



## Mink Creek Culvert Removal and Stream Rehabilitation

**Project Goal:** Improve fish passage on Mink Creek (AWC listed stream 115-34-10210) by removing a failing culvert and associated road bed material.

**Project Background:** Takshanuk Watershed Council (TWC) identified a culvert which was an impediment to fish in Mink Creek, an Anadromous Waters Catalog (AWC) listed stream, where coho, chum, Dolly Varden, and cutthroat have been documented. Debris associated with the culvert, such as concrete and rebar, along with accumulations of natural materials, created a barrier to fish passage. The road was no longer used for motorized traffic and there was no need for the culvert to remain. After developing a plan with property owner Clay Frick and conservation easement holder Southeast Alaska Land Trust, TWC received funding from the US Fish and Wildlife Service to remove the culvert and restore fish habitat.

### Location:



Meridian	Township	Range	Section
Copper River	31 South	60 East	29





Project site in center of picture, orange dot. Mud Bay Road on right



Lower reaches of Mink Creek, confluence with Mud Bay Creek, just below project site





Woody debris collecting at culvert mouths, potentially impeding fish passage. 5/13/2020



Concrete, re-bar, and other non-natural materials in stream. 5/13/2020



**Permits:**

-Alaska Department of Fish and Game (ADFG) Aquatic Resource Permits

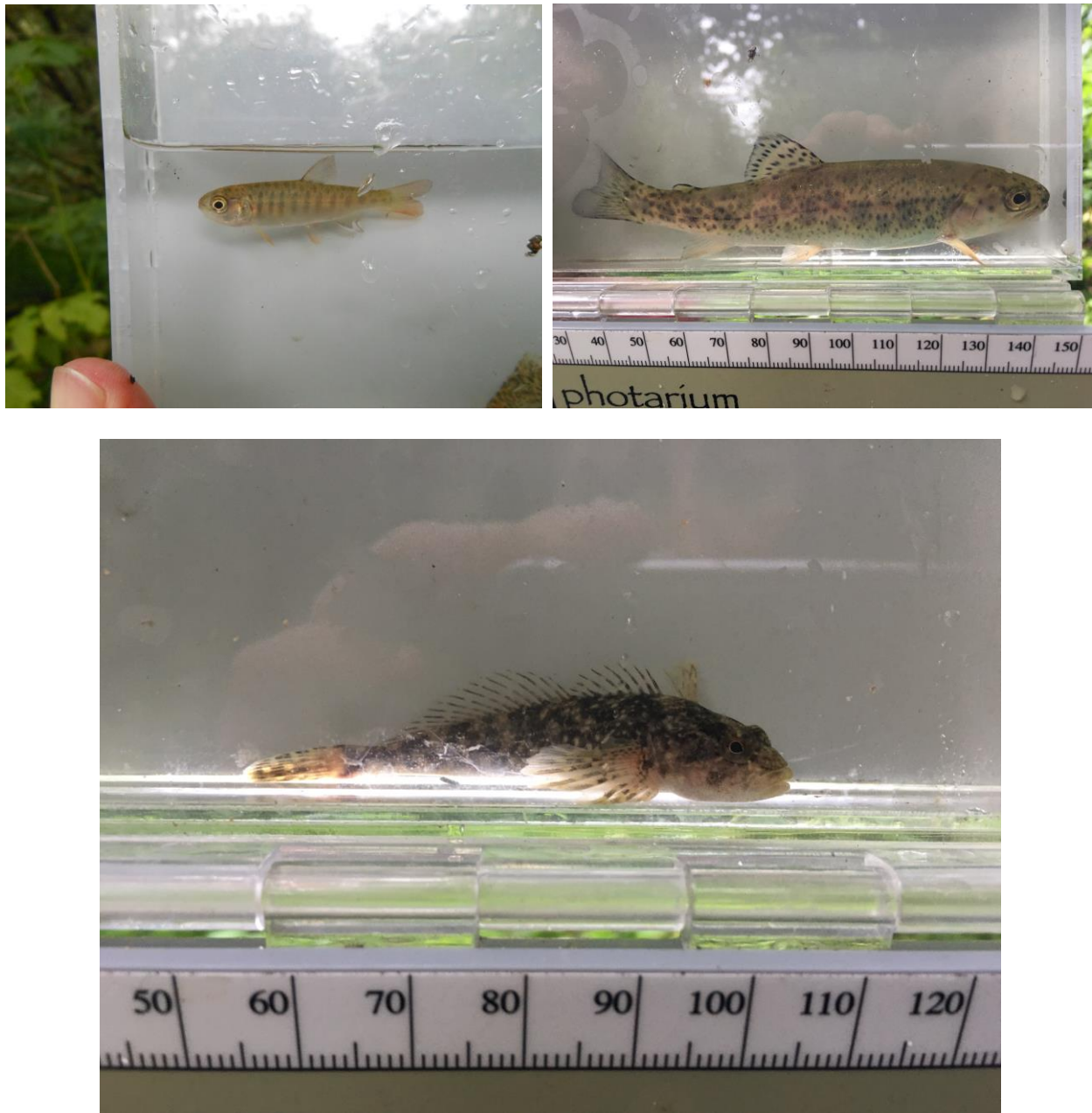
- SF2019-060
- SF2020-159

-ADFG Fish Habitat Permit

- FH20-I-0043

-A Preconstruction Notification application was submitted to the Army Corps of Engineers, however, the Regulatory Specialist determined that authorization was unnecessary.

