Freshwater Conservation Canada

Freshwater Conservation in Alberta

Lesley Peterson and Kate Mairs

Rotary Club – March 2026

Freshwater Conservation Canada

1972

1995

2017

2024

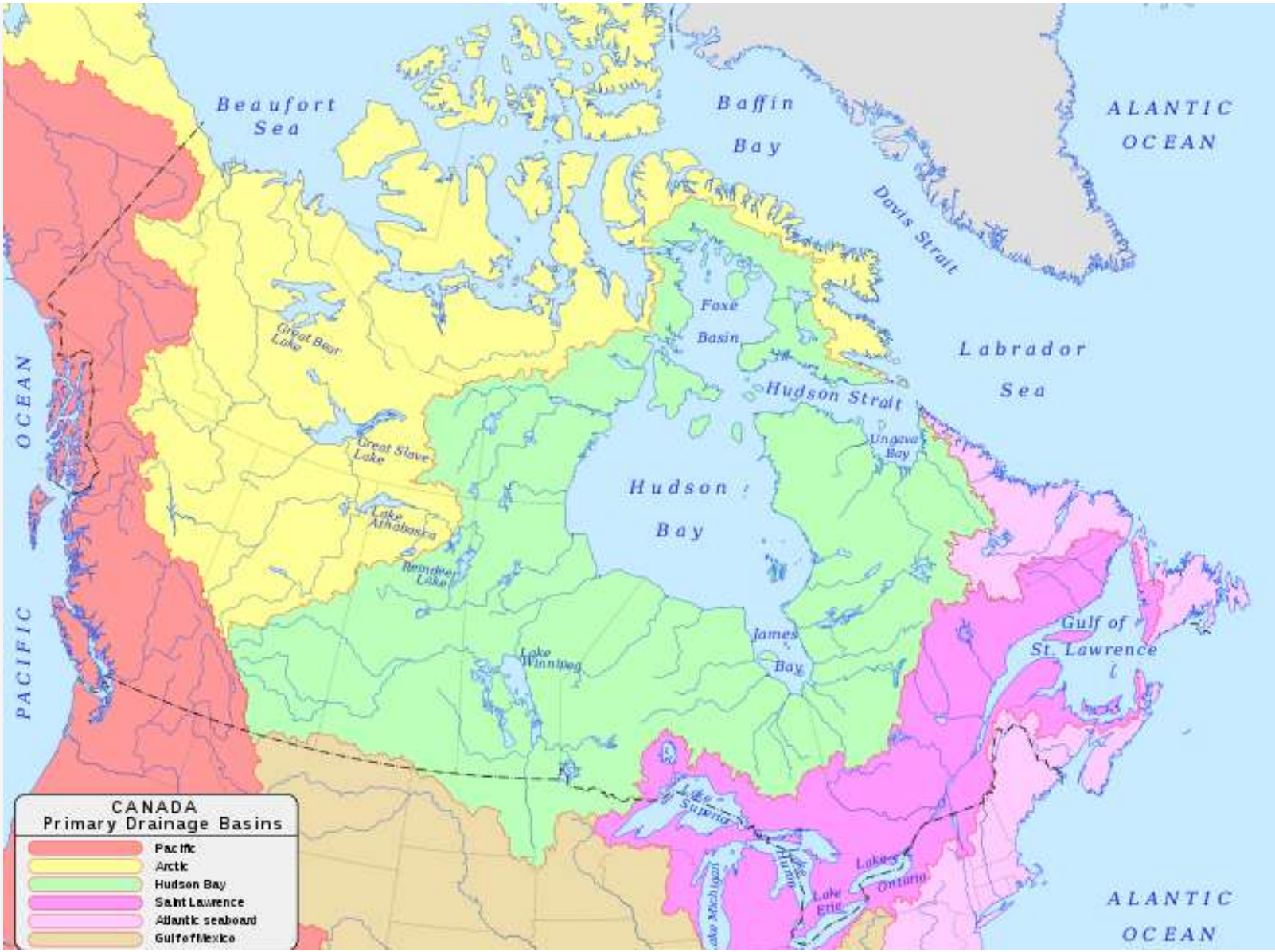
Who we are

- Volunteer-based chapters across Canada
- Professional staff in Calgary and Guelph
- Broad base of members, supporters, and partners

Our Priorities

- Water quality
- Water quantity
- Aquatic communities
- Aquatic habitat

Where are we?

