State of Alaska
Department of Fish and Game
Nomination for Waters
Important to Anadromous Fish

1991
Year of Revision

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REGION II
HABITAT DIVISION

Anadromous Water Catalog Volume V

USGS Quad BEECHEY PT B-3

Name of Waterway PUTULIGAYUK RIVER

Anadromous Water Catalog Number of Waterway
330-00-10415

Change to X Atlas
____ Catalog
____ Both

Addition X DATA, SPECIES

Deletion ____

Correction ____

Name addition:

USGS name PUTULIGAYUK RIVER

Local name ____

For Office Use

Nomination # 91 035

M Kelly 12/3/90
Regional Supervisor Date

Drafted Date

Species	Date(s) Observed	Spawning	Rearing	Migration
AC	JUNE 26, 1990		X	X
AC, LEAST CISCO, BWF	AUG 19-22, 1990		X	X
RAINBOW SMELT ARCTIC CISCO	↓ ↓		X	X
ARCTIC CISCO BROAD WHITEFISH	SEPT 24-26, 1990		X	X

Comments: Provide any clarifying information, including number of fish observed, location of fish survey data, etc.

SEE ATTACHED MEMO'S SUMMARIZING FIELD SAMPLING

Attach a copy of a map showing location of mouth and upper points of each species, specific stream reaches identified for spawning or rearing, locations of barriers, such as falls. Attach a copy of the fish survey data, if available.

Name of Observer (please print) CARL HEMMING

Date: 11/2/90 Signature: Carl Hemming

Address: 1300 College Road
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Signature of Area Biologist: Richard M Barnes for Keith Schultz

MEMORANDUM **State of Alaska**

To: Files

Date: August 17, 1990

File No: NS Mine Site Study

Telephone Number: 451-6192

From: for Carl R. Hemming
Habitat Biologist
Habitat Division
Department of Fish and Game

Subject: Gravel Mine Site
Fish Sampling,
June 24-29, 1990

During the week of June 24-29 we sampled Kuparuk Mine Site B (Aanaaliq Lakes), Put 27, and the Sag River Oxbow Site (Ott's Oxbow) with fyke nets. A variable mesh gill net fished at the inlet to Put 27. We directed most of our sampling effort toward East Creek and Aanaaliq Lakes in an effort to obtain information on the arctic grayling that were transplanted to the site from the Sagavanirktok River drainage in late June 1989. The Put 27 Mine Site was filled in late May 1990 after construction of an inlet channel connection to the Put River. We selected Put 27 for fish sampling to obtain data on colonization and use of the recently flooded site by fish. Ott's Oxbow is a shallow rearing area formed by scraping of Sagavanirktok River floodplain gravel deposits. We fished a fyke net in the Oxbow site to obtain data on seasonal use of this shallow rearing area.

Aanaaliq Lakes

We fished fyke nets at three locations in East Creek and in the inlet channel to the lakes. Two nets were set in pool areas of East Creek upstream of the site. We set the upstream nets at locations 1.0 and 0.3 miles from the inlet channel and fished these sites on June 25-29. The inlet channel net fished from June 25 to 28. We set one fyke net in a pool area 0.3 miles downstream of Aanaaliq Lakes and fished this site from June 26-29. Arctic grayling were captured on sport fishing gear using artificial flies, in East Creek between the MP access road and the inlet channel on June 27, and in Aanaaliq Lakes on June 27, 28, and 29.

Ninespine stickleback were the most abundant species captured at each net site. Daily estimated captures of stickleback ranged from 150 to 2,700 and averaged 1,190 at each of the four net sites. Arctic grayling were captured at each net site, but daily catches did not exceed four in any net (table 1). Broad whitefish were also captured at all 4 net locations in low numbers (≤ 5 per trap). A single round whitefish was captured at the trap located 0.3 miles upstream of the lake on June 26. Least cisco were captured in low numbers at the two traps located upstream of the lakes.

A total of 28 arctic grayling were captured and handled during this sample period. Fifteen grayling retained floy tags that were placed at the time of transplant (table 2). Ten of the 13 that did not retain tags had noticeable tag scars or wounds indicating that they had been part of the transplanted population. The growth rate of the tagged fish

ranged from 25 mm to 92 mm with juvenile fish (≤ 270 mm when transplanted) having very rapid growth rates (mean = 79 mm/year, n = 8).

The 28 grayling captured in this sample period represent 13% of the transplanted population of 210. Those grayling that had lost tags were remarked and will be used to estimate the population of grayling in the Aanaaliq Lakes/East Creek system after a second sample period in mid-August. Eight arctic grayling were captured more than once. Seven were recaptured at locations downstream of the initial capture site and one was recaptured at the same trap site. Hook and line sampling was an effective technique for capturing arctic grayling as 18 were captured using this method (table 1).

