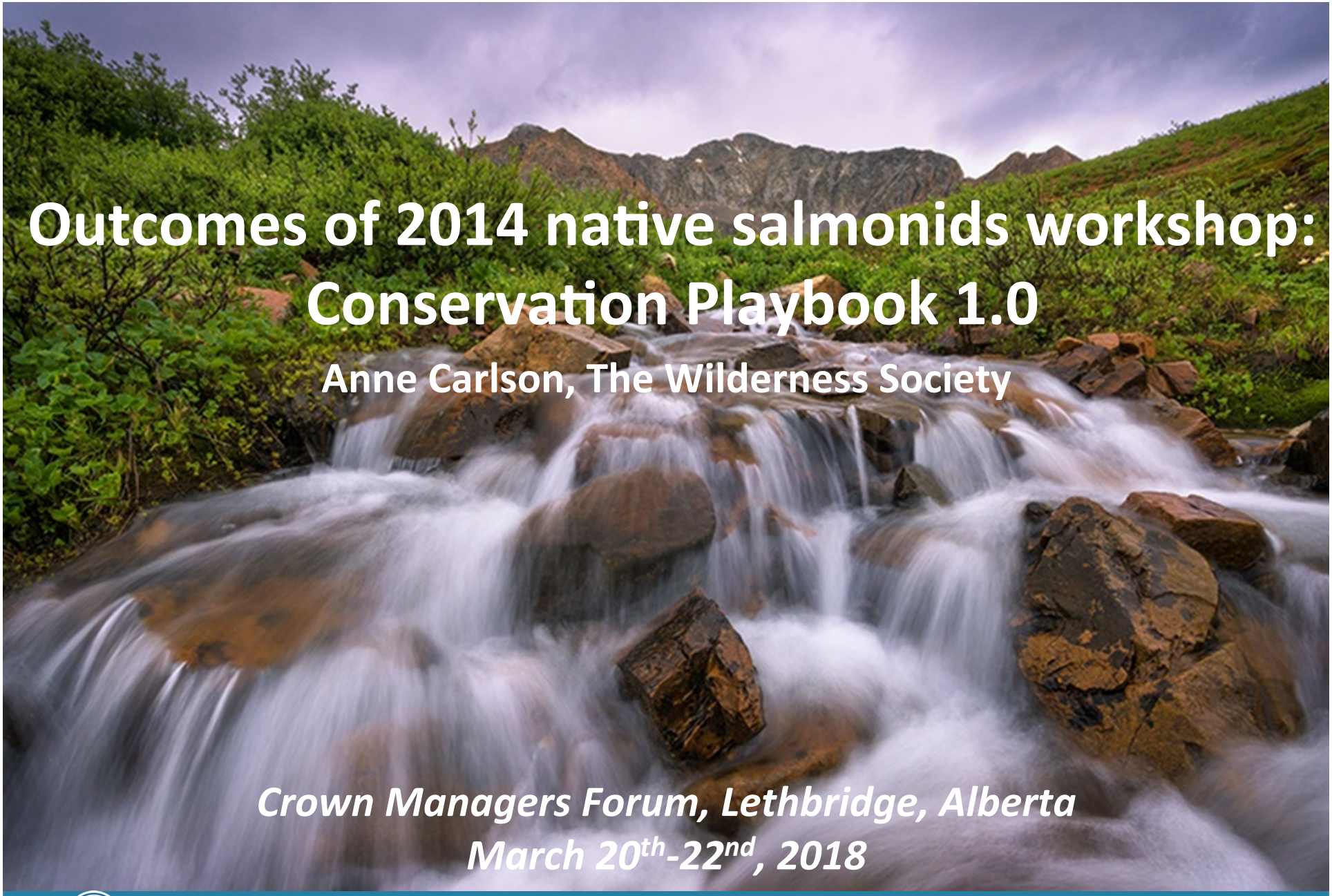


Outcomes of 2014 native salmonids workshop: Conservation Playbook 1.0

Anne Carlson, The Wilderness Society

Crown Managers Forum, Lethbridge, Alberta
March 20th-22nd, 2018

How did we get here?

Crown Managers Partnership

For many years, state, federal and provincial agencies and science organizations in the Crown Managers Partnership have been working on a whole-ecosystem approach to common transboundary environmental outcomes in the Crown of the Continent ecosystem.

The CMP has called this effort the Transboundary Conservation Initiative, which has a suite of identified priorities.

