

STATE OF ALASKA

Jay S. Hammond, Governor



Annual Performance Report for

EVALUATION OF INTERIOR ALASKA WATERS AND
SPORT FISH WITH EMPHASIS ON MANAGED
WATERS, DELTA DISTRICT

by

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Section H

Job No. G-III-H
 Evaluation of Interior
 Waters and Sport Fish
 with Emphasis on Managed
 Lakes - Fairbanks District

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Job No. G-III-I
 Evaluation of Interior
 Alaska Waters and Sport
 Fish with Emphasis on
 Managed Waters, Delta
 District

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RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
of Alaska

Project No.: F-9-10

Study No.: G-III Study Title: LAKE AND STREAM INVESTIGATIONS

Job No.: G-III-I Job Title: Evaluation of Interior Alaska
Waters and Sport Fish with
Emphasis on Managed Waters,
Delta District

Period Covered: July 1, 1977 to June 30, 1978

ABSTRACT

Two study sections in the lower Goodpaster River were sampled by electrofishing in late June, 1977, to determine population levels of Arctic grayling, Thymallus arcticus (Pallas). Age, length and species composition data were also collected.

The Petersen population estimate for grayling over 150 mm in Section 2 (km 4.8-9.6) is 614 grayling/km and Section 6 (km 24-28.8) is 357 grayling/km. The estimate for the two sections combined is 377 grayling/km (604 grayling/mile).

Age Class III comprised 66% of the grayling sample. The mean length of 649 grayling captured was 186 mm. Grayling greater than 269 mm comprised less than 3% of the total.

Capture rate and relative abundance of all species captured in the Goodpaster River is presented. Relative abundance of grayling, round whitefish, Prosopium cylindraceum (Pallas), and longnose suckers, Catostomus catostomus (Forster), as revealed by fish/hour in the two sections combined was 223, 89 and 28, respectively.

Electrofishing results for Shaw Creek are presented. Only 16 grayling, representing four age classes, were captured in the lower 9.6 km of the creek. Mean length of the sample was 226 mm.

Angler interviews on Quartz Lake resulted in 392 contacts. A rainbow trout, Salmo gairdneri Richardson, catch rate of 0.09 fish/hour was recorded. Age Class III fish, having a mean length of 455 mm, comprised 62% of the sample of sport caught fish. An estimated 8,024 anglers fished the lake during the period from May 19 to September 6, 1977. Weekend and holiday use accounted for 56% of the estimated total pressure.

Twenty-nine questionnaire responses from George Lake anglers revealed that 100 anglers caught 1,684 northern pike, Esox lucius Linnaeus, and kept 518 or 5.2 fish/angler during June, July and August. This harvest represents approximately 25% of the estimated total for the period.

Spawning silver salmon, Oncorhynchus kisutch (Walbaum), counts of 4,793 in the Delta Clearwater River and 730 in the Clearwater Lake outlet are the second highest since counts began in 1971.

Netting results for 14 lakes stocked with rainbow trout, silver salmon or grayling are summarized and possible factors affecting survival and growth are discussed.

BACKGROUND

The recreational fisheries in the upper Tanana River drainage generally fall into three categories: stream fisheries, lakes with indigenous fish species, and stocked lakes.

The principal fish species of recreational importance in area streams are Arctic grayling and round whitefish. Burbot, Lota lota (Linnaeus), are widely distributed in the larger glacial rivers and near the confluences of many tributary streams.

Lakes at lower elevations (generally below 2,000') that connect to a river system usually contain native fish populations of northern pike, burbot and humpback whitefish, Coregonus pidschian (Gmelin), while lakes at higher elevations support populations of lake trout, Salvelinus namaycush (Walbaum), grayling, round whitefish and burbot.

Landlocked lakes are typically barren. Since statehood most lakes near the highway system have been surveyed and several that were found to contain undesirable fish populations have been chemically rehabilitated. Many capable of supporting fish have been stocked with rainbow trout or silver salmon. A few have been stocked with Arctic grayling. Various stocking rates, sizes, strains and timing have been assessed to provide optimum survival and growth of stocked fish.

Research and management of selected waters are directed at monitoring fish population levels and angler utilization.

RECOMMENDATIONS

1. Sampling of established study sections on the Goodpaster River to determine population levels, age, length and species composition should be continued.
2. Lakes and streams in the upper Nabesna River drainage should be surveyed to determine existing or potential angler utilization.

