

Murphy Creek Spawning Channel: a virtual tour

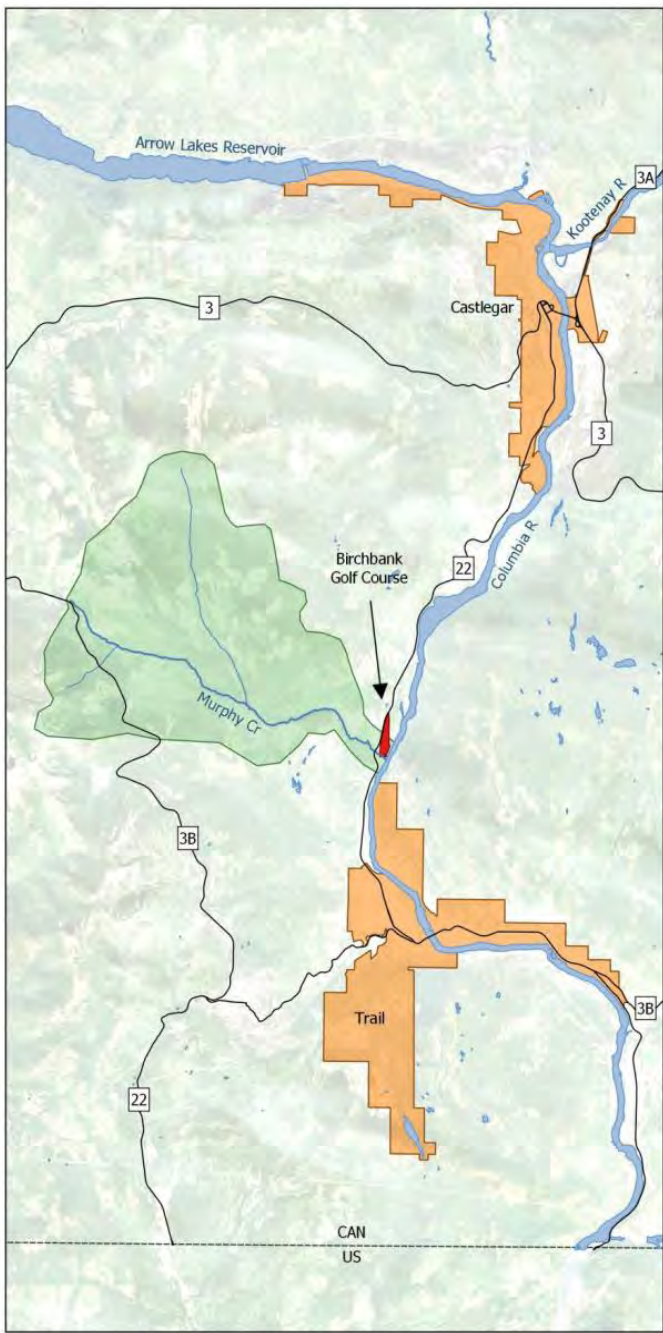


Presented by:

Karen Trebitz, Ph.D., Trail Wildlife Association

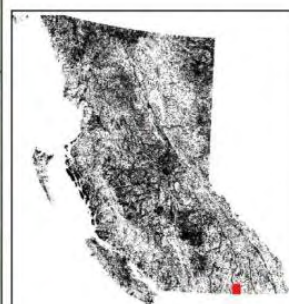
Eleanor Duifhuis, B.Sc., Okanagan Nation Alliance





Legend

- Waterbody
- Murphy Cr Watershed
- City Boundary
- Highway



Project: Murphy Creek Spawning Channel Maintenance and Monitoring
Location: Murphy Creek, Trail BC
Coordinate System: UTM Zone 11U
Datum: NAD83 Date: 31 Jan 2020
External Layers:
BC Data Catalogue: Freshwater Atlas
Lakes, Freshwater Atlas Rivers, Local Government Boundaries - Road centerline aligned, Digital Road Atlas
Statistics Canada: Provinces/territories Boundaries
Satellite Imagery: ESRI World Imagery (2017)