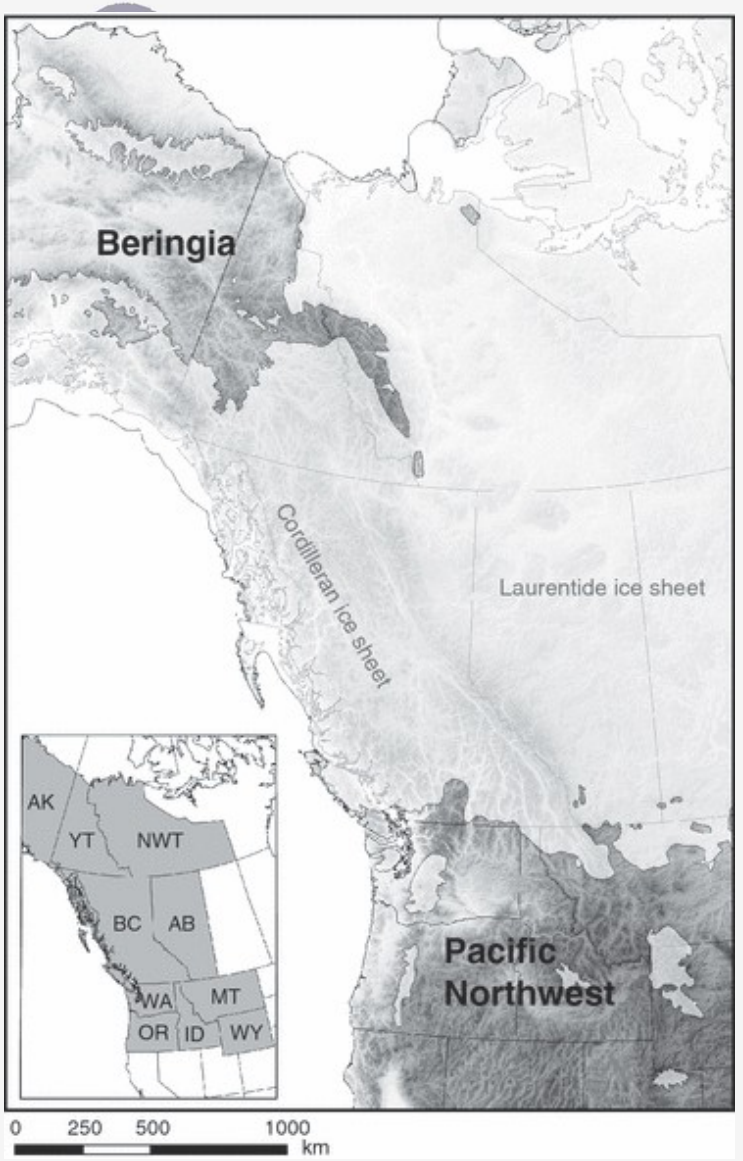

Beaufort Sea
Baffin Bay
ALANTIC OCEAN
Davis Strait
Foxe Basin
Labrador Sea
Great Bear Lake
Hudson Strait
Great Slave Lake
Ungava Bay
Hudson Bay
Lake Athabasca
Reindeer Lake
James Bay
Gulf of St. Lawrence
Lake Winnipeg
PACIFIC OCEAN
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
ALANTIC OCEAN
CANADA
Primary Drainage Basins
Pacific
Arctic
Hudson Bay
Saint Lawrence
Atlantic seaboard
Gulf of Mexico

Where are we?

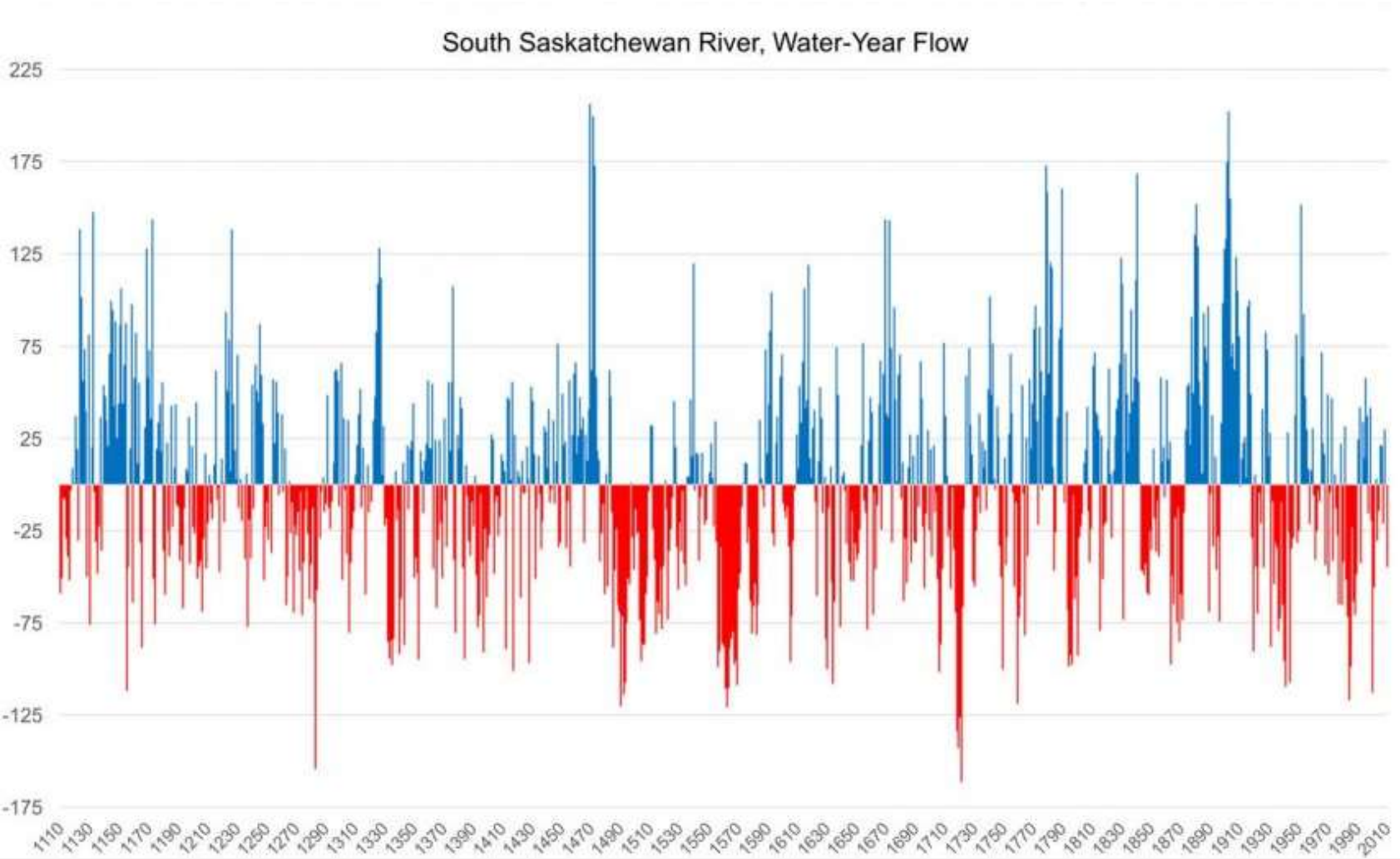
Much of the northern half of the continent was covered by the ice sheets during the last glacial maximum ~20,000 years ago.

