



MUSKWA-KECHIKA
MANAGEMENT AREA

RETAINING THE WILDERNESS EXPERIENCE

January 17 – 19, 2002

Fort St. John, BC

A workshop presented by the Muskwa-Kechika Management Area Advisory Board

TABLE OF CONTENTS

1. Opening Remarks, Ross Peck	3
2. Keynote Address: Conservation Planning in the Rocky Mountains, Dr. Reed Noss	5
3. Overview of the Circumpolar Wilderness, Dr. Brian Glaspell	8
4. Round River Conservation Area Design, Dr. Richard Jeo	9
5. Plenary Discussion: “Why Wilderness is Important to You”	11
6. Why Wilderness is Important, Harvey Locke	15
7. Intellectual Property, Dr. Charlene Higgins	17
8. The Guide-Outfitters Perspective, Ray Jackson	18
9. Wilderness Tourism, Ric Careless	20
10. A First Nations Perspective, Dennis Porter & Bill Lux	22
11. The Perspective of the BC Wildlife Federation, John B. Holdstock	25
12. Wilderness Values: A German Perspective, Dr. Christoph Gniesser	30
13. “A Thing is Right . . .” - the Y2Y Experience, Jim Pissot	34
14. Summary of Breakout Sessions	41
15. Ecosystem Dynamics, Dr. Katherine Parker	50
16. Benchmark Vegetation Indices for Satellite Imagery, Roger Wheate & Roberta Lay	54
17. Assessment of Habitat Suitability Models, Dr. Michael Gillingham	57
18. Impact of Visitor Values/Attitudes on Wildlife/Management Activities, Dr. Ron Rutledge ...	60
19. Other Species’ Impact on Ecosystems, Dr. Helen Schwantje	68
20. Forestry Development Possibilities for the Muskwa-Kechika, Greg Taylor	70
21. Summary of Breakout Sessions	73
22. Appendices	

THE IMPORTANCE OF DEFINING WILDERNESS

ADVISORY BOARD ACTING CHAIR ENCOURAGES WORKSHOP DISCUSSION

Welcome Address

By Ross Peck, Acting Chair,
Muskwa-Kechika Advisory Board

As Acting Chair of the Muskwa-Kechika Advisory Board I would like to take this opportunity to welcome everyone to the first of what we hope will be a number of workshops designed to allow an exchange of ideas that will enhance management strategies within the Muskwa-Kechika Management Area. As we attempt to meet the challenge of economic development within sustainable environments, it is timely and crucial that we explore the concept of wilderness, and what it might mean within a Muskwa-Kechika context.

For me, wilderness is one of those ideas that float around out there almost within grasp but I have never been able to quite get my hands on it. I have been kicking around the Muskwa-Kechika for most of the last 50 years, and every time I get close to this wilderness creature it seems to disappear over the next ridge; I must admit I have enjoyed the chase. My preferred venue for this discussion would have been a tent camp on the headwaters of the Gataga River, the main tributary of the Kechika, but the snowballs are flying there today and the wilderness values might be a little too close to home to allow too many PowerPoint presentations. So here we are in downtown Fort St John, and we will have to make the best of our surroundings. In real life, when I find time to get away from these meeting rooms, I make my living taking people into the Muskwa-Kechika, and the wilderness is what I think I sell. Although I am still not sure exactly what this wilderness creature is, the demand is high and our clients continue to come from around the world to get a taste of it.

“
**The
wilderness
is what
I think
I sell**
“

As well as being elusive, this wilderness beast seems to have the ability to adapt and evolve. That old tarp our outfit took refuge under during the torrential rainstorm on the Muskwa River in 1956 has given way to a palatial “wilderness” lodge, complete with health spa and satellite TV. Both camps serve adequately as a base for wilderness expeditions in their decade, and we didn’t even know what a hot tub was back then, but the reality today is we don’t find many clients looking for pack tarp accommodations.

My father may have thought he was heading into the wilderness back in 1948 when he gathered up a crew of five buckaroos and 44 head of horses and spent 29 days on the trail from Hudson’s Hope to Tuchodi Lakes. (It is just over an hour away by fixed wing aircraft today.) The wilderness soon turned into muskeg and blackflies but gained back a few wilderness values when they started picking up the trails of a few folks who had been there before them and had at least hacked out the worst of the windfall.

Early outfitters such as Frank Golata and Wes Brown had put their mark on the wilderness by blazing the odd tree, the Bedeaux expedition had tried and failed to open up a route up the Muskwa for their

Citroen half-track vehicles in 1934, and surveyor Knox McKusker had led botanist Mary Henry and her family on a plant-collecting foray through to Toad River in the early 1930s. Wild the place was, but not undiscovered. Evidence of First Nations peoples were abundant along the routes of these early trailblazers, and it was obvious from sign that these folks had no doubt been making a living and chasing wilderness creatures since their first ancestors had eased down the edge of the mountains over 10,000 years ago.

I trust this little glimpse of history illustrates that wilderness values and experiences have evolved and changed considerably within the Muskwa-Kechika, even within my lifetime, and will no doubt continue to do so. Wilderness was the key theme outlined in the Muskwa-Kechika legislation, which identifies a key goal of “maintaining in perpetuity the wilderness quality” of the area. Resource development and recreational use were also recognized as key goals, and the challenge will be to develop management strategies for the area that incorporate all three.

I expect that we will see a number of perspectives on these issues over the next three days, and we look forward to your input into a very productive session. Thank you for your attendance and participation and I look forward to visiting with many of you over the next few days.

CONSERVATION PLANNING IN THE ROCKY MOUNTAINS: A FOCUS ON CARNIVORES

SEVERAL PRIORITIES ARE EVIDENT

**Keynote Address by
Dr. Reed F. Noss
Chief Scientist, Conservation Science Inc.**

Three general approaches to conservation planning are: (1) protection of “special elements” such as occurrences of rare or declining species and communities and the “hotspots” where such occurrences are concentrated; (2) representation of habitat or community types, across their natural range of variation, in reserves or other areas managed for natural values; and (3) meeting the needs of focal species of high ecological importance (e.g., keystone species), sensitivity to human disturbance, or presumed importance as “umbrella species” for a broader spectrum of biodiversity (*Noss et al. 1997, 1999, 2002*).

Although a comprehensive assessment requires integration of all three approaches, the focal species approach is especially useful in regions where detailed vegetation or geoclimatic maps and inventories of imperilled species locations are unavailable. Moreover, the focal species approach is well suited for determining the required configuration (area and connectivity) of a regional protected areas network. Rigorous consideration of focal species moves us beyond familiar generalizations (e.g., bigger is better, connected is better than fragmented) to concrete proposals for reserve design.

As a contribution to conservation planning in the Rocky Mountains of Canada and the U.S., encompassing the Yellowstone to Yukon (Y2Y) study region, we assessed the habitat suitability and potential population viability of a set of 6-10 carnivore focal species. We applied a site-selection algorithm (SITES) to determine a subset of the regional landscape that would simultaneously and efficiently capture the best habitat for grizzly bear, black bear, grey wolf, lynx, wolverine and fisher. By considering the potential demographic value of sites in a dynamic population model (PATCH) compared to the potential reduction in demographic value over the next 25 years with projected human population growth and development, we identified unprotected sites within the region that are biologically irreplaceable and vulnerable to degradation. (*See Carroll et al. [2002] for details.*)

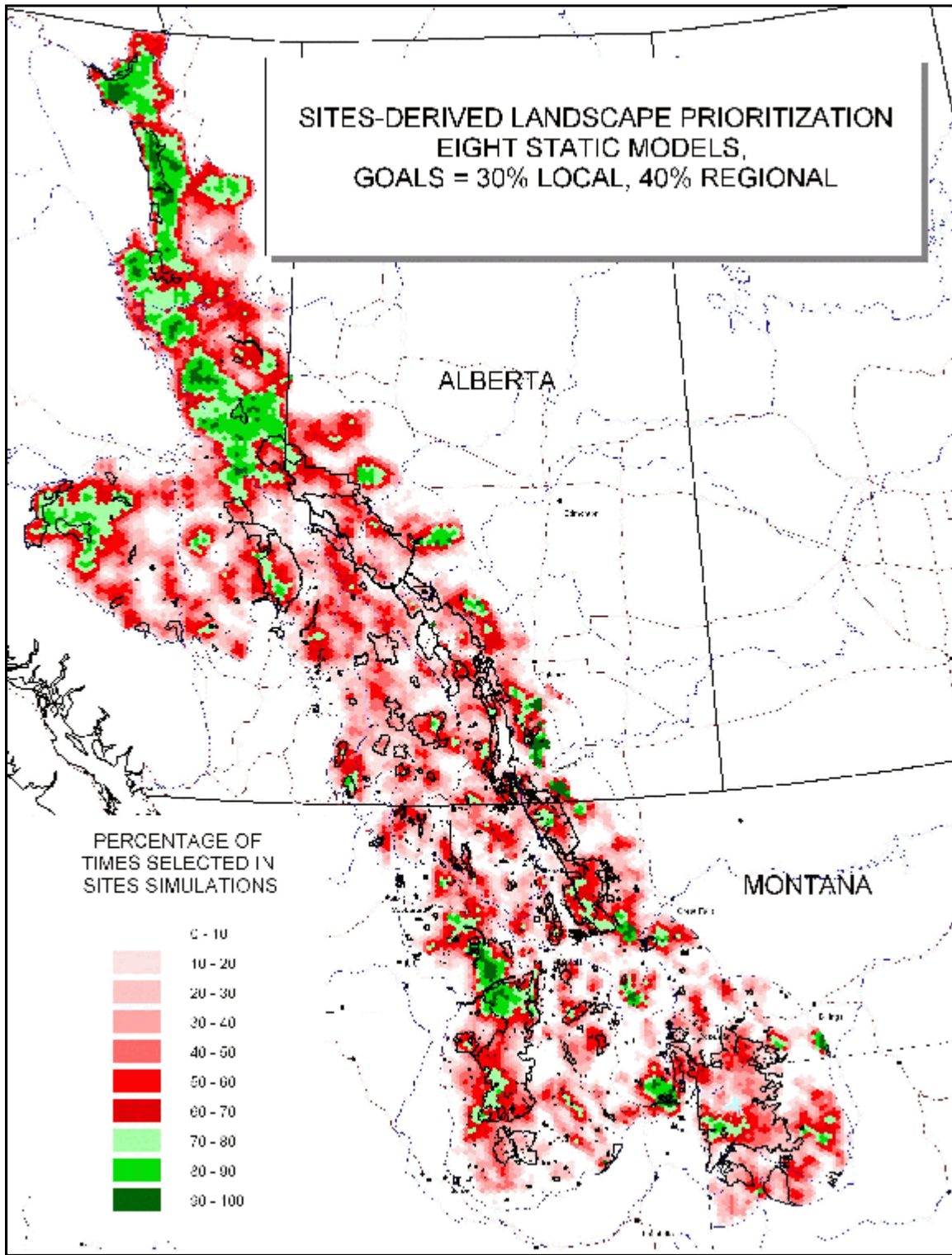
Our results highlight key areas for conservation throughout the Y2Y region (Fig. 1). Focusing on northern B.C., several priorities for potential new protected areas are evident between Jasper National Park and the Muskwa-Kechika, as well as a potential eastern addition to the Muskwa-Kechika Management Area. Our models also show potential buffer zones and corridors between existing and potential protected areas (Fig. 1). Development is occurring rapidly in some key linkage areas (e.g., the Peace River lowlands), threatening to isolate carnivore populations in the Muskwa-Kechika from areas to the south. This problem is especially evident for species such as wolverine. Conservationists are advised to act quickly to prevent this fragmentation.

The foregoing research was originally compiled by Reed F. Noss, Carlos Carroll, and Paul Paquet.

Literature Cited

- Carroll, C., R.F. Noss, and P.C. Paquet. 2002. *Rocky Mountain Carnivore Project*. Final Report. Prepared for World Wildlife Fund, Canada. Conservation Science, Inc., Corvallis, OR. In press.
- Mace, R. D., J. S. Waller, T. L. Manley, K. Ake, and W. T. Wittinger. 1999. *Landscape evaluation of grizzly bear habitat in western Montana*. *Conservation Biology* 13:367_377.
- Merrill, T., D. J. Mattson, R. G. Wright, and H. B. Quigley. 1999. *Defining landscapes suitable for restoration of grizzly bears (Ursus arctos) in Idaho*. *Biological Conservation* 87:231_248.
- Noss, R.F., M.A. O'Connell, and D.D. Murphy. 1997. *The Science of Conservation Planning: Habitat Conservation under the Endangered Species Act*. Island Press, Washington, D.C.
- Noss, R.F., J. R. Strittholt, K. Vance-Borland, C. Carroll, and P. Frost. 1999. *A conservation plan for the Klamath-Siskiyou ecoregion*. *Natural Areas Journal* 19:392-411.
- Noss, R.F., C. Carroll, K. Vance-Borland, and G. Wuerthner. 2002. *A multi-criteria assessment of the irreplaceability and vulnerability of sites in the Greater Yellowstone Ecosystem*. *Conservation Biology* 16:xx-xx.

Figure 1. Results of site selection for eight carnivore species (static model-based, goals 40% regional, 30% local). In green are areas selected most often by the algorithm, suggesting higher potential value as core areas. Areas in red also were selected, but less often, suggesting a potential role as buffer zones or corridors in a regional network. From Carroll et al. (2002)



OVERVIEW OF THE CIRCUMPOLAR WILDERNESS CONFERENCE

INTERNATIONAL COLLABORATION IS A WORTHWHILE GOAL

**Summary of a Presentation by
Dr. Brian Glaspell
Aldo Leopold Wilderness Research Institute**

Dr. Glaspell explained the importance of sustaining wilderness ecosystems. He cited the Alaska wilderness and the fact that how it is managed is unique to the U.S. He explained several studies in Alaska and suggested there is an opportunity for potential collaboration across the circumpolar north. The two-day “Wilderness in the Circumpolar North” conference addressed such issues, he said, drawing a diverse attendance and addressing several significant questions:

1. What is the definition of wilderness?

It was noted that Canada, the U.S. and Finland have wilderness legislation, but it was the consensus of the workshop that a formal written definition of wilderness is a liability. The view that traditional human activities are part of the wilderness landscape is important and different from previous views. It was obvious that the role of people in wilderness is a point of contention. That being said, participants defined wilderness in many different ways, according to size, human value, and enabling indigenous people to continue traditional use. It was decided that having multiple definitions can be an asset.

2. What values are unique to the North?

The uniqueness of the North is characterized by its large size, the fact that its ecosystems are relatively intact, and traditional relationships with nature are in evidence, Dr. Glaspell said. In addition, he noted, in the north wilderness is also a human habitat, and also sometimes subject to economic development.

3. What are the threats to Northern values?

Dr. Glaspell suggested that there are several threats to Northern values, including energy development, tourism, globalization and modernization; and he explained each term.

4. How do we improve knowledge and understanding of wilderness values?

To improve our knowledge and understanding of wilderness values, Dr. Glaspell suggested that research is key. He said such research might focus on the topics of: subsistence living; awareness and appreciation; and understanding the threats to Arctic ecosystems, such as climate change. The methodology of such research could include: cross-disciplinary analysis; comparative studies; measurement of non-market values; and integrated traditional/ecological values.

The unstated goal of all this research, he said, is to test the hypothesis of international collaboration, an effort he suggested was ultimately worthwhile. He identified similarities and significant differences between Canada and the United States and said a “wildness working group” has been established. This working group has drafted a preamble and mission statement and has as one goal, a proposal for development of an institute of wild lands.

Dr Glaspell encouraged interested workshop participants to contact him at: bglaspell@fs.fed.us

ROUND RIVER RESEARCHERS INTERESTED IN M-KMA SYSTEMATIC APPROACH PROTECTS WILDERNESS AND BIOLOGICAL VALUES

**Summary of a Presentation by
Dr. Richard Jeo
Postdoctoral Scholar in Biology, Caltech**

Dr. Jeo explained that Round River works with the Nature Conservancy of Canada, conducting conservation research, local training and ecological literacy programs, university field studies courses, and community conservation projects. It works in Namibia and the United States, focusing on the central and north coast temperate rainforest, the trans-boundary project and the Taku River project.

Round River is “very interested” in British Columbia, he said, because of the region’s biodiversity and “wild” features. In particular he noted that the Muskwa-Kechika is globally significant as one of the largest intact wilderness areas left in the world. With that in mind, he said, a systematic, flexible and dynamic approach to conservation should be developed for the Muskwa-Kechika. This type of dynamic approach is needed because it is inevitable that the Muskwa-Kechika will be altered by human actions.

**Conservation
Area Design
provides
an important
framework**

“The challenge is to learn from the mistakes of the past,” he said, adding that this challenge is expressed well in the Muskwa-Kechika Management Area concept. He stressed the need to find a way to maintain the integrity of the region while addressing the types of permitted uses in the Muskwa-Kechika Management Area. “How do we integrate biodiversity and human needs?” he asked. “We must come up with an approach that will integrate them.” Dr. Jeo said the goals of conservation are: representation; viable populations; ecological processes and evolutionary potential; and system resilience precautionary principles. Overall, the goal is protection of biodiversity/biological integrity in perpetuity.

Protected areas tend to be isolated, to resemble habitat islands, he said. They tend to be too small, too few and in unviable locations, following political boundaries, not ecological ones. Often, species can’t survive and become extinct.

The question becomes one of pristine wilderness values vs. biological values. Wilderness values do not always coincide with biological values. Where is the overlap? Wild areas include predators and hydrological processes. Conservation planning, done correctly, will provide much insight into wilderness.

The word “reserve” has negative connotations. But a Conservation Area Design provides a science-based framework for identifying and prioritizing areas for sustainable conservation. Wilderness biodiversity and conservation planning include predator/prey relationships and ecological processes. But it is important to realize that natural connectivity analysis in large areas is difficult.

“We believe that a systematic approach will protect both biodiversity and wilderness,” he said.

Tools

Dr. Jeo said the tools to be used in Conservation Area Design include: focal species analysis, movement habitat models, productivity analysis, course filter representation analysis, and special elements such as geothermal sites. Cultural importance hopefully will be included in the design, he added, and he stressed that it is important to gather and use data quickly.

Dr. Jeo said conservation decision making involves three dynamic phases: Phase 1 - data collection and model development; Phase 2 - design ; Phase 3 - refinement and redesign. In this way, Conservation Area Design will develop habitat suitability for several area species. He presented the Coast of BC Grizzly model as an example.

Noting that the Muskwa-Kechika is a predator-prey area, Dr. Jeo explained the dynamics involved in this relationship, including the effects of management scenarios, the sustainability of management and the use of species-based connectivity analysis. He said the challenge is developing a model to help predict what habitat is needed for animals to move through to get from one patch of wilderness to another. A connectivity analysis is needed for an intact area before it becomes fragmented, he said, adding that it is vital to identify crucial for natural movement.

He explained that by using terrestrial course filters on natural plant communities, etc., along with representation analysis, plant communities or habitat types are identified. He noted that ecological processes are important for wilderness, taking into account predator-prey dynamics and fires, for example. He said fine filtering includes rare and declining species. Dr. Jeo suggested it is important to have a set of models or maps, the results of which are combined to produce management plans. He added that human landscape must be understood and is important to long-term management.

From there, he said, scenario analysis and identification of impacts is important, leading to the refinement and redesign phase which uses limited field surveys, interviewing, and meetings with the public to arrive, possibly, at alternative solutions.

**'TOWN MEETING' PLENARY DISCUSSION:
"WHY IS WILDERNESS IMPORTANT TO YOU?"**

Thursday, January 17, 2002

The theme for the day is: What is wilderness? Ross Peck said he was happy to hear that wilderness in Alaska includes people making a living, and he encouraged those present to participate in the discussions.

Wilderness means there are values out there greater than myself or our needs, said Mr. Peck. He said he likes to hunt, fish and camp, but to him wilderness also means "a place where I can go and look at the wonders He has created for us". It is necessary to protect a vital resource – water, he said, and we should model our economics and community planning with watersheds in mind. Wilderness is taken for granted, he added, but imagine a world without wilderness. "What would the world look like?"

Workshop rapporteur Dr. Pat Duffy read some published excerpts to stimulate the discussion. He said the meaning of wilderness changes as we grow and experience it. The lack of mechanization is a factor of wilderness, along with the level of risk, the level of wildness, he suggested. "If you take a satellite phone into the wilderness, do you change your wilderness experience?" he asked. Dr. Duffy suggested people could learn from the First Nations, who have been there "forever" and have not changed the wilderness.