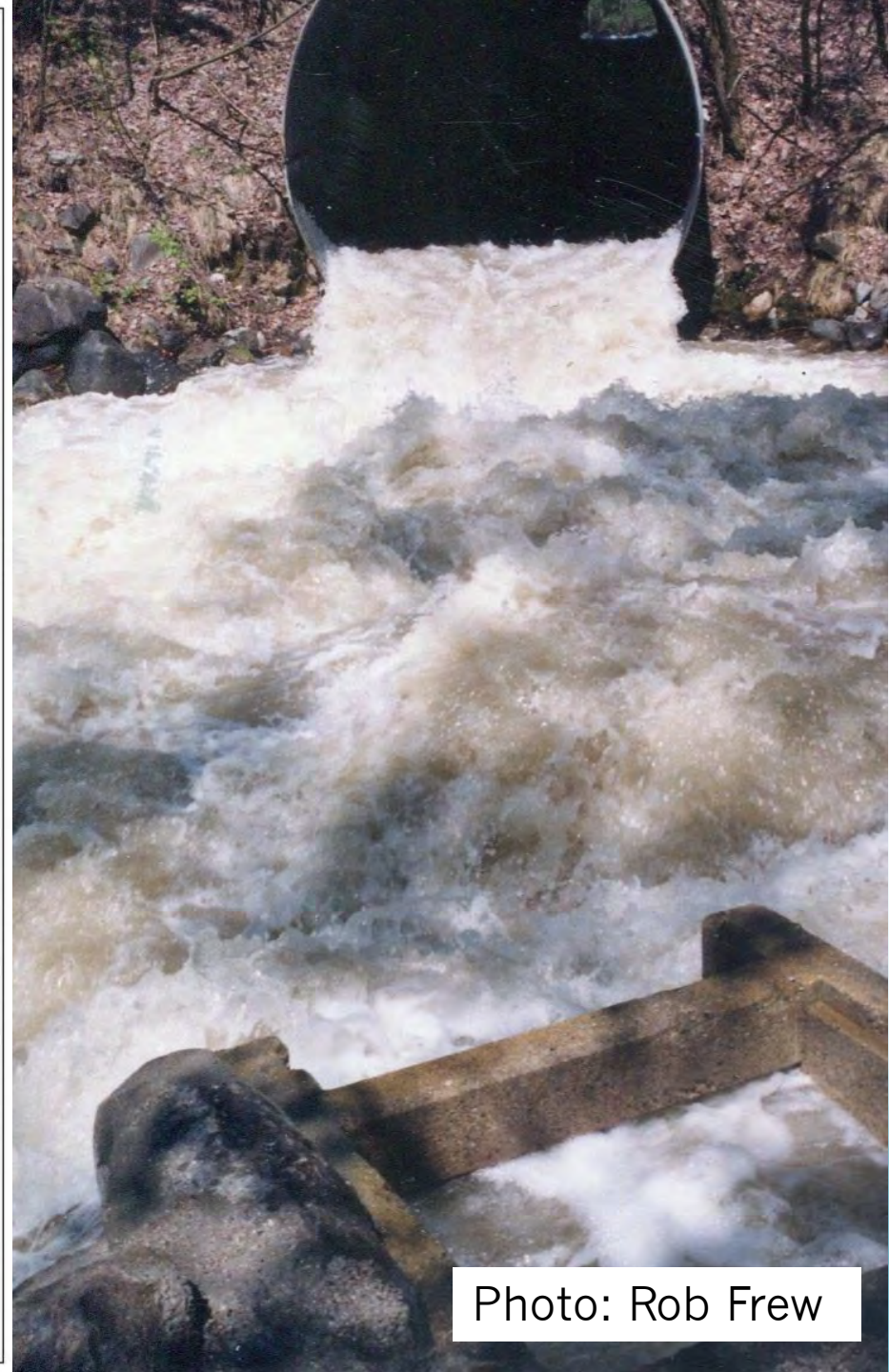
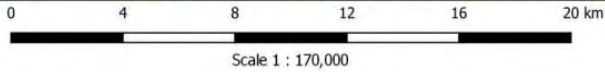


Photo: Rob Frew

Problem: How to get spawners above the culvert?



1987: TWA crew with DFO fish biologist

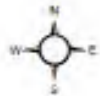
Photo: TWA archives



Murphy Creek Spawning Channel Site Overview

1:2,750

0 25 50 Meters



Trail Wildlife Association
Mapping by: Cara Adrain

Date: 14/06/2012

- Main Channel
- Side Channel
- Project Area
- Hwy 22 Culvert
- Columbia River

Source Data:

Bing Maps (2012) - hybrid basemap
National Hydro Network (2012) - hydrology

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
False Easting: 1,000,000.0000
False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Projects and maintenance: timeline

- 1987: TWA and DFO fish biologist capture and move fish around culvert
- 1990-1992: Planning and construction of first 100 meters of spawning channel
- 1994: Expansion of the spawning channel to 225m
- 2006: Channel maintenance; add gravels; build log checks between pools; floating structures to provide cover for spawning fish
- 2007: Dredge settling pond; build footbridge
- 2008: Add and rake gravels