- Shaped the land we see today
- Influenced the species present and their forms

Species survived and then dispersed from glacial refugia as ice sheets retreated. In these new environments, adaptation to new habitats and ecosystems developed!



There’s a fish for that!



Where did we come from?

Fish needs

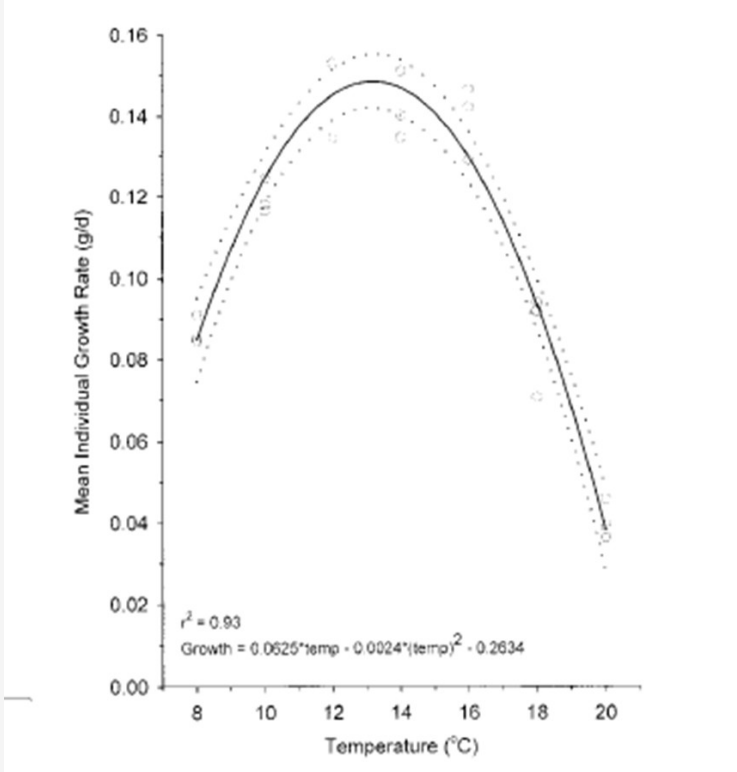
Besides water…

- Fish also need:
  - Appropriate stream temperature and water quality
  - Food
  - Cover from predators
  - Connection - to different habitat types, other individuals

Native trout needs:

- COLD
- CLEAN
- COMPLEX
- CONNECTED

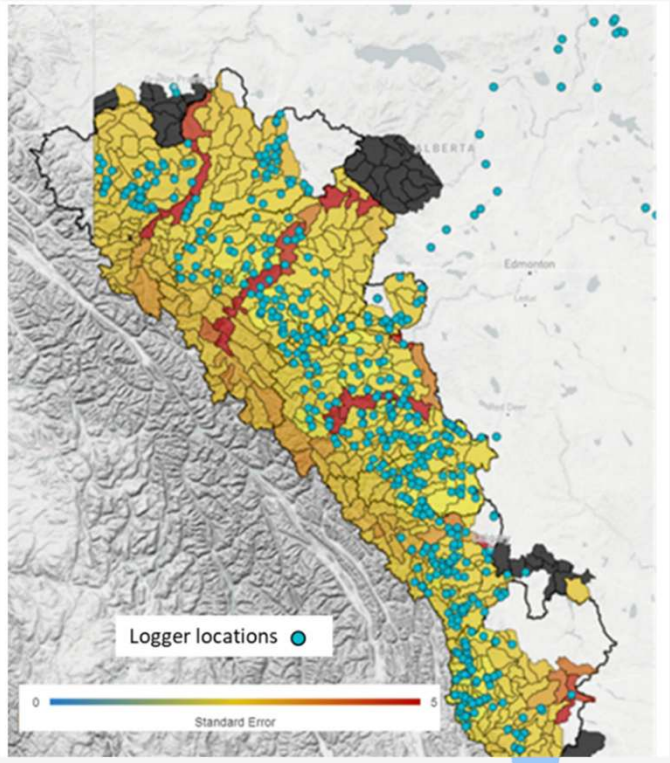
Cold



Alberta's trout habitat shrinks as streams warm

Climate change is warming streams in the Canadian province's mountains.

by YCC TEAM
NOVEMBER 22, 2024



Clean

Complex

Connected

So how are the fish doing?

