TRIP REPORT

State of Alaska
Department of Fish and Game

Field Dates:	June 14 - 21, 2022
Locations:	Illinois Creek Mine and adjacent prospects
Objective:	To conduct biomonitoring in drainages surrounding the mine and prospects
Participants:	Olivia Edwards and Lauren Yancy
Weather:	Variable
Access:	Wright's Air charter plane and Robinson R44 helicopter

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On June 14, 2022, Olivia Edwards and Lauren Yancy of the Region III ADF&G Habitat Section took a chartered plane to the Illinois Creek Mine site approximately 30 miles southeast of Kaltag, Alaska in the Kaiyuh Mountains on the ancestral lands of the Koyukon people. We collected biological data at 21 total sites surrounding the historic Illinois Creek Mine site, the Honker deposit, and the Round Top deposit, two of which had not been visited previously (Figure 1).

Weather was variable throughout the trip, ranging from clear skies to rain and thunderstorms. Daytime air temperature was between approximately 18°C and 25°C. The area had not had significant rainfall for a month prior to our we arrival. Water levels at all sites were below bankfull, similar to levels in July 2021, and conducive for minnow trapping. In situ water temperature ranged from 3.6°C and 10.1°C across sites.

This is the third consecutive year that we have visited the Illinois Creek Mine site to conduct biomonitoring (see ADF&G Technical Reports No. 20-08 and No. 22-03). Environmental parameters evaluated include fish presence, periphyton (measured by chlorophyll-a), macroinvertebrate assemblage, juvenile coho salmon metals concentration, and water temperature. Ten minnow traps were baited with cured salmon roe for 24 hours at each site. Beginning this year, in situ water temperature was also recorded at each site. Periphyton and macroinvertebrate samples were collected at Upper Illinois Creek and 15 juvenile coho salmon were retained from Lower Illinois Creek for whole-body element analysis.

Juvenile coho salmon catches were low in the Illinois Creek drainage compared to the last two years (Table 1). Juvenile coho salmon were also captured in Lower California Creek 2, California Creek upstream of Colorado Creek, Minnesota Creek headwaters, and Water Pump Creek (Figure 1; Table 2). Other species captured in 2022 included slimy sculpin, Dolly Varden, and Alaska blackfish (Table 2). Chinook salmon were captured in multiple drainages in the area between 1996 and 1998 but have not been captured in the most recent years of monitoring.

Periphyton samples, macroinvertebrate samples, and fish retained for whole-body metals analysis were preserved and flown back to Fairbanks. Periphyton samples will be processed in the ADF&G lab in Fairbanks this winter, while macroinvertebrate identification and element analysis will be outsourced.

We visited two new sites this year, Water Pump Creek and Lower Twin Creek. These are the two drainages directly northeast of camp. They both flow into California Creek above the Lower California Creek 2 site (Figure 1). Two creeks run parallel down the Twin Creek drainage, although from our aerial survey, the two distinct channels were difficult to follow, and it seemed as though the two channels connected prior to merging with California Creek. As far as we could tell, both our sample sites were in the same channel. There is a large blown out beaver dam upstream of both sites (Figure 2). A proposed road would cross the Twin Creek drainage. The Lower Twin Creek site is below the proposed crossing, while the Upper Twin Creek site is at the proposed crossing. Lower Twin Creek is lined by dense willows and alders. Stream width is approximately 3 meters characterized by swift deep runs with intermittent large pools. Slimy sculpin, Dolly Varden, and Alaska blackfish were captured in this drainage (Table 2). Riparian vegetation at Water Pump Creek consisted of large spruce and birch trees, willows, alders, sedges, and wildflowers (Figure 3). Stream width is approximately 2 meters with shallow riffles between medium sized pools. Three Dolly Varden and 26 coho salmon were captured in Water Pump Creek (Table 2). An Anadromous Waters Catalog nomination to log coho salmon catches will be submitted this fall (Figure 4).