3rd Annual Conference
Roundtable on the Crown of the Continent
Connecting people to sustain and enhance culture, community, and conservation

Yellowstone to Yukon Conservation Initiative

Great Northern
LANDSCAPE CONSERVATION COOPERATIVE

Crown of the Continent Ecosystem Education Consortium

crown
conservation initiative

Transboundary Conservation Initiative (TCI) Priorities

1. Landscape intactness and connectivity
2. Aquatic invasive species
3. Terrestrial invasive species
4. Native salmonids
5. Five needle pines
6. Meso-carnivores

How did we get here?

Crown Adaptation Partnership

'*Taking action on climate change*' is a strategic initiative of the Crown Adaptation Partnership led by the Crown Managers Partnership, Crown Conservation Initiative, U.S. Forest Service's Northern Rockies Adaptation Partnership, and The Wilderness Society. By working together, we seek to:

- Identify shared adaptation strategies that build resilience to current and protected climate change impacts to forests and watersheds, fish and wildlife in the Crown of the Continent;
- Coordinate multiple strategies at multiple scales to achieve borderless outcomes across the Crown;
- Identify and replicate examples of successful adaptation actions by managers across the landscape;
- Develop landscape-scale learning networks and adaptive management frameworks that identify and fill key information gaps.

Crown Adaptation Partnership Priorities

1. **Connectivity**
2. **Aquatic invasive species**
3. **Terrestrial invasive species**
4. **Native salmonids**
5. **Five needle pines**
6. **Meso-carnivores**
7. **Prescribed fire in mixed severity fire regimes**

Taking Action on Climate Change Adaptation

Taking Action on Climate Change Adaptation:
Piloting Adaptation Strategies to Reduce Vulnerability and Increase Resilience for Native Salmonids in the Crown of the Continent Ecosystem

Photo Source: U.S. Geological Survey, Department of the Interior/USGS, U.S. Geological Survey/Photo by Jonny Armstrong

Final Workshop Report

November 18-20, 2014 – Kalispell, Montana

For all supporting materials, please see workshop website:
http://crownmanagers.org/adaptative-management

Funding generously provided by a grant from the Crown Roundtable/ Kresge Foundation through the Adaptive Management Initiative

Organized by:

Conservation Playbook 1.0

Resources

1. Vulnerability assessments
2. Landscape-scale science
3. Identification of policy opportunities
4. Clarity around jurisdictional priorities
5. Learning from managers; prototypes/ management actions
6. Learning networks and partnership opportunities
7. Identification of landscape-scale priorities for native salmonids

1. Vulnerability assessments

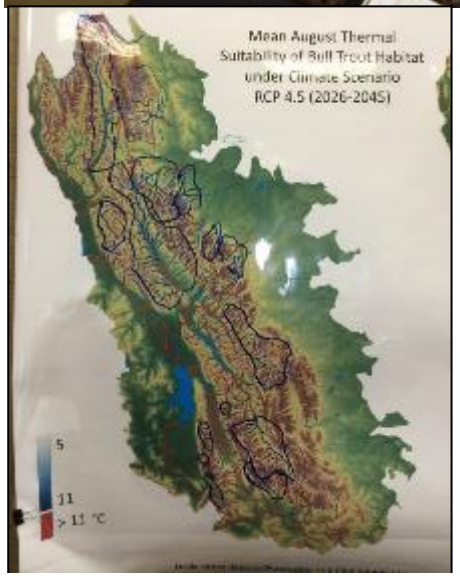
A COMPILATION OF ADAPTATION STRATEGIES AND TACTICS FROM PREVIOUS PLANNING EFFORTS[1]

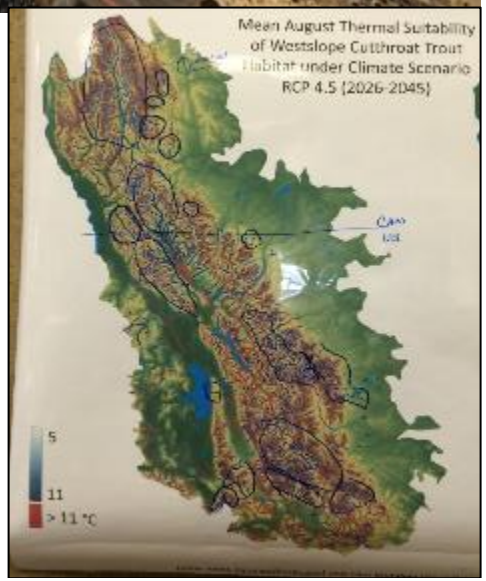
STRATEGY	TACTIC
Increase resilience of native fish populations to warming stream temperatures and flow changes	Identify and restore "warm-adapted" populations of native trout
	Replicate and supplement native fish populations
	Connect current populations with streams that are currently too cold (and may warm to suitable levels in the future)
	Consider limiting angler pressure on native fish in streams that are at or near temperature thresholds
	Establish large-scale reserves for long-term native cold-water fish conservation
	Conduct field experiments of fish-temperature relationships for multiple species and regions
	Monitor changes in stream temperature for fish distributions
	Understand and map where groundwater inputs are providing cold water
Increase resilience of native fish species by reducing barriers to movement	Replace or retrofit culverts that will not function well during future low base flows and flood periods
	Identify, prioritize, and remove barriers to native fish movements
	Minimize water diversions; where they exist, ensure fish ladders avoid entrainment of native trout
Increase population resilience by increasing native fish health	Increase public education to eliminate disease vectors
	Survey fish health conditions
	Direct treatment or removal of infected fish
Prevent / remove invasive non-native fish	Survey and map non-native species
	Combine non-native mapping with information on migration barriers
	Remove or control non-native fish species (electrofishing, chemical removal, genetic swamping, encouraging increased harvest of non-natives)
	Strategically use physical or electrical barriers to prevent further spread of non-native fish
	Assess status of non-native fish more frequently to better detect