Projects and maintenance: timeline

- 2012-13: Major upgrades to intakes and sediment settling pond; footbridge replaced
- 2015-19: Student science classes and student volunteers at the spawning channels
- **2016: Begin partnership with ONA;** add and rake gravels, remove debris
- 2018-19: Dredge settling pond, armor intakes using boulders; riparian planting and other maintenance
- 2020: ONA installs pit tag reader; TWA puts in trail cameras; general channel maintenance
- **2021: Murphy Creek receives “Core Funding” from FWCP.** Major upgrade to barrier wall from pool to system around intakes; Teck installs gate per TWA request



Photo: TWA archives







TWA archives, ca. 1994



June 2021



June 2021



Native rose
& Columbia lily
June 2021



ONA biologists
and work crew

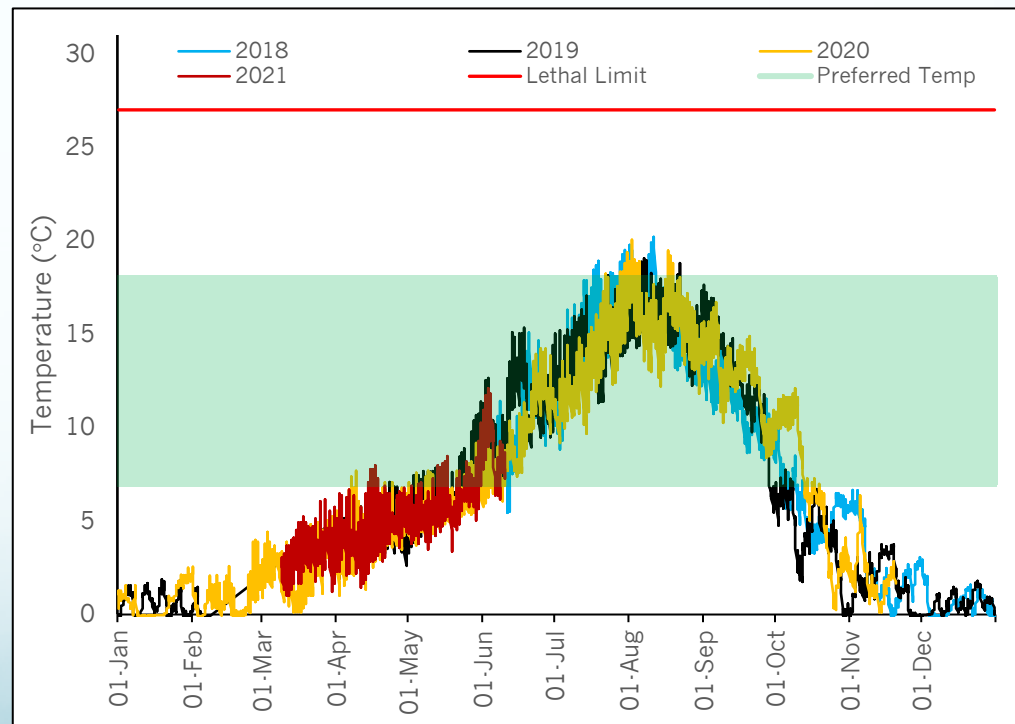
CAMERA 9

03-24-2021 10:30:01

tasco

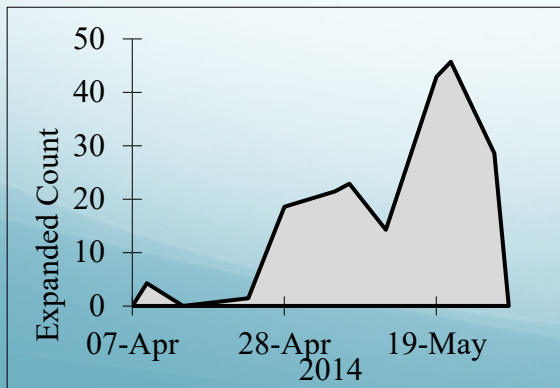
Annual Spawning Channel Monitoring

- Water temperature, turbidity, water level
- Wildlife cameras (predation events)
- Terrestrial vegetation
 - Planting
 - Grass seeding
 - Watering
 - Estimating survivability
 - Removing invasives
- Spawner Surveys
 - Visual spawner surveys
 - PIT antenna arrays



How to measure success

- Continued successful operation of the spawning channel
 - Access
 - Turbidity
- Successful Rainbow Trout spawning
 - Escapement estimates – Area-Under-the-Curve model
- Community involvement



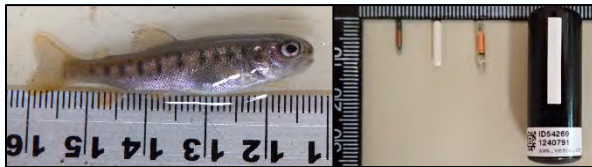
PIT Antenna Arrays



- 25 adult RB detected in 2020 (2 PIT tag reader locations)
- 21 adult and 2 juvenile RB detected in 2021
- 6 RB accessed MCSC in both 2020 and 2021
- 6.4 days average residence time for the MCSC (1.5 – 15.0 days)

