Future Forest Ecosystems Scientific Council

2009 Research Program

Summary of Successful Letters of Intent

#	LOI Title	LOI Summary	Project Leader
1	Reducing vulnerabilities and promoting resilience of BC's natural and human systems through adaptation of post-disturbance land management options	**Objective:** Develop a centralized response framework or decision support model that identifies adaptation strategies at different scales to respond to shifting natural disturbance regimes (caused by increasing frequency and severity of wildfires, insect outbreaks, drought, and extreme weather events). **Scope:** Provincial **Team / clients:** FORREX, CFS, Oregon State University, MFR (Forest Practices), MoE (Climate Change Adaptation), Interfor, MFR (Chilcotin Forest District)	Kevin Bladon, FORREX
2	Climate change adaptation plan for Northwest Skeena communities	**Objective:** Build regional adaptive capacity in the Northwest Skeena region through: (1) sharing possible forms and ranges of expected climate change impacts on terrestrial and aquatic ecosystems and services; (2) assessing current community, governance and resource management capacity to cope with such change; and, (3) increasing community adaptive capacity by joint development of an adaptation action plan, informed and motivated by the results of this study. **Scope:** Regional (Northwest Skeena) **Team / clients**: Coast Tsimshian Resources LLP, UBC, MoE/Environment Canada, Cortex, Ecole Polytechnique Federale de Lausanne, UVIC, ESSA Technologies Ltd., Conservation Corps	Dirk Brinkman, Coast Tsimshian Resources LLP
3	Integrating climate change adaptation strategies with sustainability and socioeconomic objectives for the Quesnel timber supply area*	**Objective:** Develop a vision of the future forest landscape for the Quesnel TSA that would reduce vulnerability to climate change while meeting short- and long-term sustainability and socioeconomic objectives. The project involves designing and evaluating alternate landscapes of forest types and age classes in a case study simulated over 10, 50 and 80 year horizons under projected GCM scenarios, and conduct tradeoff analysis on sustainability (wildlife habitat, landscape connectivity, wildlife occurrence and abundance, other sustainability indicators), forest health (vulnerability to MPB), and socioeconomic parameters (stability of timber supply, economic value). **Scope:** Regional (Cariboo-Chilcotin) **Team / clients**: UBC, Forestmeister Services, MFR (SI Region), Quesnel TSA Mitigation Committee, MFR (Chilcotin Forest District) **Note**: *Proposal is being redesigned in collaboration with Krcmar (# 10) & Nelson (# 12*)	Ann Chan-McLeod, UBC
4	Climate change vulnerability of old-growth forests in BC's inland temperate rainforest	**Objective:** Work with local communities to develop strategies for managing old-growth interior temperate rainforests (ITR) under a changing climate. Research will address the questions: (1) can old-growth ITR be sustained into the future? (2) What are the best management practices for old-growth ITR stands under a changing climate? Research will include synthesis of existing data sets and additional field and community based studies to address knowledge gaps. **Scope:** Regional (ICH - interior temperate rainforest) **Team / clients**: UNBC, University of Idaho, MFR (NI Region), University of Oregon, UBC, SFU, McBride Community Forest	Darwyn Coxson, UNBC