Resources

1. Nelson, R. 2014. ***A climate change adaptation gap analysis from the Crown of the Continent***. Crown of the Continent Conservation Initiative, July, 2014.
2. Workshops held in Oct-Nov. 2014 by the Northern Rockies Adaptation Partnership: http://adaptationpartners.org/nrap
3. Cross, M., N. Chambers, L. Hansen, and G. Tabor. 2013. ***Workshop Summary Report: GNLCC Rocky Mountain Partner Forum Climate Change and Cold Water Systems***. Wildlife Conservation Society, Center for Large Landscape Conservation, EcoAdapt, Great Northern LCC
4. Miller, S., M. Cross, and A. Schrag. 2009. ***Anticipating climate change in Montana: A report on a workshop with Montana Department of Fish, Wildlife and Parks focused on the Sagebrush-Steppe and Yellowstone River systems***. MT Fish Wildlife and Parks, National Wildlife Federation, Wildlife Conservation Society, World Wildlife Fund.

2. Landscape-scale science: Clint Muhlfeld and Leslie Jones





3. Identification of policy opportunities

- Fisheries Act (Canada)
- Alberta Fishery Act (Canada)
- Alberta Lands Stewardship Act (Canada)
- Water Act (Canada)
- Public Lands Act (Canada)
- Environment Protection and Enhancement Act (Canada)
- Species at Risk Act (Canada)
- Endangered Species Act 1973 (U.S.)
- ESA Bull Trout Recovery Plan (U.S.)
- Critical Habitat for Bull Trout 2010 (U.S.)
- National Forest Management Act and Planning Rules 1976 (U.S.)
- Collaborative Forest Landscape Restoration Act 2010 (U.S.)
- Forest Planning Rule 2012 (U.S.)
- Wilderness Act 1964 (U.S.)
- Hellgate Treaty of 1855 (U.S.)
- Confederated Salish Kootenai Tribes' Fisheries Management Plan (U.S.)

4. Clarity around jurisdictional priorities

- Statute authority to manage fish in the state of Montana (Montana, Fish, Wildlife & Parks)
- Multiple use agency with mining, timber, recreation, and economic demands, along with mandate to maintain species habitat and diversity (U.S. Forest Service)
- Canadian provinces to manage fisheries populations (Canada)
- Canada's Federal government ultimately regulates fish habitat (Canada)
- SARA/ ESA require recovery plans; is illegal to damage critical habitat (Canada and U.S.)
- Rights to allow CSKT to fish on Flathead Reservation along with jurisdiction and autonomy to set and regulate fish management on their lands (Confederated Salish Kootenai Tribes, U.S.)
- Habitat Conservation Plans - Glacier NP, dept. of Natural Resource and Conservation (U.S.)
- Multi-agency collaboration across multiple jurisdictions

5. Learning from managers: Prototypes/ management actions

Prioritizing Conservation of Yellowstone Cutthroat Trout Across Their Range

Bradley B. Shepard
Wildlife Conservation Society

Robert Al-Chokhachy
Robert Gresswell
USGS Northern Rockies Science Center

Lee Nelson and Scott Opitz
Montana Department of FWP

Dan Garren
Idaho Fish and Game

Steve Yekel and Jason Burckhardt
Wyoming Game and Fish Department

Jack Williams and Amy Haak
Trout Unlimited

Major Funding: Great Northern LCC (FWS)