Spawning Channel Tags

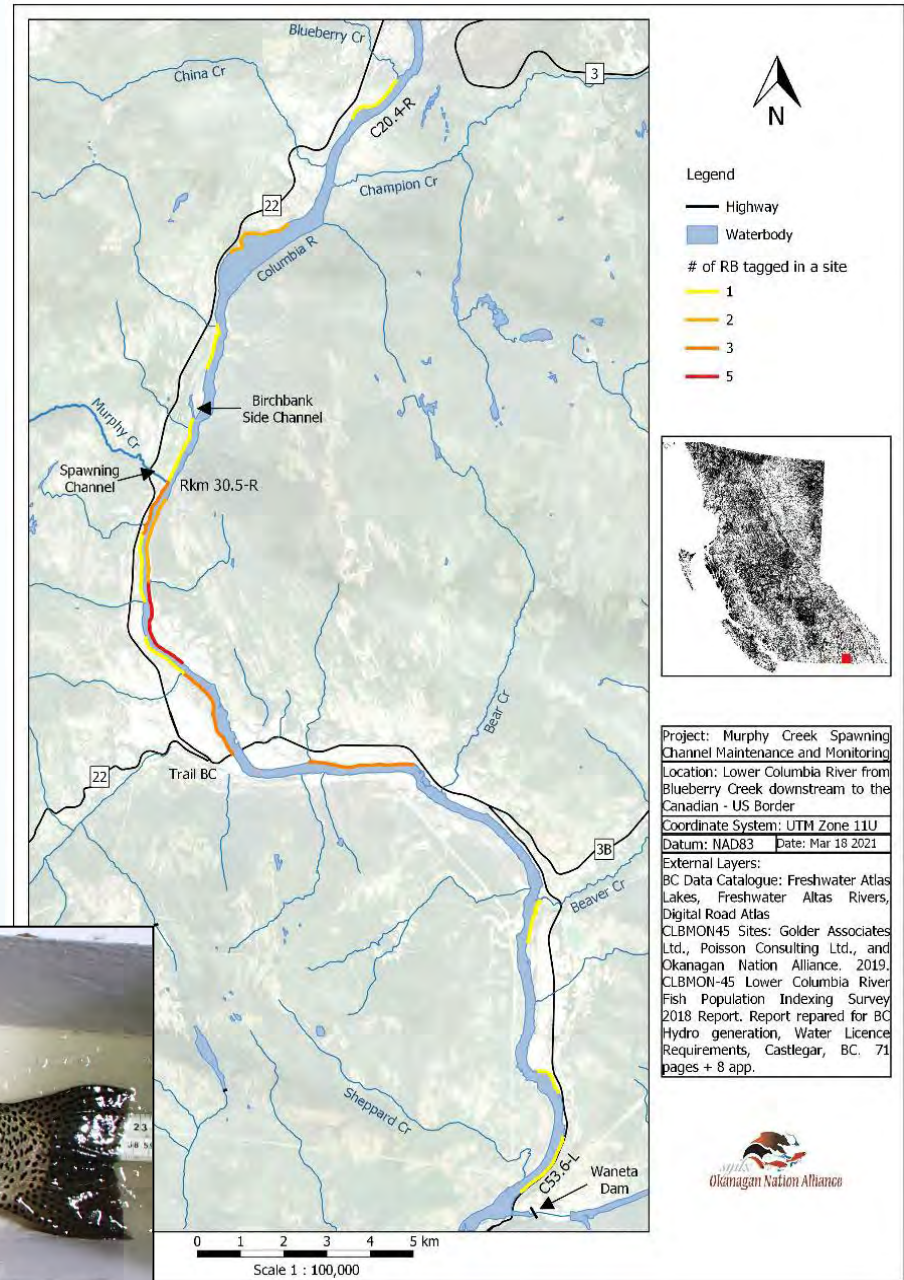
- In 2020, 155 juvenile RB were salvaged prior to setting pond dredging
- 18 salvaged individuals were > 75 mm and were implanted with 8 mm tags



