CITY OF CALGARY MAYOR'S ENVIRONMENT EXPO

June 2, 2022

Against the Current: The Story of Westslope Cutthroat Trout in Alberta's Headwater Ecosystems
Ghost Watershed Alliance Society www.ghostwatershed.ca

STUDENT ACTIVITY PACKAGE

ACTIVITY #1

Which one is the westslope cutthroat trout?

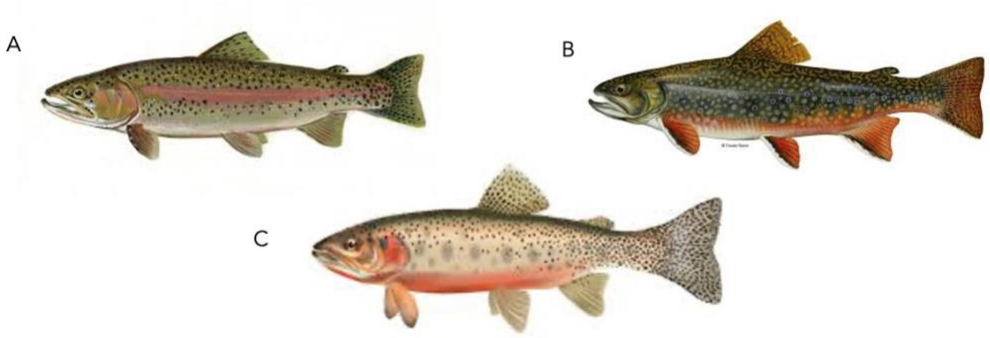


Image source: US Fish and Wildlife Service

ACTIVITY #2

Habitat Hunt

You have been hired to work as a fisheries biologist. Your first task is to create a habitat checklist.
Look at each habitat feature for aquatic ecosystems. Which field assessment word describes habitat conditions that best suit the westslope cutthroat trout?

Bonus: What are the four "Cs" of good habitat for westslope cutthroat trout?

Question #1

Habitat Feature	Field Assessment		
water quality	good	moderate	poor

Question #2

Habitat Feature	Field Assessment		
amount of sediment in gravels	low	moderate	high
dissolved oxygen levels	low	moderate	high
change in water levels	low	moderate	high
abundance of aquatic invertebrates	low	moderate	high
amount of fragmentation	low	moderate	high

Question #3

Habitat Feature	Field Assessment		
deep pools or groundwater coming in	none	some	many
overhanging riparian plants	none	some	many
boulders or large woody debris in stream	none	some	many
spawning areas	none	some	many
aquatic invertebrates	none	some	many

ACTIVITY #3

Predictive Powers

Your turn!
Read each of the real-life scenarios. Identify the threat or threats to westslope cutthroat trout by placing a check-mark in the box beside the ones you think apply. In the final line, write whether the threat has been **added** or **removed**.

1. Banff National Park fisheries biologists are successful in removing all non-native trout species from a mountain lake and stream. They plan to reintroduce WSCT here.

- ❑a. hybridization
- ❑b. competition
- ❑c. flooding
- ❑d. harvest
- ❑e. habitat loss

_____

Photo source: Rocky Mountain Outlook

ACTIVITY #3

Predictive Powers

2. An unusual combination of a heavy spring rain and a deep winter snowpack creates a large flood. Many aquatic invertebrates are washed away, and their populations remain low in the summer. Sediment washed into spawning gravels.

- ❑a. hybridization
- ❑b. competition
- ❑c. flooding
- ❑d. harvest
- ❑e. habitat loss

_____

Photo credit: GWAS

ACTIVITY #3

Predictive Powers

3. WSCT spawn along a certain reach of stream. For years, a riparian area just upstream of this important habitat had been damaged by motorized vehicles crossing through the water. The government installed a bridge. A local watershed stewardship group worked with a group of motorized recreationalists to plant willows and repair the shoreline.

- ❑a. hybridization
- ❑b. competition
- ❑c. flooding
- ❑d. harvest
- ❑e. habitat loss

_____

Photo credit: S. Fritz

ACTIVITY #3

Predictive Powers

4. Since WSCT live in headwater streams with low productivity, they snatch any available invertebrate and can be easily caught by anglers. Fishing regulations require anglers to catch and release and to use barbless hooks.

- ❑a. hybridization
- ❑b. competition
- ❑c. flooding
- ❑d. harvest
- ❑e. habitat loss

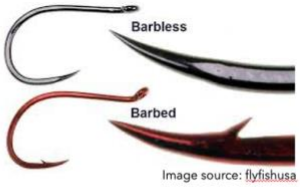


Image source: flyfishusa

ACTIVITY #3

Predictive Powers

5. A forestry company wants to harvest trees near a stretch of creek known to have a healthy WSCT population. They construct a bridge to access the site. They also install sediment fences and keep a buffer of trees and shrubs beside the creek.

- ❑a. hybridization
- ❑b. competition
- ❑c. flooding
- ❑d. harvest
- ❑e. habitat loss


Photo credit: S. Fritz

Want to learn more?

Teacher resource package including slide deck, lesson plans and student activities:
Against the Current Resource Package

About the Ghost Watershed...
30 minute tour of the Ghost River Watershed

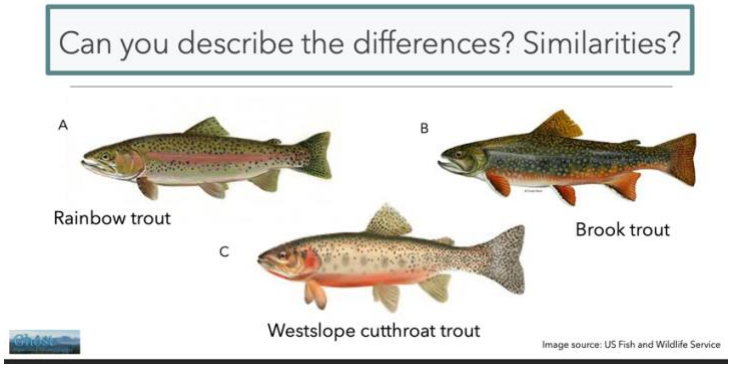
About habitat restoration and bioengineering...
9 minute video about restoring habitat in the Ghost River Watershed

About monitoring water quality including aquatic invertebrates...
20 minute video about water monitoring in the Ghost River Watershed

About native trout...
https://albertanativetrout.com/

STUDENT ACTIVITY PACKAGE - KEY

ACTIVITY 1



ACTIVITY 2

Question #2-key

Habitat Feature	Field Assessment		
amount of sediment in gravels	low	moderate	high
dissolved oxygen levels	low	moderate	high
change in water levels	low	moderate	high
abundance of aquatic invertebrates	low	moderate	high
amount of fragmentation	low	moderate	high

Question #3-key

Habitat Feature	Field Assessment		
deep pools or groundwater coming in	none	some	many
overhanging riparian plants	none	some	many
boulders or large woody debris in stream	none	some	many
spawning areas	none	some	many
aquatic invertebrates	none	some	many

ACTIVITY 3

1. A, B – remove 2. C – add 3. E – remove 4. D – remove 5. E – remove