Great Northern Landscape Conservation Cooperative

USGS

TAKING ACTION ON CLIMATE CHANGE ADAPTATION for NATIVE TROUT

Methods

ID Cons Pops → Prioritize Basins → Prioritize Pops → ID Threats → Prioritize Actions

- Prioritization
  - Ecological
    - Representation
    - Resilience
    - Redundancy
  - Opportunity
    - Support
    - Expand or Secure

Wildlife Conservation Society

TAKING ACTION ON CLIMATE CHANGE ADAPTATION for NATIVE TROUT

5. Learning from managers: Prototypes/ management actions

Oldman Headwaters Action Plan –Dutch Creek Pilot Project
'Adopt-A-Watershed' – community action for headwaters health and resilience

Headwaters Action Plan –
2 years of science, stakeholder and public engagement

TARGETS

INDICATOR 1: Presence and abundance of fish, especially native populations

TARGET 1: Maintain current native and naturalized fish population integrity within the headwaters and explore opportunities to increase native fish populations in their current range.

TARGET 2: Restore native fish in selected streams* in the headwaters.

INDICATOR 2: Density of Linear Features

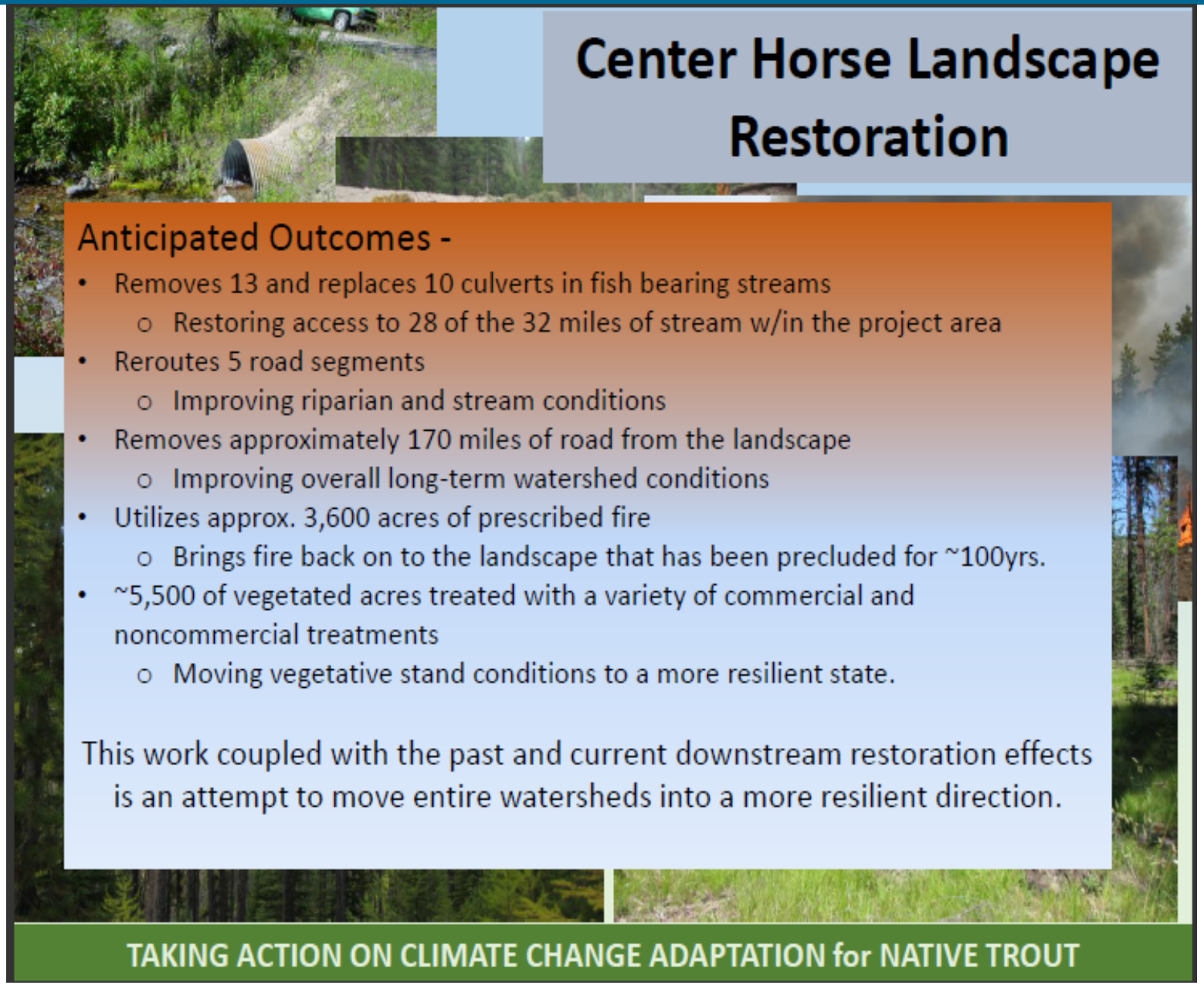
TARGET 1: In urban centres and major transportation corridors, no linear thresholds will be set; however, mitigation of the impact of linear features will be actively pursued.