Put 27

We fished a fyke trap at the access ramp to Put 27 on June 27-28 and an experimental gill net in the inlet channel to the site on June 28 and 29. We captured ninespine stickleback, round whitefish, and arctic char in the fyke trap and arctic grayling in the gill net. Ninespine stickleback was the most abundant species captured as daily estimated catches ranged from 1,050 to 375. We caught 12 juvenile round whitefish on June 26, 9 on June 27, and 4 on June 28. The round whitefish ranged from 75 to 125 mm. We captured a 125 mm arctic char on June 26. The gill net captured a 242 mm arctic grayling.

Ott's Oxbow

We fished a fyke trap at the north end of Ott's Oxbow on June 25-27. On June 26 a 490 mm broad whitefish, 4 arctic grayling (range 112-280 mm), and an 82 mm burbot were captured. On June 27 a 460 mm broad whitefish, 17 arctic grayling (range 68-288 mm), and 20 ninespine stickleback were captured.

Table 1. Number of fish captured by species at four fyke trap locations in East Creek, June 1990.

Net Location	Date	Time Fished hr	Water Temp (C)	Arctic Grayling	Ninespine * Stickleback	Broad Whitefish	Round Whitefish	Least Cisco
Spine Rd pool, 1 mi upstream Aanaaliq L	6/26	25.75	n/a	3	900	0	0	0
	6/27	23.5	10.5	0	375	0	0	1
	6/28	23.5	12.0	1	2,700	1	0	1
	6/29	26.0	14.0	0	1,650	0	0	0
Pipeline bend, 0.3 mi upstream Aanaaliq L	6/26	22.0	n/a	3	1,500	5	1	0
	6/27	23.5	10.5	2	1,350	4	0	1
	6/28	24.5	12.0	3	1,650	2	0	0
	6/29	24.5	13.5	1	1,200	1	0	0
Inlet channel to Aanaaliq Lakes	6/26	21.0	10.0	0	900	1	0	0
	6/27	23.5	10.0	0	750	2	0	0
	6/28	25.0	10.0	3	1,950	2	0	0
0.3 mi downstream Aanaaliq Lakes	6/27	14.5	10.5	4	150	1	0	0
	6/28	24.0	12.0	1	900	1	0	0
	6/29	24.5	14.0	1	675	3	0	0
Hook & line East Ck to MP access	6/27	2.0	10.5	3	n/a	n/a	n/a	n/a
Hook & line north Aanaaliq Lakes	6/27, 28	2.0	n/a	10	n/a	n/a	n/a	n/a
Hook & line N & S Aanaaliq Lakes	6/29	2.0	n/a	5	n/a	n/a	n/a	n/a

* ninespine stickleback numbers estimated

Table 2. Growth rate of tagged arctic grayling in Aanaaliq Lakes, June 1990.

Tag No.	Date Marked	Fork Length mm	Date Recaptured	Fork Length mm	Total Days	Growth mm
2151	6/25/89	194	6/26/90	275	367	81
2108	6/24/89	330	6/27/90	369	369	39
2194	6/25/89	335	6/27/90	374	368	39
2173	6/25/89	296	6/27/90	334	368	38
2080	6/23/89	201	6/27/90	270	370	69
2196	6/25/89	292	6/27/90	340	368	48
2056	6/23/89	209	6/27/90	292	370	83
2156	6/25/89	329	6/27/90	365	368	36
2171	6/25/89	303	6/28/90	328	369	25
2118	6/24/89	229	6/28/90	305	370	76
2201	6/25/89	265	6/28/90	335	369	70
2085	6/23/89	283	6/28/90	345	371	62
2104	6/24/89	232	6/29/90	301	371	69
2102	6/24/89	188	6/29/90	280	371	92
2106	6/25/89	198	6/29/90	278	370	80

MEMORANDUM **State of Alaska**

To: Alvin G. Ott
Regional Supervisor
Habitat Division
ADF&G

Date: October 10, 1990

File No: N.S. Mine Site

Telephone Number: 451-6192

From: Carl R. Hemming
Habitat Biologist
Habitat Division
ADF&G

Subject: Gravel mine site fish and water quality sampling August 18-24, 1990

During the week of August 18-24, we sampled Kuparuk Mine Site B (Aanaaliq Lakes)/East Creek, the Sag River Oxbow Site (Ott's Oxbow), Sag Site C, and Put 27 with fyke traps. An experimental gill net was fished in the inlet to Put 27 and water quality data was gathered at Put 27, the lower Put River, and in Aanaaliq Lakes. Roger Post and Keith Moueller (USFWS) assisted with the field work. The following narrative and attached tables summarize the data gathered during this sample period.

