



**BC-MT MEMORANDUM OF UNDERSTANDING
TRANSBOUNDARY FLATHEAD WORKPLAN
FLATHEAD EXECUTIVE GROUP**

Thursday May 15th, 2014 | Waterton Lakes Community Center | Waterton, Alberta

Meeting Objectives / Desired Outcomes

- (1) Brief review of progress to date, following directive from the Flathead Executive Group in Leavenworth, WA, May, 2013
- (2) Brief review of September, 2012 meeting of the Flathead Work Group, focused on the development of an adaptation plan for the Transboundary Flathead Aquatic Ecosystem
- (3) Summary of work to date and products being developed to inform the adaptation plan for the Transboundary Flathead Aquatic Ecosystem
- (4) Confirm direction from the Flathead Executive Group for 2014-2015
- (5) Confirm next steps for the Flathead Work Group in 2014-2015

Agenda

7:15 AM	Erin Sexton, Coordinator all present	Welcome, meeting overview <ul style="list-style-type: none">• Self-introductions of all present• Brief overview of agenda, objectives and desired out-comes
7:20	Madeline	Overview of implementation framework for the MOU <ul style="list-style-type: none">• Confirm Co-Leads for B.C. and MT• Flathead Executive Group and Working Group
7:30	Erin	Background <ul style="list-style-type: none">• Summary of objectives for development of the aquatic adaptation plan• Progress following Flathead Executive meeting in WA, may 2013• Summary of GNLCC strategic funding of science in the Flathead• Summary of status of products being developed for the aquatic adaptation plan
7:45	All	<ul style="list-style-type: none">• Questions, Clarification, Discussion• Confirm direction moving forward<ul style="list-style-type: none">○ Next Steps and Action Items

BACKGROUND

	<i>agree</i>	<i>plan</i>	<i>do</i>
	Explicitly covered under BC-MT MOU framework for collaboration	Transboundary Flathead Workplan approved 4/15/12  by the Flathead Executive Group	GNLCC providing coordination to implement these provisions of the Flathead Workplan
Environmental Protection	X		X
Climate Action	X		X
Renewable & Low Carbon Energy	X		---
Information Sharing	x (under Env. Protection)		X



FIGURE 1: FRAMEWORK FOR AQUATIC ADAPTATION TO CLIMATE CHANGE FOR THE TRANSBOUNDARY FLATHEAD UNDER THE BC-MT MEMORANDUM OF UNDERSTANDING AND ENVIRONMENTAL COOPERATION

Table 1.—Proposed Proof of Concept for this group starts with Projects A6, A16, A17, B1 of the Transboundary Flathead Work Plan

ACTION ITEMS from the Transboundary Flathead Workplan				
A(I). Fisheries	A(II). Wildlife	A(III) . Aquatic Invasive Species (AIS)	B. Facilitate Climate Change Adaption	C. Share Information Proactively
starting 2012				
A2. Westslope CT life history, habitat	A10. Large carnivore highway linkages	A16. ID common AIS target species	B1. Aq ecosystem habitat & vulnerability suitability	C1. Complete COC yr2 trend analysis
A3. Climate change effects on aq sys		A17. Map AIS trends & distribution	B2. Assemble Technical Working Group	C2. Initiate GNLCC RM Partner Forum
A4. Develop workplan for data synthesis				
A5. Fisheries surveys to support BC				
A6. Adaptation strategy for aq resources				
starting 2013				
A7. Monitoring for BT, WCT, aq inverts	A11. ID & modify key bridges & culverts	A18. Support existing AIS management	B3. Develop Flathead Aq Adaptation Strategy	C3. Critical spatial data collection, publication
A8. BC Flathead BT redd count	A12. ID key easements on private lands	A19. Restore native aq species & ecosystems	B4. Develop FH Terrestrial Adaptation Strategy	
A9. Macroinvert study re: climate change	A13. Protect/manage X-boundary corridors			
	A14. Meetings to enhance wildlife linkages			
	A15. ID wildlife of common interest			

The suggested Adaptation Plan for the Transboundary Flathead Aquatic Ecosystem is presented on the following pages.



THE TRANSBOUNDARY FLATHEAD

DEVELOPMENT OF AN ADAPTATION PLAN FOR THE TRANSBOUNDARY FLATHEAD AQUATIC ECOSYSTEM

Background: Climate change, invasive species, and habitat loss poses serious threats to natural resources, biodiversity, and ecosystem services in the United States and Canada. Increasingly, natural resource managers require scientifically robust and regionally relevant information to assess key impacts and species sensitivities to future climate conditions for adaptive management. The proposed collaborative project described herein aims to develop an ‘Adaptation Plan for the Transboundary Flathead Aquatic Ecosystem’ (Canada and USA) to identify conservation delivery options in response to climate change and other important cumulative stressors (e.g., land-use practices and invasive species).

The Memorandum of Understanding (MOU) and Cooperation on Environmental Protection, Climate Action and Energy signed by British Columbia and Montana in February of 2010 outlines a framework by which the signatories can work together with Federal, State, Provincial, Tribal and First Nations partners on 1) Environmental protection, 2) Climate action, and 3) Renewable and low carbon energy in the Transboundary Flathead River Basin. The GNLCC is facilitating implementation of the BC-MT MOU provisions specifically related to Cooperating on Fish and Wildlife Management (MOU Section I. Paragraph B) and Facilitation Climate Change Adaptation (MOU Section II. Paragraph A). The framework provided in the MOU of the Transboundary Flathead provides a unique opportunity to embrace a watershed-wide approach to developing a climate change adaptation strategy for the transboundary watershed. Current climate change, land-use management, and invasive species research in the Flathead system presents an ideal opportunity to build on this framework to include vulnerability assessments on trends and connectivity of native salmonids and rare and sensitive invertebrate species in this heterogenous watershed. Additionally, the Transboundary Flathead provides an excellent case study for development of an adaptation strategy in a watershed that is both jurisdictionally complex and biologically diverse, with the potential to expand this approach to the entire Crown of the Continent Ecosystem.