TARGET 2: Maintain negligible and low linear features density where it currently exists; ensure no net increase of linear features in each sub-watershed.

TARGET 3: Decrease density of linear features where there is moderate to high risk rating' in the headwaters.

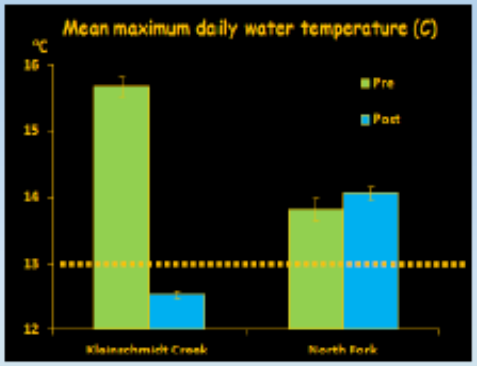
TAKING ACTION ON CLIMATE CHANGE ADAPTATION for NATIVE TROUT

5. Learning from managers: Prototypes/ management actions



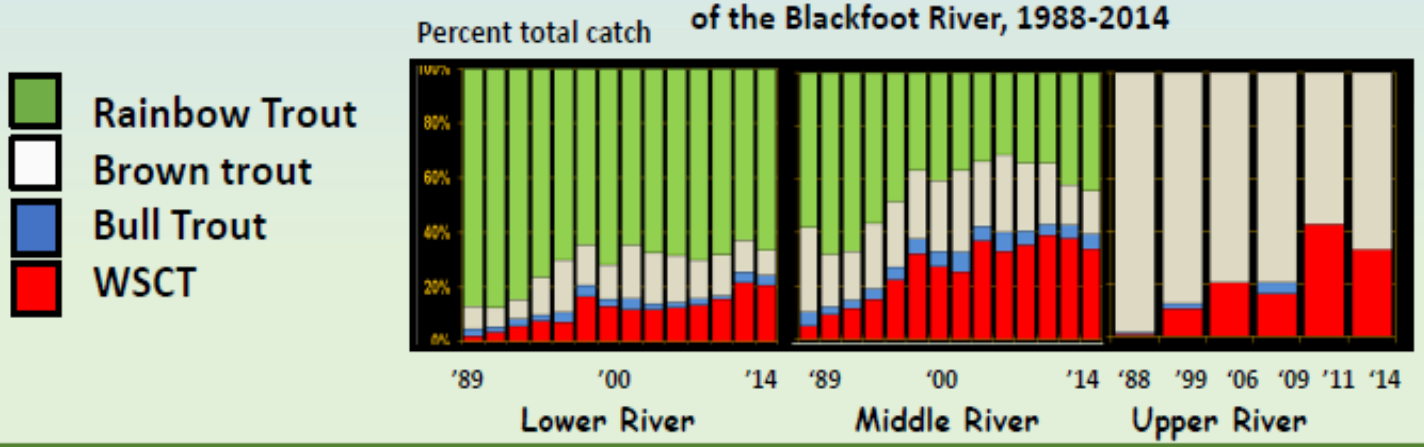
5. Learning from managers: Prototypes/ management actions

Blackfoot River Restoration focuses on tributaries



Pierce et al. 2014

Trout species composition (fish >6.0") in three reaches of the Blackfoot River, 1988-2014