3. Continued evaluations should be made of survival and growth of stocked rainbow trout, grayling and silver salmon in selected waters.
4. Angler use and sport fish harvest should be monitored on Quartz Lake, George Lake and other area waters.

OBJECTIVES

1. To assess the environmental characteristics and fish species composition of the waters of the job area and, where practical, obtain estimates of existing or potential angler use and sport fish harvest.
2. To evaluate application of fishery restoration and enhancement measures and determine availability of sport fish egg sources.
3. To evaluate stocking policies for rainbow trout and silver salmon and formulate stocking recommendations for optimum survival and growth.
4. To assist as required in the investigation of public access status to the area's recreational fishery waters.

TECHNIQUES USED

A boat mounted electrofishing unit described by Van Hulle (1968) was used to capture fish for population studies in the Goodpaster River and Shaw Creek.

Population estimates were based on a ratio of marked to unmarked fish in the sample using the Petersen equation described by Ricker (1958).

Fish were measured to fork length in millimeters. Fish scales used for age determination were cleaned, mounted on gummed cards, then impressed on 20 mil acetate using a heated press at 35,000 psi for 20 seconds. A Bruning 200 microfiche reader was used to read the scales.

Water samples were collected using a Kemmerer water sampler, and chemical analysis was done with a Hach model AL-36-WR kit. Lake depths were determined with a Lowrance echo sounder.

Graduated mesh monofilament gill nets, 125' x 6' with five mesh sizes ranging from 1/2" to 2 1/2" bar measure were used to sample fish populations in lakes.

FINDINGS

Goodpaster River Studies

Population Estimates:

Population levels of Arctic grayling, Thymallus arcticus (Pallas), were determined for two study sections in the lower Goodpaster River during a one week period in late June. During previous sampling (Tack, 1974 and 1975) grayling population estimates were made for each of three areas in the entire 185 km (115 miles) of the Goodpaster River. Population estimates in 1975 and 1976 (Peckham, 1976 and 1977) and again in this study are limited to two study sections, 4.8 km (3 miles) each in length, located in the lower 53 km (33 miles). The fish were captured using electrofishing gear, as in the previous work. Two passes were made through each section to capture fish for marking. Grayling greater than 150 mm were given a lower lobe caudal fin clip. One day was allowed for random mixing of marked fish prior to a final run to examine for recaptures.

The Petersen estimates for grayling in Section 2 (km 4.8-9.6, mile 3-6) and Section 6 (km 24-28.8, miles 15-18) are 614 grayling/km in Section 2 and 357 grayling/km in Section 6 (Table 1). The estimate for the two study sections combined was 377 grayling/km (604 grayling/mile). The combined estimate is up slightly from the 1976 estimate of 351 grayling/km (563 grayling/mile). A comparison of population estimates for the lower Goodpaster River from 1973 to 1977 is presented in Table 2.

The estimate for Section 2 was nearly twice as high as it was in 1976. This was probably due to a sudden rise in the river level of about 2 feet in a 12-hour period just prior to the final run to examine for recaptures. The high water resulted in a reduced catch rate and the fish captured were noticeably larger than those captured during the initial runs when fish were being marked. It appears that an influx of larger grayling occurred, probably from upstream, which caused a low recapture rate of marked fish and resulted in a high population estimate for that section.

The river level during the first three days of sampling was high, with minor daily fluctuations of a few inches. The rapid rise in water level occurred during the third night and resulted in greater turbidity.

Age and Length Frequency Data:

Age determinations by scale analysis were made from a random subsample of 61 grayling from Section 2 and 55 grayling from Section 6. Age Class III was the predominant age group, comprising 66% of the total subsample (Table 3). Age Class III comprised 52% in 1975 and 15% in 1976 (Peckham, 1976 and 1977).

The percent of grayling in Age Classes I and II, as shown in Table 3, may not accurately depict their relative abundance. Fish in the smaller size groups were commonly observed but are less effectively stunned by the boat shocker, and therefore are more difficult to net.

Table 1. Population estimates for Arctic grayling (greater than 150 mm) in two sections of the Goodpaster River, June 21-24, 1977.

