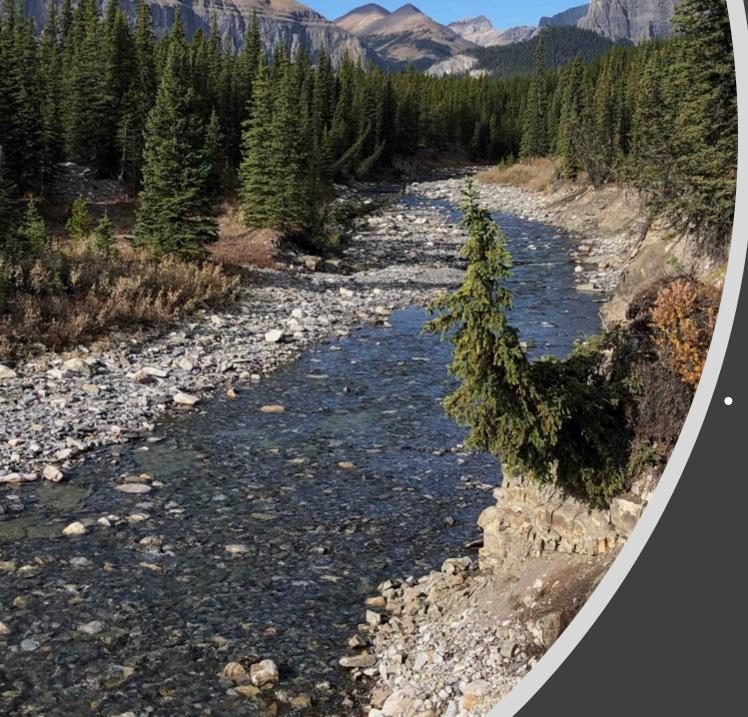




GHOST WATERSHED WATER MONITORING PROGRAM

Presentation by Bryne Weerstra to the Ghost Watershed Alliance Society
Annual General Meeting
November 28, 2020



1. Sequencing the Rivers for Environmental Assessment and Monitoring (STREAM)



Initiated by Environment and Climate Change Canada, World Wildlife Fund and University of Guelph



1. Sequencing the Rivers for Environmental Assessment and Monitoring (STREAM)



Initiated by Environment and Climate Change Canada, World Wildlife Fund and University of Guelph

 Uses DNA analysis to identify freshwater benthic macroinvertebrates and assess aquatic ecosystem health in Canada



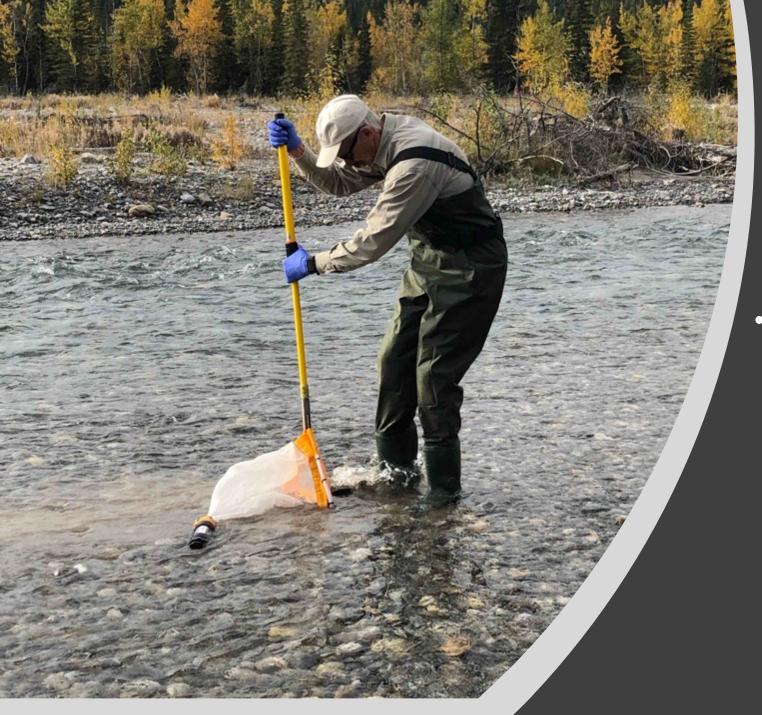
1. Sequencing the Rivers for Environmental Assessment and Monitoring (STREAM)



 Initiated by Environment and Climate Change Canada, World Wildlife Fund and University of Guelph

Uses DNA analysis to identify freshwater benthic macroinvertebrates and assess aquatic ecosystem health in Canada

Pilot citizen science project (2019– 2021)



2. Canadian Aquatic Biomonitoring Network (CABIN)

RCBA

 National biomonitoring program developed by Environment Canada to provide standardized sampling protocols