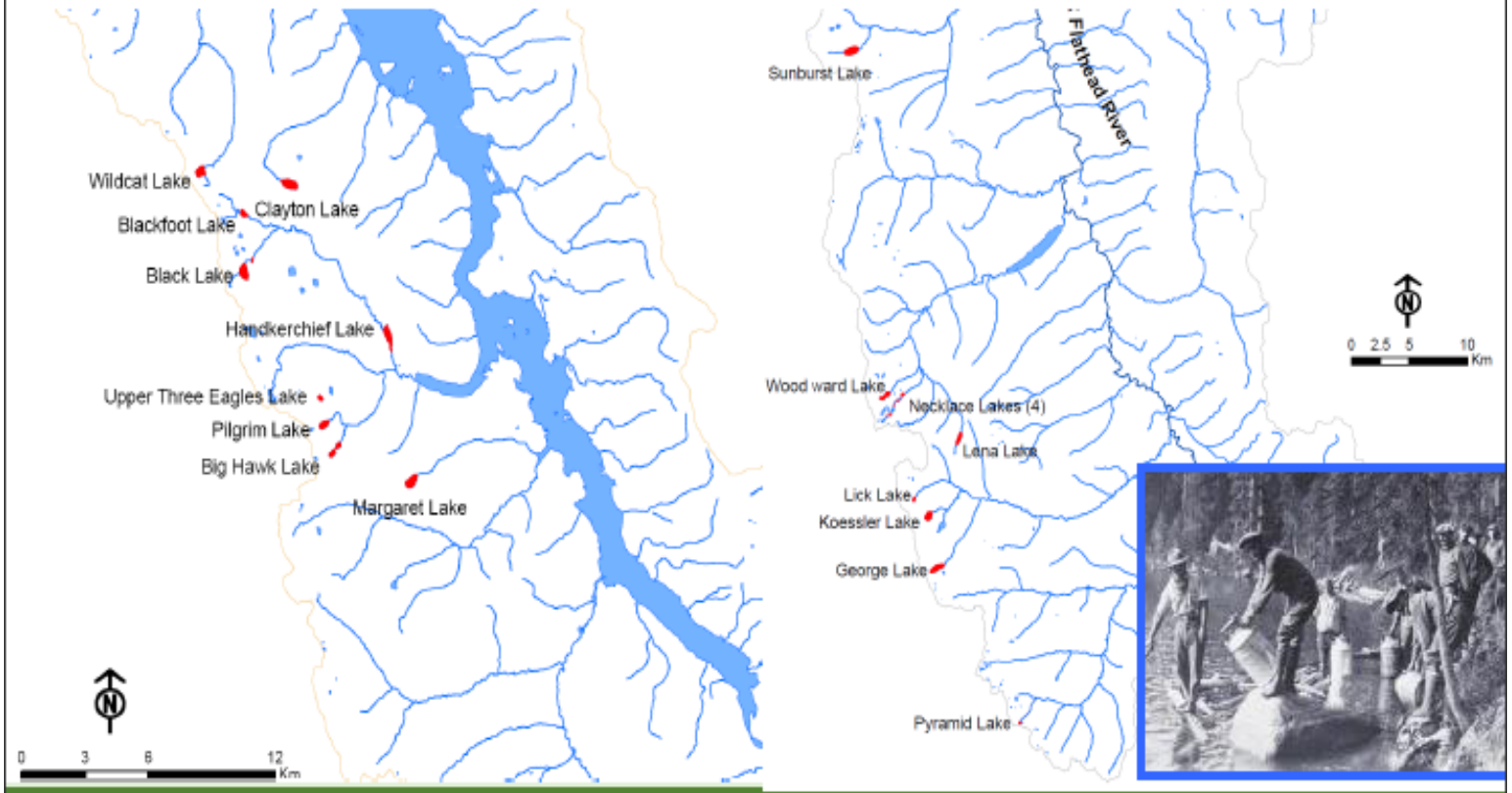
TAKING ACTION ON CLIMATE CHANGE ADAPTATION for NATIVE TROUT