“
**Wilderness
is solitude.
Wilderness
is
important**
“

One participant said he attended the workshop "because this is an important subject and it is important work". He was born in the Yukon and remembers wilderness in his back yard and he experienced another kind of wilderness in Indonesia and Arabia. All types of wilderness, all over the world, must be protected, he said, yet wilderness is being destroyed everywhere. "Wilderness is solitude. Wilderness is important." The participant said this group can protect this wilderness. He noted that we derive our wealth from the wilderness and diminish the wildlife as a result. Wilderness increases in value as it diminishes. How we live our lives determines how much we affect the wilderness and how long it will remain.

Another participant said he was finding this a useful conversation, that it was interesting how it was being expressed humanly and spiritually. Wilderness is a spiritual experience, he said and the wilderness is what's left. When you're wild you're part of the planet, not in control of it. "You have to be careful, you have to think. It's a place where everything makes sense for me."

One participant thought about this before attending and went hunting by myself in the wilderness for a week. "I was totally alone," he said. "It was a hell of an experience, a changing experience. The realization that nobody was near me was amazing." He suggested that the wilderness experience is being by yourself and doing it on your own.

Another participant had never been in wilderness, except the park area surround Banff, Alberta. It is important that wilderness is there, the participant suggested. "It is beyond just people; wilderness is more complete, it's a whole system, it's not just us." The participant suggested that since people are

territorial conquerors, the only way to protect wilderness is to change this territorial behaviour of people.

Protect water

A participant who had been a mountain pilot said he also had run dogs from Alaska to Whitehorse. Spending days in total wilderness with those dogs revealed that the water resource was vital. "If you don't protect the water, the wilderness won't do you any good," he said, adding that the definition of total wilderness is land without roads.

Dr. Duffy described parks as areas devoid of exploitation for vast expansion and he read a quote regarding parks. "We value wilderness because it's rare," he said, "and we hope that by setting aside a large protected area now, such as the Muskwa-Kechika Management Area, there may be bits left in the future."

The notion that "wilderness is what is left" seems like wilderness is an afterthought, said another participant, who suggested the focus should be changed so that wilderness is not an afterthought. This participant described going back to a lake remembered from childhood, only to find it changed. "I couldn't tell it (the lake) was there, as there were thousands of people crammed into lounge chairs, the road was paved and the trees cleared. Is that 'what's left'?"

Another participant suggested that wilderness is when "there's not another soul in sight".

Dr. Duffy discussed what he felt were the key messages heard in the workshop so far: carnivores, some sophisticated tools, plenty of modelling, the struggle with how much is enough. He said he had heard that management must be dynamic and adaptive, and that time is important. It was obvious from the discussions that wilderness is important, he said, as was how will it be managed. "You have to have a personal experience with wilderness," he suggested, to gain knowledge of what is there. "It is unique and personal, but we had to get there. How do we all go there, but not see each other?"

Two ideas

He said the workshop thus far seemed to be developing two ideas: first, that wilderness is characterized by the lack of road systems because it is for the wildlife; and, second, that there is a "human layer" where people will go into the wilderness and will have an impact on the wildlife, perhaps destroying it to maintain human life.

Another participant noted that there is no wilderness in Switzerland, for example; people are everywhere. Valleys are used to graze cattle while mountains are the preserve of mountain climbers, who climb to the top and sign a book to indicate that they were there. It is a "humbling experience" to be in the Canadian wild, he said, suggesting that the world would be better off if everyone helped to keep this experience.

One participant, a biologist, suggested that wilderness is "where everyone's home". After all there has always been somebody there longer than the current wilderness users. Therefore it is important to decide what kind of activities should we have in the wilderness and take ownership of that perspective.

We want to go out there and have our own wilderness experience, said another, but we need to know what the needs are. We need specifics. The participant asked how many oil wells are enough.

The government needs information to make decisions, and the M-KMA Advisory Board needs information to make recommendations to government. The First Nations have many perspectives on wilderness use issues which could be very valuable, the participant said, but it is time to get into specifics and then get the information out to the public as to what the M-KMA is all about.

Retaining the wilderness experience is why we are here, noted another speaker. The challenge today was to find out what wilderness means. To do that we should remember what is important to people, he said. "I hear values, not biodiversity, but wilderness is biodiversity, and areas left untouched."

Another participant expressed concern about "adaptive management", noting that there are six steps to that process and it takes a long time. There is a need and role for adaptive management, he said, asking: "Can we please follow the full process?"

Common questions

It was explained to the workshop participants that most people visiting the Muskwa-Kechika office ask questions such as: What is this area about? Is it a park? How can I get my quad in? Where can I go river boating? People think that they should be able to drive or ride into the area, the spokesperson said.

Another noted that the common thread of the workshop thus far seemed to place a heavy focus on biology. It's also about the geology, he said. Changes have been noticed which include ice patches disappearing and timberlines changing. The M-KMA should also take into account the ecosystem as it changes.

It will be impossible to retain wilderness around oil and gas drilling sites, another suggested. M-KMA workshop organizers should have provided a map of where drilling and oil exploration is going to take place, he said. "Then we could talk more intelligently about retaining the wilderness."

A pilot said he had been into the Muskwa-Kechika by helicopter and said he is a major advocate of the M-KMA. He said managing the area is essential because he wouldn't want to be prevented from going into the region. "It's foolish to think we could totally block it off to access," he said, adding that there are major resources in the M-KMA which probably will have to be somewhat exploited. But he said he is willing to "compromise" his access to the Muskwa-Kechika and said he hoped others would as well.

Users will have to compromise personally and on a business level, said another. He said the oil and gas industry wants to be "around the table" and be knowledgeable of people's needs. He said he has seen the impact of public opinion on corporate boardrooms, and suggested that wilderness proponents should "keep it going because public opinion matters and public opinion of companies is important".

"I want to know there are places in this world where no one is going," said another participant, adding that "there is so much we don't know" and that it is important to ensure that nature has a "true chance".

Another noted that in the Fort Nelson region the percentage of protected land is low. He said the land there is subject to a variety of uses and land use planning tries to achieve a balance, making use of special management plans due to the area being "so special". "We support a life style through use of resources," he said.

Dennis Lux ended the session by explaining, in response to questions, that Muskwa means “grizzly bear” while Kechika means “muddy river”. He added that First Nations are looking for initiatives to combine traditional ways with modern wilderness values and management.

WHY WILDERNESS IS IMPORTANT

'MUCH WAS LOST WHEN THE W.A.C. BENNETT DAM WAS RAISED'

Summary of a Presentation by
Harvey Locke
Senior Program Officer for the Environment
Henry P. Kendall Foundation

Harvey Locke said he was “honoured” to be invited to talk about wilderness in the Northern Rockies, especially given the challenge of thinking about what to say to the participants present, who have so much experience. But he said this workshop was vitally important because “wilderness is important to the world”.

Noting that he works for a U.S. foundation, Mr. Locke said people might wonder why Americans are so interested in this place, but “it’s lucky that they are”. Americans are interested in the Muskwa-Kechika because they have lost the wilderness in their own country, “but they can come here”. He said people have been made aware of the Peace region through family photos and published histories, while the history of the Muskwa-Kechika has become known through publications about the wilderness and exploration of the Northern Rockies.

Wilderness endangered

Mr. Locke said the region “lost a lot” when the W.A.C. Bennett dam was raised, creating the huge Williston Lake hydroelectric project. It was marketed as being good for wilderness and wildlife, but it’s hard to understand how that could be, he said. In fact, the wilderness others find so precious is endangered, he added.

Mr. Locke said he found his first trip to the Muskwa-Kechika region to be “deeply, deeply moving” as he experienced nature and its creatures in a way he had only heard about as a boy. “I was in awe,” he said, referring to a sighting of 26 caribou. “Wilderness makes you think more clearly,” he said. “Without it we are all poor. Worldwide, we are poor.”

Plan for the future

Mr. Locke said it was exciting to see the formation of the Muskwa-Kechika Management Area because it involved designing a wilderness plan for the future, some thing that has never happened before. Noting that people from “all walks of life” came together to develop the M-KMA with the intent of maintaining in perpetuity the land and its creatures in a way that is compatible with some limited recreational and industrial uses, he said: “I applaud you, it’s fantastic.”

But Mr. Locke said the real challenge was in coming up with a workable plan. “How do you do that?” he asked. He said it is important to focus on what wilderness is. “We all know wilderness means something and is as important as love, money, etc.,” he said. He suggested the definition of wilderness is “self-willed land” -- land that runs itself and thus is self-willed, land that is wild as opposed to manipulated. It is equally important to consider what the landscape is and what experiences it offers

now, he said, adding that roads “are the worst thing” to happen to any wilderness. Among other things, they create “habitat islands” and wildlife does not do well in habitat islands, he said.

“Let’s have no roads in the Northern Rockies,” said Mr. Locke.

PROTECTING CULTURES FROM BECOMING COMMODITIES

IT'S IMPORTANT TO INVOLVE INDIGENOUS PEOPLE IN DECISION MAKING

**Summary of a Presentation by
Dr. Charlene Higgins
Consultant Specializing in Indigenous Peoples**

Dr. Charlene Higgins has been involved extensively with indigenous peoples and she stressed the need and importance of “involving and engaging” indigenous people in the decisions being made about wilderness areas. It’s really important for indigenous peoples to be able to protect their culture and knowledge, she said.

Dr. Higgins cited the Brundtland Report, which outlines the importance of indigenous role in sustainable development, and noted that documents recognize the importance of indigenous people in sustaining resources and biodiversity.

“Culture, biodiversity and indigenous knowledge are intertwined,” she said, adding that efforts to conserve and use biological diversity should include ways to protect the heritage of indigenous peoples. Indigenous peoples’ knowledge is unprotected, she explained, and no effective legal mechanisms exist for that protection. In addition, elders are dying and lifestyles are changing and many indigenous communities don’t know how to identify, collect and preserve their knowledge.

Protection

She asked workshop participants to consider if it is possible to offer protection to the ways of indigenous peoples while developing the land resource. She stressed it is important to recognize and protect the right of indigenous peoples to their culture, knowledge, and cultural practices. What are intellectual property rights, she asked, suggesting that one definition may be “information coming from the mind of a person if it can be applied to making a product that is made distinctive”.

She said indigenous people need a new system using generic mechanisms evidencing uniqueness and laws that protect at the community level. Even these will have their downfalls, she acknowledged, due to indigenous communities and their knowledge, and the challenges of collective ownership.

What can be done? Dr. Higgins suggested a community-based approach that would document the knowledge, keeping and housing the data in the community. Information should be shared through a process that recognizes the exclusive and proprietary rights of indigenous people, one which allows the community to charge for access and thus recover costs to enable someone to update and maintain this data.

Thus, she said, it is necessary to outline and define the indigenous community’s exclusive ownership of their culture, knowledge and practices. That should be followed by legally binding, information-sharing agreements. The local community approach to protecting and preserving culture is a critical first step, she explained, adding, “The wilderness experience must have biological diversity and the preservation of knowledge”.

GUIDE OUTFITTERS HAVE A STAKE IN THE MUSKWA-KECHIKA THE CHALLENGE IS TO MAINTAIN WILDERNESS VALUES

**A Presentation by
Ray Jackson
Guide Outfitters Association of B.C.**

Thank you from the Guide Outfitters Association of B.C. Board and the Northern Guides Association for the invitation to be part of this panel discussion and provide you with the perspective of guide outfitters. In the time that I'm allowed, I want to first of all tell you a little bit about our industry in British Columbia and our association. Then I'll spend a few minutes talking about the role that guide outfitters in the North played in helping to establish the Muskwa-Kechika and why we did it, and then I'll finish up by addressing some of the challenges that we all face in ensuring that its wilderness values will be maintained for our children and their children.

The guide outfitting industry generates more than \$50 million a year in economic activity in British Columbia, with a good part of it occurring right here in the North. An independent economic analysis that was done in 1996 showed the combined market value of guide outfitter territories in British Columbia totalled more than \$146 million.

“
**We don't
always
agree with
each other**
“

Overall in British Columbia our industry employs around 2,000 people to look after more than 5,000 clients from around the world who come here each year to hunt, fish, ride horses, take pictures and do everything else that visitors do. Just counting hunting licence fees, tag fees, royalties and our own licence fees, payments to the government totalled more than \$2.8 million last year. That's money going directly to the province, much of it

coming from the guide outfitters operating in northern British Columbia, including the Muskwa-Kechika.

Our organization, the Guide Outfitters Association of British Columbia, of which the Northern guides are an important part, represents the vast majority of the 234 licensed guide outfitters in British Columbia. Guide outfitters have been providing hunting and fishing services for clients from around the world for more than 100 years.

The success of our industry is dependent on our ability as guide outfitters to deliver a truly wilderness experience. Now, I'm not talking about the wilderness experience that occurs on a Friday night in downtown Vancouver, or maybe in Ethel's Bar & Grill somewhere between there and here. I'm talking of sitting in the saddle somewhere in the Muskwa-Kechika under a clear blue sky on a September day watching a herd of elk drift across the valley bottom, and then looking up to the top of the mountain and seeing Stone sheep on the horizon. Now that's the type of wilderness experience that we can identify with. The natural resources combined with the guide outfitters' knowledge of the wilderness, our guiding experience, our ability to provide quality services and facilities for our clients, has resulted in a high-quality international product, especially within the M-K.

History of management

Guide outfitters have a long history of participating in the management and conservation of wildlife in British Columbia. We routinely provide valuable information about different populations and their habitats to provincial wildlife biologists. Our livelihood depends on pristine wilderness and healthy wildlife populations. We have a vested interest and we are darn proud of that vested interest. Over the years, guide outfitters have often led the charge to protect wilderness areas through the establishment of parks and what we now know as protected areas. Guide outfitters have often been the first people to dig into their jeans to help cover the cost of inventory work or habitat enhancement. If there is a conservation concern, because we spend so much time in the mountains we have often been the first to raise it.

To draw the public attention to special areas, we had to get that attention, and we did that in various ways, even putting reporters and politicians on horseback to give them a taste of that special experience. Mind you, most times it was a special experience, some would say even a challenge, to get them to stay in the saddle. We worked with other groups, organizations and stakeholders before it even became the politically correct thing to do. We knew we had to build those alliances if we were going to achieve goals. We couldn't do it alone.

Disagreement

We didn't always agree with each other on how to achieve our goals. Sometimes there was disagreement over activities. Sometimes we would get into discussions about hunting and then maybe the next time it was about the nutritional value of eating granola vs. eating moose. Now let me tell you, that's a great discussion to have around a fire at night with a granola cruncher after they've just finished off a big moose steak. But by working together here in the North we achieved something that is rare and special. Others looked at us with envy, while others came along with their own ideas as to what was best for the M-K.

If we were to look ahead 10 years, what challenges will we face in our efforts of protecting the wilderness values of the M-K and our livelihoods? Pressure from the oil and gas companies is at the top of the list, while over-regulation of traditional uses such as hunting, fishing and guide outfitting may be near the top. Increased access will also put added pressure on those wilderness and cultural values that are at the heart of the M-K and of our industry.

To deal with some of these challenges, we may want to look back to the days when we were just starting out to protect the Northern Rockies. We needed government's help, but we didn't want them taking things over. More than anything else we needed British Columbians and Canadians to know what a national treasure we have here in the North, and we don't want it to become another Banff National Park.

TOURISM HAS A ROLE TO PLAY IN THE WILDERNESS

HIGH-QUALITY ENVIRONMENT ESSENTIAL TO THE INDUSTRY

**Summary of a Presentation by
Ric Careless
Executive Director, BC Wilderness Tourism Association**

Calling the Muskwa-Kechika “truly magnificent”, Mr. Careless offered congratulations to all involved in its creation, noting: “Wilderness is where the soul of the planet resides”.

He said he was interested in tourism and tourism outfitters who get involved in sustaining wilderness. The Wilderness Tourism Association links a range of sectors together, he said, including sustainable and valuable forest products and sound, sustainable business practices. The association, he said, focuses on adventure, guided hunting and fishing trips, cruises and eco-tourism. There must be an economic guarantor that there will be wilderness in the future, he said, and the association works to ensure that local communities realize they have a vested interest in the wilderness.

“
**Tourism
is B.C.’s
other
forest
industry**
“

Noting that wilderness tourism has an 11 per cent annual growth rate, he said it is important to secure a land base for it. “We have to get serious about protecting this resource,” he said, adding that obviously tourism is big business in B.C., bringing in \$10 billion to the economy, through 112,000 jobs, and providing \$1 billion in net revenue to the B.C. government. In fact, he said, tourism already is the world’s largest industry.

Based largely on the rural economy, such tourism helps that economy import dollars from urban areas, and aids economic diversification. This kind of venture has the highest rate of owner/operators, and is critical for creating youth employment, he said. “In BC we sell nature,” he said, adding that tourism depends on maintaining a high-quality environment while ensuring that the future involves secure and careful land base management in order to protect the resource. And it’s important to think of tourism as a resource, he said.

That means mapping wilderness products and making the best use of a “world class product” in the Northern Rockies. The Super Natural BC campaign, which cost \$16 million spread over 16 years of investment, ensured B.C.’s strong global marketing position, which is important for both rural and urban tourism, he said. But New Zealand is now going after this market share, he warned, so it is more important than ever that our resource is protected. Yet there is no management plan for this valuable tourism resource, he said.

“Tourism is B.C.’s other forest industry,” he said. While forestry gets credit for being B.C.’s biggest revenue base, it is important to realize that tourism generates 80 per cent of the gross domestic product of the forest industry and employs more people than forestry. In fact, he suggested, 80 per cent of the revenue going to government is from tourism and its spin-offs. With that in mind, the association is working so that the wilderness tourism industry has a land base.

The heartland of tourism includes the Muskwa-Kechika area, he said. Within the Muskwa-Kechika Management Area the protected areas are for biodiversity, for nature, for wildlife, while there are also special management zones where some resource extraction may occur but wildlife and nature would come first. The Wilderness Tourism Association supports these ideas, he said, because the group believes tourism is the leading use of the overlap between the SMZ and the working forest.

Tourism can be divided into zones, such as front country tourism, which operates along roadways and has the highest volume of tourist traffic; and back country tourism, which often coincides with protected areas and operates as a low impact endeavour which allows for sustainability. A systems approach allows operators to succeed while protecting the environment, he explained.

“Tourism done right is good for everybody,” he said, explaining that the intention of the association is to have government and the public understand the importance of tourism. With the new Liberal provincial government, economics and jobs may become more important, but he said that the association believes tourism can be developed in economic sustainability.

TRADITIONAL KNOWLEDGE CAN BE USED TO PROTECT M-KMA

DISCUSSION OUTLINES SOME SERIOUS QUESTIONS

Summary of a Presentation and Ensuing Discussion by Dennis Porter and Bill Lux First Nations representatives

Dennis Porter explained that, from the Kaska perspective and language, the Muskwa-Kechika is the Kaska's "people's land" and to maintain the experience the land must be respected. The bottom line is respect for the land, for the numerous trails and numerous graves. The water is respected for what it is, and you respect the caribou. You respect the land to maintain the experience.

Bill Lux said the M-KMA is in the heart of the Kaska's traditional territory in B.C. There are five communities in the Kaska nation inside this territory. "Retaining the wilderness experience? To us this means protecting our culture, and enhancing and promoting our traditional knowledge and our traditional use. It is our backyard; we depend on it. It is a big part of our lives and our culture. It looks after you. You can't put a value on the land, our existence lies on that land. If we put a value on that land it can be bought."

He said the government has a day-to-day agenda and First Nations are forced to get involved in resource development and tourism because the people need an economy to survive. "Culture and traditional use are important to us and must be taken into account" he stressed. He noted that First Nations have four seats on the Muskwa-Kechika Advisory Board, which he called very important.

"We want to include our traditional use and knowledge," he said, stressing that any plans must capture "who we are and what areas are important to us. We're trying to preserve what's important to us. What you call wilderness, we call our backyard."

He said government must recognize the importance of using the Muskwa-Kechika Advisory Board and he noted that guide outfitters have just as much experience in this as First Nations. He said First Nations could use more support for their traditional knowledge, which can be used to protect wilderness areas.