Section	Marked Fish in Population (m)	Fish Examined (c)	Recaps (R)	Petersen Estimate (N)*	GR/km	GR/mi
2 (km 4.8-9.6)	234	150	11	2,945	614	982
6 (km 24-28.8)	396	263	60	1,714	357	571
2 and 6 combined	630	413	71	3,623	377	604

$$* N = \frac{(m)(c+1)}{(R+1)}$$

Table 2. A comparison of population estimates for Arctic grayling (greater than 150 mm) in the lower Goodpaster River for 1973-1977.

Year	Method of Estimate	Length of Area		Population Estimate	
		km	mi	GR/km	GR/mi
1973	Schnabel	53.0	33	480	770
1974	Petersen	53.0	33	201	323
1975	Petersen	9.6	6*	475	760
1976	Petersen	9.6	6	351	563
1977	Petersen	9.6	6	377	604

* The 6 miles for which the estimates were made in 1975-1977 include two index areas of 3 miles each (miles 3-6 and miles 15-18).

Table 3. Age frequency and length of Arctic grayling* captured in two sections (Section 2 and 6) of the Goodpaster River, June, 1977.

Age Class	Number	Percent	Length (mm)	
			Range	Mean
I	8	7	86-105	98
II	1	1	151	151
III	76	66	145-211	175
IV	6	5	185-265	229
V	13	11	221-265	245
VI	<u>12</u>	10	255-320	273
	116			

* A sample of 116 fish was comprised of the first 61 grayling captured in Section 2 and the first 55 fish captured in Section 6.

The length frequency of 649 grayling greater than 150 mm in length sampled in the two study sections is shown in Table 4. Grayling having fork lengths of 170-189 mm were the most abundant size group, followed by grayling in the 150-169 mm size group, comprising 46% and 28% of the sample, respectively. The mean length of the total sample was 186 mm.

In comparison grayling in the 190-209 mm size group were dominant in 1976. The mean length was also greater at 214 mm.

Capture Rate:

The capture rate of the fish species collected during electrofishing was recorded to provide an index of their relative abundance. The index may be biased because grayling was the target species and more effort was directed toward their capture; however, the data are intended to reveal trends in population abundance when compared with data from prior years.

The relative abundance of grayling, round whitefish, Prosopium cylindraceum (Pallas), and longnose suckers, Catostomus catostomus (Forster), as revealed by fish captured/hour was 228, 89 and 28, respectively. This is the highest capture rate for all species since intensive sampling began in 1973. A comparison of capture rates for 1973-1977 is presented in Table 5. The greater capture rates in 1975 and 1977 correspond to the moderately high water levels experienced in those years.

Other fish species captured at a rate of less than two fish/hour included northern pike, Esox lucius Linnaeus, burbot, Lota lota (Linnaeus), and slimy sculpin, Cottus cognatus Richardson.

Shaw Creek Studies

Electrofishing gear was used in sampling the fish population in Shaw Creek to determine species composition and relative abundance. On July 23, 1977, a 4.8 km (3 mile) section from Caribou Creek downstream was sampled. Fish captured included 11 grayling, 10 suckers, 3 round whitefish, and 1 slimy sculpin in approximately 1 hour actual shocking time.

On August 29, 1977, a similar run was made from the lower end of the section previously sampled to the confluence with the Tanana River, a section equal in length to the upper section. This portion of creek was not flowing at the time, due to the effects up backup water from the Tanana River. Five grayling and several burbot and suckers were captured. All except one grayling were taken at the confluence with the glacial Tanana River.

The low capture rate of less than 10 grayling/hour is believed to be partly due to the dark humic stain of the water that allows only fish near the surface to be visible. Boat shocking is also difficult in the upper section due to the amount of fallen logs and the narrowness of the creek.

Table 4. Length frequency of Arctic grayling over 150 mm in two sections (Sections 2 and 6) of the Goodpaster River, June, 1977.

Length Range (mm)	Number	Percent
150-169	182	28.0
170-189	298	45.9
190-209	70	10.8
210-229	30	4.6
230-249	25	3.9
250-269	28	4.3
270-289	9	1.4
290-309	4	0.6
310-329	2	0.3
330-349	<u>1</u>	0.2
	649	

mean = 186 mm

Table 5. A comparison of fish capture rates using a boat mounted shocker, Goodpaster River, 1973-1977.