2020

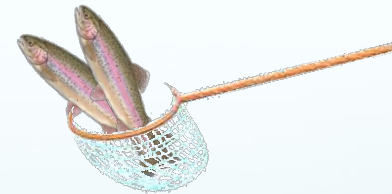
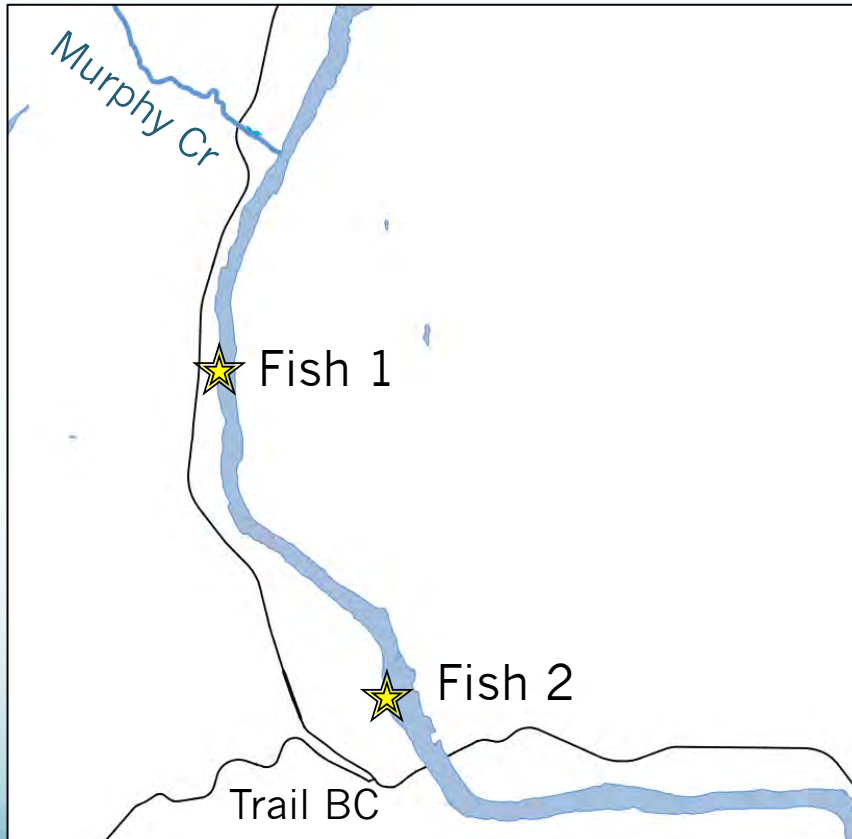
BC Hydro – CLBMON45 Tags

- Over 30,000 RB have been tagged in the LCR mainstem over the past 20 years
- In 2019, the recapture rate of adult RB was 3.9%
- RB travel to Murphy Creek from as far as the Pend d'Oreille River (downstream) and Blueberry Creek (upstream)



