the ground cover within the plots (see photo) at precise locations and comparing the ground cover composition from year to year within the photo frames, changes were noted.

Results from the study reveal that, in fact, the lichen is decreasing, particularly in the mountain pine beetle-affected forests. Of the 730 photoplots monitored so far, 71% have seen a decrease in lichens. On plots located within harvested areas the lichen cover decreased slightly through the first four years of the study but not to the same degree as the mountain pine beetle-affected forests.

According to Cichowski, as the mountain pine beetle outbreak progressed and overstory trees died, competition from other ground cover species intensified and the lichen was essentially crowded out of the growing site. “Lichens do not compete well with other vegetation,” said Cichowski.

What does this mean for the caribou? “Right now we don’t believe that there is a shortage of terrestrial lichens for the caribou,” said Cichowski. “Caribou are more likely to die from predation than from a lack of food.” Over the longer term the study will determine whether the lichen decline will continue, or if this was an initial, short term response to the mountain pine beetle epidemic.

## Silviculture Strategies Being Developed

The M&L IFPA is developing silviculture strategies to promote additional timber supply and wildlife habitat in both the Morice and Lakes Timber Supply Areas (TSAs) within the Nadina Forest District. The analysis will focus on the next 10 to 50 years of the timber supply planning horizon, which coincides with an expected timber supply falldown as a result of the mountain pine beetle (MPB) epidemic.

The analysis, which is being conducted by Tesera Systems Inc, will

model several silviculture strategies to help resource managers optimize investment on future forests. The strategies to be modelled may include:

- o Testing the impacts of stand rehabilitation
- o Testing the impacts of using genetically selected reforestation stock.
- o Testing the impacts of stand fertilization regimes.
- o Testing the impacts of young pine mortality, based on empirical data if available.

“We need to know where we can get the best returns on silviculture investment to deal with mid-term timber supply issues,” said Nadina Forest District stewardship technician Carolyn Stevens. “This project is about looking at a range of options, from fertilization/spacing to using genetically selected stock in our reforestation program.”

Tesera will be working with the IFPA technical committee and the Nadina Forest District staff by means of several workshops to identify and refine additional silviculture strategies for analysis.



The table below shows the proposed innovative elements that will be used throughout future planning horizons to increase timber supply in the Morice Timber Supply Area. For details on these innovative elements and on timber supply scenarios, please see the M&L IFPA Forestry Plan available online at [www.moricelakes-ifpa.com](http://www.moricelakes-ifpa.com). Click on the "publications" tab.

Innovation	Description	Timber Supply Gain
Reduced Operational Adjustment (OAF) Factor	Increases the accuracy of predicted sustainable harvest levels.	5,200 to 7,600 cubic metres increase in annual timber supply in the short, mid and long terms.
More accurate Predictive Ecosystem Mapping and Site Index / Biogeoclimatic Ecosystem Classification data	Results in an increase of growing stock within the forest and consequently additional sustainable harvest volume.	77,162 cubic metres increase in annual timber supply in the mid term and a 148,458 cubic metres increase in the annual timber supply in the long-term harvest.
Increased utilization	Harvesting to a 15cm stump height.	Results in a 2% increase in available timber supply (32,000 cubic metres per year and 8.37 million cubic metres across all planning periods).
Increase the percentage of spruce planted in future plantations	Changing future plantation species mix from 60:40 pine/spruce mix to 60:40 spruce/pine mix.	Increases the long-term timber supply by 5.25% or 88,418 cubic metres per year.
Use of genetically selected stock	Uses the genetic worth and availability forecasting in the Forest Genetics Council 2004-2005 business plan.	Increases the long-term timber supply by 9.5% (100,000 cubic metres per year in the mid term and 160,000 cubic metres per year in the long term).
Implementing the Harvest Rules as outlined in the Mitigation Composite Scenario	Stands with the largest projected beetle-related volume losses are high priority.	Reduces non-recoverable losses as a result of the MPB epidemic. Increased harvest in the short-term is 1,098,883 cubic metres per year.