Species	1973		1975		1976		1977	
	Fish/ Hr	Percent	Fish/ Hr	Percent	Fish/ Hr	Percent	Fish/ Hr	Percent
Grayling	138	78	172	73	78	61	223	66
Round whitefish	38	21	50	21	31	24	89	26
Suckers	<u>2</u>	1	<u>14</u>	6	<u>19</u>	15	<u>28</u>	8
Total	178		236		128		340	

The total stream length of Shaw Creek is over 60 km (37 miles). In addition there are nine named tributary streams. Riverboat access is limited to the lower 10 km due to a large number of fallen trees above that point.

Four age classes were represented in the 16 grayling sampled, with Age Class III predominant (Table 6). The length range of this age class was 190-230 mm, with a mean of 210 mm. Mean length of the total sample was 226 mm.

The majority of the sport fish harvest usually occurs during spring and fall movement, although spring pressure and harvest were observed to be much less in 1977 than in past years. Of interest was the sport harvest of one sheefish, Stenodus leucichthys (Guldenstadt), 635 mm in length caught in the lower kilometer of the river on July 30, 1977.

Angler Pressure and Sport Fish Harvest Estimates

Quartz Lake:

Quartz is a 1,500 acre lake located near the Richardson Highway approximately 16 miles north of Delta Junction. The lake was rehabilitated in 1970 with powdered rotenone to eliminate stunted northern pike and least cisco, Coregonus sardinella Valenciennes, and has been restocked annually with rainbow trout, Salmo gairdneri Richardson. Silver salmon, Oncorhynchus kisutch (Walbaum), totaling 197,400 were stocked in 1977 in addition to 113,800 rainbow trout.

Creel census conducted from May 19 to September 6, resulted in 392 angler interviews. A total of 115 rainbow trout was caught during 1,233 angler hours for a catch rate of 0.09 fish/hour (Table 7), down from 0.13 fish/hour recorded in 1976.

The low catch success is believed to be the result of poor stocking survival coupled with a moderate winterkill experienced the past two winters. Although the catch rate is low, the fish harvested are of large size. The mean length of 61 rainbow trout sampled during creel census was 436 mm (17.2"). Only two fish shorter than 340 mm were recorded. Over two-thirds of the sample exceeded 1 kg (2.2 lbs). Rainbow trout in Age Classes II and III comprised 93% of the total sport fish harvest. Age Class II fish having a length range of 297-464 mm and a mean of 395 mm comprised 31%, while Age Class III fish ranging from 391-525 mm with a mean of 455 mm in length comprised 62%.

The total pressure estimate for the period from May 19 to September 6 was 8,024 angler days (Table 8). Weekend and holiday use accounted for 56% of the total. A total of 27,646 angler hours was estimated for this same period. This compares closely to total angler hours ranging from 24,172 to 24,755 recorded on Birch Lake from 1970 to 1972 (Peckham, 1973).

Table 6. Age frequency and length of Arctic grayling captured in Shaw Creek, July and August, 1977.

Age Class	Number	Percent	Length (mm)	
			Range	Mean
II	2	12	178-180	179
III	7	44	190-230	210
IV	3	19	216-280	241
V	<u>4</u>	<u>25</u>	258-284	<u>267</u>
	16	100		226

Table 7. Quartz Lake creel census summary, May 19 to September 6, 1977.

Month	Anglers Contacted	Total Hours	Total Fish	Fish/ Hour	Hours/ Angler
May	41	180	6	0.03	4.4
June	96	458	25	0.05	4.8
July	183	387	53	0.14	2.1
August	55	161	25	0.16	2.9
September	<u>17</u>	<u>47</u>	<u>6</u>	<u>0.13</u>	<u>2.8</u>
	392	1,233	115	0.09	3.1

Table 8. Quartz Lake angler pressure estimates, May 19-September 6, 1977.

Month	Total Angler Days*			Expanded Angler Hours	Expanded Total Catch
	Weekdays	Weekends and Holidays	Total		
May 19-31	659	674	1,333	5,865	176
June	958	1,358	2,316	11,117	556
July	1,015	1,489	2,504	5,258	736
August	832	838	1,670	4,843	775
September 1-6	<u>85</u>	<u>116</u>	<u>201</u>	<u>563</u>	<u>73</u>
	3,549 (44%)	4,475 (56%)	8,024	27,646	2,316

* Angler counts were made during 11 weekdays (14% of total weekdays) and 15 weekend days (43% of total weekend days) from May 19 to September 6, then expanded to cover the entire 112 day period. Counts include three daily periods as follows: morning (7 am to 12 noon), afternoon (12 noon to 6 pm) and evening (6 pm to 12 midnight).