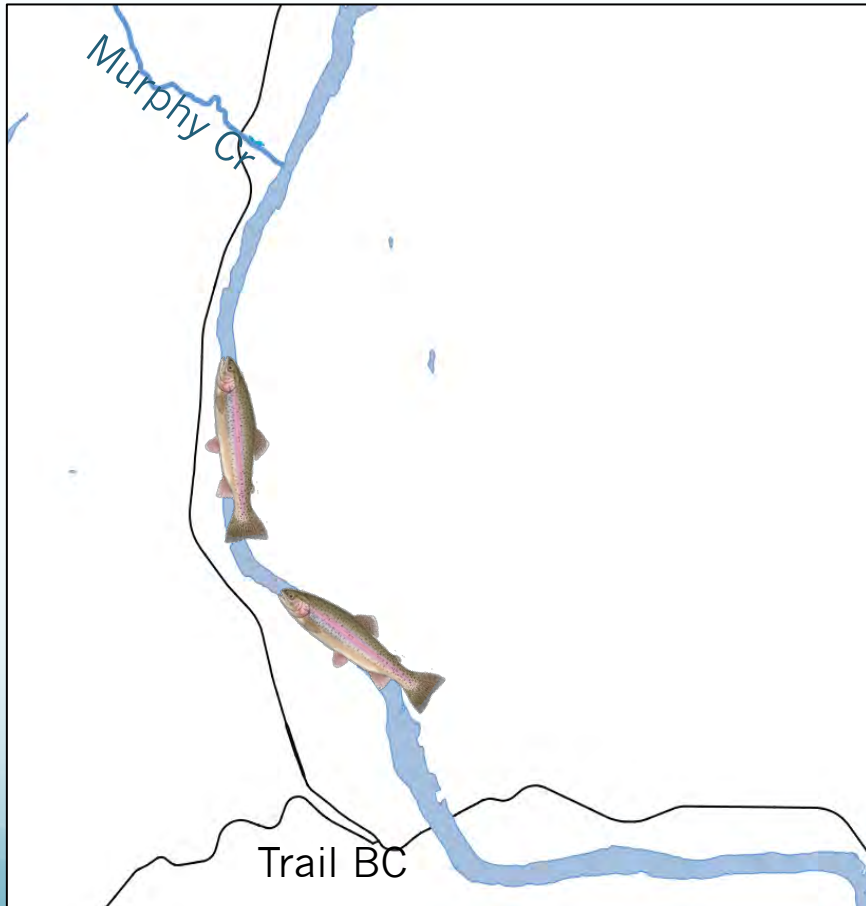
Fin-tastic Fish Encounters

Fall 2019



Fin-tastic Fish Encounters

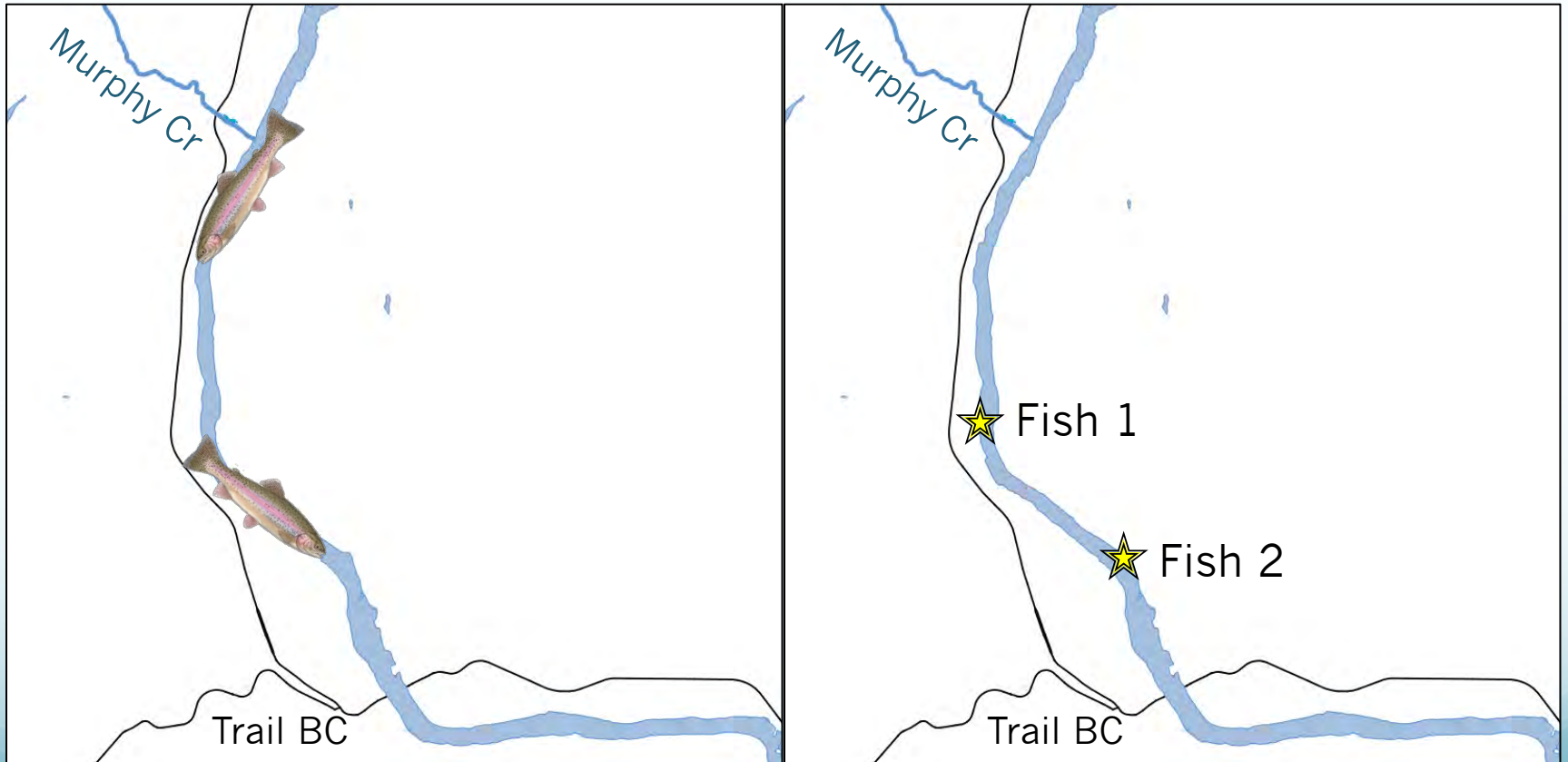
Spring 2020



Fin-tastic Fish Encounters



Fall 2020



In-person monitoring

- Water levels in pools
- Channel temperatures
- Plant survival
- Counting fish in pools
- Photographs
- **Other Observations...**



Problem?