Question and Answer Period

One participant said he had a problem with participating in a workshop "that doesn't begin to deal with the reality of the ground that I'm from". He asked that others consider what he was about to say "from the principle of where I want to head to", the principles of Treaty 8. He said welcoming all people was a tradition of his people but he was not sure he could carry on the tradition. He said he was "deeply offended" with the kind of terminology used in the workshop thus far.

"You talk of first explorers, pioneers, world famous explorers," he said, "but we (First Nations) have been here for thousands of years or at least hundreds of years welcoming newcomers. Our people kept the first explorers alive."

He said the terminology being used was arrogant and borne of ignorance and he asked that “out of respect” the workshop participants educate themselves to that reality. He said current circumstances in the region, such as mining, forestry and contaminated sites, should be taken into consideration, with the understanding that First Nations have interests here which also must be protected. He suggested that First Nations representatives should sit on the Rocky Mountain Park Advisory Board.

Mr. Porter replied that when the process started it was agreed that there would be a First Nations Steering Committee. He said he felt it was important to have a “second process” but he understood there to be problems finding someone to lead the process. “We are still interested,” he added.

Presenter Dr. Ric Careless was asked about one of his slides showing the volume of tourism. The questioner noted that the concerns “are parallel”, that the backcountry is not where forest companies want to be. Dr. Careless said he was not able to show other mapping during his presentation but he would be glad to show other maps after the session. The primary issue is view management, he said, and it should be possible to get the forest industry to see there is a win-win potential. He said it is possible for both tourism and forestry to coexist, but he stressed that tourism is deserving of respect.

Ray Jackson was asked about guide outfitting in the Cypress area, and what experience he might have had with industry operating in that area. “In 1991 when started we were able to move our horses into a mountain base camp and hunt,” he replied. “Today we have pickups and trailers and we move every two days.” Mr. Jackson said he worked with the oil and gas industry every day and “it does affect us”. He said the guide outfitting industry is “running out of country”. Some operators, like him, are able to operate in agricultural land, but that generally doesn’t include the wilderness aspect. “Most guys are overrun,” he said. “There’s no wilderness left, so what we have in the Muskwa-Kechika is special.”

Another participant asked what tourism and guide outfitting organizations are doing to protect local communities’ cultures and wilderness resources. Dr. Careless said tourism is very much about retaining the resources. He said it was important for all such organizations to ensure that there is a land base to work from, and to work with First Nations and local communities. “What happens on the land is important to everyone,” he said.

Integrating with oil and gas

It was suggested to Dr. Careless that, since the province gets \$1.7 billion annually from oil and gas revenues and 60 per cent of the Muskwa-Kechika is ripe for oil and gas exploration, would the wilderness tourism industry look at integrating with oil and gas. Dr. Careless said there have been many meetings on that very subject. “Oil and gas is geographically specific right now” he replied. “We are working closely with guide outfitters, who are so involved in it.” He said it was important to note that options for large areas are coming to completion in regard to large-area protection.

Dr. Charlene Higgins was asked what in her vast experience, was the greatest challenge and how was it solved. She said all challenges are different but the greatest success stories internationally generally involved bringing a “clear voice” to meetings, bringing different voices and values to the discussions, which could then include into the reports the role of indigenous knowledge in biodiversity.

Fort St. John Mayor Steve Thorlakson was asked what other funding sources could be accessible to the M-KMA. He said he could not know all the sources available but he indicated that while Fort St. John City Council was prepared to help the process, that help would not include cash. “You can be an agent

of the change or a victim; it's up to you, he said. "You can drive the bus and ride the bus or you can be the road kill."

He said local government would support the Muskwa-Kechika Advisory Board, help change the focus and hope that industry understands and supports the multiple uses of this area. He said enabling government and First Nations to work together should be the highest common goal, and he thought this would help to make a difference.

Mayor Thorlakson encouraged workshop participants to take up the challenge, "not as one who feels that you need to dig moats, but to use those same tools to build bridges of understanding between government, First Nations and others". He said this would provide new opportunities to work, gain understanding and form liaisons with First Nations. "We look forward to working with you and will continue to support you," he said, "because the whole world is watching."

A WARNING ABOUT COMMERCIALIZATION

IS GOVERNMENT PREPARED TO CASH IN ON THE WILDERNESS?

**A Presentation by
John B. Holdstock
Past-President, B.C. Wildlife Federation**

When I lived up at Muncho Lake a lot of years ago, I became friendly with Tom and Rose Mould, who at that time ran the Muncho Lake Lodge and also outfitted for big game hunts. When both Tom and Rose came into this country it was truly a wilderness, by anyone's definition. There were no roads or even horse trails. In the summer you traveled on the rivers and in the winter, on the trap lines, you traveled with dogs or on snowshoes. If you ran short of supplies out on your trap line, there was no local store to run to. It was real wilderness. If you made a serious mistake the country would kill you.

The building of the Alaska Highway in 1942 began the change in the North Country, opening it up to development. When I moved down the Alaska Highway to Muncho Lake from the Yukon in the early 60s, oil exploration had already crisscrossed much of the country with seismic roads. There was a network of emergency landing strips in the backcountry but most air travel into the backcountry was, as now, with floatplanes. The outfitting business was well established and hunting magazines were publishing articles about exotic hunting trips in this newly accessible wilderness. To any great extent, southern B.C. residents had not yet discovered northern B.C. and even local hunters were just beginning to expand their horizons into less explored territory. The Muskwa-Kechika may not have been the wilderness it once was but it still stirred the imagination.

Neither Tom or Rose Mould is with us any more but I wonder, with their history, how wild they would find the Muskwa-Kechika today. Wolves have learned to road-hunt the old seismic cuts. Jet boats traverse the rivers and snow machines now travel the backcountry in the wintertime. Heli-hiking operators are beginning to pump people into the high ridges so that more people can enjoy what is advertised as a wilderness experience. In fact, with the use of helicopters you can literally access any spot in the country in a few short hours, not the weeks and months it took in their day. The face of the wilderness has been permanently changed by technology.

So what will be the Muskwa-Kechika Management Area look like in the future? What will its wilderness look like 20 years from now, or even five years down the road? The decisions that are made in the coming months will tell the tale.

History of Land Use Planning

The B.C. Wildlife Federation was one of the original participants in the land use planning process in this province and our representatives have sat at every table. The federation had called for such a process for years before it became a reality. It began as a true land use process, intended to protect representative eco-systems and set the direction for the future in how the province was to develop. Now much of the discussions and decisions are based on moral and ethical issues that have nothing to do with real land use decisions.

When the B.C. Wildlife Federation went into this process we knew there were compromises that we and other resources users would have to make. Unlike other participants, the only thing we stood to gain was the hope that we could continue our traditional uses in wilderness areas. We were there to represent the wishes of our members – anglers and hunters – and to ensure that in the end they would be able to continue these uses on the land base. Part and parcel of that responsibility is the protection and enhancement of wildlife and its habitat, concerns about access, and the overall concern about the quality of the experience in the backcountry.

With the Muskwa-Kechika we also knew that there were risks as well as value in setting aside this land. We knew that when areas are set aside and as much publicity and advertising is given to the newly established areas, it attracts more attention from the public at large. It becomes more of a focus and there is increased demand on the resource as more people and commercial operators want to use the area. What was once an unknown jewel is now open for business.

Expectations

What does the B.C. Wildlife Federation expect of the Muskwa-Kechika? Simply stated, we expect the M-K to be maintained as it was. Unlike most industrial or commercial activities, traditional users such as hunters and trappers have been around from the beginning, with little or no impact on the land base. We wish to preserve that traditional use for the residents of this province.

We know that the Muskwa-Kechika Management Area was created to control, and in many cases prevent, commercial extraction of its natural resources. But we do not believe that the M-KMA was created to provide unlimited commercial opportunities for tourism. We have concerns, not only with the Muskwa-Kechika, but also in other land use processes in this province regarding the end use of Protected Areas. When the B.C. Wildlife Federation got into these processes, the understanding was that Protected Areas would be managed differently than parks, and not under the Parks Act, and that traditional uses would continue to be acceptable in these areas. This how we expect the M-KMA to be managed.

Government's Involvement

One of our ongoing concerns regarding not only the Muskwa-Kechika but in other areas of the province as well is that government, through the B.C. Assets and Land Corporation (BCAL), seems determined to cash in on the wilderness. They appear to only see the cash value of the backcountry and have already been guilty in the province of approving motorized commercial tourism tenures in wildlife-sensitive areas, overriding the concerns and objections of the government's own Fish and Wildlife Branch staff.

BCAL, which derives its operating revenues from its lease and land sale fees, has no incentive to limit its sell-off of the backcountry, and in fact has a strong incentive, if not a mandate, to commercialize as much as the traffic will bear. And maybe more. That said, what are the dangers to the wilderness and to the resource with increased commercial operations and in particular increased motorized commercial activity?

Wilderness Tourism and Wildlife Values

Wilderness tourism needs wildlife for people to see. To see those animals, and to satisfy your paying customers, you must go where they are the most numerous or concentrated. It is unlikely that you will see grizzly bear viewing operations in the high country, as the bears are more widely dispersed.

Grizzly viewing stations will be found on the coast where salmon runs effectively perform as a bait station to draw the bears in.

For tourists being ferried into the M-K, the expectation will be to at least see sheep, goats and caribou in the alpine country. It would be naive to think that helicopter-run tourism operations won't give them that opportunity. Anyone who has done aerial game counts knows how wildlife reacts to a low-flying helicopter: They run and try to find cover. Constant over-flights by helicopter operators will drive wildlife off preferred feeding grounds and predator secure sites. They will negatively affect their security and their feeding patterns. Flights in the spring during lambing time will end up forcing females to move to far less secure habitat and will almost certainly lead to higher mortality in young animals.

In the short term, helicopter over-flights may appear to the casual observer to be harmless. But in the long run, if flights such as this are allowed to proliferate, they will adversely impact wildlife populations and down the road we will see tourism operators complaining to the government that their businesses are being impacted by the lack of visible wildlife and wondering what the government is going to do about it. The very value that attracted the operator in the first place will be gone.

Unfortunately, at that point they will be talking to the Fish and Wildlife Branch and not to BCAL, where the problem began. They will also, as the past has shown, be demanding that hunting and fishing be further restricted so they, the commercial operators, will have less competition in the wilderness.

Putting People into the High Country

I think that the term "wilderness tourism" is an oxymoron. Regardless, various forms of it are being promoted throughout the world. One that is becoming more popular is heli-hiking, where paying customers are ferried by helicopter onto the top of a ridge and dropped off where they can take an extended hike in the alpine country with the expenditure of little personal effort. Once they have had their fill of the wilderness experience they are ferried back off the mountain, presumably back to a lodge where they can sit in the sauna and drink lattes while they contemplate their next adventure.

Is there anything wrong with this? Absolutely not! And to prove it, there are helicopter loads of people who are willing to put up good money to do just that. But the question is, how many people can you send out hiking on the alpine ridges before the "wilderness experience" is a joke and cumulative damage to the alpine habitat is irreversible? Where is the wilderness experience for other users as helicopters ferry paying customers from lodge to mountain and return? Where is the wilderness experience for the person who has packed into the top of a ridge by dint of hard work and perseverance only to have a helicopter bearing a load of tourists descend on him? Are his rights to this experience less valuable because he did not pay the commercial fee to arrive there?

If there is to be a wilderness experience there must be one for all users. The M-K should not be managed only for those who are willing to pay for that experience. And we should not allow the desire to produce a cash flow to set the standard for what a wilderness experience is.

What is the Difference?

There appears to be a consensus that a road into the backcountry lessens its value as wilderness. But in truth, what is the difference between a road on the ground and a road in the air that accesses a remote

ridge? Both “roads” put people on that ridge. The difference is that the road up the mountain allows almost anyone to access the ridge. Access by helicopter only allows those in who can afford to pay. We might end up with the same number of people on top of the ridge either way; it is just that one is much more profitable than the other. But is wilderness damaged any more or any less by either “road”?

Commercial Operations Are Like A Black Hole

The danger with commercial recreation is that without some kind of control it is insatiable. You need at least a certain volume of business to survive. After that point, the more people you can process the more revenue you can generate. And to induce more people to use your services rather than your competitors’, you need a better product. So the demands will increase for land tenures so lodges can be built in the wilderness and huts built on the ridges for the comfort of the customer. No one will live with the current status quo.

When commercial tenures are issued, access for others becomes restricted either to the leased area itself, or to the lake or trail that now has a commercial operator attached to it. Traditional users are looked upon as non-paying competition and, inevitably, attempts are made to block their use of the resource. It is important to our members that they maintain their opportunity to move about and use the backcountry without restrictions, as they have always done.

Even with regulations it will be next to impossible to control the volume of traffic that will be generated, particularly through motorized commercial operations. This is especially true when government gets used to the revenue generated from the tenures. Once they depend on it, it will be difficult to convince them that there must be a limit on what they allow. Governments are notoriously weak in supplying enforcement to back up regulations, especially when the enforcement aspect will generate less revenue than the enterprise they are trying to regulate. Now we are apparently heading into a new era of self-regulation and we have no doubt where that will lead us.

Commercial Operations Not All Bad

This is not to say that commercial operations can’t work without destroying what people came to enjoy in the first place. In the case of the guide outfitting industry, the wise decision was made to allocate specific territories to each operator. This eliminated confrontations and over-harvest between outfitters competing for the same resource. But our experience to date with the current attempt at the management of backcountry recreation would indicate that the government has learned nothing from that example.

In the end we must decide what kind of wilderness that we want the Muskwa-Kechika to be. A person who comes from a city of five million people may get off the bus at Banff, look up at the surrounding mountains and believe that he is in the wilderness. From his particular viewpoint that is wilderness. But does that have to be the baseline for the rest of us? I used to read stories of old hermit trappers who would up and leave if someone else showed up in his valley with intentions to stay. Their sense of wilderness was more refined and they left because that wilderness had been invaded and lessened.

The dictionary defines wilderness as an uncultivated, uninhabited, empty or pathless region. I doubt if the M-K fulfills that definition anymore. I am not sure that I can make a definitive statement as to what my version of wilderness is, but I know what wilderness is not. Wilderness is not a place that is full of people. A road by itself does not destroy a wilderness, but the people it brings in does.

A wilderness will recover from a mine or logging. But it ceases to be a wilderness if your solitude is continually shattered by rotor blades overhead or if your destinations are constantly limited by the presence of other people in the area.

We believe that the Muskwa-Kechika Management Area was established because a lot of interested people wanted to maintain it, as closely as possible, in the same state that it is in today. They recognized that they could not turn back the clock and probably couldn't stop the clock either. But they wanted to slow it down considerably. They wanted their grandchildren and their grandchildren's grandchildren to be able to know the mountains and the valleys that they knew.

There is a mindset in some circles that if a resource is not being used, then it is wasted. Back in 1973, Warren Page, a writer for *Field & Stream* magazine wrote: "The recreationist segment views all uninhabited areas, all green space, as part of a playground for the masses which they will chop up with roads and parking lots and picnic tables, at whatever detriment to the area's animals or natural beauty, so that the masses can without effort enjoy what is left". The key phrase there is, "what is left".

Conclusion

Unless we take a strong philosophical position on what the Muskwa-Kechika is and must remain, unless we take a strong position to control the commercialization of the Muskwa-Kechika, then the Muskwa-Kechika will drift further and further away from that dictionary definition of what wilderness is, and the tourist escaping from his city of five million people will stand on that mountain ridge with a group of similar tourists and marvel at the wonders of wilderness. His concept of wilderness will be 20 people standing on a high ridge in the mountains. He will not realize that the people who were responsible for setting this area aside had a different idea of wilderness and what it should be used for.

But the rest of us will know what we have lost and, once lost, will never regain.

WILDERNESS VALUES: A GERMAN PERSPECTIVE

MUSKWA-KECHIKA CAN PROVIDE WHAT FOREIGN TOURISTS ARE SEEKING

**A Presentation by
Dr. Christoph Gnieser
Assistant Professor, School of Outdoor Recreation, Parks and Tourism
Lakehead University**

It's a privilege to be here today to swap ideas and thoughts on wilderness with such a diverse group of people who share wilderness as a common interest.

But can wilderness really be distilled into this monolithic entity, a single word that pinpoints a distinct set of values? To use a pictorial metaphor, I look at the concept and definition of wilderness as something like an insect's eye: multi-faceted and covering a broad spectrum of vision or, in our case, values. In my talk I will focus on a small clump of facets in this eye to provide you with an idea of the German perspective of wilderness, a distinct cultural bias thrown into this forum for good measure.

My talk will probably fit in most closely with Ric Careless' earlier presentation on wilderness tourism because my purpose is to give you an appreciation of German wilderness values, which may be significant from the perspective of commercial outfitters. After all, German tourists are famous (or infamous?) for international travel, making up a sizeable portion of the wilderness recreation market in B.C.

**Examining
the German
wilderness
idea in the
M-KMA
context**

Not only do I believe that the overall number of German tourists will rise in years to come but that I think that they'll also seek out new destinations, such as the Muskwa-Kechika Management Area. Germans have a peculiar preoccupation with anything Arctic and subarctic, including Canada's Boreal Forest. To give you an idea of how wide-spread and almost obsessive this interest is: In 2000, over a dozen books were published in

German on some form of polar wilderness expedition, and most of these new titles came out with a first printing of at least 30,000 copies.

In the next 15 minutes I'll share some of my thoughts on the German perception of wilderness, the changes it has undergone over time, and I'll finish by musing over some of the potential implications for commercial recreation and possibly management in the M-KMA. You'll notice that throughout my presentation I'll use the term wilderness predominantly in the sense of an experiential notion, as a social construct, notwithstanding the biophysical entity that we refer to as wilderness.

Contrary to most Canadians and Americans, I did not inherit my wilderness values from my immediate ancestors. Post-war Germany had none of the type of wilderness left that we are discussing here. And yet, I grew up with a sense of what wilderness ought to look like: It clearly resembled the wide-open expanses of North American hinterland areas. Long before I ever left Germany I had already adopted the idea and ideal of big North American wilderness.

You may not be aware of it, but both Canadian and American society have quite forcefully exported their notion of an ideal condition of the natural environment and their thoughts on what constitutes proper preservation around the world, promoting very aggressively, for instance, national parks and wilderness reserves as choice instruments for conservation. Short of the type of monumental cultural symbols of national identity, such as the ancient castles and musky cathedrals of the Old World, Canadians and Americans early on defined their independence, identity and even spirituality through the stupendous natural icons of the North American continent. I would argue that Germans have eagerly and enviously adopted the ideas behind these natural symbols and ideals for at least a century, maybe especially after the moral defeat of two lost World Wars, eager to shed the incarcerating trauma of the past, longing for a new start which the original idea of wilderness, at least in the American sense, embodies as the primary symbol of the frontier past.

Used North American ideal

I believe that the contemporary notion of wilderness in Germany has until very recently been a well-received conception moulded almost entirely from a North American ideal. However, since the modern notion of wilderness in Germany is not a homegrown, innate idea, I would also think that its interpretation is still malleable and will continue to evolve.

Let me explain my thoughts on the German wilderness idea, its origins and development in some more detail now. Given the limited time that I have available I'll distinguish between three broad phases in its evolution, three phases which are distinct philosophically and yet overlap in terms of their chronology. The first phase is set off by the powerful lure of literary lore; the second phase is defined by aesthetic yearning; and the third, most recent, phase is informed by ecological concern.

Let me start out with the powerful lore/lure of historic and contemporary wilderness literature. European romanticist writers of the 19th century, the pedants to Thoreau and Emerson, established a wide-reaching appreciation for the wilderness idea, marvelling at the beauty of wild lands and promoting its strengthening qualities for the human spirit. In the Romantic tradition, wilderness had lost much of its former repulsiveness and was portrayed as a beneficial challenge in terms of providing existential and important experiential values. Romanticism was about freedom and rebellion against convention, and all German literary accounts from the North American wilderness fit this image. Romanticism never questioned the dominant and ultimately detrimental pioneer attitudes towards wilderness. In fact, the German romantics glamorized frontier lifestyles in their fictional narratives or travel accounts.

Likely you've all heard this before and are probably wondering about the merit of me chatting about 19th century German books, but I should point out that the German authors of that period continued to be standard literary fare for most if not all German adolescent males during the 20th century. In fact, for generations, including my own, readings of Friedrich Gerstaecker, Karl May and Jack London were pretty much obligatory to be part of the pre-teen and early-teen in-crowd; we traded their books the way Canadian boys traded hockey cards. Reading this stuff was about fantasizing a free life unencumbered by history and the trauma of wars. It was about self-actualization. (I should mention that the geographic focus of these authors was predominantly Canada and the U.S.)