The 1977 estimate is believed to be more accurate than previous estimates utilizing vehicle traffic counts, which appear to be high due to an undetermined amount of traffic unrelated to fishing. However, vehicle counts probably provide a comparison of pressure from year to year. The total vehicle count from May 19 to October 8, 1977, was 6,763, down almost 8% from a similar period in 1976. In 1977, 489 vehicles were recorded over the three day Memorial Day weekend compared to over 1,100 in 1976 and 900 in 1975.

George Lake:

George Lake, located about 40 miles east of Delta Junction, continues to be the most heavily utilized northern pike fishery in the Delta area. Civilian and military anglers from the Delta and Fairbanks area are the principal users.

The Tanana River isolates this 4,500 acre lake from the Alaska Highway, making it accessible only by riverboat or float plane. Float plane use is presently light. During 1977, 85% of the people fishing George Lake launched their own boats at George Lake Lodge near Mile 1385 Alaska Highway or were transported by the lodge owner. The remaining anglers launched at a landing about 15 miles downstream on the Tanana River.

The use of a questionnaire, initiated in 1976, was again utilized to provide angler use and success information. People launching boats or being transported from the private landing at George Lake Lodge were given a questionnaire and asked to return the completed form at the end of their trip. Information obtained is summarized in Table 9. The responses from 29 parties or 100 anglers represent about 25% of the estimated total use for the three month period.

Assessment of Anadromous Fish Populations

Silver salmon spawners were enumerated in the Delta Clearwater River and Clearwater Lake outlet on October 24 and 25, 1977. Counts were made by one observer from a riverboat utilizing an elevated platform.

The counts of 4,793 in the Delta Clearwater River (Miles 0-17) and 730 in Clearwater Lake outlet (approximately 1.5 stream miles) are the second highest since counts began in 1971. A comparison of counts from 1971 to 1977 is presented in Table 10. All counts are considered minimums since spawners are known to utilize the numerous small spring tributaries flowing into the Delta Clearwater River and Clearwater Lake.

Sport fishing for the spawning silver salmon seems to be gaining some popularity; however, due to the relatively poor condition of the fish when they reach the river, a significant increase in pressure is not expected. Total sport harvest in 1977 was probably less than 100 fish.

Table 9. Angler use and northern pike harvest from 29 questionnaire responses, George Lake, 1977.

Month	Total Anglers	Average People/ Party	Total NP Caught	Total NP Kept	Average Length of Stay (days)	Fish Kept/ Angler
June	40	3.6	608	230	2.1	5.8
July	47	3.6	813	242	2.3	5.1
August	<u>13</u>	<u>2.6</u>	<u>263</u>	<u>46</u>	<u>1.6</u>	<u>3.5</u>
Total	100	$\bar{x} = 3.4$	1,684	518	$\bar{x} = 2.1$	$\bar{x} = 5.2$

Table 10. Silver salmon escapement counts for the Delta Clearwater River and Clearwater Lake outlet, 1971-1977.

Date	Delta Clearwater River	Clearwater Lake Outlet
10/15/71	3,000*	...
11/9/72	630**	...
10/17 & 24/73	3,322	551
1974
10/22 & 24/75	5,100	1,500
10/21 & 22/76	1,920	460
10/24 & 25/77	4,793	730

* Estimate only. Counts from 1973 on were made utilizing an elevated platform mounted on the bow of a riverboat.

** Count made late in the season under poor conditions.

Fish Stocking Evaluation

Fourteen lakes stocked with rainbow trout, silver salmon or grayling were sampled with gill nets during August and September for evaluation of growth and survival of stocked fish. Netting results, population characteristics and stocking histories are summarized in Table 11. Most lakes were sampled with two gill nets fished overnight for a period ranging from 20 to 24 hours. Three small lakes were sampled with only one gill net.

A hatchery shortage of rainbow trout forced a reduction in the number of lakes scheduled for stocking in 1976 and a reduction in numbers of fish stocked in individual waters. Only three lakes, Quartz, Lisa and Jan received rainbow trout in 1976 and two lakes, Donna and South Twin, were stocked with silver salmon. The rainbow trout were of the Oregon source while the silver salmon were from Bear Lake and Blind Slough sources.