**Fish Trapping:** Four minnow traps were set just above and below the culvert on 7/18/19 and 8/7/2020.

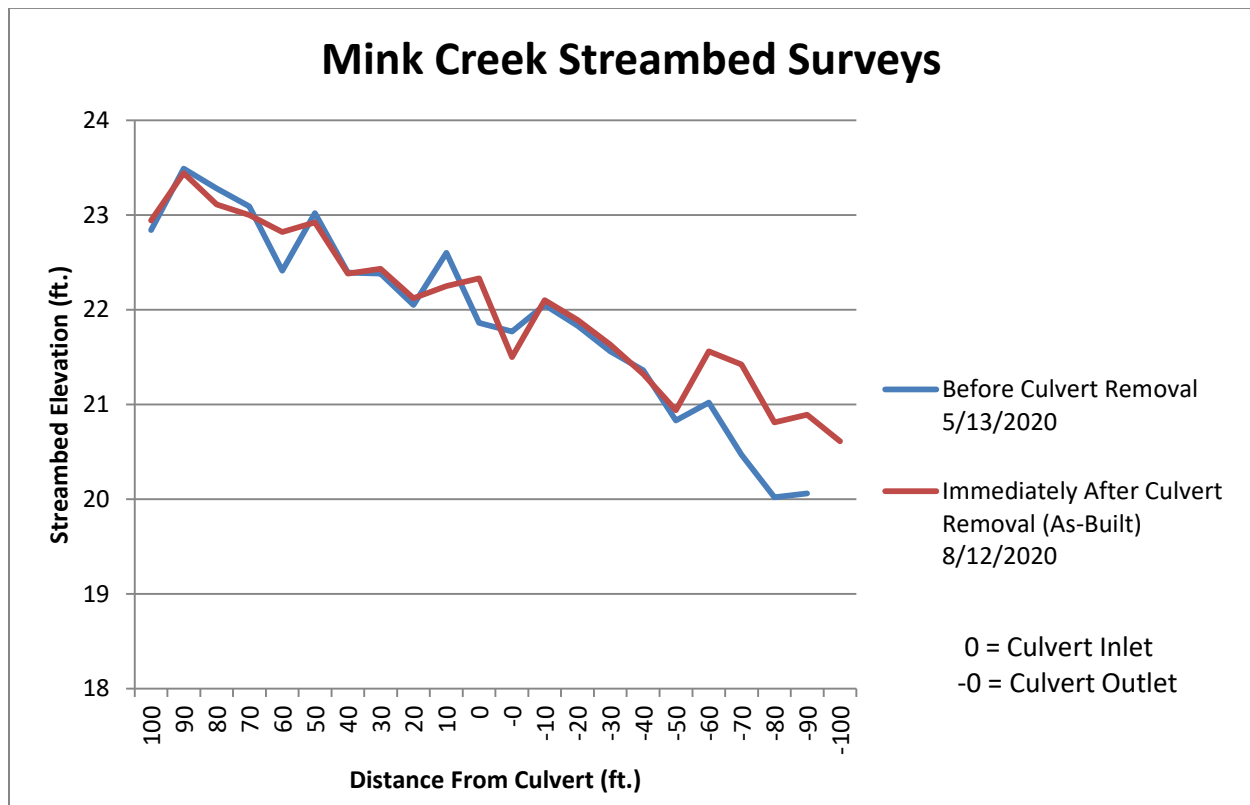


Clockwise from top left: coho salmon, cutthroat trout, and slimy sculpin

Trapping results:

Date	Species	Length (mm)
7/18/19	coho salmon	45
7/18/19	slimy sculpin	75
7/18/19	slimy sculpin	80
8/7/20	coho salmon	55
8/7/20	coho salmon	61
8/7/20	slimy sculpin	55
8/7/20	slimy sculpin	-
8/7/20	slimy sculpin	-
8/7/20	cutthroat trout	115
8/7/20	cutthroat trout	110

**Longitudinal streambed profile survey:** Streambed elevation at estimated center of thalweg was measured on 5/13/2020 before the culvert was removed, and again on 8/12/2020 just after the removal project. This survey will be repeated in 2021, 2023, and 2025.



**Culvert Removal:**

A fish exclusion zone was established with ¼-inch mesh netting extending approximately 20 feet both above and below the culvert. Fish were removed from this zone with minnow traps and dip nets and released upstream of the work area. We used a small excavator to remove all road-bed material to just above waterline. Although a 3-inch pump was available to dewater the work area, we were able to construct a dam of native materials just upstream of the culvert which stopped virtually all flow of water for the short time it took for us to pull the culvert from the stream channel. Just before pulling the culvert we also constructed a sediment trap just downstream of the culvert work area. This trap consisted of two small dams of native materials, mostly wood and leaves. What little water was still flowing through the area was again slowed considerably by this pool just downstream of the impacted work area. We allowed the water in the cavity left by the culvert to settle for as long as possible before dismantling the upstream dam and restoring the stream channel using hand tools. After all instream work was complete we removed the downstream sediment dams and the fish exclusion netting. The entire removal project was accomplished on 8/7/2020.