Long after Americans had begun to digest Aldo Leopold's suggestions for a new land ethic, we were still stuck on 19th century frontier books. In fact, to this day they still enjoy cult status and a summer holiday to the frontier places that are engrained in the German mind would be a fulfillment of bright

childhood dreams. As such, Gerhard Trommer (1998) from the University of Frankfurt described wilderness as a 'psychotope' rather than a biotope.

The view of the wilderness as a frontier setting by default includes some level of human development and I would argue that the German interpretation of this notion accepts some form of modern-day analogues, especially if they are folks who eke out a subsistence living on the land. As such, First Nations' use of the land, outfitters, bush plane traffic, and even small-scale exploration and mining camps probably strengthen rather than deconstruct the powerful frontier lore and are quite consistent with the German notion of wilderness. That said, there are obviously somewhere limits of acceptable development, but I won't dare speculate where that lies.

Aesthetic appeal

A second principal, and by no means less important, wilderness value for Germans is aesthetic appeal. It may be the relentless advertisement with which American and Canadian landscapes have been promoted for consumer and tourist products, or it may be the perceived confined-ness of west-central Europe: its neatly bunched-up doll-houses in stuffy century-old villages; its extensive but nonetheless highly-fragmented patchwork of forests; as well as the tedious order of agricultural lands that make German landscapes seem cute to some but stifling to others. Even the undeveloped parts of the Alps appear considerably more confining with their narrow, deep and therefore often dark valleys and imposing peaks in a comparison with the Rockies.

Or maybe it is simply an innate, evolutionary human condition that leads us to appreciate and contemplate views of vast landscapes that stretch the horizon, as this seems to convey a sense of independence, option and opportunity. But there is no doubt that 'open spaces' are a defining characteristic of North American wilderness from a German perspective. And for the sake of aesthetics, most Germans are quite accepting of management actions that support their vision of landscapes that please the eye. The active management of the alpine tree line is a prime example. Across the European Alps, animal husbandry is heavily subsidized to maintain a lower than natural tree line to maintain the traditional vision of what we have come to associate with the alpine landscape.

Nonetheless, the visual impacts of any industrial-scale development and fragmentation of the viewshed in landscapes therefore raises a significant issue. As such, the two German ideals of wilderness, the seemingly endless aesthetic landscape and wilderness as the frontier setting, ultimately clash.

There is an obvious contradiction in this wilderness vision but hey, it's not entirely reasonable to expect consistency in argument from the average traveller, is it?

To confuse things a bit more, let me now introduce the proposed revision of the German Nature Conservation Act (BnatSchGNeuRegG) for which an amendment (BDrucksache 14/6378 (2001-11-13)) has been tabled that would preserve wilderness (Wildnis) in its own right, thereby recognizing its intrinsic value ("eigenwert der wildnis an sich").

This presents the third and most recent re-incarnation of the German wilderness idea. In fact, the term wilderness ("Wildnis") became a buzzword within the European conservation movement. The context for this discussion was academic musings on whether it was feasible at all to re-establish wilderness in Europe.

There was widespread recognition that various international commitments to the protection of biodiversity required the restoration of natural ecological processes, including natural disturbances such as avalanches or stream flooding that had been managed for centuries. In fact, in various discussion documents such as the national awareness campaign by the BUND (the Coalition for Environmental and Nature Protection), the terms wilderness and 'protection of natural processes' were presented as synonyms and as such were used interchangeably. Arguably, the definition of wilderness had begun to take on a new form. Wilderness in this specific context referred to protected land designations under Category 1b of the IUCN classification.

But is there even any such wilderness left in Germany, Austria and Switzerland? Ultimately, the landscape has been settled and intensively managed in most places for thousands of years. What's left are small, postage stamp-size pockets of so-called 'primary' forests, bogs, meadows and significant ecological associations. But at present there aren't any wilderness areas that would satisfy all criteria of the IUCN definition to warrant certification and designation.

Significant changes

However, we can expect some significant changes in the decades to come. German national park authorities have begun to manage their core reserves in accordance with wilderness guidelines and to manage all surrounding buffer areas in any manner that will expedite the process of 're-wilding'. In the absence of large-scale areas capable of supporting natural evolving systems, the conservation of biodiversity in Europe will require continued human intervention. These efforts are supported by well-orchestrated public awareness campaigns through which park administrations hope to gain acceptance of the revised wilderness concept by the general public. Outside of national parks, there are also serious efforts to re-establish wilderness but I think the parks example gives you a basic idea of where the latest wilderness vision is headed.

Arguably, this latest perspective on wilderness is still in its infancy and provides a complete paradox in the context of the two other competing wilderness visions, which at this point are still more prominent among the general public. Future small-scale wilderness areas in Germany can't be managed to be untrammelled, aesthetically pleasing as well as satisfy incipient frontier urges.

The current political verdict clearly favours the restoration and protection of ecological processes and integrity at the cost of both other values. Given the relatively high level of ecological literacy in Germany, it shouldn't be long before the general public will accept the reasoning behind this latest vision and adopt it in its examination of tourist destinations around the world.

In other words, I believe that, increasingly, German tourists will evaluate the attractiveness of specific North American wilderness areas as to whether they can satisfy all three visions of wilderness without requiring extensive travel between locations. The Muskwa-Kechika Management Area is in a position to provide the breadth of these desired wilderness experiences, probably better than most of Canada's national parks ever could or even should. However, those charged with determining the future of the M-KMA will have to evaluate if foreign wilderness values would be consistent with their vision for the area and whether they should be considered at all.

A PROMISING EFFORT TO DO THE RIGHT THING

M-KMA OFFERS AN ALTERNATIVE TO THOUGHTLESS DETERIORATION

**A Presentation by
Jim Pissot, Executive Director
Yellowstone to Yukon Conservation Initiative Society**

Regardless of what roadless expanse we see from horseback, airplanes or on foot in this spectacular country, we live in a global landscape dominated by humans. Look around this room: No bears. Not a single moose or caribou. No tundra swans. To the degree these animals are represented, they are here by clan affiliation or because we have eaten them or are wearing them. And these are all good things.

But the animals are also with us in our minds and spirits. That is why we are here. And if we do the right thing – in this room and others like it – these animals, and the humans who value and enjoy them, will thrive in the Muskwa-Kechika and the entire mountain eco-system from Yellowstone to Yukon. Moose, caribou, sheep and elk. Grizzly, wolf and wolverine. They have been here since this land was created and re-created and they will be here, for us, for countless generations if we do the right thing.

In *A Sand County Almanac* Aldo Leopold (1949) wrote, “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” During these three days, and in the workshops to come, we will try to distinguish the right thing from the wrong thing, and choose the right.

The Muskwa-Kechika Management Area is recognized in British Columbia as a very promising attempt to do the right thing. And your efforts are celebrated from Yellowstone to Yukon and beyond. We struggle throughout the North American continent to figure out how modern communities can live in – more than live in, actually support and embrace – the naturally functioning systems we call home. Here in northern British Columbia, in Dena Keyih, all the people of this land are working to make this happen while there is still abundance and opportunity. We congratulate you in this effort. We anticipate your success. We look to your leadership.

I would like to spend a few minutes this morning talking with you about three related themes:

- ❖ The Yellowstone to Yukon Conservation Initiative
- ❖ Essential contributions to conservation, including priority areas for wildlife, human innovation, and communities and landowners committed to conservation in their own best interest; and finally,
- ❖ The critical importance of the Muskwa-Kechika Management Area.

The Yellowstone to Yukon Conservation Initiative

The Muskwa-Kechika Management Area sits about two-thirds of the way up what is called the Yellowstone to Yukon ecoregion. Starting in northwestern Wyoming, a relatively similar chain of mountains, valleys, rivers and, most importantly, communities stretches north to the Mackenzie and Peel rivers in the Yukon Territory.

It is peopled by ranchers, First Nations, factory workers, office workers, hunters and trappers, resource industry workers, tourists, retirees, and families earning a living. We live in communities like Fort St. John, Blairemore, Alberta, and Livingstone, Montana, hoping this Western landscape will provide open spaces and economic opportunities for our children and grandchildren.

Yellowstone to Yukon is also a country peopled by bighorn sheep, elk, lynx, wolf, moose, mule deer and white tails, grizzly and black bear. By mountain lion, bighorn, pronghorn, and shorthorn. By golden and bald eagles, sandhill crane, sharp-tailed grouse, great horned owl. In fact, we still enjoy all the wildlife species that were here when Native people guided Thompson, Mackenzie and Lewis and Clarke through these mountains.

“
**A century and
 a half of
 human
 impacts...
 have all taken
 their toll.**
 “

This, of course, is the Yellowstone to Yukon ecosystem, said to be one of the most intact mountain ecosystems in the world. And because of its natural treasures, residents enjoy a very high quality of life and visitors arrive from around the globe. Long cherished for its breathtaking beauty and wealth of species (most notably the charismatic large carnivores), this “wild heart” of North America is showing many signs of deterioration. A century and a half of human impacts – mining, logging, damming, road building, oil and gas exploration, subdividing, farming and ranching – have all taken their toll. The once tightly woven tapestry of life is being torn and frayed, species are disappearing or struggling to survive in islands of habitat unable to support

them, and the natural resilience of the entire ecoregion has been compromised.

Yellowstone to Yukon, like the Muskwa-Kechika Management Area, offers an alternative to thoughtless step-by-step deterioration. Together, we attempt to answer the question: Given what we have learned about wildlife and wilderness and rural communities over the past 30 years, what do we need to do now if we value species other than ourselves enough to want to keep them as part of our lives? Or, put another way: How do families earn a living, how can communities and individuals flourish here, without overwhelming nature and the overall quality of life?

One thing we have learned is that many wildlife species need large areas for foraging, reproduction and security. We also know that wildlife need to be able to move between these protected areas. But a wide range of activities to meet human wants and needs is dividing and subdividing intact habitats, until we’re left with small wildlife populations living in isolated wilderness ghettos. In these isolated habitats, typified by much of the western edge of Yellowstone National Park, wildlife populations are vulnerable to genetic weakening, natural catastrophes such as fire, drought, disease and food crop failures. The result is that small, isolated populations tend to weaken, decline and disappear over time. As recently as the late 1980s a biologist named William Newmark (1987) showed that 29 different mammal species have disappeared from “protected” national parks in the western U.S. for no other reason than being isolated on habitat “islands”.

David Mattson’s research of North American grizzly bear distribution illustrates this phenomenon very clearly (*Mattson et. al. 1996*). It shows how a population of bears that numbered 100,000 less than 200 years ago was divided and subdivided into smaller and smaller pocket populations. And how, one by one, those small populations have disappeared – a combination of loss of habitat and a frontier mentality of shooting just about everything that came into your sights.

Today, the lower 48 in the U.S. has fewer than 1,000 bears that occupy less than two per cent of the species' former range. Aside from the obvious trend of island populations "winking" out, note what's happening just north of the Medicine Line, where we have a narrow peninsula that is just waiting to be cut into islands. And this islandization is creeping north into Canada.

Conservation biologists joined by hunters and trappers, wildlife managers and wildlife advocates have pushed the idea of large, ecosystem-based planning and management for 25 years (*see Noss 1996*). Dr. Reed Noss, with his conservation model to save the Florida panther and black bear, was one of the early articulate proponents. As Dr. Noss explained, this idea of landscape connectivity – of habitat strongholds, wildlife movement areas and transition area that soften the line between wild habitat and industrial development – may offer the best hope for wildlife species we value in this region.

How did Y2Y come about? It started with a meeting in late 1993 that was convened near Calgary by a group of conservationists and scientists who were alarmed at what they were seeing in the Rockies. They were interested in applying this idea of connectivity to their own backyard and as they talked, the vision became much clearer. They wanted a marriage between "science", "conservation advocacy", and sustainable communities.

The Yellowstone to Yukon Conservation Initiative is a Canadian and U.S. network of more than 160 organizations, scientists, businesses and foundations, representing almost one million conservation-minded individuals, working together to conserve the beauty, health and natural diversity of the Rocky Mountains from the greater Yellowstone ecosystem to the central Yukon. To our knowledge, no comparable collaborative effort exists at such a scale anywhere in the world.

Three program areas

Y2Y's projects fall into three program areas: conservation science, public outreach and education, and supporting the Y2Y network. Our science program sponsors more than \$550,000 in original scientific research, analysis and synthesis regarding carnivores, native fishes, and resident and migratory birds. Based on this effort, we will work with advocates throughout the region to propose a Conservation Area Design – prioritizing core and connecting wildlife habitats and valued spiritual, recreational and aesthetic areas – to ensure that the world-renowned wilderness, wildlife and natural processes of the Yellowstone to Yukon region will continue to function as an interconnected web of life.

To tap existing and strengthen public support, Y2Y meets and seeks to work with other interests in the region, including elected officials, community groups, businesses, landowners and land managers, agency scientists and others. We publish reports, fact sheets and brochures, provide information packets to national park interpreters, conduct media tours, and identify and support practices that are compatible with wildlife protection. To assist network members, we host a website and other communication tools, sponsor skill-building workshops, and award support grants to network groups.

Since hiring a coordinator and opening an office in January 1997, Y2Y has hosted a 350-participant, bi-national conference and public launch; published *A Sense of Place: An Atlas of Issues, Attitudes and Resources in the Yellowstone to Yukon Ecoregion* (Harvey 1998), as well as several reports and monographs; launched a comprehensive, map-based, long-range conservation planning process; provided annual mini-grants to support regional grassroots efforts; supported a two-year, 2,200-mile Y2Y hike; delivered well over 100 public presentations; and developed brochures, slide shows and a website.

Our efforts have not gone unnoticed. Y2Y's work has been lauded by leading scientists, conservationists and organizations, and has drawn phenomenal media attention from newspapers (including *The Globe and Mail*, *Washington Post*, and *Christian Science Monitor*), radio (including the Canadian Broadcasting Corporation and National Public Radio) and magazines (*Equinox*, *Smithsonian*, *Audubon*, *Backpacker*, *Outside*). *National Geographic*, in June 2000, published *Yellowstone to Yukon*, a splendid special edition book about the ecoregion and the Y2Y Initiative (*Chadwick 2000*). The prestigious Glenbow Museum of Calgary, Alberta included Y2Y as part of a major exhibition on the life and work of artist Carl Rungias, and the American Museum of Natural History in New York has expressed interest in mounting an entire exhibition on Y2Y this year or next.

The Yellowstone to Yukon Conservation Initiative combines sound science, local advocates, innovative outreach, and a new vision for conservation and the community. We invite you to join us in this historic effort.

Conservation: Human Communities, Wildlife Habitats and In-Between

Human communities, too, don't exist in isolation. Food, other materials, people and information move to and from our communities on highways, rail lines, telephone wires, rivers and canals, and over the airwaves. Similarly, parks and protected areas do not exist in isolation. Like our own communities, wildlife communities are connected – by rivers, valleys, passes, seasonal migration routes, and wind currents. Wild critters, and the things they need, flow between habitat areas as surely as we drive from Fort St. John to Fort Nelson or Edmonton.

If we try to manage human or wildlife communities as though they exist in isolation, we ensure that both communities will be diminished if they manage to persist at all (*Gray and Davidson 2000*). Success calls for informed, integrated and intentional management. In Y2Y's view, at least three elements combine to ensure successful ecosystem management:

- ❖ Communities and landowners engaged in sustainable living;
- ❖ Innovative practices on the land that mimic natural processes and minimize negative impacts on wildlife; and,
- ❖ A well-grounded network of places where wildlife can thrive.

Communities that seek to live and manage land sustainably are the key to a landscape where human and wildlife needs can be met. The purpose of the Muskwa-Kechika Management Area, “to maintain in perpetuity the wilderness quality, and the diversity and abundance of wildlife on which it depends while allowing resource development and use in special management zones”, certainly embodies this notion of sustainable co-existence.

Lands between protected areas and intensive human use offer opportunities for innovative practices to meet human and wildlife needs. In many cases, wildlife use these intervening lands to move between more protected habitat areas. Examples of innovative practices to conserve wildlife abound in northwestern Canada but we have a long way to go. Wildlife overpasses and underpasses allow for human and wildlife traffic. Efficient sawmill practices such as those employed by Tembec, Sundance Forest Industries and others can squeeze more forest product out of fewer trees. On-the-ground agreements addressing cut block design and streamside protection, including Weyerhaeuser's agreement with the Haida First Nation, also hold promise. Road closures and coordinated access management and directional drilling could minimize the impact of oil and gas development. Predator avoidance practices, “Bear Aware” measures, depredation compensation, and conservation easements

assist our ranchers and communities. These innovations and others are essential conservation contributions. I trust you will be discussing more of these opportunities at the fall land use workshop.

Providing places where wildlife thrive

How do we provide a network of places where wildlife can thrive? The cornerstone of wildlife conservation is the protection of areas where wildlife needs are a priority, particularly larger “core” areas that meet a range of requirements for a number of wildlife species. Wilderness, as found in nearly 2.8 million hectares of parks and protected areas in the Muskwa-Kechika Management Area, can provide that priority habitat. Of course, we also must ensure that even large wilderness areas do not become islands in a hostile landscape. In the Muskwa-Kechika this means connecting south along the Rockies, west toward the coast and north to the Yukon Territory.

Wilderness, literally translated as “the place of wild beasts” (*Nash 1982*), has proved essential to many species of wildlife. These wilderness-dependent species are “...vulnerable to human influence, whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat”. (*Hendee and Schoenfeld 1978*). Wild wilderness and truly wild beasts are synonymous.

What can we do to retain these critical processes? Wilderness lands must “serve to preserve natural behaviour and processes that naturally regulate wildlife populations” (*Mattson 1997*). Eons of evolution have shaped seasonal wildlife behaviour, predator-prey relationships, and other wildlife population dynamics that define wild populations. While some may be tempted to favour one species at the expense of another, Aldo Leopold (*Leopold 1949*) reminds us once again, “Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left...you cannot love game and hate predators...” Given the tens of thousands of hectares of already modified and degraded habitats that surround most of our wilderness areas, perhaps the natural drama ought to play out in our remaining natural places.

The ecological value of wilderness lies in its ability to directly enhance wildlife survival by providing security and seclusion. We ought to resist the urge to get in there and do something. “Wildlife in wilderness should not be symbolic of our management prowess. Wilderness must be a refuge for wildlife where our efforts are directed at restraining our management and control.” (*Carter 1997*)

Of course, equal parts of this equation are men and women, local residents and visitors, willing to take wild lands on the land’s own terms. In the Muskwa-Kechika, managers are investigating opportunities for resource development consistent with their goal to “maintain in perpetuity...the diversity and abundance of wildlife...” outside of designated protected areas. This is a grand experiment, one that will be measured not so much by what we take as what we decide to leave in place. Wilderness, in short, “reminds us in the plainest terms that we are living with, not at the expense of, other creatures”. (*Carter 1997*)

The Critical Importance of the Muskwa-Kechika Management Area

How important is the Muskwa-Kechika Management Area to wildlife and to humans struggling for solutions? A linear disturbance map showing road density in orange and red, and intact habitat in green tells the story. Unplanned human activity creeps north and west from Yellowstone to Yukon. Wildlife and wild places disappear kilometre-by-kilometre, day-by-day. Does this mean one has to stop all human activities to protect wildlife? Absolutely not. But it does mean that thoughtful and deliberate experiments, like Muskwa-Kechika, must replace headlong destruction of natural places.

The Muskwa-Kechika Management Area is the largest deliberate and cohesive management strategy on the continent. By its size and location, the area has the opportunity to make a contribution of continental and global significance. Managers are committed to meet an array of human and wildlife needs. Where these needs might be in conflict, managers are guided by their goal to “maintain in perpetuity...the diversity and abundance of wildlife...”. This scheme reflects the deliberate consideration needed to ensure that the abundant treasures of the Muskwa-Kechika will be enjoyed by our children and grandchildren.

The goals of the Muskwa-Kechika Management Area parallel Y2Y’s own vision for long-term and comprehensive wildlife protection in a landscape meeting other human needs. It is imperative, paraphrasing Aldo Leopold’s words, to do the right thing to preserve the integrity, stability and beauty of these mountains, valleys, forests, rivers and communities. Together we will prove whether this is possible. Together we will identify and confirm that core wildlife areas are adequately protected in parks and wilderness areas. Monitoring and adaptive management will determine if we have done the right thing. If boundaries need adjustment, or if new areas need to be added, we must do so. In the Muskwa-Kechika and in the entire Y2Y ecoregion we will ensure connections within our management areas and to regions beyond our borders. It is the right thing to ensure the integrity and future of wildlife populations.