2. Canadian Aquatic Biomonitoring Network (CABIN)

RCBA

- National biomonitoring program developed by Environment Canada to provide standardized sampling protocols
- Uses a consistent, science-based set of measurement tools and indicators



2. Canadian Aquatic Biomonitoring Network (CABIN)

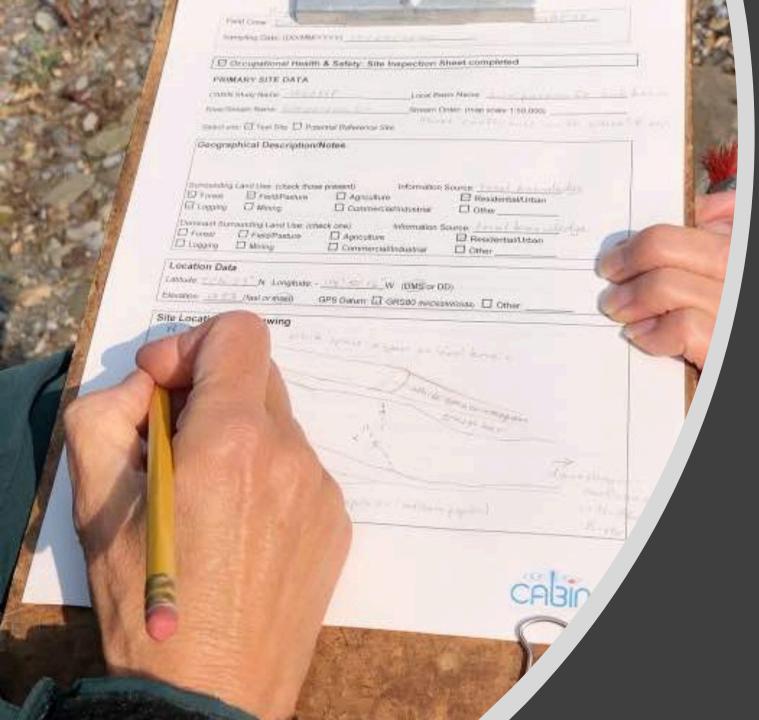
- National biomonitoring program developed by Environment Canada to provide standardized sampling protocols
- Uses a consistent, science-based set of measurement tools and indicators
- Benthic macroinvertebrates are collected, and their numbers are used as an indicator of the health of that water body



2. Canadian Aquatic Biomonitoring Network (CABIN)

RCBA

- National biomonitoring program developed by Environment Canada to provide standardized sampling protocols
- Uses a consistent, science-based set of measurement tools and indicators
- Benthic macroinvertebrates are collected, and their numbers are used as an indicator of the health of that water body
- Involves scientists and trained community volunteers



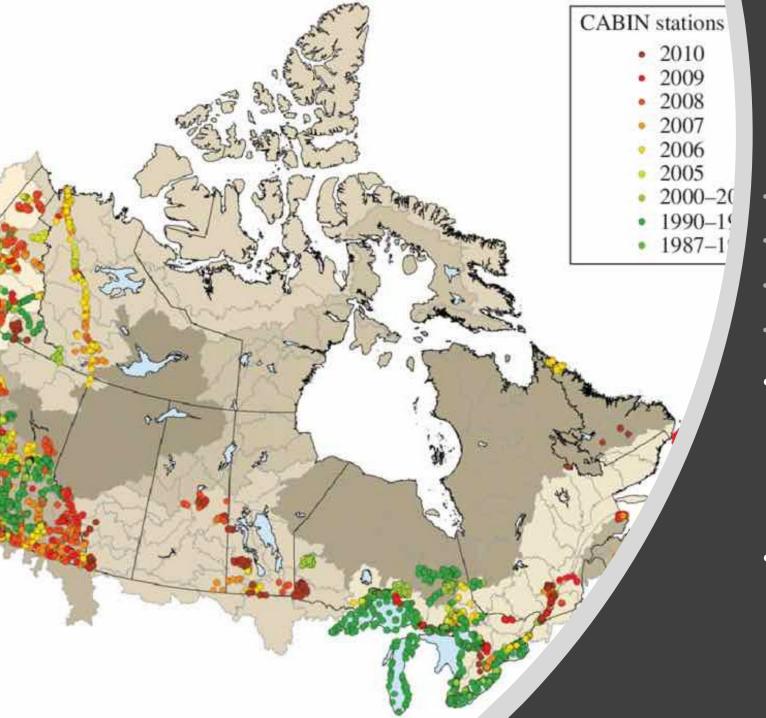
STREAM / CABIN — Why did GWAS want to get involved?

- Recommendation in the 2018 State of the Watershed report
- Opportunity in 2019 to get trained and certified in the STREAM and CABiN protocols



STREAM / CABIN — Why did GWAS want to get involved?