The alarming state of freshwater biodiversity in Canada

Authors: Jessica E. Desforges, Julia Clarke, Evaline J. Harmsen, Alex M. Jardine, Jessica A. Robichaud, Serina Serré, Prosanta Chakrabarty, Joseph R. Bennett, ... SHOW ALL | AUTHORS INFO & AFFILIATIONS

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One-quarter of freshwater fauna threatened with extinction

Catherine A. Sayer, Eresha Fernando, Randall R. Jimenez, Nicholas B. W. Macfarlane, Giovanni Rapacciuolo, Monika Böhm, Thomas M. Brooks, Topiltzin Contreras-MacBeath, Neil A. Cox, Ian Harrison, Michael Hoffmann, Richard Jenkins, Kevin G. Smith, Jean-Christophe Vié, John C. Abbott, David J. Allen, Gerald R. Allen, Violeta Barrios, Jean-Pierre Boudot, Savrina F. Carrizo, Patricia Charvet, Viola Clausnitzer, Leonardo Congiu, Keith A. Crandall, ... William R. T. Darwall + Show authors

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PERSPECTIVE | Open Access

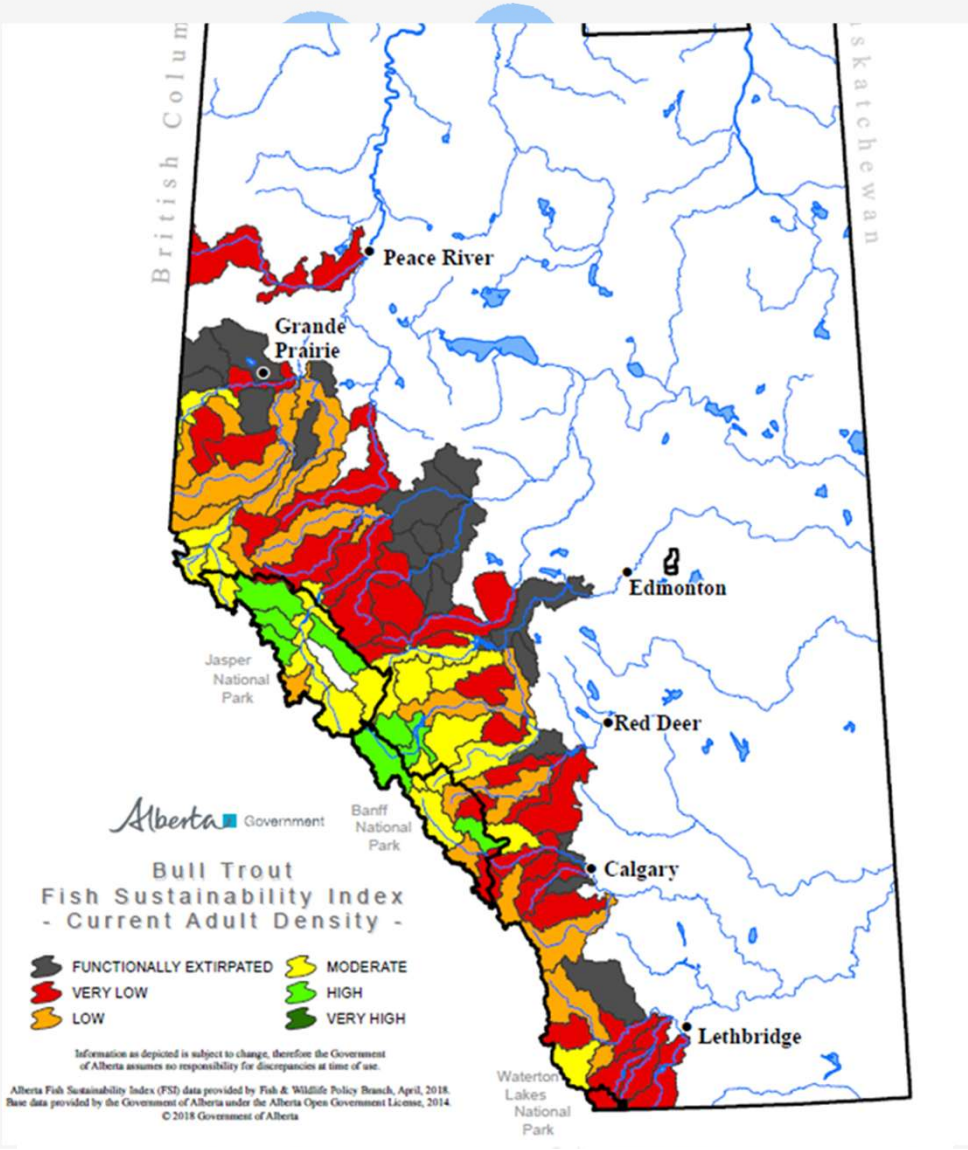
The RACE for freshwater biodiversity: Essential actions to create the social context for meaningful conservation

Kim Birnie-Gauvin, Abigail J. Lynch, Paul A. Franklin, Andrea J. Reid, Sean J. Landsman, David Tickner, James Dalton, Kim Aarestrup, Steven J. Cooke

First published: 22 February 2023 | https://doi.org/10.1111/csp2.12911 | VIEW METRICS

So how are the fish doing?