5. Learning from managers: Prototypes/ management actions

South Fork Flathead

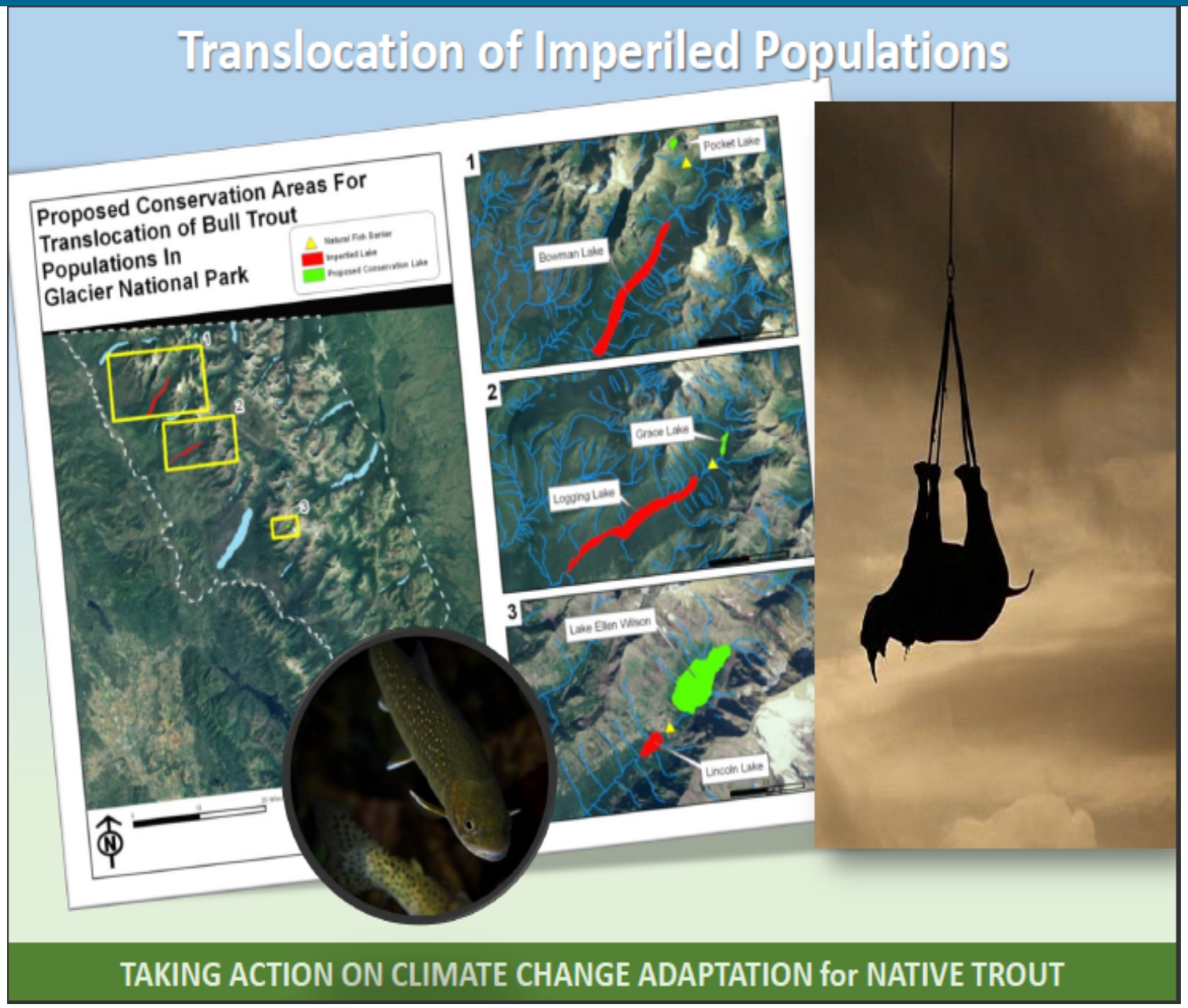
Problem: downstream expansion of hybridization from historically fishless lakes planted with nonnative trout (1920-1960)

Tactic: eradicate headwater sources of introgression and conserve intraspecific genetic variation in WCT



TAKING ACTION ON CLIMATE CHANGE ADAPTATION for NATIVE TROUT

5. Learning from managers: Prototypes/ management actions



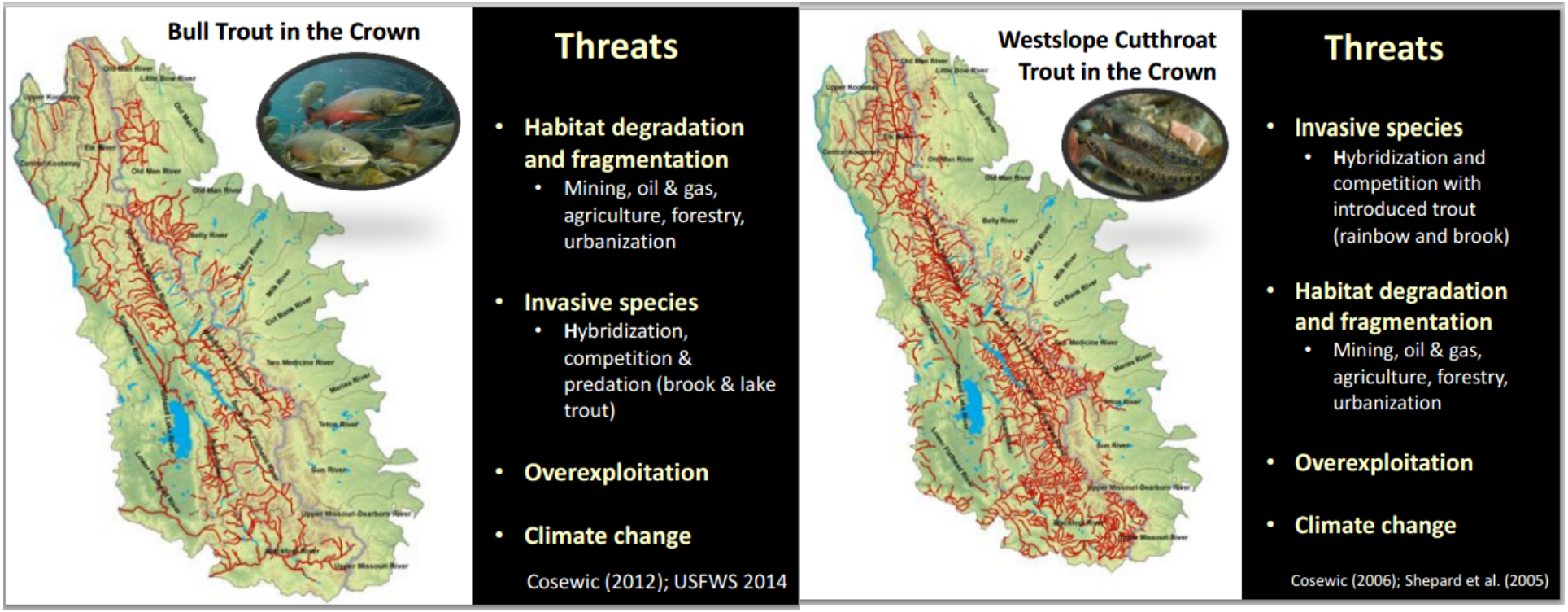
5. Learning from managers: Prototypes/ management actions

