

## **Interdisciplinary Climate Change Adaptation Research For Forest and Rangeland Ecosystems**

### **2009 PROGRAM OVERVIEW**

#### **INTRODUCTION**

British Columbia's Chief Forester established the Future Forest Ecosystems Initiative (FFEI) in 2006 to adapt BC's forest and range management framework<sup>1</sup> to a changing climate. The FFEI is pursuing a suite of activities designed to:

- increase understanding of the ecological changes associated with climate change and the consequent risks to ecosystem services; and
- use that knowledge to adapt the forest and range management framework to changing ecological conditions.

In March 2008, the BC Ministry of Forests and Range (MFR) established the Future Forest Ecosystem Scientific Council (FFESC) to contribute to the adaptation research required by the FFEI. The FFESC is a cooperative council made up of UBC, UNBC and MFR. A grant-in-aid totalling \$5.5 million was made available to the FFESC to fund research.

#### **PURPOSE OF FFESC**

The purpose of FFESC is to promote research that supports adaptation of BC's forest management framework for rapid climate change. The specific objectives are to:

1. Increase our understanding of how forest and range ecosystems can be expected to change over time as a result of climate change.
2. Develop projections to forecast those changes.
3. Develop methods of adapting forest management in response to climate change that will help reduce the impacts on forest and range ecosystems and productivity.
4. Research the economics and social consequence to BC of the changing forest and range ecosystems, and of the effects of the proposed adaptation options.

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<sup>1</sup> The forest and range management framework includes legislation, policies, procedures and systems under the MFR's jurisdiction that support: biogeoclimatic classification; timber supply planning; and, management and conservation of ecosystem services, biodiversity, wildlife, fish, riparian, water, soil, tree species and genes, forage and rangeland plant communities, biotic and abiotic agents, exotic and invasive species, and fire.

## WORK TO DATE

In 2008 the FFESC established its terms of reference and provided funding for four research projects identified by the FFEI as immediate high priorities - three projects investigated impacts of climate change on tree species and a fourth was a climate change and wildfire research forum. In early 2009, the FFESC conducted an internal gap analysis of climate-change adaptation research needs for British Columbia's forest and rangelands to inform a 2009 call for research proposals.

The preliminary gap analysis provided the FFESC with an overview of climate-change research within the mandate of FFESC and outlined where key research gaps exist that should be addressed by FFESC. This gap analysis (see Haeussler, S. April 2009. Climate Change Adaptation Needs for British Columbia Forest and Range Ecosystems Summary), as well as work undertaken by the FFEI recognize that successful climate-change adaptation will require an interdisciplinary approach, including integrated natural and social sciences research to build the knowledge and approaches required to anticipate and respond to changing forest and range ecosystems and economies.

The following are principles used to guide the design of the 2009 Interdisciplinary Climate Change Adaptation Research Program. They are based on the FFESC Charter, the gap analysis and the work of the FFEI technical team.

## GUIDING PRINCIPLES FOR 2009 PROGRAM

### Eligible Applicants

- Worthy projects will be funded regardless of their sponsoring organization or institution's connection to the FFESC.

### Interdisciplinary

- Projects will address the cross-disciplinary, cross-scale challenges inherent to studying ecological and socio-economic systems.
- Projects will build capacity to work in interdisciplinary teams.

### Scientist -Client Partnerships

- Researchers will work in partnership with clients, i.e., policy makers, resource management practitioners, and community stakeholders, to understand adaptation challenges, frame research questions and implement projects that fill critical knowledge gaps and provide practical information and tools for addressing those adaptation challenges.

### **Research Scope**

- Research projects will address one or more of the following areas:
  - Impact Assessments: evaluating the potential social, economic, and ecological consequences of climate change to forest and range ecosystems and their dependent communities;
  - Vulnerability Assessments: evaluating where a forest or rangeland social-ecological system is most exposed and sensitive or least capable of adapting and identifying barriers to adaptation;
  - Adaptation: designing and implementing adaptive actions to reduce the vulnerabilities of forest and rangeland social-ecological systems to climate change;
  - Integration: monitoring the response of forest and rangeland socio-ecological systems to climate change, identifying interactions, feedbacks and cumulative effects, and adjusting adaptation approaches as necessary.