Bull Trout



Bull Trout: Threats

Where did we come from?

"The creek is only 2 or 3 feet wide, but has been extensively dammed by beavers to create a long series of fine, large ponds. These are deep and clear with abundant willow cover" – R.B. Miller and W.H. Macdonald, 1949

What can we do?

Reconnecting habitat

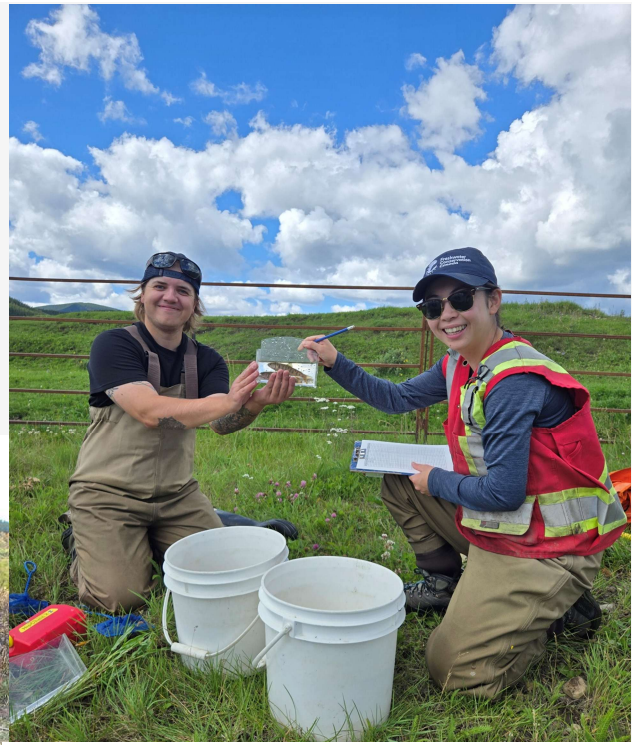
Aquatic restoration

Volunteer and Community Engagement

What can we do?