- Recommendation in the 2018 State of the Watershed report
- Opportunity in 2019 to get trained and certified in the STREAM and CABiN protocol
- To better understand impacts of land use and human activity on aquatic ecosystems
- To learn and practice a sampling method that lends credibility to the findings



STREAM / CABIN – Why did GWAS want to get involved?

- Recommendation in the 2018 State of the Watershed report
- Opportunity in 2019 to get trained and certified in the STREAM and CABiN protocol
- To better understand impacts of land use and human activity on aquatic ecosystems
- To learn and practice a sampling method that lends credibility to the findings
- To provide a solid foundation upon which to design a more comprehensive, systematic, multiyear monitoring framework in the Ghost watershed
- To be part of a nation-wide method and network that contributes knowledge on the health of Canada's rivers and streams!

Ghost Watershed Alliance SocietyWater Monitoring Program Plan

Draft V9 Aug. 31, 2020



STREAM / CABIN — So what did we do?

 Developed a multi-year strategy for sampling our watershed



STREAM / CABIN – So what did we do?

- Developed a multi-year strategy for sampling our watershed
- Raised \$17,000 for equipment, supplies and partial payment for a Project Manager



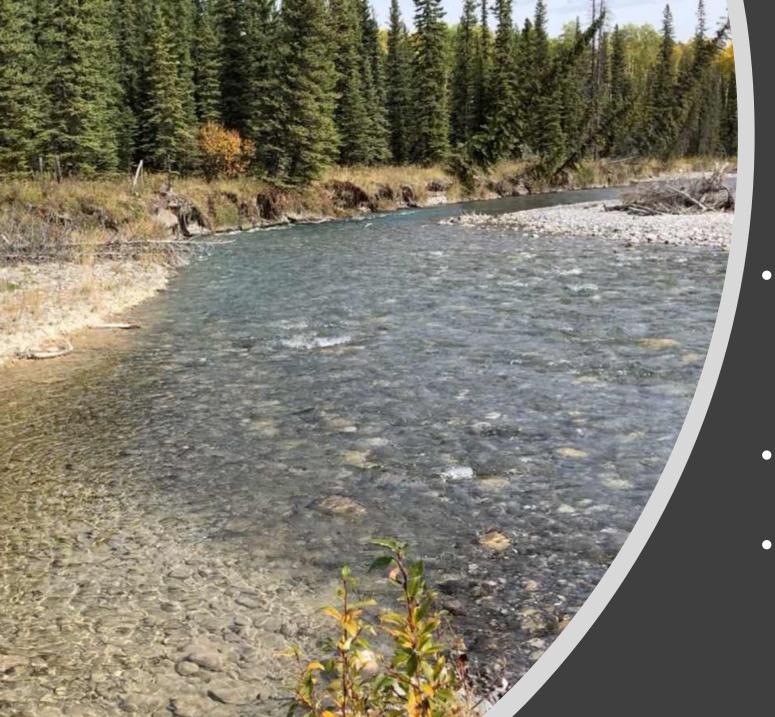
STREAM / CABIN — So what did we do?

- Developed a multi-year strategy for sampling our watershed
- Raised \$17,000 for equipment, supplies and partial payment for a Project Manager
- Sampled 10 sites in Sept./Oct. 2020 (8 along Waiparous Creek, 2 along Ghost River)
 - 3 STREAM samples and 1 CABiN sample taken at each



STREAM / CABiN — So what did we do?

- Developed a multi-year strategy for sampling our watershed
- Raised \$17,000 for equipment, supplies and partial payment for a Project Manager
- Sampled 10 sites in Sept./Oct. 2020 (8 along Waiparous Creek, 2 along Ghost River)
 - 3 STREAM samples and 1 CABiN sample taken at each
- Submitted samples to labs in B.C. (taxonomic) and Ontario (U. of Guelph - DNA) – awaiting results
- Participated in the CABiN Eastern Slopes Collaborative with other Alberta watershed groups, NGOs and government personnel interested in STREAM/CABiN programs



STREAM / CABIN – What happens next summer? (Year 2)

- Sample 8 more sites (along the Ghost River – North and South) to continue acquiring baseline data on water quality
- Train more volunteers if possible
- Continue participating in the CABiN Eastern Slopes Collaborative

Acknowledgements

Supportive Organizations

- Canadian Aquatic Biomonitoring Network (CABiN), Environment and Climate Change Canada
- Hajibabaei Lab, Centre for Biodiversity Genomics, University of Guelph
- Living Lakes Canada
- World Wildlife Fund (Canada)

Supportive Suppliers

- Bureau Veritas Laboratories
- Cordillera Consulting Inc.
- Halltech Aquatic Research Inc.
- Oak Environmental Inc.
- Alberta Environment and Parks





Canada











Acknowledgements

Funding Agencies

Alberta Ecotrust

Alberta Gaming (AGLC)

Land Stewardship Centre

World Wildlife Fund (Canada)









Acknowledgements
GWAS Volunteers