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5	Risk Analysis and decision support tool	**Objective:** Develop a stand-level climate change risk assessment and decision support tool to assist forest managers in evaluating options for minimizing tree-mortality risk, and making strategic forest investments in response to a rapidly changing climate. Research will focus on risks associated with: (1) drought-induced tree mortality; (2) drought-induced stress leading to high tree mortality from insects or disease (e.g., bark beetles, root rot); and, (3) wet warm-induced spread of disease leading to high tree mortality (e.g., needle blight, rusts). **Scope:** Regional (Northern Interior, Prince George) **Team / clients**: MFR (NI Region); UBC; UNBC, CFS, MFR (Forest Practices)	Craig Delong, MFR
6	Using red alder as an adaptation strategy to reduce environmental, social and economic risks of climate change in coastal BC	**Objective:** Develop an adaptive strategy for using red alder to reduce environmental, social and economic risks of climate change in coastal BC. Research will: (1) determine the effects of red alder densities on conifer and mixed wood stand development; (2) explore the expected migration of alder to sites that are currently too cold for alder growth; (3) utilize traditional knowledge of red alder use from First Nations to gain historical context and to determine potential future cooperative management; and, (4) determine how to develop an integrated hardwood forest sector value chain industry on the coast. **Scope:** Regional (Vancouver Island) **Team / clients**: MFR (Research Branch), University of Alberta, UVIC, Oregon State University, UBC, MFR (Coast Region)	Louise deMontigny, MFR
7	Managing for the ecological and socioeconomic effects of climate change on BC rangelands	**Objective:** Develop a forward-looking strategic guide for a range management unit that includes multiple range tenure holders and forest tenure holders. The strategy will forecast the ecology and economy of the rangeland in 10, 50 and 100 years, and will guide range management activities in the present, near future, and long-term future in a manner that considers climate change impacts. Research will include: a review of past and ongoing climate change experiments; field experimentations; socio-economic analysis of natural goods and services; a survey of the ranching community to determine ranching perceptions of climate change; and, incorporating the ecological and socioeconomic findings into an integrated range management plan. **Scope:** Regional (Southern Interior) **Team / clients**: Thompson Rivers University, Agriculture & Agri-Food Canada, MFR (Research Branch), UNBC, UBC, TRI, BC Grasslands Conservation Council	Lauchlan Fraser, TRU
8	Resilience and climate change: adaptation potential for management and ecological systems in the West Kootenays	**Objective:** Work with a diverse client group of managers and practitioners to conduct a case study regional assessment of climate impacts, vulnerability, and adaptation potential of ecological and management systems in the West Kootenay. The case study will downscale available climate change modeling, incorporate best scientific practices, apply a systems perspective and resilience concepts, and promote adaptation through learning. **Scope:** Regional (West Kootenay) **Team / clients**: Group of 4 consultants led by Veridian Consultants, SFU, MFR (SI Region), Selkirk College, PCIC, Wildfire & Ecosystem Management, MFR (SI Region), 13 local client groups including MFR, BC Parks, MoE, MHLS, three community forests, woodlot owners, forest companies, private land owners, NGOs, Regional District of West Kootenay	Rachel Holt, Consultant

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9	Climate change adaptation research for forest and rangeland ecosystems: resiliency implications at the landscape level*	**Objective:** Develop recommendations for operational practices that will foster environmental/ ecological, human, and economic resilience in adapting to climate change in the South Selkirk Region, in consultation with Government, First Nations, industry, academia and the broader community. **Scope:** Regional (South Selkirk Region) **Team / clients**: UBC, MoE, Turtle Island Consulting, Nature Conservancy of Canada, FORREX, Metis Nation, Lower Kootenay Indian Band **Note**: *Proposal is being redesigned to avoid duplication with Holt proposal (#8)*	John Innes, UBC
10	Uncertainty in adaptation to climate change in forest management: selected case studies in British Columbia*	**Objective:** Systematically examine uncertainty in adaptation decisions in the Quesnel and Williams Lake TSAs to find parameters related to climate change to which forest resources, the forest industry and local communities are most sensitive. Applications of complementary methods to case studies will be investigated to draw conclusions about advantages and disadvantages of different decision frameworks/methods and the value of identified adaptation strategies. Through participatory workshops, attitudes to uncertainty and adaptation of the local stakeholders and decision makers in Quesnel and Williams Lake will be explored. **Scope:** Regional (Cariboo-Chilcotin) **Team / clients**: UBC, UVIC, MFR (Research Branch), Bulkley Valley Research Centre **Note***: Proposal is being redesigned in collaboration with McLeod (# 3) & Nelson (# 12)*	Emina Krcmar, UBC
11	A multi-scale trans-disciplinary vulnerability assessment*	**Objective:** At a broad system-wide level, develop and test methods to systematically account for climate change in the assessment and development of forest management plans and policies, by: (1) conducting management unit vulnerability assessments within the Kamloops and Nadina forest districts; (2) developing policy options for the management units that account for vulnerability; (3) evaluating and testing a multi-scale trans-disciplinary vulnerability assessment framework that enables understanding and evaluation of interactions across social and ecological domains; and (4) conducting livelihood assessments by describing these socio-ecological systems, different scales of decision-making, how communities fit in, how people will be impacted, and how and who can respond to climate change. **Scope:** Regional (Northwest BC, Kamloops TSA) **Team / clients**: MFR (Research Branch), Morice/Lakes IFPA, Bulkley Valley Research Centre, Saskatchewan Research Council, CFS/UNBC, Symmetree Consulting, Daust Consulting **Note**: *Study area is being redesigned to improve the geographic distribution of projects*	Don Morgan, MFR