Aanaaliq Lakes/East Creek

Fyke nets were fished at five locations in East Creek and Aanaaliq Lakes (Table 1). Four arctic grayling were captured at the inlet channel trap location. Three grayling did not have tags, but each of these fish had a tag scar or wound below the dorsal fin indicating they had been tagged. These fish were re-marked and released. One grayling retained a tag from the transplant experiment. This fish had grown 31 mm from the time of initial capture and tagging on June 23, 1989 to the recapture on August 19. Grayling were not captured in East Creek or at the north end of the lakes during this sample period. Young of the year grayling were not captured at any fyke net site during this sample period. Juvenile broad white fish were captured in East Creek upstream of Aanaaliq Lakes, at the inlet channel and in the lakes and least cisco were captured at the inlet channel and in the lakes. Ninespine stickleback were the most frequently captured species. The catch rate for stickleback was greatest at the inlet channel and in the lakes (Table 1). We found isothermal water temperatures in Aanaaliq Lakes, a slightly basic pH, dissolved oxygen concentrations at or near saturation and low concentrations of hardness and alkalinity. The conductivity of the water was low, indicating freshwater conditions and low concentrations of total dissolved solids (Table 3).

Put 27

We fished a fyke trap at the access ramp to Put 27 on August 19-22, and we fished a gill net in the inlet channel on August 18-19. The gill net captured two round whitefish (174 and 178 mm) and a broad whitefish (440 mm) as well as two red throated loons. The fyke trap captured arctic cisco, least cisco, broad whitefish, rainbow smelt, round whitefish and ninespine stickleback. The catch results indicate initial colonization by anadromous and freshwater fish species (Table 2). We also monitored water quality in

the Put River and Put 27. The conductivity levels as well as hardness and alkalinity concentrations were higher in the Put River system than in Aanaaliq Lakes. Levels for these parameters were also higher in the river than in the pit indicating a more estuarine influence in the river (Table 3).

Ott's Oxbow

The Oxbow site produced a large catch of juvenile broad whitefish in the 70 to 80 mm size class. We also captured arctic grayling, burbot, ninespine stickleback, and round whitefish (Table 2). The culvert at the downstream end of the site had less than 2" of water passing over a mud bar on the Sag River side of the drainage structure and it appeared the site would be isolated if water levels continued to fall in the Sag River.

Sag Site C

Arctic grayling were captured most frequently in the two fyke traps fished in Sag Site C on August 22-23. The two traps captured 28 arctic grayling ranging from 67 mm to 358 mm fl. Most size classes were represented in this sample. We also captured a round whitefish and a burbot (Table 2). One grayling had a tag scar beneath the dorsal fin indicating it may have been one of the fish tagged in July 1988.

CRH/dw

Table 1. Number of fish captured by species at five fyke trap locations in East Creek and Aanaaliq Lakes, August 1990.

Net Location	Date	Time Fished hr	Water Temp (C)	Arctic Grayling	Broad Whitefish	Least Cisco	Ninespine Stickleback*
East Creek	8/19	23.5	7.0	0	0	0	79
Spine Rd.	8/20	25.5	6.2	0	1	0	49
Pool 1.0 Mile	8/21	17.5	4.1	0	0	0	286
upstream	8/22	25.5	4.5	0	1	0	572
Aanaaliq	8/23	31.0	6.0	0	0	0	286
Lakes inlet	8/24	17.25	4.5	0	0	0	143
East Cr .3 mi	8/19	23.50	7.0	0	0	0	210
upstream of Aanaaliq Lakes inlet	8/20	25.50	6.5	0	1	0	572
Inlet channel	8/19	22.5	7.5	3	2	0	3861
Aanaaliq	8/20	23.0	7.0	1	0	1	3432
Lakes	8/21	20.75	6.5	0	1	1	3575
	8/22	23.5	6.5	0	0	0	7150
	8/23	29.75	7.0	1	0	1	5720
N. Aanaaliq	8/19	22.50	8.0	0	0	0	4862
Lakes	8/20	23.5	7.0	0	1	2	15730
	8/21	18.75	7.0	0	0	0	8008
	8/22	24.0	7.0	0	0	0	12298
	8/23	29.75	7.0	0	0	2	7722
	8/24	18.50	6.5	0	0	0	9009
East Creek	8/19	25.0	7.5	0	0	0	70
downstream Aanaaliq Lakes	8/20	24.5	6.5	0	0	0	48

