

# TRIP REPORT

*State of Alaska*  
*Department of Fish and Game*

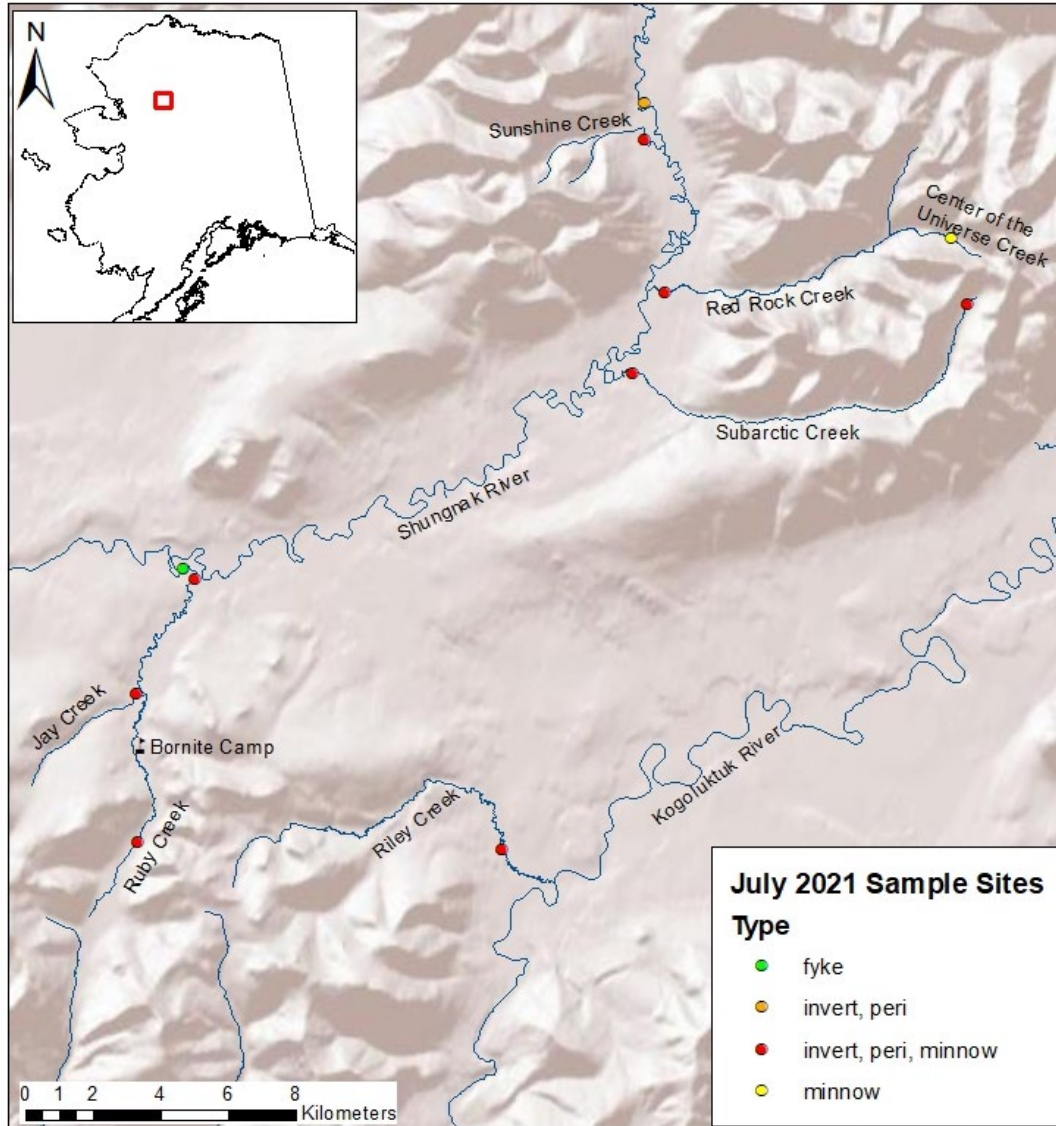
*Field Date(s):* July 14 - 19, 2021  
*Location(s):* **Arctic Bornite Prospect**  
*Objective(s):* Periphyton, aquatic invertebrate, and fish sampling  
*Participant(s):* Chelsea Clawson and Audra Brase  
*Weather:* Mostly sunny, 60's, occasional rain  
*Access:* A-Star helicopter