**Note:**

Short-term harvest = 2007 to 2017  
 Mid-term harvest = 2018 to 2102  
 Long-term harvest = 2103 to 2252

## For the Nadina Forest District

The analysis—which will look at forests that have been attacked by the beetle, as well as forests that are not expected to be affected by the outbreak—will guide decisions on how to invest in future forests on the beetle epidemic landscape.

"The first stage of this process will be to update the datasets based on actual harvesting for the last five years as well as integrating planned harvesting," said Dwight Scott Wolfe, operations manager with Tesera Systems Inc. "From here we will build on the existing datasets to

model the silviculture investment strategies." Wolfe noted that, where possible, the project will use data generated from previous IFPA analyses.

"Our results and interpretations will be made available to IFPA partner companies, the resource management community, and the wider public, through the M&L IFPA website," said Wolfe.

It is expected that the silviculture strategy will be completed by March 31 of this year.



# Caribou Collaring Project

In addition to the caribou lichen project (page one), the Morice & Lakes IFPA has also provided partial funding for another caribou habitat project that assesses the effects of the mountain pine beetle epidemic on the Tweedsmuir – Entiako herd of caribou. The study—currently in the second of three years—is monitoring caribou migration, habitat use and forage site selection using radio collaring techniques and snow tracking.

A total of 27 adult female caribou were captured and radio-collared (12 GPS, 15 VHF) during the capture session in January 2007. An additional nine caribou were captured and radio-collared in December 2007. The plans for the current year are to continue monitoring collared animals by means of radio telemetry flights, and investigating winter habitat areas on foot.

“Our focus is on pine forest winter ranges,” said project consultant Debbie Cichowski. “The pine trees killed by mountain pine beetle have lost their needles and the canopies in these forests are intercepting less snow, resulting in a change in snow conditions on the ground. One of the things we want to know is how the animals are responding to this change in their habitat”

The caribou are captured using highly trained and specialized wildlife sub-contractors who use net guns fired from helicopters to immobilize the animals, handling the animals briefly in order to take some measurements and attach the collars. Cichowski and her crews then use telemetry to keep track of the animals, from aircraft and from the ground. “We will ascertain their location, and then backtrack away from the animals through the areas they have just occupied,” said Cichowski. In this way the crews do not affect the behaviour of the animals as they investigate areas where they have just foraged for food. (They paw through the snow leaving behind characteristic craters and trenches.)

“Last winter there was a very deep snowfall, but the caribou continued to dig through the snow to get at the lichens on the ground,” said Cichowski, adding that the animals can smell the lichens in up to 90 centimetres of snow. (While caribou seem to prefer lichens that grow on the ground, they will eat arboreal (tree) lichens if snow conditions become too difficult for them to dig.)

The information collected will be used to develop a management strategy specific to the Tweedsmuir-Entiako caribou population in a post-beetle landscape, and can also be used to develop a general management strategy for other caribou populations experiencing mountain pine beetle outbreaks. Like the caribou lichen project, the results from the study will be made available to wildlife and forestry managers through the Morice & Lakes IFPA website: [www.moricelakes-ifpa.com](http://www.moricelakes-ifpa.com).



## Morice Scenario Planning Team Members

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Shirley Hamblin	Pleasant Valley Cattlemen
Les Kearns	Fishing Guides
Frank McDonald	Non-motorized Recreation
Andy Meints	Contract Logging
John Mould	Trapping
Jim McCormack	Canadian Forest Products
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Rob Saunders	Wildlife
Sharon Smith	District of Houston
Gary Thompson	Mining
Jim Tourond	Guiding/Outfitting
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Glenn McIntosh	Canadian Forest Products
Dwight Scott Wolfe	Tesera Systems Inc.
Steve Wright	Woodlots

## Lakes Scenario Planning Team Members

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For more information on Sustainable Forest Management Planning and projects completed through the M&L IFPA, visit our website at [www.moricelakes-ifpa.com](http://www.moricelakes-ifpa.com)

Photos courtesy Debbie Cichowski