Sharing expertise

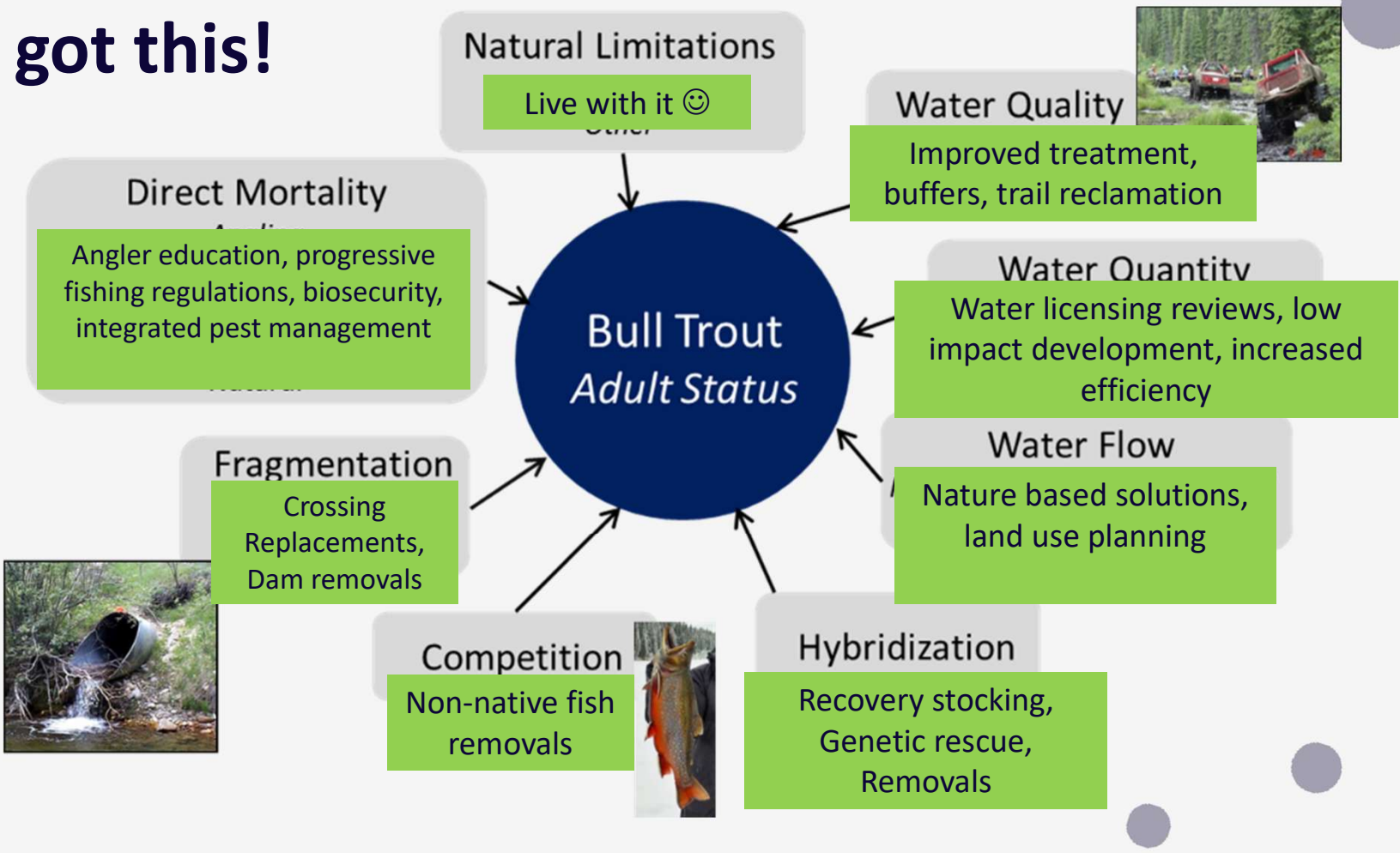
Bioengineering



Evaluating successes

Cumulative effects demand cumulative efforts!

We got this!



Beaver dam analogues

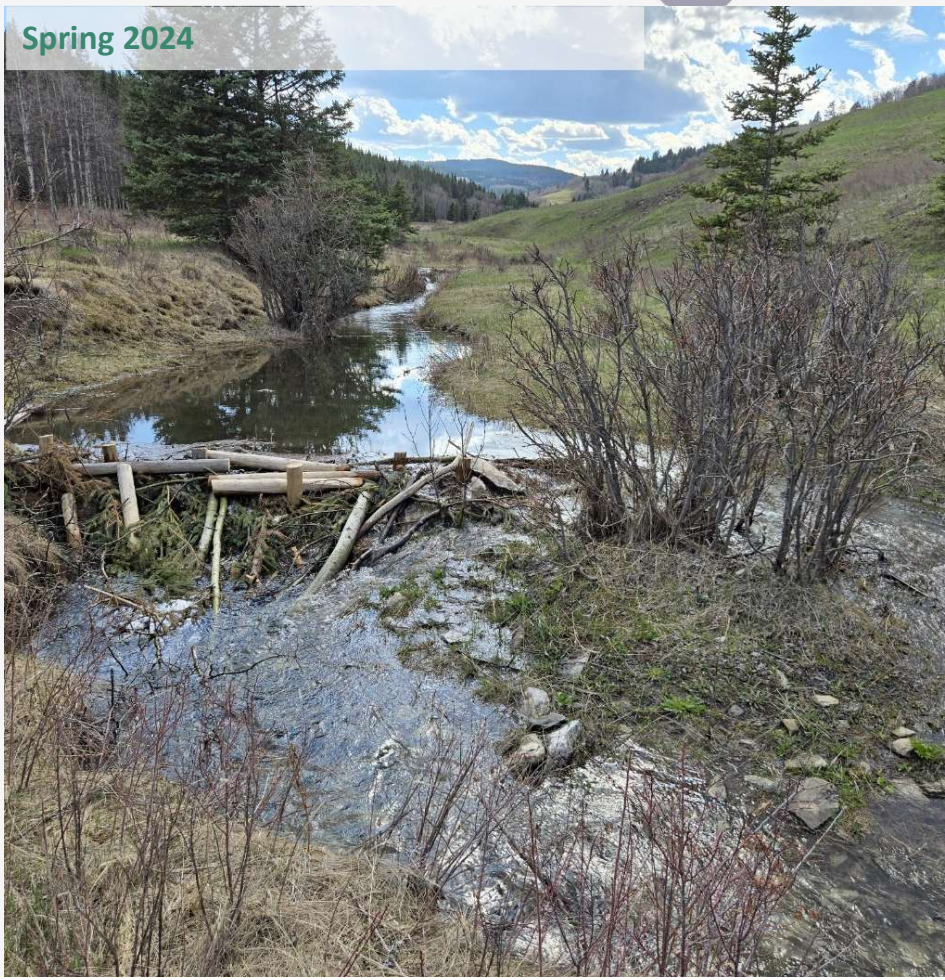
Fall 2023

Spring 2024

Beaver dam analogues

Fall 2023

Spring 2024



Beavers

"Trout and nearby Lyndon Creek within the forest reserve would go dry in late summer were it not for storage of runoff in the beaver ponds."