Commercial development, recreation, hunting, trapping and fishing meet human needs and can be compatible with the management area’s goal to “maintain...the diversity and abundance of wildlife”. We congratulate the British Columbia government and the advisory board on their efforts to ensure this compatibility. We know local residents and the citizens of British Columbia will be watching to ensure this goal is met.

The Muskwa-Kechika Management Area is the foundation of wildlife conservation and innovative management in northeastern British Columbia. As such, we expect government and the advisory board to ensure that the Muskwa-Kechika Management Area will become a leader in the Yellowstone to Yukon ecoregion, in Canada and in North America. And it will if we do the things that are right. We look forward to supporting you in that effort.

References

Carter, D. 1997. *Maintaining wildlife naturalness in wilderness*. International Journal of Wilderness, (3)3:17-19.

Chadwick, D. 2000. *Yellowstone to Yukon*. National Geographic Society, Washington, DC

Gray, PA, and RJ Davidson. 2000. *An ecosystem, approach to management: a context for wilderness protection*. Pages 59-64 in: USDA Forest Service Proceedings RWRS-P-15-VOL-2. USDA Forest Service. Ogden, Utah

Harvey, A. 1998. *A sense of place: an atlas of issues, attitudes and resources in the Yellowstone to Yukon ecoregion*. Yellowstone to Yukon Conservation Initiative. Canmore, AB

Hendee, JC, and C Schoenfeld. 1978. *Wildlife in wilderness*. Pages 215-247 in JC Hendee, CH Stankey and RC Lucas, editors. *Wilderness management*. Miscellaneous Publication 1365. USDA Forest Service. Washington DC.

Leopold, A. 1949. *A Sand County Almanac*. Oxford University Press. New York.

Mattson, DJ, S Herrero, RG Wright, and CM Pease. 1996. *Designing and managing protected areas for grizzly bear: how much is enough?* Pages 133-164 in: RG Wright, Editor. *National parks and protected areas: their role in environmental protection*. Blackwell Science. Cambridge MA

Mattson, D. 1997. *Wilderness-dependent wildlife*. International Journal of Wilderness. 3(4):34-38

Nash, R. 1982. *Wilderness and the American mind*. Yale University Press. New Haven CT.

Newmark, W. 1987. *A land-bridge island perspective on mammalian extinctions in western North American parks*. Nature, 325:430-432.

Noss, RF, H. Quigley, M Hornocker, T Merrill, and P Paquet. 1996. *Conservation biology and carnivore conservation in the Rocky Mountains*. Conservation Biology, 10(4):949-963.

SUMMARY OF BREAKOUT SESSION DISCUSSION GROUP FINDINGS

Friday, January 18, 2002

NGO Discussion led by Jim Pissot

- Role of NGO in M-KMA Management: money; policy advocacy.
- Role of non-residents in M-KMA.
- Is promoting a wildlife corridor a threat to livestock?
- Role of other citizens and residents in M-KMA policy and management; non-residents? How to broaden public interest.
- Explain Y2Y role, mission and some activities.
- **Question:** more predators and ungulates (e.g. eating hay and crops).
- Innovative management to accommodate wildlife and human needs.
- Compensation if there is real cost to landowners (to benefit “public good”).
- How to engage communities and families. Does each side just talk to itself? How to address this.

Role of....

- Participants want continuing, meaningful role.
- Accountability – recommendations of Advisory Boards implemented (enforced).

Need to broaden knowledge base concepts, vocabulary, players, processes, and “buzz words” for better participation.

- Continuum of input; better than non-response after initial contact; need feedback to all public bodies (government agencies and others).

Information, input into a black box

- What is the connection between public input and policy decisions?

How are research priorities determined? Why are some M-KMA proposals funded and some not?

- Board needs to incorporate input to shape funding strategies (where the money goes...to research, etc.).
- Broaden spectrum of the interests providing input.

M-KMA website needs to be a two-way street, by accepting comments and being interactive (this takes resources).

Opportunities equally open to:

Stakeholders and First Nations
 NGOs and
 Individuals

Broad input is invited and encouraged; board meetings are open to all. The board represents an area larger than the region...there is global interest.

Input welcome – not telling us what to do.

- Y2Y history: no staff, Forest Alliance misinformation campaign challenged Y2Y; further reduction in BC economy. Y2Y is about retaining corridors for genetic diversity. Goal is to provide data and solution ideas, let local planning people decide.

Role of Citizens in the M-K

- Re wildlife/livestock controversy – a seminar in Fort St. John brought southern ranchers up to talk about solutions.
- Said that ranchers and wildlife can co-exist in buffer zones.
- Local ranchers are worried about restrictive aspects of parks limiting their ability to deal with wildlife on the ranch.
- There is a need to increase the dialogue on this issue regarding ranch management practices that could be improved and compensation.
- Does each side just talk to itself? What is the role of Y2Y and M-KMA in hearing the concerns of oil/gas folks and other extractive resource users?
- Y2Y has limited resources/staff but always tries to get word out through local media, politicians, seminars with locals.
- General public feels input not being incorporated into M-K management but this is always a problem because decisions must be made.
- What is connection between public input and policy decisions?
- How are research priorities determined – biased toward big game and charismatic megafauna.
- Some people are concerned that M-K advisory board needs to have more effective strategies for funding projects that reflect a broad spectrum of interests, eg. non-game.
- There are practical limitations due to funding constraints of how detailed citizen involvement can be. That is why citizens need to join or be represented by stakeholder groups.

Discussion on the European Perspective led by Dr. Christoph Gnieser

How have you been able to protect wilderness values and implement plans?

- Top-down approach (Germany)
- Bottom-up suits Canada

Enforcement and monitoring:

Who is going to monitor policy implementation?

- Strong advocacy required

How do you deal with changes in political will?

- Plans have a public component.
- Realities on the land are sometimes inconsistent with plans.
- Need documented evidence of above.

- Need information regarding permitting.
- Linkage between grassroots and statutory requirements.
- Now self-regulation is important; cooperation is necessary to avoid power imbalance.
- Good corporate image encouraged.
- Currently M-KMA annual report published after going to B.C. Premier.
- In Europe, alternative, less formal coffee shop sessions used.
- Link regulations and monitoring process.
- Referring to land use plans and keys to permitting.
- Faster response time.
- Less monitoring likely due to government cuts.
- Industry and outfitters working together is important.
- Joint environmental monitoring?
- Percentage for an auditing fund.
- Public concerns.
- Market-based certifications.
- Public pressure.
- Plans must encourage settlement of disputes (government involved as facilitator only).
- Help needed to handle volume of applications.

Pre-tenure Planning Issues

- Prior to sale, issues with guide outfitters, First Nations, etc...should be dealt with.
- Develop positive incentives (more carrots, fewer onions approach).
- Solve compliance/enforcement workload.
- Assess management implications of pre-tenure issues.

How would we pay for it?

- Audit fund
- Proponent and funded (third party)
- Part of permitting process
- Pre-approval fund (similar to restoration funds)

Should money from assessments come from this fund?

Improve communications and upfront expectations.

Educate frontline workers, encourage public participation and stewardship.

Find a workable oil and gas tenure system.

Discussion on First Nations Issues led by Bill Lux

Document Traditional Knowledge (TK) and keep it dynamic; how can we do this?

- First Nations' (FN) concern is access to TK information and what it is used for.
- Must come from First Nations offices and communities.

- First Nations need the ability to manage their own information.
- Confidentiality of this information through confidentiality agreements is important.
- An example of some more available TK information are the traditional names of lakes, rivers and creeks for mapping processes, and updates such as Muncho Lake area.
- Sacred sites, traditional campsites are TK that are more protected and have limited access.
- TK information is dynamic (past, present and future)

How does Traditional Knowledge (TK) fit into “special management”?

- Issue is that the scientific community drives planning.
- The scientific community must realize TK is very important; it is knowledge through time.
- Changes in the environment affected where hunting and fishing occurred.
- Local users see the changes whether they are guide outfitters, trappers or First Nations; they bring to the table information that may not be historical but still is important.
- Never can get 100 per cent of all information.
- Scientific knowledge is good for data, but the knowledge is from the ground up.

Are Delgamuukw Treaty negotiations being used in the planning process in the M-K?

- The treaty is a separate process.
- Land in the M-K is an issue (how the land is managed is an important issue to First Nations).
- The treaty has yet to protect First Nations’ interest in the planning process.
- The Kaska have a Letter of Understanding (LOU) stating that the M-K planning process is without prejudice to treaty planning process.
- Have to understand that scientific data is not as solid without being combined with TK; then you have a strong product.

How do you get over concern of TK loss, and protection of TK?

- The process of planning in the M-K has been accelerated and there is not sufficient time to get anything right.
- The new government’s priority is oil and gas.
- Must do pre-tenure planning and get done by 2003.
- NO DATA = NO PLAN.
- There is no TK data or the data that does exist is insufficient.
- Planning processes never have the same people, so who will be held accountable?
- We are not happy with the government approach in speeding up the process.
- We need to promote the need for the M-K Advisory Board to continue, otherwise issues will continue in courts or we will have to fight for Land Use Planning boards.
- In Ontario, all LUP boards were disbanded in massive cuts.
- Most of the government changes will go over those that cannot fight to survive, and you must fight well by forming unlikely coalitions, e.g. oil and gas, forestry, NGOs, First Nations, and other stakeholders -- all on a common ground.
- The future of protecting wilderness is important and we will have to work together to deal with government.
- We are willing to deal with industry, NGOs and other stakeholders to change the mindset of this government.
- If they agree with our values, we will work with others to continue the legacy.

- We are really concerned with where this government is going.
- First Nations have ground rules they will lay and then be willing to deal with other issues.
- The Canadian Association of Petroleum Producers (CAPP) is supportive of environmental and First Nations' concerns
- It is in the corporate interest to maintain dialogue with First Nations.

Where do we want to go?

- TK agreements on how to deal with this knowledge are necessary with First Nations. We must document it at the community level for planning processes; then people (planners, government and companies) have to go to the community to get the information.
- It is important to recognize that TK is both written (recorded data) and verbal knowledge, and the two cannot be separated.
- We need to support perpetuation of knowledge and not compartmentalize this knowledge.
- Need to incorporate traditional knowledge into the decision-making process.
- Need to develop processes to engage community experts and combine traditional knowledge with scientific knowledge.
- Respect for animals is a Kaska philosophy and we live in harmony with them.
- First Nations need money to do their own land use plans to protect their interests and values.

Recommendations

- When starting scientific studies, First Nations need to be part of the team.
- The number-one priority is to get the wildlife plan done.
- Need a broader, more cohesive understanding of wildlife, as it is a priority issue.
- We and government must look at what there is today and manage for that in the M-K, rather than set targets, such as to increase moose numbers by artificial management, which would lead to increased hunting pressure.
- Gathering of TK and encouraging communities to document their knowledge is important.
- Can't separate TK from the people and the communities need to control the TK information.
- TK can't be used unless there is involvement and full participation by First Nations at a working and government level.
- First Nations do not want their spiritual sites documented on a map.
- First Nations need to participate and be involved.
- Government is planning with or without First Nations.
- The Kaska understand that they need to work with consensus and deal with issues critical to our people while looking out for future generations. We want to protect our interests and move forward in the future.
- **Priority is wildlife:** Road kill is a major issue along the Alaska Highway and the issue needs to be raised with Ministry of Transport.

Discussion of Economic Issues led by Mayor Steve Thorlakson

1. Tourism is a large possibility for this area. Things can be done immediately using existing facilities. Most tourists don't go "off road".

2. Oil and gas is a relatively short-term benefit, given changing economies and alternative energy choices. Need to ensure the long-term benefits of wilderness in the M-K are retained for other industries, e.g. tourism, outfitters.
3. Developments can have constraints, e.g. contingency funds, return to pre-development state, limited time frames for development.
4. Diversify industry base for a healthy economy. Tourism depends on good times and jobs in other sectors. Need non-service jobs in the M-K as well, whether sustainable forestry or oil and gas.
5. Where effects of human activity are not known (e.g. helicopters over flying wildlife), go slow and use precautionary principles.

Discussion of What is Wilderness and Why is it Important led by Harvey Locke

- No roads – is it attainable in M-K?
- How can you embrace the wilderness as part of you and have no impact?
- How can we maintain to take back after the drilling?
- Have technology and money but no willpower.
- Not road issue but access – controlling who gets to use.
- Gates on roads, self-policing can stop trucks but not ATVs.
- Roads damage habitat and fragment wildlife.
- BC is worst at reclamation than anywhere else. Can't effectively close the roads during or after development.
- Oil and gas industry is key to roads – put in 50 roads for 50 rigs. Prophet River area is a concern – the Sikanni is an example of what happens when government just lets them go.
- Does M-KMA have enough teeth? NO!!!
- Road reclamation is a requirement under Forest Practices Code but with oil and gas you're looking at the life of a well that could be 30 years or longer. It also becomes the access for the second, third, etc. roads for additional rigs.
- Can only stop this by making it a protected area. Need legislation. Helicopter drilling is out.
- Requirements under the M-KMA that a pre-tenure plan for drilling be done. There is no reason helicopter and snow roads can't be done. Won't agree to permanent roads. There will be a huge fight in the northeast.
- Government has to be amenable. The political field had changed – they want money. Public process is not being followed.
- Results-based, performance-based – Oil and Gas Commission
- Control issues – access, road. Need to give tools for them to control. Can't stop roads.
- We can drive local economy and still keep values.
- Alberta – conservation board to energy board. High speed, rapid change. B.C. is changing the same way.
- Consistency of goals – need to communicate to the government, and really fast.
- The ability to work is more important than the ability to go and hunt.
- Fear of going everywhere at one time.
- Don't write a plan if you don't want oil and gas to go there.
-

- Sikanni management plan was written for the M-K, but government changed the document to end plan. Can write Besa (Prophet) plan differently.
- Can't say no access, except to oil and gas exploration. Then comes pipeline to access. As soon as you have open corridors, wildlife habitat diminishes.
- Access is anything that creates a linear disturbance.
- If oil and gas is allowed it must use the best technology available. Directional drilling. Need ice roads, etc. Ice roads are working really well.
- LRMPs are working because people here are listening and wanting to make it work.
- First Nations are allowed to go beyond a gate to hunt so then (non-native?) hunters want same rights.
- Once open you cannot stop the people and ATVs, etc.
- Mountains are a concern due to cutting for roads.
- Best practices – companies are willing but government isn't.
- Reclamation can be done – emphasis is on industry's need to incorporate standards into a plan.
- Can put into design that a road is going to come out. Can't in timbered landscape.
- In the Arctic – had to go back and clean up. Cost a lot. Drilled in Indonesia -- no footprint and it worked.
- Can fly up the Rocky Mountain Trench and see that forestry has done more damage than oil and gas.
- Alpac forest management agreement. Annual allowable cut in the oil and gas industry equals that of Alpac.
- Have government with a deficit that needs a revenue boost. And the MLA in this area is the Energy Minister. People have a special relationship with Rockies in their hearts and you can draw on that for public support. Need to get that noise up. Whale back good example.
- Will only spend money here when the price is low if we play hardball.
- Only talks front end – we need backend: watchdog who has ability to enforce. No basis in legislation for anyone to do a better job. The standard is low. Difference between deactivation/reclamation and restoration.
- Need to set the rules and let the oil and gas industry follow them.
- This is a good time to set a global example of how to do it right.
- Who will set the rules? Will it happen at a provincial level? Government is in a hurry for revenue.
- Pre-tenure plans are in place, with guidelines.
- Need big push for the M-K to slow this process down. There is a role for local government to help with that.
- If you want to save wilderness and still have oil and gas you need to slow down, to do segmented development. Go into one watershed and not into another until the first is restored.

Summary:

- Are roads practical or not. If so, can we build with no impact and restore surroundings when they're gone. High standards and can't happen all at once.
- We are dealing with a special place and a special process. The process needs to be honoured. Time is a big factor. There is a lot of fear that government is in too much of a hurry for revenue and won't have standards or policy.
- There is great fear that all planning is at risk.

- We need to use the best possible technology.
- *We have a globally significant area which requires using the best available technology on Earth to have the least amount of impact.*

Discussion on BC Wildlife Federation Issues led by John Holdstock

- Disregard for residents by fishermen and hunters. Not considered to be a partner.
- Non-commercial recreation: may be divided into consumptive and non-consumptive.
- Non-commercial recreation brings a lot of money into the area.
- Too many people in boating/camping areas.
- Rivers are roads and provide access.
- Management is restricting access only – is there another way?
- ATVs kicked out of traditional use areas and funnel traffic into select small area.
- Need to allow more areas, permits if necessary.
- Camping and hiking are not a big overuse issue – can it become so?
- Snowmobile access – cannot get in with gated areas and plowed roads.
- With permitting you need someone there to enforce the regulations.
- Have a longer open season, but you draw for your time. Not limited entry but draw for first week, second week, i.e. hunter access. **Try to spread out access on the Muskwa River.**
- There has been talk about permitting the Muskwa – number of jetboats. Getting some support from boaters.
- Why so concerned about Y2Y? Is there a real benefit to BC – i.e. link up grizzly habitat? Break in chain may be good. History shows small islands of habitat not necessarily sustainable. More of a philosophical idea?
- The bison of Pink Mountain are very destructive to moose and elk environment.
- Horses left in back country year round should be removed as they are destructive to the moose and elk environment.
- The agenda for some is to restrict access to the M-K. But where do we set the limit? How many routes to we want?
- Concern that roads should be available to the public.
- Decommissioned roads should be decommissioned properly, not just by cutting a ditch across them.
- Local residents (community) are not truly represented at this workshop. They are working and cannot attend because of time off work and the cost. Need more public input.
- How much work do you have to do to get people involved?
- The people that show up are interested in making the process work.

Discussion on Guide Outfitting Issues led by Ray Jackson

- The M-K is beneficial to guide outfitting to promote the wilderness experience.
- The question is, how do we manage roads within the M-K outside protected areas.
-

- Discussion on M-K boundaries and whether boundaries can be changed to even out the benefits of being in the M-K (not likely – have been set for many years).
- Guide outfitters educate children with programs such as scholarships and videos.
- GOBC is a provincial association of northern guides from Chetwynd north.
- Discussion around hunting and the population of grizzly bears.
- The M-KMA results in a lot of meetings.
- Helicopters with heli-hikers and heli-skiers could be a problem in the future, with impacts on wildlife populations.
- Discussion on tourism – identified some conflicts with the ideas/philosophy of tourism that promotes heli-skiing; concern due to pressure on ungulates within the M-K.
- Cost of trips to get people wanting alternative (non-hunting) trips i.e. birding, etc. provides a challenge but the opportunity is there.
- Guide outfitting school, sponsored by guide outfitters due to a lack of experienced people, had 15 graduates. The M-K Advisory Board sponsored one last year for the Kaska.
- Need an audit of the LRMP to see that PMZ strategies are being followed.
- Finding forestry implementation around Fort St. John is going OK. Consultation is good with respect to operational planning.
- Referral processes (forestry, oil and gas) is good.
- Allocation is especially challenging if there are declining populations in the M-K.
- In the old days, 45-60 day trips were common because of inaccessibility and the fact that there was less wildlife.
- Through activities such as prescribed burning and predator management, old-time guides provided increased habitat.
- There is likely more wildlife now than prior to the 60s. It reached a peak in the 80s and has been declining ever since.

Overview:

- Main topic discussed was how important wilderness is for our business.
- We discussed access and the potential of what the pre-tenure plans will allow to happen.
- We discussed how the wildlife populations are doing, particularly grizzly bears.
- We discussed the possibility of an audit of the strategies from the LRMP document. Are they being enforced?

ECOSYSTEM APPROACH EXAMINES PREDATOR-PREY INTERACTIONS

PROJECT IS BUILDING AN INFORMATION DATABASE FOR THE M-K

**A Presentation by
Dr. Katherine Parker
University of Northern British Columbia**

I'd like to talk to you today about an ecosystem approach to habitat capability modeling and cumulative effects management in the Muskwa-Kechika (M-K) Management Area in northern British Columbia. Our project is the beginning of a large-scale approach in which we are trying to quantify the interactions among the large predator-prey species in the M-K. By understanding this web of interactions, we have the best chance of ensuring that wildlife and wilderness values persist. The project will build an information database for the M-K, particularly by defining the processes, core areas, typical movements and specific habitat requirements for large ungulates and large carnivores that all use large portions of a large landscape.