6. Learning Networks and partnership opportunities

- Alberta Culture and Tourism
- Alberta Env't and Sustainable Resource Development
- Big Blackfoot Chapter of Trout Unlimited
- Clearwater Resource Council
- Confederated Salish Kootenai Tribes
- Cows and Fish
- Crown Conservation Initiative
- Crown Managers Partnership
- Crown Roundtable
- Five Valleys Land Trust
- Flathead Basin Commission
- Glacier National Park
- Heart of the Rockies
- Montana Fish, Wildlife & Parks
- The Nature Conservancy
- The Wilderness Society
- University of Montana, Institute on Ecosystems
- U.S. Fish and Wildlife Service/ Great Northern LCC
- U.S. Geological Survey Northern Rocky Mountain Science Center
- Waterton Lakes National Park
- Wildlife Conservation Society

7. Identification of landscape-scale priorities for native salmonids

1. **Identify 1-2 on-the-ground projects that could be scaled up and applied more broadly across the Crown of the Continent Ecosystem (CCE);**
2. **Identify one new tactic that could be implemented as a prototype project (with strong scientific basis used to identify appropriate geospatial location for that strategy/tactic); and**
3. **Coordinate across jurisdictions on one Crown-wide project.**



7. Identification of landscape-scale priorities for native salmonids

PROJECT #1: Establish coordinated monitoring efforts across the CCE, including standard protocols, frameworks, and objectives, as well as a common data repository, for both fish populations and habitats.

PROJECT #2: Complete prioritization and mapping of conservation populations and key watersheds most critical to sustain native salmonids across the CCE given both existing stressors and climate change, and simultaneously work to identify and secure groundwater upwelling areas and potential coldwater refugia at fine scales.

PROJECT #3: Develop a set of consistent strategies for suppressing non-native fish species across Crown (e.g. prevention, monitoring, response, and enforcement) that is based on lessons learned about critical uncertainties and ecological function from ongoing projects; prioritize testing of these strategies in core areas and known cold water refugia.

PROJECT #4: Secure the placement of fish screens on existing water diversions, including those on Saint Mary's River, and the Belly River.

7. Identification of landscape-scale priorities for native salmonids

PROJECT #5: Replicate, restore and/or translocate native salmonid populations to cold water refugia in priority transboundary watersheds East of the Divide (including the Oldman Watershed).

PROJECT #6: Implement strategic and coordinated suppression of invasive rainbow trout in the transboundary Flathead watershed, combined with exportation of best management practices to other locales;

PROJECT #7: Improve and restore native salmonid habitat in headwaters by whatever suite of interventions are appropriate locally;

PROJECT #8: Re-establish beavers across the landscape: launch a pilot project that incorporates efforts to (a) reduce trapping of existing beaver populations (i.e. to facilitate successful dispersal events by existing populations), (b) identify policy avenues that can incentivize expansion of beaver populations in key watersheds, and (c) identify educational outreach opportunities for private landowners, agency staff, and fisheries managers (Stillwater, Montana, and Alberta);

PROJECT #9: Export successful bull trout translocation efforts piloted in the North Fork of the Blackfoot to other landscapes.


Thank you!
Questions?