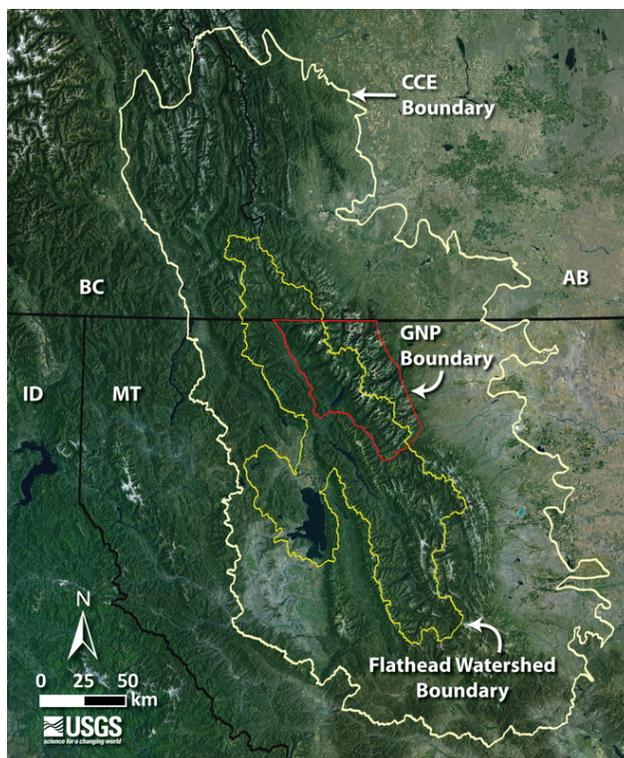
Adaptation planning: Adaptation planning has emerged as a powerful management tool to help people and natural systems prepare for and cope with the current and projected impacts of climate change and other important cumulative stressors. Climate change requires altering traditional approaches to conservation and natural resource management, which are focused on short term response variables, to conservation and restoration goals focused toward longer time periods (e.g., several decades) and larger scales (e.g., landscapes and biogeographical areas). This includes

adaptation analyses that account for an increasingly unknown future. Adaptation planning may include conservation measures to reduce deleterious effects or to take preventative measures to slow the impact and rate of climate change. As such, adaptation planning is rapidly becoming the primary lens for conservation and natural resource planning and management to develop approaches that minimize risk for increasingly different and uncertain future changes.

Adaptation science and planning are in nascent development stages, yet are evolving rapidly (Heller and Zavaleta 2009). However, most adaptation strategies to date have focused on three adaptation principles: (1) building resistance to climate-related stressors; (2) enhancing resilience to change; and (3) anticipating and facilitating ecological transitions that reflect the changing environmental conditions (Glick et al. 2011).

To conserve aquatic habitats, species and ecosystems in the Transboundary Flathead, adaptation planning requires proactively responding to the cumulative impacts of climate change, invasive species, and habitat loss/degradation. Developing comprehensive and effective adaptation strategies, therefore, requires understanding the potential impacts and uncertainties associated with climate change, and assessing the vulnerability of populations, species, and ecosystems to climate change and existing stressors. Results may be used to: a) develop pro-active, on-the-ground conservation programs to reduce existing stressors; b) manage ecosystem function and diversity; c) provide refugia and improve habitat connectivity and complexity; d) monitor populations and habitats (physical, biological – including invasives); and e) implement management and restoration programs to build resistance and resiliency for adaptation.

We propose to use vulnerability assessments and spatially explicit tools to develop a strategic adaptation plan for the Transboundary Flathead Aquatic Ecosystem over the next two years (FY2012-13). The proposed project aims to build on an existing climate change and transboundary research program to assess the potential hydrologic, geomorphic, and thermal effects on foodwebs (rare and endemic macroinvertebrates), native salmonids (threatened bull trout and westslope cutthroat trout), and lotic habitats in the transboundary (US and Canada) Flathead River system. The project will apply new and existing techniques for combining downscaled and regionalized



USGS map showing the Transboundary Flathead.

climate models linked with specific spatial data, fine-scale aquatic species vulnerability assessments, population genetic data, and remotely sensed riparian and aquatic habitat analysis. This information will be used to develop an Aquatics Adaptation Plan for the Transboundary Flathead. The final synthesis will be used to prioritize conservation and management options that are consistent with the MOU.

The adaptation framework involves four elements (Figure 2): (1) identifying conservation targets (2012); (2) assessing vulnerability to climate change (2012); (3) identifying management options (2013); (4) and implementing management options (2013 and beyond). The plan will be used to identify which species and systems are most likely to be impacted by ongoing and projected climate change and why they are likely vulnerable. This information can be used to prioritize and implement effective conservation strategies for the entire aquatic ecosystem (Year 1). Year 2 (2013) will involve completing component 3, which will involve other technical, financial, and policy-level considerations (including chance of success) and will require obtaining input from multiple stakeholders and resource management agencies in the Transboundary Flathead system (e.g., CMP).