The best technology available for defining animal life history patterns (their movements and the strategies they use for survival) is with Global Positioning Satellite Collars (GPS) that can record locations of the animals frequently no matter what the weather conditions. The best technology available for mapping habitats, given that everything can not be measured on the ground, is using remote sensing - satellite images. We can then combine these two technologies using a Geographic Information System (GIS) in which we overlay data layers. These outputs help us build our best models of habitat capability for wildlife species so that we can contribute to good land-use planning.

We are concentrating on the large predator-prey ecosystem in our study because it is one of the primary mandates of the M-K Management Act and the reason for the M-K's designation as the 'Serengeti of the North'. Our objectives are not specifically to enhance ungulate populations, but rather to begin studying the ecosystem by concentrating on the large mammals. We recognize that the project is limited and serves as a base for expanded study beyond these terrestrial large mammals in the future.

This overhead (Figure 1) puts the system in perspective. First, we need a good map of the habitats. The large mammal interactions that characterize the M-K occur within those habitats. For some of these species, there are specific requirements that are critical but which don't show up on large-scale maps, such as mineral licks, and those deserve further study. On top of this ecosystem, there likely will be increased access to the region, and whether it's recreational or industrial, that access will affect the system. So, the left side of the overhead represents our research plan: baseline data for maps and wildlife, and then the consequences of recreation and industry.

The right side of the overhead is the link to management. We need to understand how the system functions to be sure that our management can maintain the wildlife and wilderness values of the M-K. From these data we develop the best habitat models with the fewest assumptions. We incorporate the habitat values into land use planning, and then we should monitor what the cumulative effects of our management activities are, so we can adjust our levels of recreation and industry in the land use plans.

Our initial studies are concentrating on the large carnivores, caribou, Stone's sheep and specific mineral lick requirements.

Site Description

The project is focused primarily in the Besa-Prophet Pre-tenure Planning Area within the Muskwa-Kechika Management Area but the boundaries will be defined by animal movements. We chose the Besa-Prophet area specifically as a study area because of its non-impacted wildlife species and its habitat diversity, and because of the likelihood of extrapolating much of the science to other areas of northern BC.

The region is very diverse and includes the Muskwa Ranges and the Rocky Mountain Foothills. It is characterized by repeated east-west drainages and south-facing slopes. The underlying sedimentary rock formations are folded and faulted. As with the eastern slopes of the Rockies from Denver up through Calgary, the area potentially contains significant oil and gas reserves. Therefore, development is likely to expand north and west into this region, and therefore the data from this work will be crucial for determining the cumulative effects of increased access.

There are primarily three biogeoclimatic zones: boreal white and black spruce at lower elevations; spruce-willow-birch zones at mid-elevations and some aspen communities; and alpine tundra. Because of this variety and in combination with the south-facing slopes that are often blown free of snow during winter and the lack of access to the region, the area supports one of the largest intact predator-prey systems in North America. Except for one recreational ATV/snow machine route, the Besa-Prophet area has no easy access at this time.

Studies and Objectives

I'd like to now just give you an overview of four graduate student studies that are ongoing at UNBC. The studies will contribute to understanding of the big ecosystem picture and will provide the baseline from which to monitor future changes.

(1) We are attempting to define the predator landscape. Brian Milakovic is looking at the distribution of the carnivores, how their use of the landscape changes, and who eats who when.

Wolves and grizzly bears likely play a major role in the distribution and abundance of ungulate species in the Besa-Prophet. There are very few studies that have attempted to examine broad-scale multi-predator multi-prey systems. Most large mammal predator-prey research has tended to focus on a single predator regulating a single prey population (e.g. wolves eating moose), or sometimes the capacity of a single predator to regulate a multi-prey community (e.g. wolves eating moose and caribou).

The importance of ungulates in grizzly bear diets also has been established. However, the relative and cumulative impacts of a system with both wolves and bears on multi-ungulate populations is still unclear, especially given that bears also consume high amounts of plant resources.

So the specific objectives are to monitor movements in relation to prey distribution, to determine what the prey of choice is, and to determine when and if prey switching occurs. We will also identify important habitats and core areas of concentration by the predators.

This is important baseline data because other studies have shown that predator distributions may change in response to the access provided by roads and seismic lines. And then we will assess whether habitat capability models, which are typically based on vegetation, are appropriate to determine static habitat values for predators.

(2) Another graduate student, Dave Gustine, is focusing his research on the calving strategies of woodland caribou. Caribou are probably the best year-round landscape-level indicator species in the Besa-Prophet area. They range across large landscapes to meet their requirements for wintering areas, spring/summer calving grounds, and fall rutting locations. Consequently, survival is directly affected by movement patterns. Animals typically winter at high elevations on windswept lichen ranges or in lower pine-lichen stands when snow depths are low.

In our study area, many of the caribou winter on Klingzut Mountain and then move across extensive forests to the west to calve. Some animals calve in slightly lower shrub-krumholtz zones and others farther west in rugged high alpine areas. The animal movements depend on forage supplies, snow conditions, and predation. But because they use large portions of the landscape, they are affected by disturbances that occur within and across large areas. Recent studies show that caribou can be adversely affected by petroleum exploration, if the access causes changes in predation pressures.

Specific objectives of this study are to define movement routes between the core wintering areas and calving grounds, to identify which habitats within the normal/typical calving strategies are successful for calf survival, and to compare seasonal habitat use patterns of caribou and wolves. These data will provide critical habitat baselines from which the scenarios for future access management can be made.

(3) Stone's sheep are *the* species in the Besa Prophet system that is probably the most susceptible to disturbance. Andrew Walker will do his research to identify the specific niche requirements for Stone's sheep. The largest populations of Stone's sheep in the world are found in northern BC, in the Muskwa-Kechika Management Area, and yet relatively little is known about the species.

Stone's sheep are generally assumed to be limited by the availability of suitable winter-spring forage and escape terrain, but there is no quantification of those needs. Do the vegetation communities selected by resident animals differ from those with seasonal ranges? What is the variability in escape terrain? How often and how far do they travel to mineral licks? Data from similar species such as bighorns indicate that these animals are extremely susceptible to varying types of disturbance. Many researchers believe that the frequency of environmental stress is the primary causes of pneumonia epizootics in mountain sheep.

So a primary objective of this study is to improve the habitat capability models by specifically defining habitat requirements. Another goal is to establish baseline levels of stress using cortisol levels in snow urine and fecal samples so that, in the future, we can determine if sheep are affected by industrial disturbance. And we also want to determine when mortality rates are greatest, particularly for lambs. Preliminary impressions of the local biologists are that highest rates of predation occur during fall, which is in contrast to all the other ungulates in the same area.

(4) The final graduate study is being done by Jeremy Ayotte on the ecological importance of mineral licks. Mineral licks are small, localized niches that are critical in the life histories of all ungulates in the M-K, and they should be incorporated in our habitat models.

Wet licks are often associated with ground water springs and develop into muddy clearings that are typically used by elk and moose. Dry licks are commonly used by Stone's sheep and mountain goats and are often found on bluffs bordering riverbeds or stream drainages. The use of mineral licks is probably an indicator of physiological stress in animals that are unable to meet their nutritional demands with forage alone. Licks can be used to compensate for mineral deficiencies or imbalances, and they can help reduce digestive disorders and intestinal infections. For example, the clay content in the licks may be important, because clay can bind with toxic compounds or excess minerals, and then be excreted in the feces. The benefits derived from licks though must be greater than the energy needed to move from their normal foraging ranges, which can be from distant higher elevations, to and from licks, as well as the added risk of predation during those movements.

Our objectives are to record seasonal attendance at licks by four different ungulate species (moose and elk, sheep and goats) and to compare the different sexes and different age groups. We will also determine the chemical and mineral composition of wet and dry licks, and the effectiveness of the clay in the lick soils. These data will define when licks are most valuable and that can be incorporated into access management plans.

(5) Future studies on the other three ungulates in the system should also be conducted if we really want to understand ecosystem dynamics. Studies on moose and elk should be done because these two species contribute the greatest biomass to the system. In addition, moose populations in particular have high value to the First Nations peoples using the area, and the distribution of elk populations has changed dramatically in response to prescribed burning, which undoubtedly has influenced the entire ecosystem. Mountain goats should be studied because, like Stone's sheep, they are very susceptible to disturbance and confined to specific habitats.

Our scientific objectives are to understand the dynamics of the ecosystem. After quantifying the linkages between the focal species, our goal is to define what is driving the system, what is most vulnerable to change, and what the best scenarios are to accommodate the changes associated with increased access. These data feed into habitat capability models. From the management perspective, this base for planning and cumulative impacts assessment is crucial. Unless we know how this system operates, we certainly can't predict what cumulative impacts to the system will be.

In summary, it's rare in today's world that we actually have baseline data, and especially in a complex system such as this one. We have the opportunity now (still) in the Muskwa-Kechika to integrate wildlife, their habitats, and management activities so that we can retain some of the wilderness values of the M-K.

USING SATELLITE IMAGERY AS A MANAGEMENT TOOL DATA IS USEFUL FOR RESOURCE MANAGERS

**A Presentation by
Dr. Roger Wheate and Dr. Roberta Lay
University of Northern British Columbia**

The world's very first operational Geographic Information System (GIS) was developed here in Canada 30 years ago as a means of managing natural resources and providing a strategy for potential land use conflicts. The Muskwa-Kechika represents a classic example of the need for GIS; a crucial component of developing a database for a region as large and relatively remote as this is the use of digital satellite image data. These offer three distinct advantages over traditional mapping incorporating aerial photography:

A. Geographic extent: Each Landsat Thematic Mapper (TM) scene covers an area approximately 185km x 185km, and between 6-8 scenes cover the whole M-K, compared to thousands of aerial photographs. Their use avoids the need for geocorrection and mosaicing of such a large number of photos, although the images do not present the same quality of spatial detail, as they offer a 'medium' resolution of 30 metres compared to one metre for aerial photographs, which would create unnecessarily large files for most management applications. Other imagery is more coarse. For example, MODIS data are supplied at resolutions of 250, 500 or 1,000 metres, while high resolution IKONOS image data are also available at comparable resolution to aerial photography (1-4 metres).

B. Multispectral data: Aerial photographs are mostly panchromatic and present only one 'view' of the landscape. In contrast, satellite image data are captured at visible, near/mid/and far infrared (IR) wavelengths. These each represent different qualities: In particular, the near IR give a measure of vegetation biomass and vigour, while the mid IR indicate soil and vegetation moisture. Combined with the visible, these give a powerful cross-section of various components of the landscape.

C. Repeat period: Image data can be collected, in theory, on a weekly or even daily basis given cloud-free conditions. But in practice, monthly images will be more likely. In contrast, aerial photography is taken about every decade this far north and for B.C. in general. Repeat imagery allows us to update changes on a regular basis, and to monitor seasonal and phenological changes in vegetation.

The role of satellite image data here and in most cases is to be processed in such a manner as to yield 'information' from the mass of data for resource managers. Typical products may include: original 'band' data displays overlaid by map vectors, such as contours, roads and hydrography; derived data channels, such as vegetation indices and principal components; and three-dimensional perspective views, where the satellite data are 'draped' over the B.C. TRIM provincial elevation model for effect and ease of visualisation. (*Note: All three such types of images were displayed in colour at the workshop.*)

Of particular interest and application in this study is the use of derived greenness channels to indicate

vegetation 'green-up' over the summer months to be correlated next summer with GPS data from collared ungulates, in order to better understand large animal behaviour and to be able to predict movement based on seasonal phenology. In the summer, ground field investigations were made across the Besa-Prophet special management area in order to be able to assign vegetation classes to the satellite image data with some confidence. At that time, the area was also scoped out for the establishment of permanent plots, where the vegetation would be studied in depth and be marked both for seasonal and future annual changes. Broad valley floor sites have also been established as 'exclosures' in the last few years by government researchers, studying the impact of released buffalo in the area. In addition, a number of transects were walked from ridge tops to river valleys in order to assess some mid-slope forested sites beyond helicopter access.

In early October we revisited the area to establish permanent plots within the Besa-Prophet area, primarily on ridge tops suspected to be popular habitats for ungulates, particularly caribou. Nine such plots were created. In three cases we created two plots in the same vicinity on different slopes or habitats to maximize value per helicopter time. These are tabulated according to location and dominant vegetation in *Table 1*. Three of the sites may appear to be similar (1, 7, 8) but the species vary in dominance and the sites also have different geographic aspects (direction of slope). In each case, we measured a 50x50 metre square and sampled every five metres along two edges, using a one metre square quadrant if shrubs were present, and 50cm square if they weren't. Next summer we plan to revisit these sites to review the seasonal variation in plant growth and one further site is planned. Caribou scat was observed at all nine sites and caribou were actually observed at six of the nine sites. Another site was adjacent to a valley where we counted almost 40 moose in moist willow shrub and scattered trees.

As a result of the permanent plots and transect sites, we were able to produce a first-run supervised classification of the Besa-Prophet area with over 30 vegetation classes. These are listed in *Table 2*, and they partially overlap both in spatial location and non-spatial attributes with the Terrestrial Ecosystem Mapping (TEM) study completed two years ago for the Besa-Prophet area. At the same time, the different data collection process reveals some differences. Continuing work over the next year will refine these classes, and incorporate a variety of greenness and vegetation indices in association with these classes.

Satellite images have been acquired over approximately monthly intervals from summer 2001: June, July, August and September, to analyse the seasonal green-up changes as measured by the satellite sensors. This is the critical portion of the work that requires continued funding to establish our ability to measure seasonal change and associate these with large animal movements, in conjunction with several studies being undertaken by a team of graduate students under the supervision of Muskwa-Kechika Professor Dr. Katherine Parker, Forestry Program at UNBC, and predictive ecosystem modelling research being conducted by Dr. Michael Gillingham, Biology Program, UNBC.

Minimum Distance Classification Abbreviation Key

SL (TEM)	Spruce/willow-Labrador tea/feathermoss
w/bp	Willow-balsam poplar/fuzzy-spiked wildrye-lupine
sc/fsw	shrubby cinquefoil/fuzzy-spiked wildrye-pasturesage
ma/ab	Mountain avens- alpinebluegrass-lupine
bb/sc	Bog birch-shrubby cinquefoil- fuzzy-spiked wildrye
MA (TEM)	moss campion-fescue-net-veined willow
bb/af	bog birch/altaifescue-tallbluebells
bb/jl	bog birch-juniper/lingonberry
sf/bb	Subalpine fir/bog birch-feathermoss
lp/lt	lodgepole pine/Labrador tea/feathermosses
s/w/c	spruce/willow/crowberry-bluejoint
BV (TEM)	bog birch-polar willow/fescue
BS (TEM)	bog birch-Labrador tea/fescue
bb/f/f	Bog birch/fescue/feathermoss
sp/w	Spruce/willow/tall bluebells-coltsfoot
bb/bw	bog birch-Barratt's willow-willow/altai fescue
bs/lt	Black spruce/Labrador tea/nagoonberry
wp/wat	Net-veined willow-polar willow-altai fescue-mountain sagewort
TC (TEM)	bog birch-willow/altai fescue
SF (TEM)	bog birch/water sedge-coltsfoot
WS (TEM)	willow-bog birch/altai fescue-nagoonberry
sp/bb	Spruce/bog birch-willow/red-stemmed feathermoss
ma/bb	mountain avens/bog blueberry/ red-stemmed feathermoss
AWF	Mountain avens-net-veined willow-northern rough fescue
WB/LF	net-veined willow-bog birchlupine-northern rough fescue
HAV	arctic white heather-mountain avens-Vaccinium
ACM	mountain avens-moss campion-moss spp
WM	willow-mountain sagewort
HWC	arctic white heather-net-veined willow-Carex
WB/F	willow-bog birch/northern rough fescue
RB/L	lapland rhododendron-bog birch/lichens

ASSESSMENT OF HABITAT SUITABILITY MODELS

PROJECT FUNDED BY MUSKWA-KECHIKA TRUST FUND

**A Presentation by
Dr. Michael Gillingham
University of Northern British Columbia**

I would like to thank the organizers for this opportunity to speak with you this morning. I would like to briefly talk to you about some concepts that I have been working on as part of a project funded by the Muskwa-Kechika Trust Fund. Initially we were examining the reliability of the Besa-Prophet pre-tenure planning models but today I would like to talk to you about the use of models in planning and tie this to two concepts that have come up throughout the workshop: scale and uncertainty. As you will see, scale is the key issue that we need to keep in mind when considering the predictions of various models.

As we have heard, the M-KMA area is huge but for several of the RMZs, the time for planning is short. When combined with the Besa-Prophet pre-tenure plan, the next four pre-tenure plans (next two years) will affect the wilderness and other values over a large area of the M-KMA. We have a globally significant area but the current challenge is to make local-scale decisions that maintain the wilderness, wildlife and other values over a large scale.

We have heard a number of things over the last few days. We've heard that oil and gas is the immediate development of concern and that it is a linear development. We've heard that we need to keep the landscape "connected" and "intact". We've heard that we may end up with a matrix of "wildland" interspersed with centres of development. We've also heard about a number of different models: Dr. Noss talked about large-scale models in a Y2Y context; Dr. Jeo told us about models as tools in a conservation area design. Although unmentioned to date in the workshop, government-based wildlife habitat models have formed the baseline for much of the pre-tenure planning process in the Besa-Prophet.

Generically, all of these spatially explicit models have a number of elements in common. They begin with a vegetation or terrain layer. Values are then overlaid on the base layer. As we've heard, these values might include any or all of TEK, other expert opinion, wilderness, biodiversity, wildlife, traditional values, or even viewscapes.

In our context, the perturbations are largely anthropogenic but they can be quite varied depending on your perspective. In terms of time and money it seems that most of the effort is invested in producing a model of the base layer – and remember that it is just a model of what is really out there. As Roger has described, there are a number of ways of producing terrain maps by overlaying combinations of satellite images and elevation models for example.

In British Columbia we rely on a classification system that breaks down the vegetation into biogeoclimatic zones and then various subzones. Here you see an aerial photograph overlaid with various polygons of similar vegetation. This diagram describes the both time consuming and expensive process that was undertaken to generate a TEM for the Besa-Prophet pre-tenure plan.

This process has been deemed both too expensive and too time consuming to use in future pre-tenure plans.

This flow chart describes the proposed process for developing base vegetation layers using PEM. Interestingly from my perspective, most of the effort has been in evaluating the reduction in accuracy of base layers produced by PEM compared to TEM, while this concern with accuracy has not necessarily followed up to the next overlay of layers. In the case of conservation biology, or Conservation Area Design models, this layer might include population models and examination of issues of dispersal and connectivity. The Besa-Prophet pre-tenure plan attempted to predict the value of the area for various wildlife species based on habitats and how they are interspersed, and considerations of cover, distance to roads, elevation, etc.

There may ultimately be several complimentary layers but the value may be based on expert opinion, surveys, sampling, TEK. Ultimately some algorithm or look-up process is used to extrapolate the values across the landscape. Dr. Noss used resource selection functions that are basically extrapolations of where we do and do not find suitable habitat for a species. Other approaches (HSI) attempt to describe specific habitat requirements mathematically and then project suitable habitat across the planning area.

The British Columbia Resource Inventory Branch approach is to assign each vegetation subzone a value for cover, escape, food, etc. for a given species, then use a look-up approach to come up with the wildlife layer. Rules are sometimes applied to adjust values based on adjacent polygons but, generally, minimum habitat sizes and issues of connectivity are overlooked.

The reliability of all of these approaches depends on the scale at which we examine them. Here we see the current suitability for bears compared across the province. The Y2Y comparison uses a similar scale. Boundary areas of 10 kilometres are likely unimportant, especially when we are looking at relative versus absolute predictions. Are we trying to predict potential regional problems (Highway 3 corridor, Peace lowlands development) or trying to decide which side of a valley that a pipeline should be built on? Certainty in our predictions must be high when predictions are spatially explicit.