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On July 14, 2021 we flew to the Arctic Bornite deposit to perform the fifth year of baseline aquatic biomonitoring. Specific tasks we planned to perform were: 1) collect periphyton and aquatic invertebrate samples at nine sites, 2) collect various fish species at target locations for whole body element analysis, and 3) sample fish at various locations to better understand fish presence and distribution. We sampled a total of 11 locations (Table 1, Figure 1).

**Table 1.** Sampling sites (WGS84) and types of samples collected, July 2021.

Sample Site	Latitude	Longitude	Invertebrates	Periphyton	Minnow Traps	Fyke Nets
Upper Subarctic	67.1926	-156.3911	X	X	X	
Lower Subarctic	67.1720	-156.6208	X	X	X	
Lower Red Rock	67.1932	-156.5991	X	X	X	
Upper Ruby	67.0408	-156.9394	X	X	X	
Lower Ruby	67.1114	-156.9084	X	X	X	
Mouth of Ruby	67.1140	-156.9167				X
Upper Shungnak	67.2440	-156.6160	X	X		
Riley Creek	67.0426	-156.6923	X	X	X	
Jay Creek	67.0804	-156.9445	X	X	X	
Upper Center of the Universe Creek	67.2010	-156.4041			X	
Sunshine Creek	67.2335	-156.6162	X	X	X	



**Figure 1.** Minnow trap sample site (yellow), fyke net sample site (green), and periphyton, aquatic invertebrate, and minnow trap sample sites (red). The sample site on the Upper Shungnak River was only sampled for invertebrates and periphyton (orange).

### Periphyton and Aquatic Invertebrates

A total of nine sites were visited and sampled for periphyton and aquatic invertebrates (Table 1). Water levels were low and weather conditions were good, allowing for successful sampling at all sites. Eight of the sites have been sampled in past years, and Sunshine Creek was added this year (Figure 2).

### Fish Sampling

A total of nine sites were sampled with minnow traps, and one additional site was sampled with fyke nets (Table 2). Eight of the sites have been sampled in past years, and Sunshine Creek was added this year.



**Figure 2.** Sunshine Creek sample site, new to 2021.

In general, at each site sampled with minnow traps, 10 traps were fished overnight and checked approximately 24 hours later.

A total of five different fish species were captured with the minnow traps and fyke nets (Figure 3). The Ruby Creek nets (upstream and downstream) were set on July 15, checked in both the morning and afternoon of July 16, and pulled on the evening of July 16. All fish that were captured in the morning received a small fin clip on the upper caudal fin to identify recaptures. Total number of fish captured (Table 2) is the number of unique fish seen over the total fyke net capture period.