Quartz Lake was test netted twice during 1977. On June 7, four gill nets fished overnight captured 15 Age Class III rainbow trout and three Age Class IV rainbow trout. The predominant Age Class III fish were of the Winthrop, Washington strain. No fish from the 1975 Ennis, Montana or 1976 Oregon plants were captured. During fall sampling, however, a small number of fish from each plant was represented. The 1976 plant of Oregon rainbow trout amounted to only 65 fish per surface acre.

The low net catch and low rate of sport harvest reported earlier may also be a result of winterkill which was again experienced in 1976-1977.

Observations on May 20, shortly after ice breakup revealed that moderate winter mortality had occurred. Seventeen dead rainbow trout ranging in size from approximately 350 to 500 mm were observed in shallow water along approximately 4.8 km (3 miles) of shoreline. The lowest recorded dissolved oxygen level during the 1976-1977 winter occurred on March 16, 1977 when readings of 5.0 ppm, 5.0 ppm and 8.0 ppm were recorded at three locations.

Although these oxygen levels do not appear to be sufficiently low to cause winterkill, stress may have occurred during a prolonged period to cause the observed mortality.

Poor survival to Age Class I of the Oregon source rainbow trout was experienced in Quartz, Jan and Lisa lakes. Catch/net hour was 0.04, 0.10 and 0.02 in the three lakes, respectively. Stocking rates were low, however, ranging from 65 to 227 fish/acre. Also the size of fish planted was smaller than normally stocked, being 670 fish/pound in Jan and Lisa lakes. About 43% of those stocked in Quartz Lake were of this same size while the remainder were 100-261/pound.

Age Class II rainbow trout of the Ennis strain were captured in Quartz, North Twin and Rapids lakes. Catch frequencies for these fish were 0.10, 0.17 and 0.09 per net hour, respectively. Stocking rates for these plants were higher, ranging from 140/acre on Quartz Lake to 652/acre on North Twin Lake.

Table 11. Population characteristics of stocked lakes determined by graduated mesh gill nets, Interior Alaska, 1977.

Lake	Date Sampled	Species*	No.	Age Class	Length (mm)		Frequency	Date Stocked	Total No.	No. /lb.	No. /acre	Source
					Range	Mean						
Bolio	9/9	SS	38	II	206-304	236	0.90	7/17/75	11,800	369	118	Bear L.
Craig	9/16	SS	4	IV	300-340	328	0.08	9/20/73	5,100	91	300	Kodiak
		CH	3	...			0.06					
Donna	9/13	SS	18	I	115-150	133	0.42	8/24/76	23,100	174	398	Bear L.
		RT	1	III	447		0.02	7/23/74	22,900	279	394	Winthrop
		RT	1	IV	504		0.02	7/18/73	29,000	166	500	Winthrop
Little Donna	9/13	RT	3	III	445-462	453	0.06	7/23/74	16,300	279	347	Winthrop
Donnelly	9/8	SS	4	II	236-275	255	0.20	7/17/75	8,850	369	148	Bear L.
Ft. Greely #2	9/9	RT	3	III	188-218	206	0.14	7/10/74	10,000	588	1,250	Winthrop
Jan	9/16	RT	5	I	262-312	295	0.10	8/2/76	10,000	670	227	Oregon
		RT	1	IV	411		0.02	7/18/73	8,200	54	186	Ennis
Lisa	9/16	SS	2	III	300-360	330	0.06	7/23/74	9,900	227	198	Delta Clearwater
		RT	1	I	230		0.02	8/2/76	10,000	670	200	Oregon
Mark	8/26	RT	3	IV	335-358	343	0.06	7/18/73	4,000	46	200	Ennis
		RT	1	V	492		0.02	9/12/72	7,500	147	375	Winthrop
		SSc	10	...			0.21					
North Twin	8/26	RT	8	II	271-341	310	0.17	7/24/75	15,000	171	652	Ennis
South Twin	8/26	SS	12	I	146-171	158	0.25	8/24/76	6,000	78	286	Blind Slough
Rapids	8/24	RT	2	II	229-264	247	0.09	7/24/75	2,000	171	400	Ennis
Quartz	6/7	SS	1	III	412		0.01					
		RT	15	III	297-450	402	0.20	7/10-8/28/74	184,600	119-588	123	Winthrop
		RT	3	IV	450-496	475	0.04	8/1/-15/73	285,100	98-107	190	Winthrop
	9/13	RT	2	I	300-304	302	0.04	8/3-24/76	97,800	100-670	65	Oregon
		RT	5	II	423-448	442	0.10	7/24-29/75	209,900	171-186	140	Ennis
		RT	3	III	470-491	478	0.06	7/10-8/28/74	184,600	119-588	123	Winthrop
		SS	4	0	100-110	103	0.08	6/23/77 8/15/77	197,400	170-394	131	Seward Lagoon
81 Mile Pit	8/23	GR	62	I	101-115	109	3.00	6/21/77	5,000	Fry	5,000	Tolsona L.
		GR	21	IV	260-305	278	1.00	6/15/73	3,000	Fry	3,000	Tolsona L.