*Ninespine stickleback numbers estimated

Table 2. Number of fish captured by species in fyke traps Sag Site C, Put 27, and Ott's Oxbow, August 1990

Net Location	Date	Time Fished hr	Water Temp (C)	Fish captured
Ott's Oxbow near culvert crossing	8/21	19.25	6.5	20 Arctic grayling 237 Broad whitefish 5 Burbot 38 Ninespine stbk 11 Round whitefish
Sag Site C at access ramp	8/23	29.25	7.0	22 Arctic grayling
Sag Site C at outlet channel	8/23	27.50	5.5	6 Arctic grayling 1 Burbot 1 Round whitefish
Put 27 at access ramp	8/20	24.75	7.0	2 Broad whitefish 1 ninespine stbk
	8/21	27.75	7.0	1 Arctic cisco 4 Broad whitefish 1 Least cisco 2 Rainbow smelt 1 Round whitefish
	8/22	18.0	7.0	5 Broad whitefish 429 ninespine stbk* 2 round whitefish

*Ninespine stickleback numbers estimated

Table 3. Water quality sampling results from Put 27 the lower Put River and Aanaaliq Lakes, August 1990

Site	Total depth (m)	Secchi depth (m)	Sample depth (m)	Temp (C)	pH	Hardness mg/L*	Alkalinity mg/L*	Conductivity uS/cm	Dissolved Oxygen mg/L
Put 27	9.1	2.7	1	7	8.24	178	116	760	10.6
			2	7	8.33	177	118	780	11.5
			4	7	8.29	178	119	780	11.6
			6	7	8.34	181	118	780	8.6
			8	7	8.31	175	116	780	10.4
Put River	4.1	1.9	1	6	8.32	200	124	990	11.9
			2	6	8.35	203	127	990	9.6
			3	6	8.35	204	125	990	11.2
Aanaaliq Lakes	8.15	2.0	1	6.5	8.14	81	68	195	11.4
			2	6.5	7.63	81	71	210	10.3
			4	6.5	7.87	82	69	195	10.9
			6	6.5	7.78	85	67	195	11.8
			8	6.5	7.78	80	70	195	10.5

*Alkalinity and Hardness expressed as $CaCO_3$

MEMORANDUM **State of Alaska**

To: Alvin G. Ott
Regional Supervisor
Habitat Division
ADF&G

Date: October 10, 1990

File No: N.S. Gavel Mine Study

Telephone Number: 451-6192

From: Carl R. Hemming
Habitat Biologist
Habitat Division
ADF&G

Subject: Gravel mine site fish sampling Sept 24-26, 1990

During the week of September 24, we attempted to sample the North Slope Gravel Mine Sites to determine the pre-winter movement patterns of fish in these sites. Unfortunately, cold weather and ice formation made it unfeasible to fish the nets beyond September 25. The remainder of the time I assisted Dick Shideler and John Hechtel with the bear project. The following data were collected at the Gravel Mine Sites on September 25 and 26.

Aanaaliq Lakes and East Creek

Three fyke traps were set in Aanaaliq Lakes/East Creek. Nets were set in the inlet channel to the lake, at the north end of the lake and in East Creek upstream of the lake at the Mobil Phillips access road crossing of East Creek. The East Creek net was oriented to capture downstream migrants. The net set at the Mobil Phillips access road crossing fished for 24 hours and captured an estimated 14,729 ninespine stickleback. The water temperature was 0°C at the net site and 1 to 2" of ice formed in the stream channel overnight freezing the net in place. It took 1 to 2 hours to chop the net out of the ice. The net at the inlet channel was fished for 25.5 hours and captured an estimated 286 ninespine stickleback. The water temperature was 0.7°C at the inlet. The trap at the north end of the site captured an estimated 1,859 ninespine stickleback in a 25.25 hour period. The water temperature at this trap site was 1.2°C. The traps at the inlet and at the north end of the lake had ice accumulation on the portion of the net above the water level subject to wave action. Due to the imminent threat of additional ice formation the traps were removed on September 25.

Put 27

A single fyke net was fished at the access ramp to Put 27 for a 27 hour period between September 24 and 25. The net captured an estimated 858 ninespine stickleback, one 65 mm arctic cisco, one 75 mm broad whitefish, and one 75 mm fourhorn sculpin. The water temperature was 0.7°C at the net site in Put 27.

The four fyke traps, fish sampling equipment, and the boat and motor, were taken to Red Barn where they were stored for the season.

CRH/dw