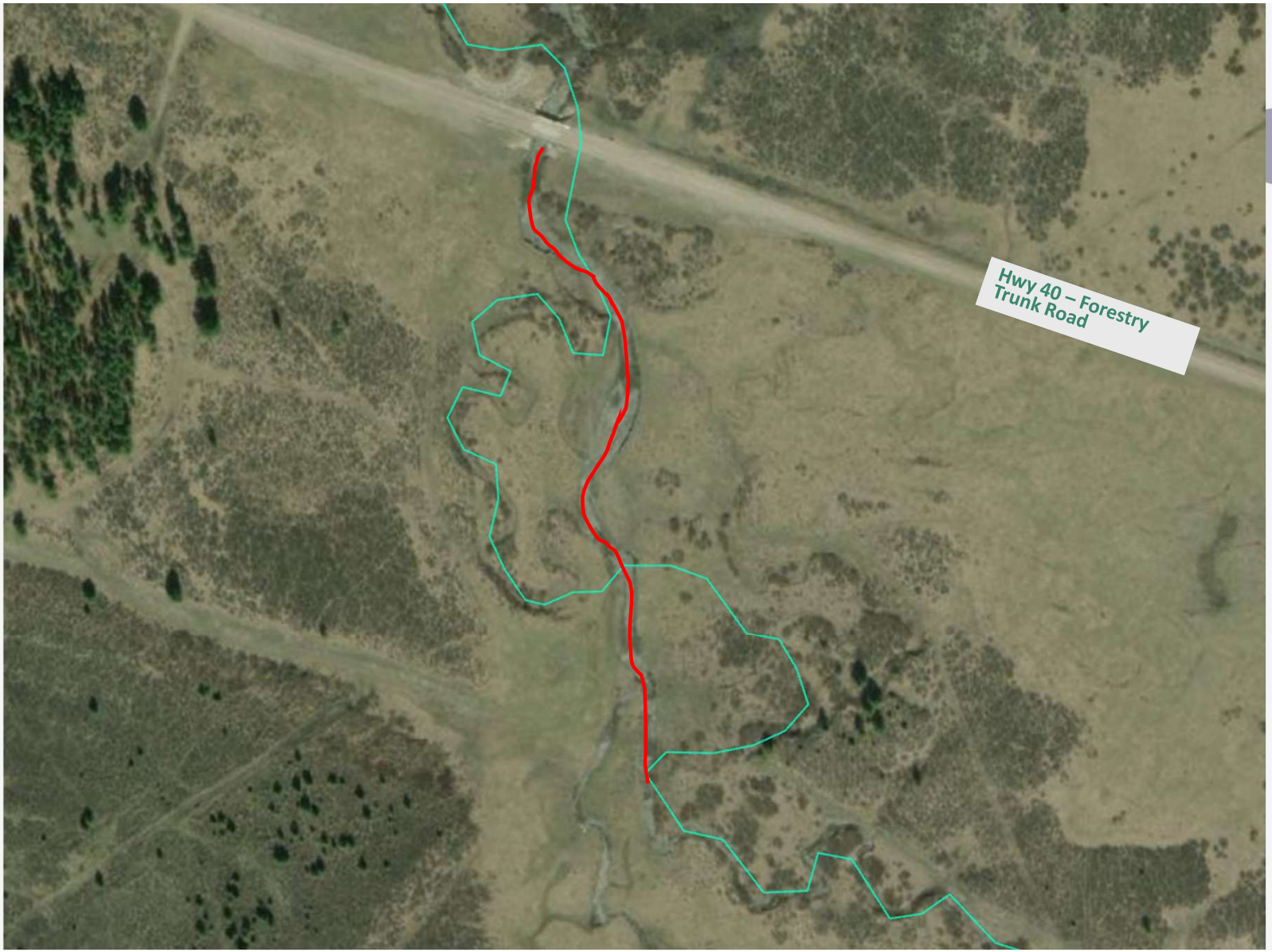
– R. B. Miller and W. H. Macdonald, August 1948


King Bolt Creek, October 2021

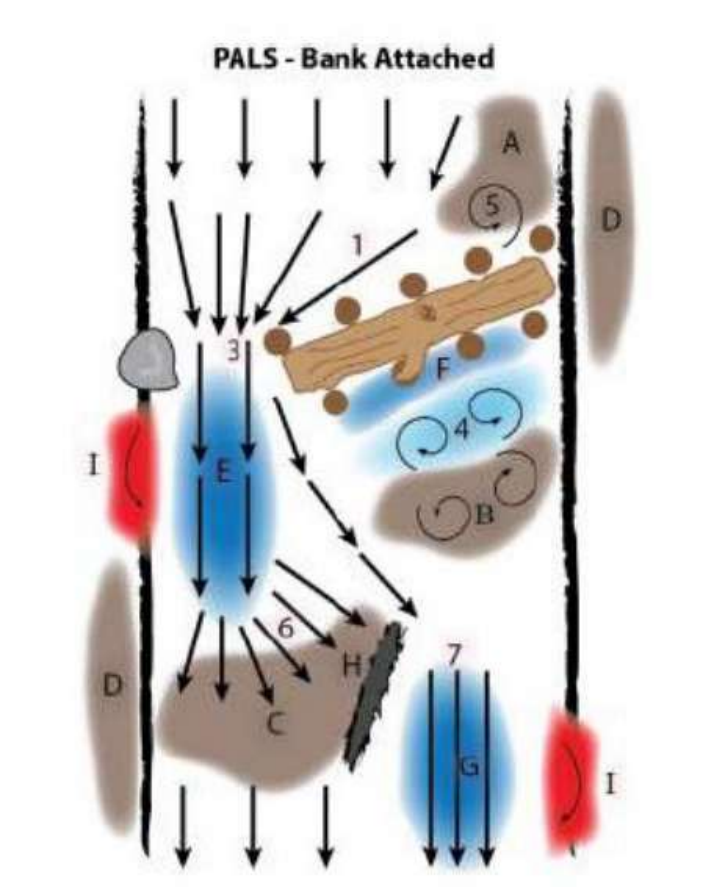

Trout Creek, October 2021

Figure 18 – An example from Goldfarb (2018a) of achieving a self-sustaining condition where meals of beaver dam analogues (BDAs) mimic beaver dam activity, and then the maintenance and expansion of beaver dam activity is taken over by actual beaver, and then they maintain a complex system state. Figure © Science by V. Altounian.