* LC - lake chub, Couesius plumbeus (Agassiz)
 GR - Arctic grayling, Thymallus arcticus (Pallas)
 RT - rainbow trout, Salmo gairdneri Richardson
 SS - silver salmon, Oncorhynchus kisutch (Walbaum)
 SSc - slimy sculpin, Cottus cognatus Richardson

Age Class I silver salmon sampled in Donna and South Twin lakes were netted at rates of 0.42 and 0.25 fish/hour. The fish were stocked on the same date but the fish stocked in South Twin were 78/pound while those stocked in Donna Lake were 174/pound. The rate of stocking was higher in Donna Lake at 398/acre as compared to 286/acre in South Twin. Fish sampled in Donna Lake were slightly smaller, having a mean length of 133 mm, while those in South Twin had a mean length of 158 mm.

Age Class II silver salmon in Bolio and Donnelly lakes exhibited similar growth. Those sampled in Bolio were 236 mm in mean length compared to a mean length of 255 mm for Donnelly Lake fish. Size of fish planted and rate of stocking were similar, as shown in Table 11. The relatively low catch rate of 0.20 fish/hour in Donnelly Lake does not accurately depict the existing population. Sport fishing success was excellent during the summer season and an abundance of fish could be seen surfacing on calm days.

Four Age Class IV silver salmon were captured in Craig Lake. These are the first Age Class IV silver salmon noted in Interior Alaska stocked lakes. The fish were from a single plant of 5,100 stocked in 1973 following lake rehabilitation. The fish were of the Kodiak source and had a mean length of 328 mm when sampled.

One managed lake containing stocked grayling was netted in 1977. Grayling from two plants that 81 Mile Pit has received were represented. A total of 62 Age Class I and 21 Age Class IV grayling were netted at catch rates of 3.0 and 1.0 fish/hour. The Age Class IV fish had a mean length of 278 mm.

This small roadside gravel pit is only one acre in size but is providing a recreational fishing opportunity to travelers along the Richardson Highway. The lake had previously been stocked with rainbow trout but in recent years experienced frequent winterkill.

Lake Prerehabilitation Surveys

1238 Mile Lake:

This 99 acre lake is located about 4.8 km (3 miles) east of the Alaska Highway at Mile 1238. Maximum recorded depth is 15.2 m (50') and the water has a light humic stain. Three small inlets enter the southwest portion of the lake and a single outlet flowing to the north forms the headwaters of the south fork of Gardiner Creek. The outlet is approximately 2 m (6 1/2') wide and on July 22, 1977, had a flow of 2.5 cfs.

Water chemistry and test netting results from a 1974 survey were reported by Pearse (1975). Fourteen northern pike having a length range of 170-787 mm (6.7"-31") were netted. In 1977, four northern pike having a length range of 305-559 mm (12"-22") were collected in three man hours with sport fishing gear.

A volumetric survey was completed and a bottom contour map is on file in the District office in Delta Junction.

1255 Mile Lake:

This 151 acre lake is accessible by a 200 m foot trail leading south from the Alaska Highway at Mile 1255. Maximum depth is 9.1 m (30') and water coloration is lightly humic stained. A small inlet enters the northeast portion of the lake and there is seepage through marsh to a small shallow lake to the north.

During past netting in 1967 and 1974 only northern pike were captured. Pearse (1975) reported a gill net catch of nine northern pike ranging from 152 to 787 mm (6" to 31") with an average length of 356 mm (14"). Three man hours of sport fishing in 1977 resulted in the capture of 13 northern pike ranging from 356 mm to 521 mm (14" to 20.5").

A volumetric survey was completed in 1977 and a bottom contour map is on file in the District office in Delta Junction.

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