### **Build on Existing Knowledge Bases**

- Projects will use and build on the best available international science, standards, terminology and frameworks for ecosystem adaptation research rather than inventing a made-in-BC approach.
- Projects will take advantage of and contribute to the province's existing forest and range research and planning networks, long-term field experiments, modeling frameworks and databases.

### **Timely Products**

- Projects will focus on providing useful products (strategies, tools, knowledge) within a short (two-year) time frame.

### **Scientific Merit:**

- The quality of science will be assessed by peer review (i.e., independent scientific experts) to determine whether the science is sound and how important or ground breaking it is.

### **Team Competence**

- Project team members will collectively bring the required training, experience and skills to successfully carry out research projects related to the province's forest and range ecosystems or their dependent communities.

### **Value for Money**

- Projects will be cost-effective, realistic and provide good value for the expected benefits.

### **Balance**

- The portfolio of projects funded will reflect a balance among the variety of ecosystems, geographic locations and issues in British Columbia.

## **APPLICATION AND REVIEW PROCESS**

The FFESC's Interdisciplinary Climate Change Adaptation Research Program will competitively award up to \$4 million dollars over 2 years (December 2009 to December 2011) to interdisciplinary research teams for projects that will help British Columbia adapt its forest and range management framework for rapid climate change.

The application and review process involves three steps:

### **1. Expressions of Interest (EOIs)**

The EOI step is intended to identify a broad pool of potential proponents who have the interest, experience and expertise to work on interdisciplinary teams to design and implement applied research projects addressing climate change adaptation. Team leaders of successful EOI applications will be invited to a collaborative planning workshop to learn about the application and review process, and exchange information with other scientists and clients to facilitate the development of interdisciplinary teams and projects.

### **2. Letters of Intent (LOIs)**

The LOI step is intended to competitively evaluate preliminary project proposals on the basis of their relevance, connection to a practical climate change adaptation problem of a client, the significance of the knowledge gap, the collective expertise of the team to carry out the work, the soundness of approach and support for cross-disciplinary integration, the expected benefits and likelihood that the results/product will be achieved within the two-year timeframe and the linkages to other initiatives and existing research infrastructure. LOIs will be approved for up to 100% of the available funding.

### 3. Full Proposals.

Successful LOI applicants will be invited to submit full project proposals which will be reviewed to ensure a high quality proposal and interdisciplinary team and value for money. The review will also confirm the relevance and expected benefits.

#### **Timeline for Applications and Review**

| <b>Description</b>                                           | <b>Deliverable</b>                 | <b>Date</b>                              | <b>Sent to/Location</b>      |
|--------------------------------------------------------------|------------------------------------|------------------------------------------|------------------------------|
| 1. Expression of Interest (EOI)                              | EOI Form (Appendix I)              | 14 April 2009<br>- 4 pm                  | FFESC@gov.bc.ca              |
| FFESC evaluates EOIs                                         | Workshop invitation                | 17 April, 2009                           | Proponents' email/ address   |
| 2. Collaborative Planning Workshop                           | Team leader registration form      | 29 April, 2009                           | FORREX                       |
| 3. Letter of Intent (LOI)                                    | 2-4 page LOI submitted             | 1 June 2009 –<br>9 am                    | FFESC.office@ubc.ca          |
| FFESC evaluates LOIs                                         | Invitation to submit Full Proposal | 19 June 2009                             | Proponent's email or address |
| 4. Full Proposal                                             | 10-20 pg proposal submitted        | 14 Sept. 2009<br>– 9 am                  | FFESC.office@ubc.ca          |
| FFESC informs proponents of acceptance & funding will follow | Projects announced                 | 1 <sup>st</sup> week<br>November<br>2009 | Proponent's email or address |
| 5. Funded Project                                            |                                    | December 2009 to December 2011           |                              |
| First Year End                                               | Progress report                    | Dec. 31, 2010                            | FFESC.office@ubc.ca          |
| Project Completion                                           | Final Report                       | Dec. 31, 2011                            | FFESC.office@ubc.ca          |