CAMERA 9

05-17-2021 02:01:30

tasco



CAMERA 13

05-06-2021 12:17:46

tasco



CAMERA 8

05-25-2020 08:38:22

tasco

Who else uses the spawning channel system?





CAMERA 13

04-11-2021 11:25:14

tasco



CAMERA 10

06-19-2021 09:41:28

tasco







CAMERA 8

02-09-2021 13:29:25

tasco



CAMERA 10

06-05-2021 13:55:22

tasco



CAMERA 10

06-05-2021 13:19:16

tasco



CAMERA 8

11-01-2021 05:08:56

tasco



CAMERA 13

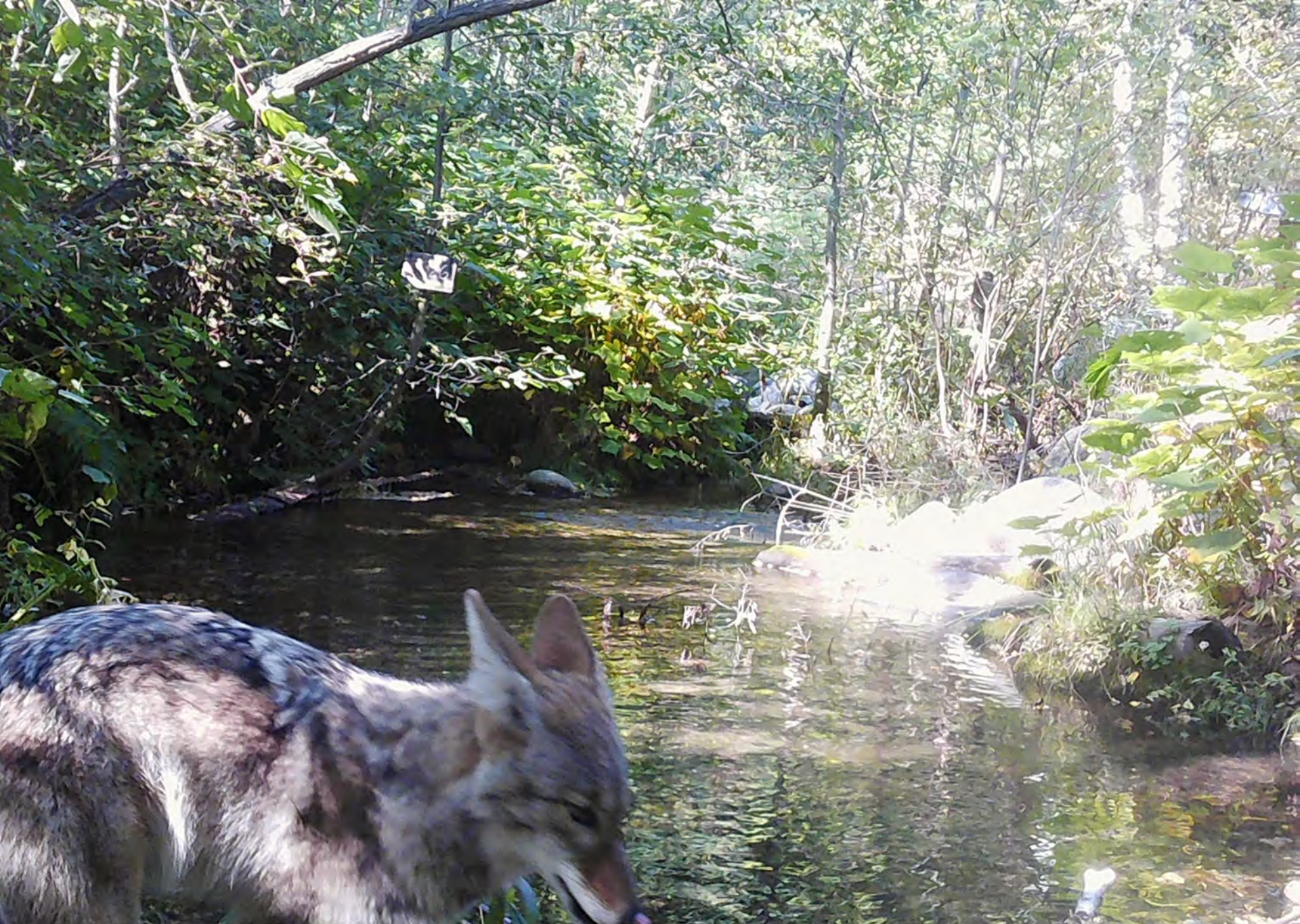
08-19-2020 16:02:04

tasco



5C

ONANRCAM37



CAMERA 8

10-03-2020 12:07:19

tasco





Resilience: can the system withstand weather events?