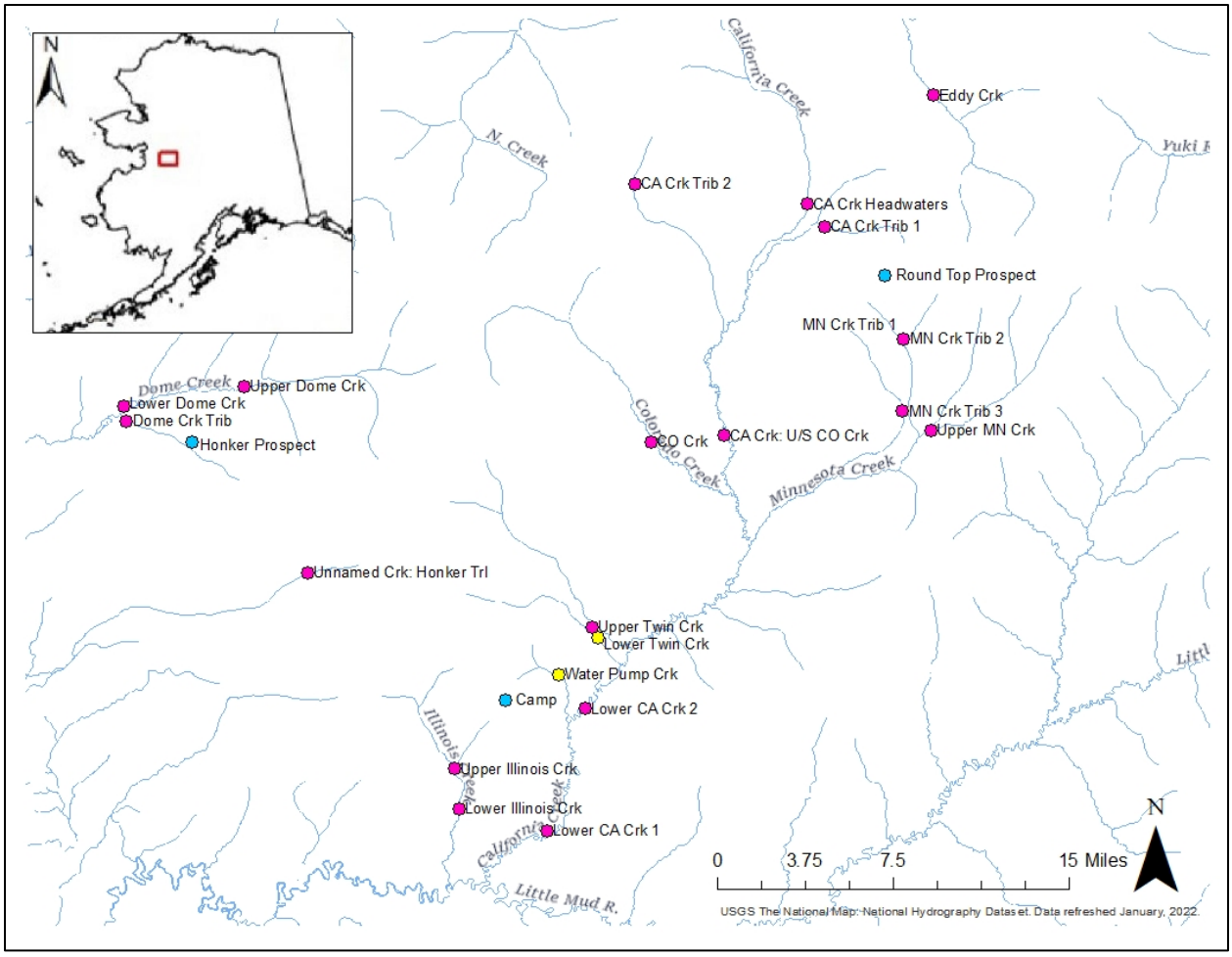

Figure 1. Sample sites surrounding the Illinois Creek Mine site, Honker deposit, and Round Top deposit (blue points), Alaska 2022. Sites in pink have been previously sampled, while those in yellow were new in 2022.

Figure 2. Blown out beaver dam in the Twin Creek drainage, 2022.

Figure 3. Water Pump Creek near the Illinois Creek Mine site, 2022.

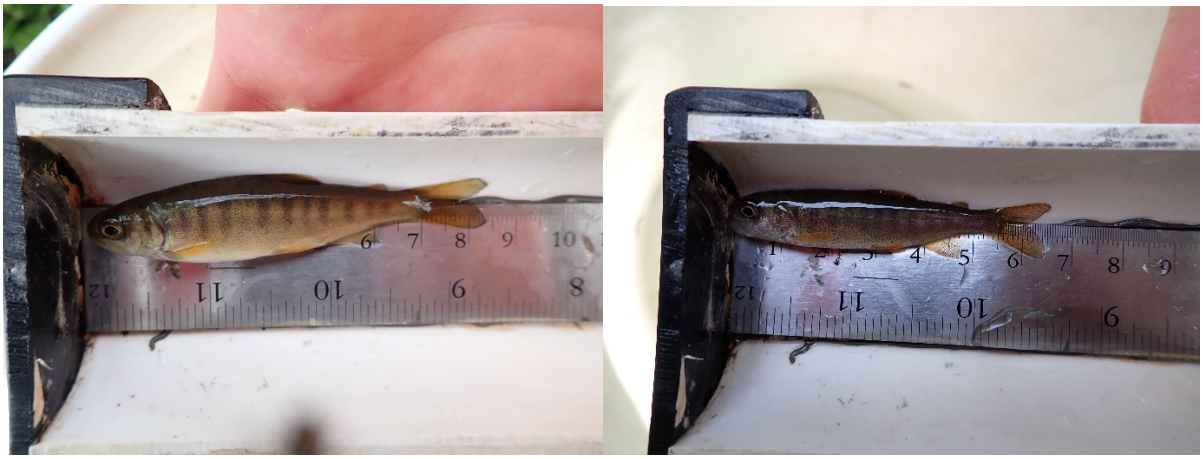

Figure 4. Coho salmon captured in Water Pump Creek, 2022.

Table 1. Juvenile coho salmon captured during annual biomonitoring in the Illinois Creek drainage, 2020 - 2022.

	Upper Illinois Creek	Lower Illinois Creek
2020	62	304
2021	229	116
2022	8	31

Table 2. Total fish captured by species at each site sampled surrounding the Illinois Creek Mine site, Honker deposit, and Round Top deposit, 2022.

Site	Coho Salmon	Slimy Sculpin	Dolly Varden	Alaska Blackfish
Upper IL Crk	8	8	0	0
Lower IL Crk	31	3	0	2
Lower CA Crk 1	0	7	0	0
Lower CA Crk 2	11	6	1	3
CA Crk: Upstream CO Crk	23	2	0	0
CA Crk Headwaters	0	0	5	0
CA Crk Trib 1	0	9	0	0
CA Crk Trib 2	0	0	20	0
CO Crk	0	3	2	0
Honker Trail Crk	0	0	10	0
Upper Dome Crk	0	3	1	0
Lower Dome Crk	0	3	6	8
Dome Crk Trib	0	1	1	0
Eddy Crk	0	1	3	0
MN Crk Headwaters	2	9	10	0
MN Trib 1	0	0	6	0
MN Trib 2	0	0	0	0
MN Trib 3	0	0	1	1
Upper Twin Crk	0	2	1	1
Lower Twin Crk	0	1	3	0
Water Pump Crk	26	0	3	0