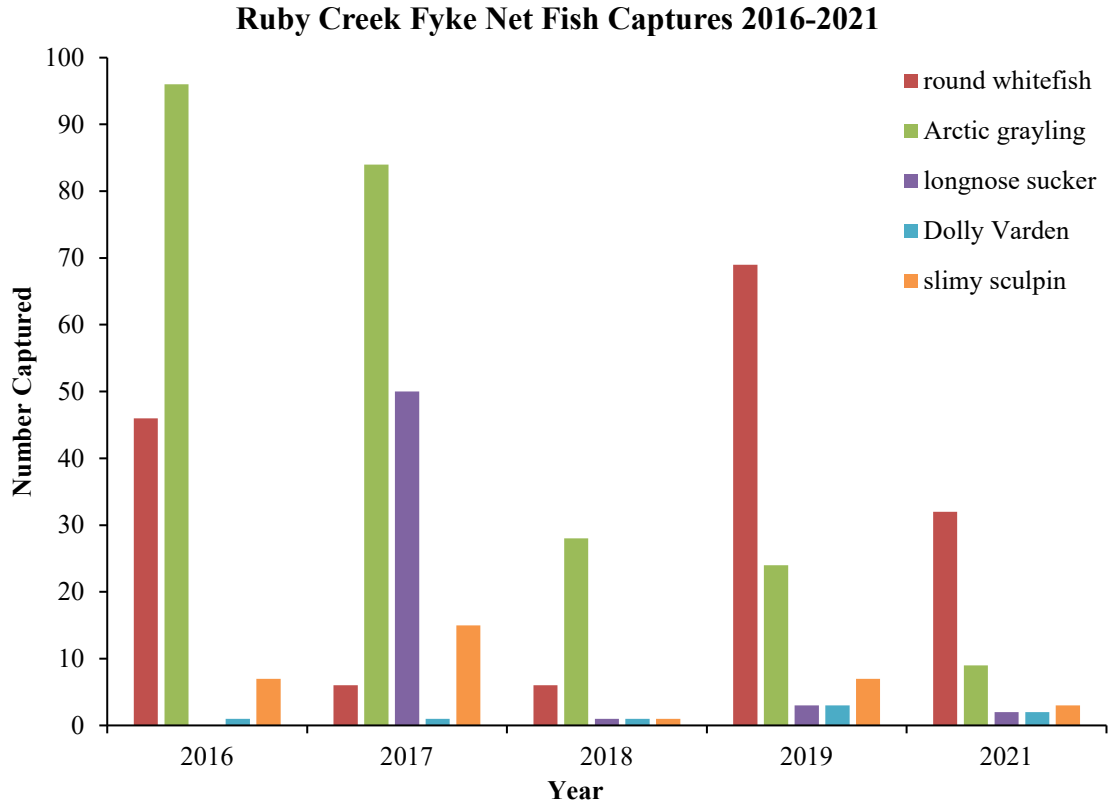
Catch composition in the Ruby Creek fyke nets has varied from year to year, likely due in part to the short duration of fishing time (24 hours). Round whitefish and Arctic grayling are the most consistently captured species (Figure 4). Longnose suckers have only been captured in large numbers in 2017, when 50 were caught.

**Table 2.** Sites in the vicinity of the Arctic and Bornite deposits sampled for fish, with total number captured of each species and total number saved for whole body element analysis, 2021.

Sample Site	Gear Type	Total number of fish captured (Total saved for element analysis in parentheses)				
		Dolly Varden	Slimy Sculpin	Arctic Grayling	Longnose Sucker	Round Whitefish
Upper Subarctic	Minnow Traps	42 (13)	-	-	-	-
Lower Subarctic	Minnow Traps	2 (2)	5	-	-	-
Lower Red Rock	Minnow Traps	12 (8)	2	-	-	-
Upper Ruby	Minnow Traps	-	40	-	-	-
Lower Ruby	Minnow Traps	-	24	-	-	-
Mouth of Ruby	Fyke Net	2	3	9	2	32(14)
Riley Creek	Minnow Traps	6	10 (10)	-	-	-
Jay Creek	Minnow Traps	4	-	-	-	-
Upper Center of the Universe	Minnow Traps	12	-	-	-	-
Sunshine	Minnow Traps	5	-	2	-	-



**Figure 3.** Adult round whitefish (left) captured in the Ruby Creek fyke nets, and an adult dwarf Dolly Varden (right) captured in a minnow trap on Jay Creek, 2021.



**Figure 4.** Fish captures in the Ruby Creek fyke nets from 2016 to 2021. No sampling occurred in 2020.