Once we have the values of interest in place we can begin to examine the potential impacts and, as we have heard, the types of impacts can be quite varied depending on your perspective. To be effective as planning tools, models must also be interactive. Here we see changes in habitat suitability for grizzly bears along the Maligne Lake Corridor in Jasper as a function of levels of human use. Disturbance to a bear in a national park is likely limited to human activity and these models were used to learn that waterfowl surveys by wardens were significantly reducing the suitability of near shore habitats for bears – the surveys were discontinued.

We heard yesterday that the “process will not be as important as the outcome”. Although industrial development will not be an issue for this lick overlooking Tuchodi Lake we would want to know how confident the modeller was in the predictions of sheep habitat if we were to decide that a development could take place close to this lick. Where does the line go?

Consider the area in red to be critical habitat. Are the predictions from these two maps different? It depends on our confidence in the predictions, which is a function of the error in the predictions. A model is a collection of assumptions, guesses and hypotheses. Before you would want to use a model predictively, you would want to know how sensitive your predictions are to your assumptions, and then how well you understand the most sensitive assumptions.

Most spatially explicit models are extremely difficult to validate, as I mentioned on Thursday morning, and so if a model cannot be validated we become very dependent on a sense of how reliable the predictions are.

All of the highlighted steps in the Besa-Prophet pre-tenure planning model contain large amounts of uncertainty, but this error was undocumented and certainly untested. Based on our concerns with the wildlife habitat ranking model process, a more explicit and transparent model is apparently going to be used in the next four pre-tenure plans. As the web site that describes this model indicates, there will be no estimates of the error of the predictions included in these next models either. Hopefully, the CAD will also include estimates of certainty along with its predictions.

We hope to work to correct this but in the meantime we intend to apply the new model to an area of the Besa-Prophet to compare its predictions with that of the original pre-tenure model. As part of this process we intend to develop a sensitivity framework and process for using this type of model interactively. Although time is short, we then intend to use existing data to attempt to validate the new model, so that users of the new model will have some sense of its accuracy when they have to make decisions based on its predictions.

PLOT	EAST	NORTH	ELEV (m)	ABREV	PREDOM_SP
1	477528	6345628	1750	AWF	Dryas octopetala-Salix reticulata-Festuca altaica
2	477770	6345715	1710	WB/LF	Salix spp-Betula glandulosa/Lupinus arcticus- Festuca altaica
3	480503	6352731	1810	HAV	Cassiope tetragona-Dryas octopetala-Vaccinium spp
4	480783	6352956	1750	ACM	Dryas octopetala-Silene acaulis-Moss spp
5	469316	6360676	1881	WM	Salix-Artemisia norvegica
6	457010	6372280	1920	HWC	Cassiope tetragona-Salix reticulata-Carex spp.
7	457300	6372429	1808	WB/F	Salix spp-Betula glandulosa/Festuca altaica
8	464035	6371082	1763	WB/LF	Salix spp-Betula glandulosa/Lupinus arcticus- Festuca altaica
9	484627	6363319	1659	RB/L	Rhododendron lapponicum-Betula glandulosa/Umbilicaria-Stereocaulon

VISITOR VALUES AND ATTITUDES ON WILDLIFE AND MANAGEMENT ACTIVITIES

ACCURATE INFORMATION ON USE AND USERS IS ESSENTIAL

**A Presentation by
Dr. Ron Rutledge
University of British Columbia**

In order to retain the opportunity for a wilderness recreation experience in the Muskwa-Kechika Management Area, accurate information on recreation use and users' values and attitudes is essential. This information, when combined with information about legal and administrative mandates, agencies' policies, historical perspectives, public opinion and interest group politics, can help in the development of wilderness management objectives and strategies.

In 1993 visitors to a portion of the M-KMA were surveyed to obtain baseline data on wilderness recreation use and to identify visitors' attitudes and opinions concerning recreation management. Results from the Northeastern British Columbia (NEBC) Recreation Survey (*Rutledge and Trotter, 1995*) will be presented to describe characteristics of survey respondents and their recreation trips, and their attitudes on observing and encountering wildlife. In addition, respondents' opinions about potential management activities are described.

Study Area

The study area coincides, for the most part, with the Fort Nelson Forest District, which occupies the northeastern corner of British Columbia. The district covers about 83,000 square kilometres or 31,950 square miles. This is equal to nine percent of the British Columbia provincial land base.

Cold winters and short, warm summers characterize the region. The average annual precipitation is 450 millimetres (18 inches). Lower elevation snowfall is 25-75 centimetres (10-30 inches) with higher elevations to the west receiving greater accumulations of snow. The eastern slopes of the Northern Rocky Mountains experience warm chinook winds from the west. These winds reduce snow accumulation (especially on southern exposed slopes).

Backcountry recreation opportunities include hiking, hunting, fishing, horse back riding, river boating, canoeing and rafting. Close to 20,000 square kilometres of the district are of a primitive nature, especially in the Northern Rocky Mountains. Visitors come to the area from all over the world. Many travel the famous Alaska Highway while others fly in from B.C.'s largest city, Vancouver.

Survey Sample

Because of the large number of access points to the backcountry in NEBC and the lack of reliable information on visitor access patterns, random sampling from a fixed sample frame was not possible. Names and addresses of potential survey respondents were obtained in a number of ways during the summer and fall of 1993. First, visitors were contacted at various field locations in the area and asked to provide their names and addresses and were told to expect a questionnaire to be mailed to them later.

Second, commercial guide outfitters in the area provided the names and addresses of clients who agreed to participate in the study. Third, names and addresses of recreationists were collected from a local outdoor recreation organization. Lastly, names and addresses were obtained from B.C. Environment records.

Survey Instrument

A mail-back questionnaire was used as the survey instrument in this study. The initial mailing consisted of an introductory letter, the questionnaire and a stamped self-addressed return envelope. The first mailing was followed one week later with a reminder letter and two follow-up mailings after three and six weeks, respectively. Each follow-up included a cover letter and another copy of the questionnaire. A total of 501 questionnaires were delivered. Of that total, 399 usable questionnaires were returned, which resulted in a response rate of 78.2 percent.

Study Limitations

Research studies of this kind have limitations or assumptions associated with them. One limitation of this study relates to sampling. A convenience sample was used and only those NEBC visitors who volunteered or who were known to visit the area were sampled. Therefore, study results should not be generalized and do not necessarily reflect the views of all NEBC visitors.

The descriptive information provided by this initial study on backcountry recreation use in NEBC can help studies in the future overcome the above limitations and, thereby, increase the effectiveness of management of the area's values and opportunities.

Visitor and Trip Characteristics

This section reports on the characteristics of survey respondents, their reasons for visiting NEBC and characteristics of their trips. Figure 1 shows the country of origin, gender, education level and place of residence for survey respondents. The average age of survey respondents was 43 years old. The youngest individuals who responded were under 18, while the oldest were over 75.

Figure 1. Visitor Characteristics

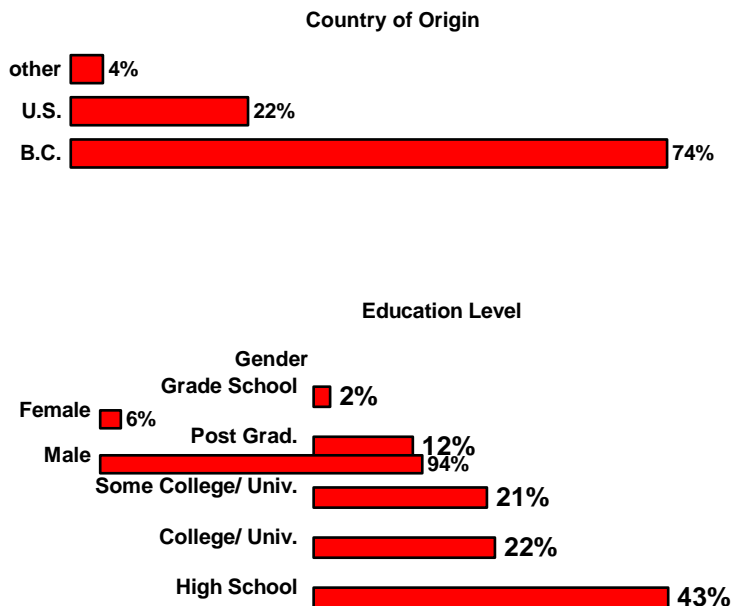
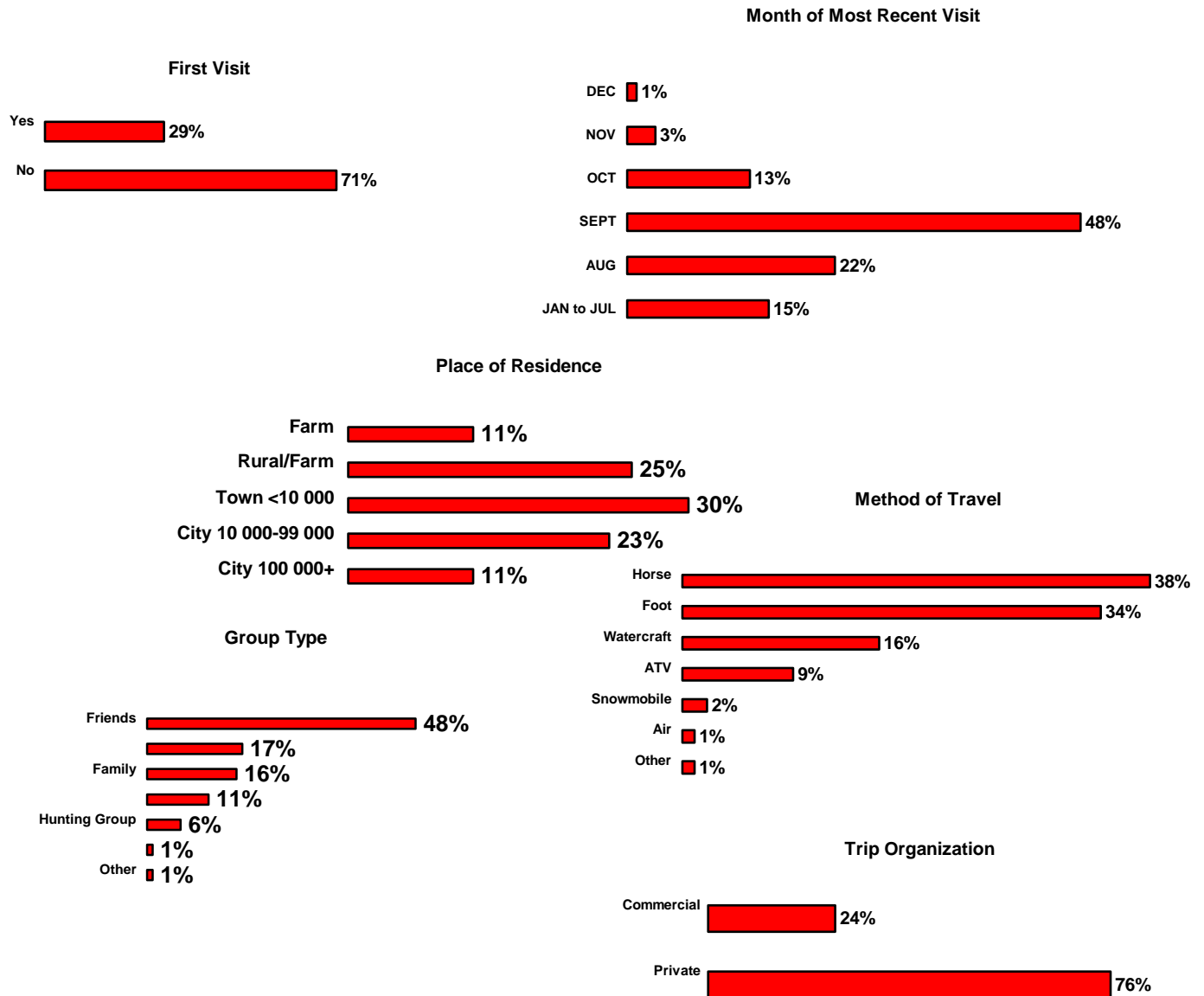
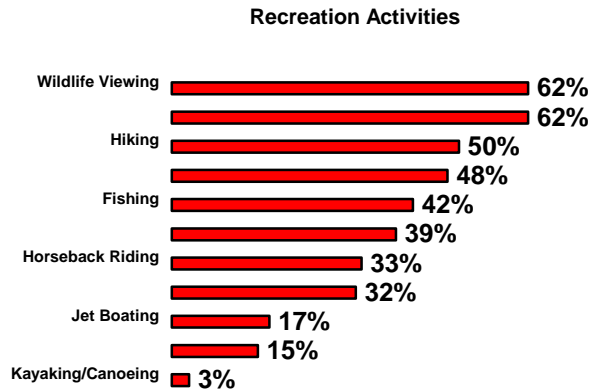


Figure 2 shows a number of characteristics of survey respondents' recreation trip to NEBC in 1993.

Figure 2. Trip Characteristics

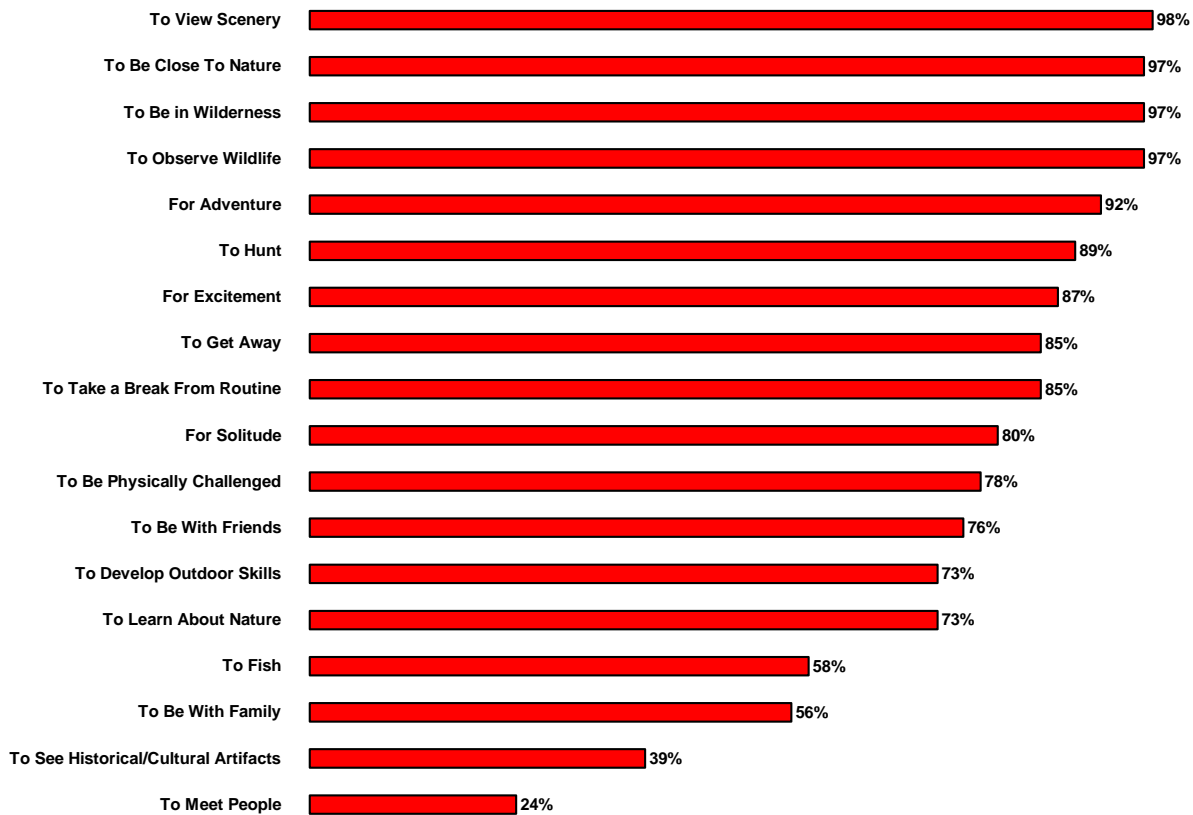




Survey respondents were given a list of reasons describing why they might be recreating in NEBC. Figure 3 shows the

reasons respondents identified that were important to them.

Figure 3. Important Reasons for Visit



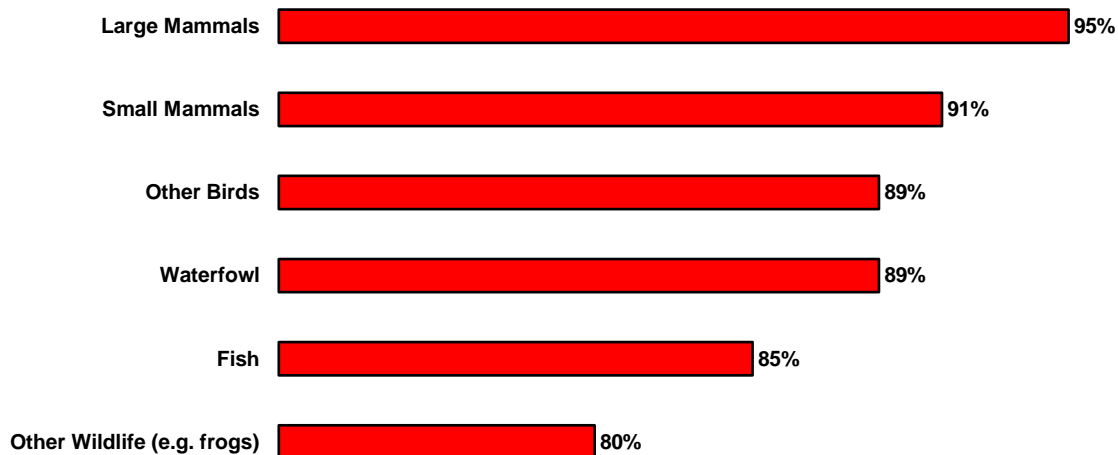
Visitor Attitudes Toward Wildlife Observations or Encounters

Conducting research on visitor attitudes toward wildlife observations or encounters is an essential source of information that can be used in a successful resource management program. Knowing visitor attitudes toward particular types of wildlife will help recreation managers monitor those resources in order to maintain quality recreation experiences.

This section reveals visitor attitudes toward wildlife observations and encounters in three different perspectives: the level of enjoyment obtained; emotional reasons for wanting to observe or encounter wildlife; and other reasons for observing or encountering wildlife.

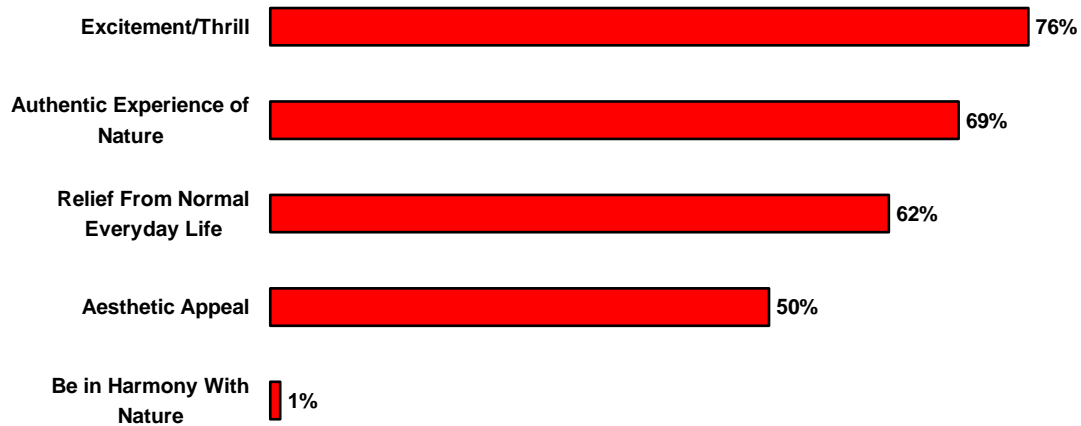
Respondents were asked to indicate how they felt about observing or encountering particular types of wildlife in a natural habitat (excluding those they would want to hunt or fish). Figure 4 shows the percentage of respondents who enjoyed observing a particular type of wildlife.

