

CFS Activities Relevant to ABoVE

(Maximum 2 page)

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| 1. Project Title |
| High Elevation and High Latitude Forest Health in a Changing Climate |
| 2. Investigators (include email). a) Project Lead; b) CFS collaborators, c) external collaborators (individuals/institutions) |
| a) Jason Edwards, Northern Forestry Centre, Canadian Forest Service (Jason.Edwards@Canada.ca) |
| b) CFS: Roger Brett, Dr. Ted Hogg, Dr. David Price, Dr. Ron Hall, Dr. Guillermo Castilla, Dr. Marc-André Parisien, Dr. Daniel Thompson, Dr. Jag Bhatti, Dr. Barry Cooke |
| c) Government of Northwest Territories, Parks Canada Agency |
| 3. Project Description (200 words maximum) |
| <p>The CFS provides ongoing forest health expertise and advice to Government of Northwest Territories and Parks Canada Agency by annually surveying issues within the Northwest Territories and mountain and northern boreal national parks. The annual CFS forest health surveys assess current forest health conditions, observe trends over time, and discover emerging issues. Recent surveys have indicated significant increase in forest health decline in many areas of Northwest Territories and the mountain and northern national parks. Some forest health issues have been attributed directly to increased forest pest activity while other symptoms are directly related to drought. Still other symptoms remain undiagnosed, yet expert opinion from research staff at the CFS Northern Forestry Centre (NoFC) suggests the widespread and significant increase in forest health decline is climate related. We believe that the information NoFC has, and annually collects on National Park forest health issues, can assist Government of Northwest Territories and Parks Canada Agency in taking proactive measures to address climate change-related issues, and serve to demonstrate how CFS research benefits a range of forest resource values.</p> <p>This project is currently evolving from a forest health monitoring program into an integrated climate change impacts and adaptation approach through stronger collaboration with ongoing research by other CFS scientists, listed above.</p> |
| 4. Timelines and current funding (level and source) |
| 2016 summer: Forest health surveys (aerial and ground) in select national parks and the western portion of Northwest Territories. |

2016 Funding: \$7.8K from Government of Northwest Territories, seeking \$5.3K from Parks Canada Agency. CFS FTE: 0.75. In-kind support of aircraft time from Government of Northwest Territories and Park Canada Agency

2017: Project lead and participants are currently starting discussions with Government of Northwest Territories and Parks Canada Agency on a more comprehensive climate change impacts and adaptation project integrating this project with other ongoing CFS research in these regions. Funding and activities to be determined by March 2017.

5. Reference (1-2 key publication, website)

6. ABoVE question being mainly addressed (please highlight)

1. How are environmental changes affecting critical ecosystem services - natural and cultural resources, human health, infrastructure, and climate regulation - and how are **human societies** responding?

2. What processes are contributing to changes in **disturbance** regimes and what are the impacts of these changes?

3. What processes are controlling changes in the distribution and properties of **permafrost** and what are the impacts of these changes?

4. What are the causes and consequences of changes in the **hydrologic system**, specifically the amount, temporal distribution, and discharge of surface and subsurface water?

5. How are **flora and fauna** responding to changes in biotic and abiotic conditions, and what are the impacts on ecosystem structure and function?

6. How are the magnitudes, fates, and land atmosphere exchanges of **carbon** pools responding to environmental change, and what are the biogeochemical mechanisms driving these changes?

7. Linkages with ABoVE:

- a. **Data being collected/generated**
- b. **Expected key benefits and potential challenges from collaborating with ABoVE**
- c. **Ongoing and / or interest in future involvement in ABoVE**

- a) - Annual maps and records of forest health conditions, including forest pests, drought, mortality, etc.; increment tree core data.
- b) Benefit: Increased opportunity to enhance ground plot assessments/tree core data to link forest health survey observations to forest growth and yield/productivity.
Challenge: Data sharing. Some forest health survey data is released only by permission of Government of Northwest Territories or Parks Canada Agency.
- c) Permafrost mapping, linking remote sensing to forest health conditions.

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