#### **Overall Evaluation Framework for Proposal Review**

The following evaluation framework will guide the overall evaluation of proposals. At each stage of the review process a specific set of criteria linked to the framework will be used. For example, during the EOI review the focus of the review is relevance, for the LOI stage screening criteria mainly relate to relevance and expected benefits, and for the full proposal the focus broadens to include technical/scientific merit and value for money. The specific criteria used at each stage are documented in separate process descriptions for each stage. In addition to the proposal evaluation criteria, the final selection of projects will take into account the balance among geographic, ecological and topic areas to ensure the effectiveness of the overall program.

## Future Forest Ecosystem Scientific Council

| <b>Relevance</b>                                                                                                                                                          | <b>Technical/Scientific Merit</b>                                                                                                                                    | <b>Expected Benefits</b>                                                                                                                                 | <b>Value for Money</b>                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Contributes to stated FFESC objectives.                                                                                                                                   | Research and/or extension questions and project objectives are clear.                                                                                                | Expected benefits for the management of forest and rangelands and for the communities that depend on forest and range resources are clearly articulated. | Costs are within a reasonable range.                                                       |
| Recognizes and addresses a component of the IPCC's climate change adaptation framework (i.e., impact assessments; vulnerability assessments; adaptation; or integration). | Approach is technically sound.                                                                                                                                       | Expected scientific benefits are clearly articulated.                                                                                                    | Builds on and contributes to existing research infrastructure, information and activities. |
| Addresses climate change adaptation from holistic (i.e., systems) and interdisciplinary perspectives.                                                                     | Approach supports cross-disciplinary integration.                                                                                                                    | Plan for knowledge transfer/extension is meaningful and complete.                                                                                        | Links to other projects and initiatives and avoids duplication.                            |
| Integrates natural and social sciences.                                                                                                                                   | Proposed research methods are appropriate, well laid out, and based on best available literature on the subject.                                                     | Products are achievable and timely.                                                                                                                      | Leverages funding and contributions from other sources.                                    |
| Advances priority knowledge and/or extension gaps/needs.                                                                                                                  | Team is highly qualified, experienced and skilled with the necessary complement of expertise and division of responsibilities to carry out the project successfully. | Enhanced capability for collaborative, interdisciplinary teamwork and researcher - client partnerships.                                                  | Good return on investment vis-à-vis expected benefits.                                     |
| Clients <sup>2</sup> demonstrate support for and involvement in the project.                                                                                              | Goals and milestones are measureable, realistic and attainable.                                                                                                      | Potential to significantly advance adaptation of the forest and range management framework.                                                              |                                                                                            |

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<sup>2</sup> Clients are resource management practitioners, policy makers and community stakeholders - anyone directly affected by and/or involved in decisions about the way the forest and range resources are managed.

## **Evaluation Process**

EOIs will be reviewed and screened by the FFESC secretariat which includes a representative from each of UBC, UNBC and MFR. Subsequently, an FFESC evaluation committee composed of one representative from each agency will be established to review the LOIs and the full proposals. Every effort will be made to select committee members without a conflict of interest. If a conflict of interest arises during the review of an application, then the committee member will excuse themselves from decision-making for that application and an alternative representative from their organization will evaluate that application. At the full proposal stage, to aid in the committee's deliberations, up to three independent peer reviews may be requested to evaluate criteria related to technical/scientific merit and extension planning. The secretariat will be responsible for ensuring policies and cost guidelines are adhered to.

Successful projects will be required to provide a mid-term progress report and a final project report. Second-year funding will be contingent on the demonstration of adequate progress.