Figure 4. Feelings about Wildlife Observations



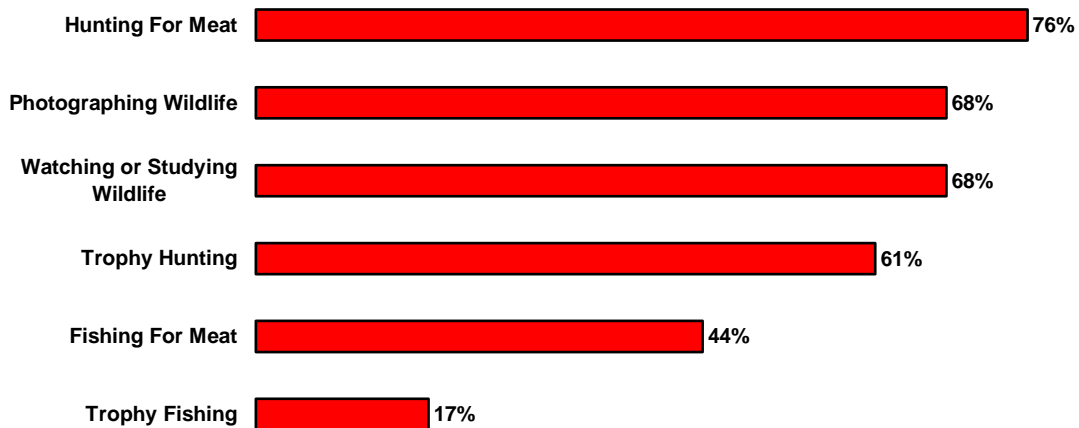
Respondents were asked what emotional reasons they had for wanting to observe or encounter wildlife in a natural habitat. Figure 5 shows that the most commonly cited reason was for excitement/thrill.

Figure 5. Emotional Reasons for Wanting to Observe Wildlife



In contrast to the "emotional reasons" examined in the last section, the reasons listed in Figure 6 are related more to the activities of the respondents in NEBC.

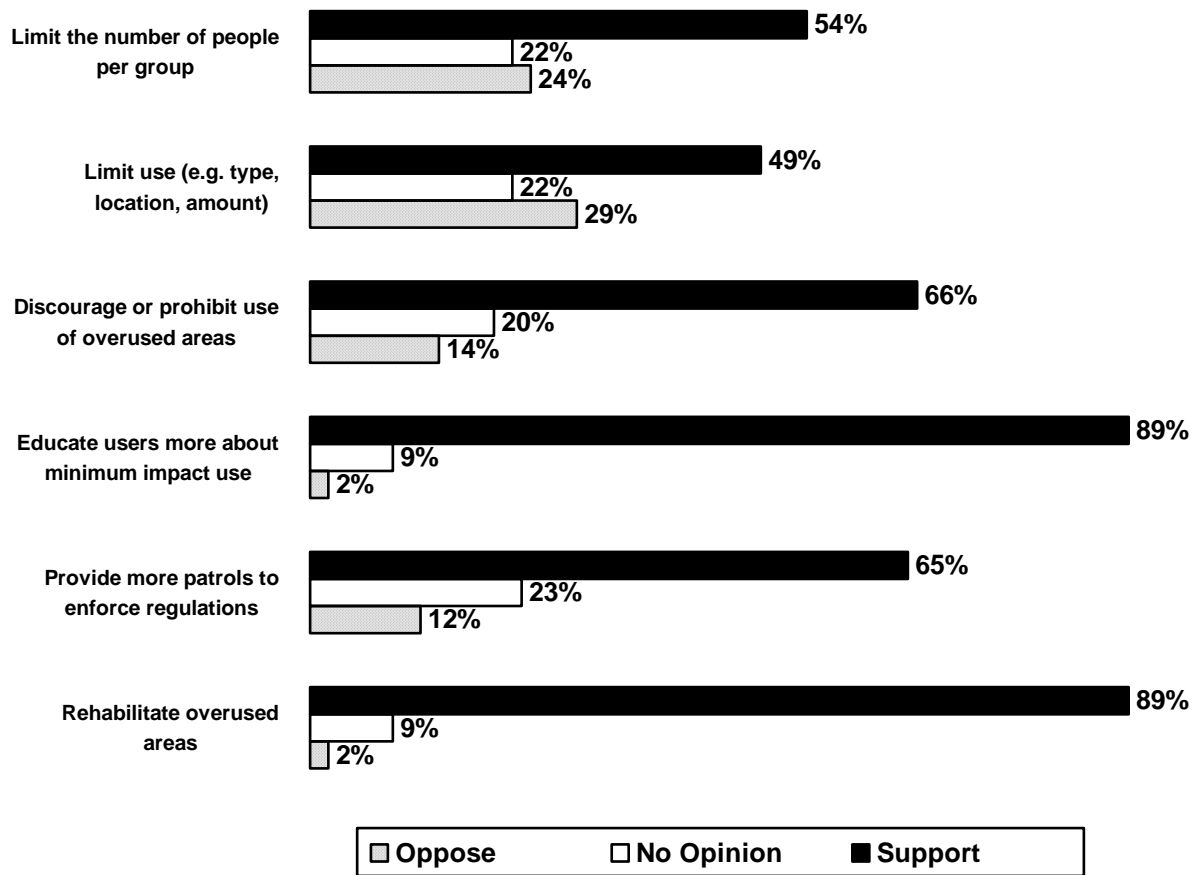
Figure 6. Other Reasons for Wanting to Observe Wildlife



Visitor Attitudes Toward Potential Management Actions

This section reports on respondents' attitudes toward a number of potential management actions that could be used if the resources or quality of experiences are threatened in NEBC (see Figure 7).

Figure 7. Visitor Attitudes Toward Potential Management Actions



Conclusion

Recreation visitor and trip profiles and attitudes toward management activities are important baseline information in monitoring for the retention of wilderness experiences in the M-KMA. The survey results presented in this paper give some indication of the wilderness values important to recreation visitors to the M-KMA. Ultimately, it is the actions of wilderness recreation visitors that will protect the qualities that facilitate quality wilderness recreation experiences.

For this reason, M-KMA recreation managers must actively seek the views and opinions of recreation visitors, incorporate their values into management objectives, and thereby obtain their support for management activities in the area. But, as everyone knows, society's values and attitudes often change.

It is, therefore, incumbent on M-KMA recreation managers to monitor changes in values, attitudes and recreation visitors' experiences, and identify when appropriate changes in management direction are required. However, caution should be exercised as there exists the potential for the M-KMA's wilderness characteristics to slowly diminish as values, attitudes, visitor characteristics and recreation uses change over time.

Reference

Rutledge, R. and Trotter, W. 1995. *The 1993 Northeastern British Columbia Recreation Survey-Summary Highlights*. BC Ministry of Forests, Forests Practices Branch, Victoria, BC. 23pp.

CONSIDERATION OF SOME OTHER SPECIES IS IMPORTANT

DATA COLLECTION ALLOWS A LOOK AT CHANGES OVER TIME

**A Presentation by
Dr. Helen Schwantje
Wildlife Veterinarian, BC Wildlife Branch**

Today I'd like to introduce the idea of looking for and at species that are generally far less popular than moose, wolves, birds or even non-game species, but which can play huge roles in ecosystems with far-reaching impacts. I will try to give a brief overview of how we try to monitor the health of the environment through the wild animals that live there. It is a big topic but one of increasing interest, especially in areas like the Muskwa-Kechika, areas where we still retain wilderness habitats and animals, for the most part undisturbed by us and our impacts.

Wild animal health can be considered important for probably as many reasons as we have heard definitions of wilderness at this meeting. These reasons range from diseases and parasites that can be transmitted to people, to developing models that can help to track global climate or contamination patterns.

What is wilderness? Definitions: "a region uncultivated and uninhabited by human beings"; "an area essentially undisturbed by human activity together with its naturally developed life community"; "an empty or pathless area". (*Webster's Dictionary*) We've heard that the definition of wilderness can be an extremely personal process so I won't try, but I personally like the middle one. What is wildlife? This needs less explanation, but keep aware of the wide variety of species we need to look at. What is health? Definition: "state of an organism when it functions optimally without evidence of disease or abnormality". Most think of health as "normal" or the absence of disease (there are many other definitions as well), however, most agree that before you can understand health you need to know what "normal" is. What is normal? We must establish "normal health values" by evaluating wildlife health:

- Before disturbances
- Opportunistic or focused sampling
- Ongoing surveillance

Ideally we would have looked at the normals 50 or even 200 years ago. This is not easy so we try to use the most undisturbed populations as baselines, as normals. Ideally we focus projects and select specific populations of animals or species of interest. In reality, those that are the most accessible or cost effective to sample are used. Opportunistic sampling for information may mean piggybacking on other studies or relying on samples from sources like hunter kills or even road kill. And it must be over a long time period. Wildlife health evaluations feature:

- Population basis
- Historical and current patterns
- Searches
- Oral and archives

Data on animal groups and their numbers and patterns in the past and present can be added to information from other sources such as oral history from people on the land (First Nations, trappers, guide outfitters, ranchers), historic diaries, archives or even desk drawers. This is time consuming and difficult, especially without local support.

Active sampling involves individual animals or groups, along with before and after disturbances. For some diseases we need specific samples, such as biological ones directly from animals captured and handled or killed. These may include blood, feces, tissues or direct examination.

Monitor occurrence of "common" or unusual disease conditions in individuals or groups

Hunters, field staff and the public can observe and collect some information and samples, especially those that are very obvious in individual animals. In this way we can establish baseline data for significant diseases found elsewhere, i.e. chronic wasting disease, soremouth and wild sheep pneumonia complex. Often we need data, even in some cases the absence of disease, for baseline information on diseases that are very significant to certain species, or those that are considered reportable or emerging diseases.

Muskwa-Kechika Wildlife Health Projects

These are two examples of local projects funded by the Muskwa-Kechika Trust Fund:

1) Stone's Sheep Parasite/Health Evaluation

- collection of fecal and tissue samples
- to compare Stone's herds
- to collect tissue samples
- to parallel Dall's sheep study done in the Northwest Territory/Yukon Territory

2) Health risks to wildlife from camelids

- create wildlife and camelid health database
- owner survey
- active sampling
- risk assessment

What are the risks from other domestic species? For risk assessments we may never have all of the answers and must often make the best guess, or at least the most educated one, for these questions. Often the precautionary principle or "do no harm" provides the least risk.

Monitor health data over time and after habitat disturbances

This is also a big focus and one of the biggest reasons to look at and collect the normal data. It allows us to look at the changes over time and after disturbances that may include changes in habitat or potentially stress causing events such as helicopter overflights, seismic activity, etc.

My thanks to the people of the Peace country for their ongoing support and interest.

FORESTRY DEVELOPMENT POSSIBILITIES FOR THE M-KMA

CONSIDERATION OF FORESTRY OPTIONS, CONCEPTS AND IMPLICATIONS

Discussion Outline by Greg Taylor

Today's remarks reflect my personal views, based upon my experience and within the context of the situation you are facing in the Muskwa-Kechika Management Area.

Topics for Discussion:

- ❖ Options for management:
 - Wilderness preservation
 - Commercial forestry
 - Variations of the two
- ❖ Forestry concepts
- ❖ Implications of Forest Management Actions

Commercial forestry contiguous to wilderness: the boundary issue.

Variations:

1. Extent of commercial forestry which may be acceptable within a wilderness – for example, harvest necessitated by beetle infestation, or
2. Lower impact logging: variable retention heli-logging, faller's choice logging in dry belt Douglas fir

Concepts:

Forest succession, fire origin stands
Sustainability – biological, compared to viability – economic
Passive or active management
Watershed, foodshed

Management Actions:

Consequences occur for both action and inaction
Management tradeoffs – essentially an economic concept that applies to forest management

Initial Information Requirements:

- ❖ Topography and soils
- ❖ Forest composition
- ❖ Other resources, including wildlife, water, fish, petroleum, minerals, etc

These are essential for decision-making; baseline information is needed before taking action. Relate to comparable nearby sites if data is unavailable for specific area.

Obtain best and greatest detail possible
Essentially it is detail for biogeoclimatic zones
Forest species, stand site index, age health, etc.
Other resources may only be anecdotal

The Wilderness Option:

- ❖ Let nature take its course
- ❖ Roadless area
- ❖ Non-motorized travel
- ❖ Limits to access

Natural forest succession: mature >beetles/fire>release of nutrients>regeneration
Roadless – U.S. term
Untrammelled

Nature Taking Its Course:

- ❖ Mature to over-mature stand suffers beetle infestation
- ❖ Infestation spreads, killing large areas of forest
- ❖ Wildfire burns forest
- ❖ Seed and nutrient release fosters regeneration
- ❖ New forest is established and begins to mature

Examples of spruce bark beetle in Bowron spruce, pine bark beetle from Tweedsmuir Park
Could be worsened by blowdown
Nutrient release also improves forage and berry crops increase ungulate population
Decline in moose with maturity of forest

If Nature Takes Its Course:

- ❖ There will be dramatic changes in the forest cover
- ❖ Especially the sudden change as a result of fire
- ❖ Will the impact of fire be acceptable over a large area?
- ❖ If not, should steps be taken to mitigate the hazard?
- ❖ The first step is risk assessment and estimation of extent of possible damage

The first change is beetle-killed forest
Fire cycle in northwestern Ontario, 10-20 year cycle – burns young green timber
Over-abundant regeneration, then better spacing with second fire, no appreciable site degradation/erosion: “gentle slopes”
Experience in Yellowstone Park – prevention for years and then fire: not entirely of high fuel levels – but dry conditions on its own – a dry weather pattern
Risk assessment: incidence of beetle attack, likely wind direction etc.

Options to Mitigate Large Wildfire:

- ❖ If beetle attack, consider fall and burn for small patches of infestation
- ❖ Use aerial fire detection after lightning storms
- ❖ Fight initial fire with rapid attack crews to prevent spread
- ❖ Permit some fires to burn smaller areas under controlled conditions

Fall and burn would be done on a regular basis as required

Can truly extreme fire conditions be controlled?

Is it acceptable if fires escape and burn larger areas?

Commercial Forest Development:

- ❖ Additional data required: timber cruise for species, volume, quality, also roadability
- ❖ Prepare feasibility study to determine economic viability
- ❖ So silviculture prescriptions to plan future regeneration approach
- ❖ Manage to FPC and/or sustainable forestry guidelines such as CSA or FSC – a “working” forest

Generally a large-scale operation unless Muskwa-Kechika Management Area provides only a portion of harvest

100,000 m³ / yr = 444 he logged @ 225 m³ / he

But this is only 25 MMfbm of lumber – likely to be 4 to 10 times larger

Road requirements will be extensive

Issues:

- ❖ Natural vs. planted regeneration
- ❖ Road deactivation vs permanent installation
- ❖ Move to results-based code

Revenue from log sales could help support other activities in the M-KMA

Mount St. Helens recovery after 20 years

Alternative Commercial Forest Development Options:

- ❖ Use large scale commercial harvesting operation as a means to control beetle infestations
- ❖ Use commercial harvesting as an approach to mitigate the disturbance created by petroleum exploration
- ❖ Consider small scale harvesting, especially if possible for salvage operations

Direct harvesting only to infested stands

Burn after harvesting to mimic natural fire – seldom hot enough

Ensure harvest of right-of-way timber to prevent infestation

Small scale harvesting could provide wood products for cabins, bridges, corrals, etc. for the M-KMA

Next Steps:

- ❖ Confirm objectives for operation of M-KMA
- ❖ Collect and analyze data using a forest modeling program
- ❖ Undertake SWOT and feasibility analyses to compare options
- ❖ Reach decisions on programs and take action

SUMMARY OF BREAKOUT SESSION DISCUSSION GROUP FINDINGS

Saturday, January 19, 2002

Discussion on Ecosystem Dynamics led by Dr. Katherine Parker

- ❖ Mineral licks (buffer zones around).
- ❖ Males use at end of season; females and young use early in season during lactation period.
- ❖ Gathering plan for data.
- ❖ Female early in spring (ASAP)
- ❖ Males follow females to lick during rut.
- ❖ Concern there is not enough time to do wildlife research plan.
- ❖ Pre-tenure planning is critical, must identify that it is adaptive. Adequate time frames (two years minimum). Multiple seasonal data is essential (e.g. winter and summer).

First Plan is critical

- ❖ Industry on outside first.
- ❖ Outline how industry would operate.
- ❖ Obtaining data from NGOs, First Nations and government.
- ❖ Currently gathering data.
- ❖ Difficulty with manpower – not enough, especially with Stone's sheep; collaring issue.
- ❖ Caribou, wolves and bears (XHF collars)
- ❖ Wildlife management plan completed by March: no net loss concept, difficulty with large wildlife species (how to identify net loss).
- ❖ M-KMA plan/Act takes precedence over industry.
- ❖ Adaptive management a priority.
- ❖ FSC certification.
- ❖ Approach industry (environment group) for information research/data that they might have gathered.
- ❖ Contacted John Elliot to obtain data from him. He has not followed through.
- ❖ Daily statistics kept while doing exploration.
- ❖ Oil company research is audited (concerns that data may be biased).
- ❖ Suggest a third party audit to ensure data is accurate.
- ❖ Establish relationship/communications with Conservation Officers (joint research ventures).

Discussion on Forestry led by Greg Taylor

If pest outbreaks start in parks, what should be done?

- ❖ Need good info.
- ❖ Decision matrix re fire and bugs management needs to be developed.
- ❖ Controlled burns are one option, to maintain patch distribution if forestry not economic.

- ❖ Ecosystem-based management, considering all species key to wilderness value retention.
- ❖ No logging must be an option in planning.
- ❖ Using value-added products to increase net income from logging is important.
- ❖ Roads are key issue in retaining wilderness character.
- ❖ Logging with roads uneconomic? Plan for minimal road network.
- ❖ Consider the M-KMA a “model forest” or a “forest stewardship model”.
- ❖ Consider alternative harvesting or silviculture systems and determine if viable in the M-KMA.
- ❖ Review allocation and development options while meeting “wilderness experience” goal. We need new options.

Discussion on Recreation led by Dr. Ron Rutledge

1. How much is enough?
2. Promoting recreation will result in future generation wanting to retain wilderness.
3. Interpretive Centre is being looked at in Fort Nelson – use as an educational tool remote from the M-KMA; provides information – reduces impacts – creates information trail.
4. Retaining the Wilderness Experience
 - a. Recreation has within it the word ‘re-create’.
 - b. Quiet
 - c. Uncrowded
 - d. Unmarred natural beauty
 - e. Sense of place overwhelms sense of self.
5. Need a process that assesses values – define the limit of acceptable change.
6. Need a diverse group to brainstorm on what the standards should be before the values get changed.
7. While limiting visitors may not control impacts, two people who do not respect the M-KMA could do more damage than five who do respect it.
 - a. Zoning may help control conflicts between users.
 - b. Possibly a regulation of uses through recreational resource values.
8. Need to continue a committee, i.e. Peace Managers, who collectively will help manage the M-KMA.
9. Recreation in areas under pre-tenure planning:
 - a. Possibly recreation restrictions could be looked at during pre-tenure planning.
 - b. Issue – access by recreationists on roads created for oil and gas, forestry, mining.
 - c. Issue – once the public has had access they will not want to give it up.
10. Deactivation needs to be more than digging a ditch across the road – recreators will continue to use.

Discussion on Data and Models led by Dr. Roger Wheate and Dr. Mike Gillingham

Data:

1. Satellite image data purchased by the M-K Advisory Board is, in principle, available to all stakeholders.

2. UNBC has acquired air photos from the 1950s of the Muskwa-Kechika; those of Peace River of great interest to some.

Models:

1. Currently these conform to RICS standards.
2. Pre-tenure planning time compression has forced the need for a single working model for the M-KMA.
3. Model results and data processing provide the tools but the users need to provide input, for example:
 - a. What confidence levels are associated with results?
 - b. What buffer distance applies to critical areas?
 - c. The criteria may have a greater constraint than the data.

Discussion on Mining led by Ed Beswick

- ❖ Are mining and the wilderness compatible?
 - Standards of conduct
 - Thoughtful consideration of the magnitude of the disturbance
 - Justification of the level of disturbance for each stage

Cumulative effects concepts:

- Full cost accounting, e.g. water quality
- Ecosystem disruption of target wildlife species

How to retain wilderness experience in the M-KMA while allowing mining?

- Non-intrusive exploration
- Work requirement system – waive requirement in sensitive areas?
- Paper staking – positive impacts? Avoids staking rush
- Industry – two zone system, in or out of PAS (protected areas)
- Challenge temporary use of land concepts

Trenching/Alpine?

Camp placement and approval
 Helicopter coordinated activities with Conservation officers as per the LRMP
 Concern – try guiding exploration away from sensitive areas?
 Consultation with First Nations at outset at earliest possible time
 Difficulty engaging miners?