Our excavator was equipped with an articulating bucket which made removal of material around the culvert much easier and quicker than it would have been with a traditional digging bucket

















Newly-constructed channel showing designed bank-full limits (red lines)



Jordan Tanguay, Southeast Alaska Land Trust, and Clay Frick, property owner, at the project site



**Remaining Project Tasks:**

To the greatest extent possible, the following activities will include the participation and assistance of kids from Haines and Klukwan schools, as well as any other persons interested in participating in a small stream restoration and habitat enhancement project.

- Following fall high water we will inspect the site and do additional hand-tool work as needed to mitigate possible erosion of remaining road bed material and to assist in the establishment of a naturally stable stream course.
- We will conduct additional fish trapping to document fish use of the area post-construction.
- In spring of 2021, we will transplant local native plants into the area to speed re-vegetation.
- We will construct a foot bridge of local spruce timber spanning the creek at the project site.
- We will take water samples for laboratory analysis and monitor seasonal water quality at the site for one year with a YSI ProDSS multi-meter.
- The project site will be photo-point monitored for five years.

**Thanks to:**

Stan Allen, Pacific States Marine Fisheries Commission  
Alex Atkinson, National Oceanic and Atmospheric Administration  
Sean Bryant, excavator operator  
Rob Cadmus, Southeast Alaska Watershed Coalition  
Clay Frick, project site landowner  
Krista Garrett, Southeast Alaska Land Trust  
Allison Gillum, Southeast Alaska Land Trust  
Debbie Hart, Southeast Alaska Fish Habitat Partnership  
Dylan Krull, Alaska Dept. of Fish and Game, Habitat Section  
Trent Liebich, US Fish and Wildlife Service  
Neil Stichert, US Forest Service  
Jordan Tanguay, Southeast Alaska Land Trust  
Carol Tuynman, adjacent landowner