

POTENTIAL MKMA RESEARCH TOPICS

Submitted to the Collaborative Partnership Working Group for discussion
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Five research themes, which are important to maintaining the vision of the Muskwa-Kechika Management Area (MKMA), were summarized in the Framework for Strategic Research Plan (UNBC 2000):

- Ecosystem relationships/maintenance – understanding how ecosystem components operate in the MKMA and how their integrity can be maintained over time;
- Predator/prey relationships - understanding the interrelationships between each species and how are those roles are affected by natural and human activities;
- Restoration of ecosystem components – understanding what is needed to restore and manage natural and human disturbances (including resource development) on the MKMA ecosystems;
- Recreation management - understanding the effects of recreation use and recreation management strategies on the MKMA ecosystems, wilderness attributes and visitor experiences; and
- Historical and cultural processes - understanding the historical and current interrelationships of humans (culture) and the MKMA ecosystems.

Since this Plan, the goal of the research partnership between UNBC and the Muskwa-Kechika Advisory Board continues to be the same: to provide basic information on 1) the unique wildlife and wilderness resources of the MKMA, and 2) how recreation, development and resource extraction can be successfully integrated into these unique wildlife and wilderness resources.

Related to this goal and the above themes, we compiled a list of potential research topics that have current relevant priority in the MKMA:

Ecosystem integrity

- 1) HOW do we determine wildlife and wilderness values? A different suite of values will result in different thresholds and endpoints for ecosystems.
- 2) What are the requirements for successful reproduction of organisms in native habitats and what impact does habitat alteration have on these breeding requirements (e.g., calving grounds, migration corridors)?
- 3) Are there endangered species or hotspots of biodiversity that are particularly sensitive to habitat alteration?
- 4) What impact has human activity had on ecosystems over the past 50+ years (e.g., prescribed burning, introduction of bison)?

- 5) What are the appropriate spatial and temporal scales for development to maintain existing ecosystems?
- 6) What are the cumulative effects of various forms of development on the species within the MKMA?
- 7) How do we accommodate the influence of climate change on plans for future development in existing ecosystems?

Predator/prey dynamic

- 1) How does the occurrence of multiple species affect habitat capabilities for various species?
- 2) What are the relationships between habitats that are designated as high value and animal condition and reproduction?
- 3) How appropriate are habitat-based approaches to understanding predator/prey dynamics?
- 4) What are the effects of access (e.g., industrial, recreational) on predator/prey relationships? Do they vary at different times of the year (seasonal)?
- 5) What are the short-and long-term effects of access, including cumulative effects?
- 6) How appropriate are pre-tenure plans in the management of predator/prey dynamics?
- 7) What are the best techniques for estimating populations (densities, counts, productivity)?
- 8) What are the best techniques for inventory and mapping habitats as they relate to the predator/prey dynamics?

Restoration/reclamation of ecosystem components

- 1) When is remediation adequate?
- 2) What is the definition of an acceptable level of impact - both from a biophysical and socioeconomic perspective?
- 3) What are the restoration targets or objectives of disturbed areas? Is it always necessary to restore to "pristine" values?
- 4) What areas either inside or outside the MKMA can be identified as controls for proposed areas of disturbance within the MKMA? What is the desired ecosystem condition of the disturbed area relative to the control area over a given time period? How can cumulative effects be accommodated in control areas?
- 5) Are there seasonal fluctuations in the ecosystem that need to be considered in disturbance or restoration activities?
- 6) What are the consequences and management implications of vegetation re-growth on operational pipelines and seismic lines?
- 7) What is the impact of a series of roads, well sites, mining, and wind-energy developments? Are the restoration requirements the same among sites?
- 8) What is the comparative effectiveness of various access control methods on restricting public use of the resulting access roads? How can these best be applied?

Outdoor recreation and tourism

- 1) What are the recreationists' and publics' expectations for management of the MKMA?
- 2) What is the visitor experience of the various different recreationists' (both direct and indirect e.g., highway) uses and in particular what is the nature of the wilderness experience?
- 3) What are indicators and thresholds of these visitor/wilderness experiences?

- 4) What are the limits of acceptable change for recreational users in various areas of the MKMA?
- 5) What are the impacts of recreation/tourism on other resource uses and vice versa?
- 6) What are the differences in impact between commercial and non-commercial recreation and tourism use on wildlife and wilderness values? What are the seasonal extents and effects of motorized access?
- 7) How do various access scenarios (i.e., trail or river vs dispersed access for snowmobiles) affect predator/prey dynamics?
- 8) To what extent do recreation values shape the goals for restoration plans (e.g., native vs introduced seed mixes; length of restoration process)?

Historical and cultural processes

- 1) What resources do people use, how do they use them, and what impact does that use have on ecosystems - past and present (e.g., prescribed burning)?
- 2) How do we ensure that First Nations have a fair opportunity to participate in, contribute knowledge towards, and benefit from, economic development in the MKMA?
- 3) How do we define culturally appropriate economic development?
- 4) What mechanisms can be used to resolve potential or actual conflicts between economic development and traditional use?
- 5) How can spiritual/ritual/traditional/historical practices contribute to and enhance understandings of the land and human relationship with the land (bioregionalism and First Nations perspectives)?
- 6) How do we plan comprehensively for mixed uses?

There also should be consideration given to **linking research outcomes and adaptive management**.

- 1) How do we manage an inventory of data and research outcomes so that it is readily available?
- 2) How should an adaptive management framework be constructed and implemented to ensure that human activities (industrial or recreational) are conducted in a way that continues to maintain wildlife and wilderness values? How do we learn from our activities and minimize future detrimental actions?