**Murphy Creek after a
rain-on-snow event,
May 9th, 2018**





Murphy Creek
summer 2021 Shoring
up the wall around the
intake valves

2021. 9.21 16:10

Going forward...

Expand Murphy Creek
spawning channels? Enough
space to double the capacity...

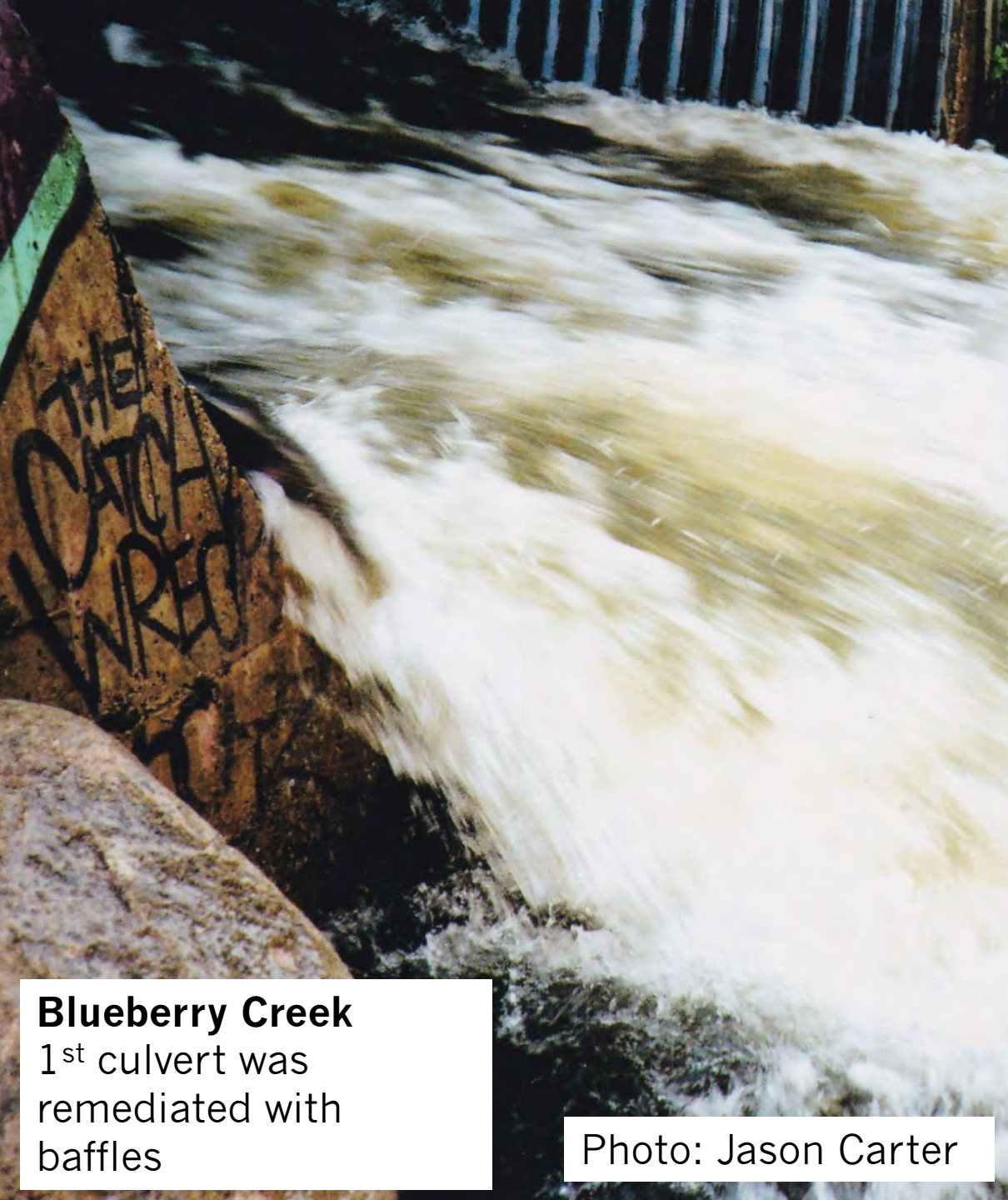
Restore access to other
historical spawning streams?

What is the best “bang” for our
bucks?

Blueberry Creek

Historically, 25 km of
prime spawning habitat





Blueberry Creek
1st culvert was
remediated with
baffles

Photo: Jason Carter



Blueberry Creek
Old CPR
tunnel/culvert is
virtually impassible
for fish

How can you help?

- Volunteer
- Join TWA
- Donate funds, materials, or expertise
- Get involved in other area conservation projects



Thank you for attending!

