



Mountain Pine Beetle Ecology Program

Request for Research Concept

The fRI Mountain Pine Beetle Ecology Program has identified a set of research priorities expressed as by questions and categorized under the following four Research Themes:

- a. Biology and Management of MPB
- b. Hydrological Impacts of MPB
- c. Dynamics of Natural and Management Lodgepole Pine Stands following MPB
- d. Social and Economic Implications of a Changing Landscape

By this Request for a Research Concept, the MPBEP invites you to respond to its information needs as outlined in Table 1 using the following format. The intent of the Research Concept is to provide a succinct statement of the work to be undertaken to answer a specific question. The Research Concept should be a concise document of not more than two pages that demonstrates how the work will address a specific priority question or questions; who will undertake the research, what are the anticipated deliverables; funding requested and in what timeframe. If accepted, the proponent will be asked to submit a full proposal (not more that six pages), which will contain significantly more detail.

The Research Concept must follow the format outlined below and must include the following headings.

1. *Title of Project*

2. *Principal Investigator(s) and Agency*

Address:

Telephone/Fax Number:

Email:

Collaborators/ Industry Partners:

3. *Collaboration*

The MPBEP encourages investigators to engage an industrial / government partner in the development and implementation of the proposed research.

4. *Project Summary*

The Project Summary will illustrate how the proposed research is aligned with the goals of fRI and how the research results will address the research theme and priority question to affect change to protect forest values and how the information might be applied to improve existing systems/processes.

The Research Concept should include the following attributes:

- a. Brief background
- b. Clear statement of the objectives of the study, including hypotheses to be tested



- c. Involved personnel
- d. A brief description of proposed methodology
- e. Deliverables in terms of peer review papers, technical reports and engagement with project practitioner to facilitate knowledge transfer / information exchange (investigators are expected to participate in the annual MPBEP Information Exchange Forum)
- f. Time line / milestones / duration of study identifying timing of deliverables)
- g. Project risk (what could delay or prevent the successful completion of the project?)

5. Budget Estimate

- a. Provide budget by year (if a multi year project is proposed) and allocation of expenditures
- b. Indicate cost sharing that might be involved (i.e. are others contributing to the cost of the project?)
- c. Indicate in-kind contributions

Questions and Research Concepts can be directed to:

Keith McClain, Program Lead

kmclain@foothillsri.ca

Submissions of Research Concepts are due Monday May 13, 2013

Table 1. Research Themes and Priority Questions Identified by the fRI MPBEP

| | Research Theme 1: MPB Biology and Management | Key Elements of Question |
|----|---|---|
| 1. | What is the efficacy of current control measures applied to MPB in Alberta? | |
| 2. | What drives local and long distance beetle dispersal, establishment and population dynamics of MPB in novel host environments? | <ul style="list-style-type: none"> • Ecological • Climate • Environment • Stand conditions • Spread risk |
| 3. | What critical establishment thresholds can be defined to guide operational management of MPB infestations in novel habitats? | <ul style="list-style-type: none"> • number of attacks/tree • number of attacked trees/spot infestation |
| | Research Theme 2: Hydrological Impacts of MPB | |
| 4. | What are the specific thresholds in MPB affected watersheds that are indicative of pending negative conditions such as, changes in water quality and quantity, deterioration in aquatic habitat, flood potential? | |
| 5. | What is the range of hydrological impact at stand and watershed levels from variable MPB attack; can hydrological recovery be effectively determined? | |
| | Research Theme 3: Dynamics of Natural and Managed Lodgepole Pine Stands Following MPB | |
| 6. | What are the vegetation dynamics in managed and natural pine dominated stands following variable MPB caused mortality? | <ul style="list-style-type: none"> • Release rates of lower veg layers and understory crop species • Recruitment rates of crop species • Fall down rates, CWD • Growth and yield • Timber supply |
| 7. | What measures can be taken to restore landscapes severely altered by MPB to ensure the flow of ecological services? | <ul style="list-style-type: none"> • water quality • water quantity forest productivity • habitat • aesthetics |
| 8. | How is wildlife habitat for grizzly bear and caribou affected by landscape change due to MPB, and what rehabilitative measures can be taken to restore their critical habitat? | |

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| 9. | How can variably affected ecosites (by MPB) be differentiated into those that should be actively managed (including salvage) versus those that ought to be left for natural succession? | |
| 10. | How does fire risk and fire behaviour change following MPB? | <ul style="list-style-type: none"> • Ecosite • Degree of attack • Standing / down trees |
| 11. | How will the anticipated increase in soil water affect choice of rehabilitative options and what are the potential implications to the flow of ecological services? | |
| Research Theme 4: Social and Economic Implications of a Changing Landscape | | |
| 12. | What are the characteristics of resilient communities that are able to ensure their social and economic stability in the midst of a landscape changing due to MPB, and what steps can be taken to enhance resilient capacity? | |
| 13. | How is fibre quality related to shelf life of MPB killed trees across ecosites across Alberta and what are the subsequent implications for manufacturing? | |