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12	Validating impacts, exploring vulnerabilities, and developing robust adaptive strategies under the Kamloops Future Forest Strategy*	**Objective:** Develop credible, robust management strategies for the Kamloops Future Forest Strategy that address uncertainties associated with climate change, by: (a) developing modeling indicators for key KFFS assumptions, sensitivities and questions regarding proposed management actions; and, (b) using several linked models to test assumptions and further explore sensitivities and implications from proposed management actions by assessing regeneration and growth dynamics and alternative management strategies. Research will also explore social, economic, environmental and cultural impacts of climate change on local communities (Barriere and/or Clearwater) and First Nations. The project will strengthen the conclusions of the KFFS, broaden their applicability, and make recommendations to inform policy. **Scope**: Regional (Kamloops TSA) **Team / clients**: UBC, group of 4 consultants, Saskatchewan Research Council, PCIC, UNBC **Note***: Proposal is being re-designed in collaboration with Chan-McLeod (#3) & Krcmar (# 10)*	Harry Nelson, UBC
13	Comprehensive synthesis of forested watershed science and climate change impacts	**Objective:** Complete a watershed sciences compendium and associated extension activities. The compendium will capture over 30 years of BC watershed research and experience into a consolidated, accessible document that focuses on scientific principles and techniques, and assessment methods drawing directly on BC case studies. The compendium addresses how climate change will affect key watershed processes and provides the foundation necessary for science-based forest management. **Scope:** Provincial **Team / clients**: FORREX, MFR (Research Branch), UBC, MFR (SI Region)	Todd Redding, FORREX
14	High resolution spatial climate data for climate change research in BC	**Objective:** Increase capabilities of ClimateWNA and PCIC's Regional Analysis Tool (RAT) to improve delivery of historic and climate change data to users, including FFESC research projects, the wider scientific community, resource managers, and others interested in how climate affects ecosystems and society. **Scope:** Provincial **Team / clients**: MFR (Research Branch), PCIC, Oregon State University, Centre for Forest Gene Conservation	Dave Spittlehouse, MFR
15	Integrating FFEI scientific predictions into community planning and governance	**Objective:** Develop a framework for integrating scientific knowledge of climate and ecosystem changes and risks into long-term community planning for the city of Prince George. The project will integrate a research scientist/team directly into the city's process for developing a long-term integrated community sustainability plan, which will enable the connection of research, researchers, local government and citizens in determining and mitigating risks to their forest and community. **Scope:** Regional (Prince George) **Team / clients**: UNBC, CFS, MFR (NI Region)	Tracy Summerville, UNBC

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16	The effects of climate and forest cover change on snowmelt-dominated water supplies in the Okanagan	**Objective:** Assess the effects of climate and vegetation cover change on snowmelt-dominated streamflow generated in two high-elevation watersheds at Upper Penticton Creek (UPCr). Research will improve our ability to accurately model current snow pack processes in upland watersheds, and climate and forest change effects on snow water storage and release. A clear understanding of the effects of climate change on upland water supplies is essential for valley bottom water planning, and project outcomes will help resolve high priority issues in sustainable water supply identified by the Okanagan Basin Water Board, Ministry of Healthy Living and Sport, Ministry of Environment, and the Okanagan Nation. **Scope:** Regional (Southern Okanagan) **Team / clients**: MFR (SI Region), University of Lethbridge, University of Saskatchewan, MFR (Research Branch), FORREX, MHLS, Okanagan Basin Water Board, MoE, Okanagan Nation Alliance	Rita Winkler, MFR

* Selected project proposals are undergoing re-design to avoid duplication of topics and geographic areas