Radiant Creek


Hwy 40 – Forestry
Trunk Road

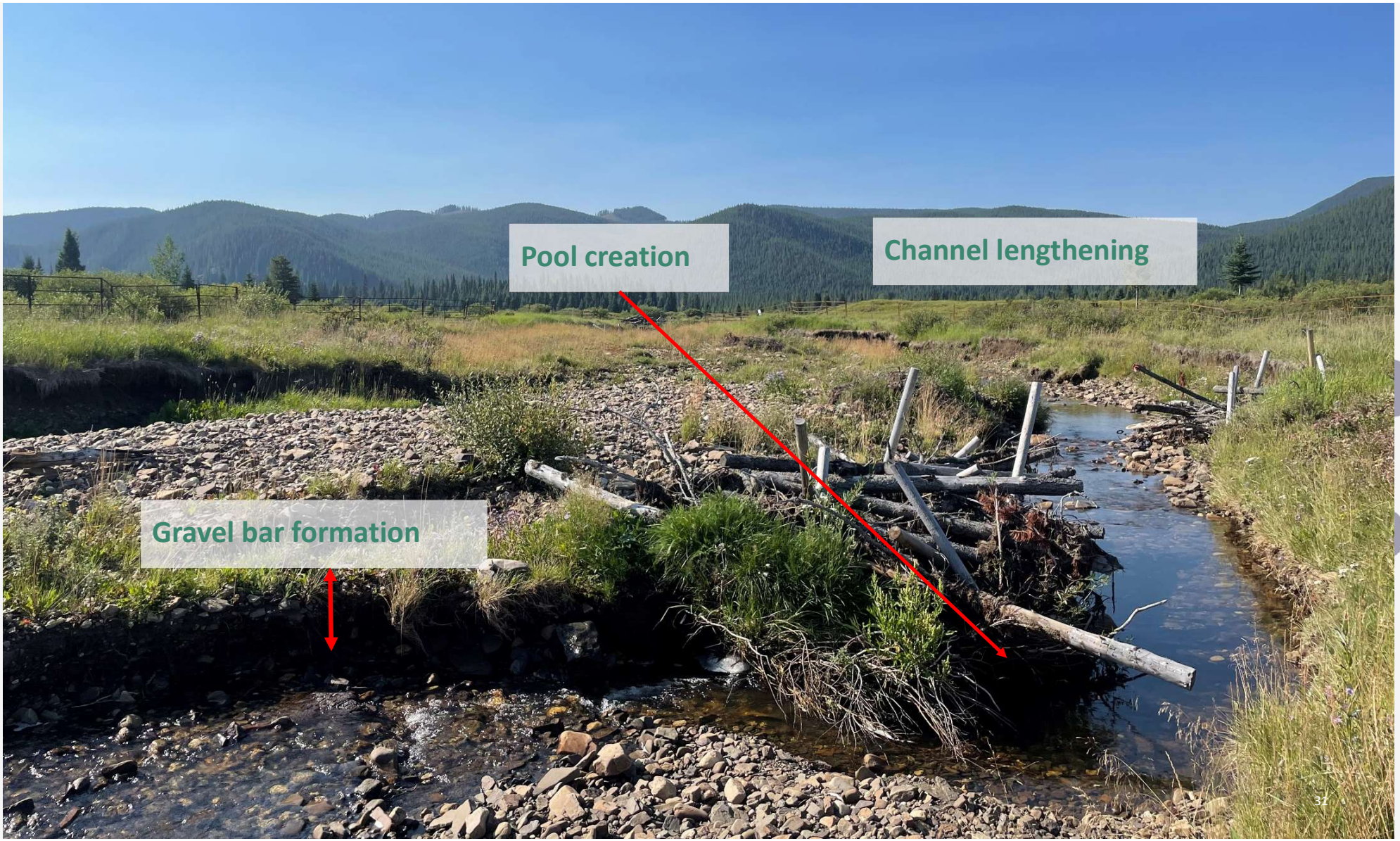
PALS (post-assisted log structures)



Hydraulic
1. Shunting Flow
2. Splitting Flow
3. Convergent Jet Downstream
4. Eddy Downstream
5. Eddy Upstream
6. Divergent Flow Downstream
7. Convergent Flow Downstream

Geomorphic
A. Deposition Upstream
B. Deposition in Wake
C. Deposition Downstream
D. Deposition Overbank
E. Erosion at Convergent Jet
F. Erosion by Plunge Hydraulics
G. Erosion Forming Chute
H. Erosion of Bar Edge
I. Erosion of Outer Bank

Eddy Pool
Deposition
Pool-Forming Erosion
Bank Erosion
Channel Margin
Flow Vector


Pool creation
Channel lengthening
Gravel bar formation

What's next?

How can you help?

Thank you!

Lesley Peterson
lpeterson@freshwatercanada.org

Kate Mairs
kmairs@freshwatercanada.org

FreshwaterConservationCanada.org