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STATE OF ALASKA

Jay S. Hammond, Governor

Annual Performance Report for

EVALUATION OF INTERIOR ALASKA WATERS
AND SPORT FISH WITH EMPHASIS ON
MANAGED WATERS - FAIRBANKS DISTRICT

by

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RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
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Project No.: F-9-12

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

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

Period Covered: July 1, 1979 to June 30, 1980

ABSTRACT

Late winter dissolved oxygen readings were taken on 16 area lakes in 1979. All managed lakes had sufficient oxygen to overwinter fish. Eighteen lakes were sampled to evaluate species composition and growth.

A creel census conducted on the Chatanika River during the whitefish, Coregonus sp., spearing season in September and October showed that a calculated 393 fishermen spent 917 hours to harvest 2,183 whitefish.

Two gravel pits and four lakes were stocked in the Fairbanks area during 1979 with a total of 101,314 rainbow trout, Salmo gairdneri (Richardson), and 53,579 coho salmon, Oncorhynchus kisutch (Walbaum).

BACKGROUND

The Fairbanks management area of approximately 52,000 square miles includes waters of the Tanana drainage from the Little Delta River downstream to the Tanana River mouth, including roadside waters of the Parks Highway south to the Denali Highway, the Richardson Highway south to Birch Lake, the Steese and Elliott highways, and the Chena Hot Springs Road. Also in the area are all north flowing tributaries of the upper Yukon River from Tanana to the Canadian Border. Figure 1 does not show the entire Fairbanks management area, only that part of the lower Tanana River where most of the field work for this report was accomplished.

This area includes some of the most highly used fisheries in the Interior including the Chena, Chatanika, and Salcha Rivers, Minto Flats and Harding and Birch Lakes. There are many popular fly-in lakes in the Tanana Flats. Communities served include Fairbanks, North Pole, Central, Circle, Eagle, Livengood, Minto, Manley Hot Springs, Rampart, Nenana, Anderson, Healy and Cantwell. Fort Wainwright Army Post, Eielson Air Force Base, and Clear Air Force Site are also included in this area.

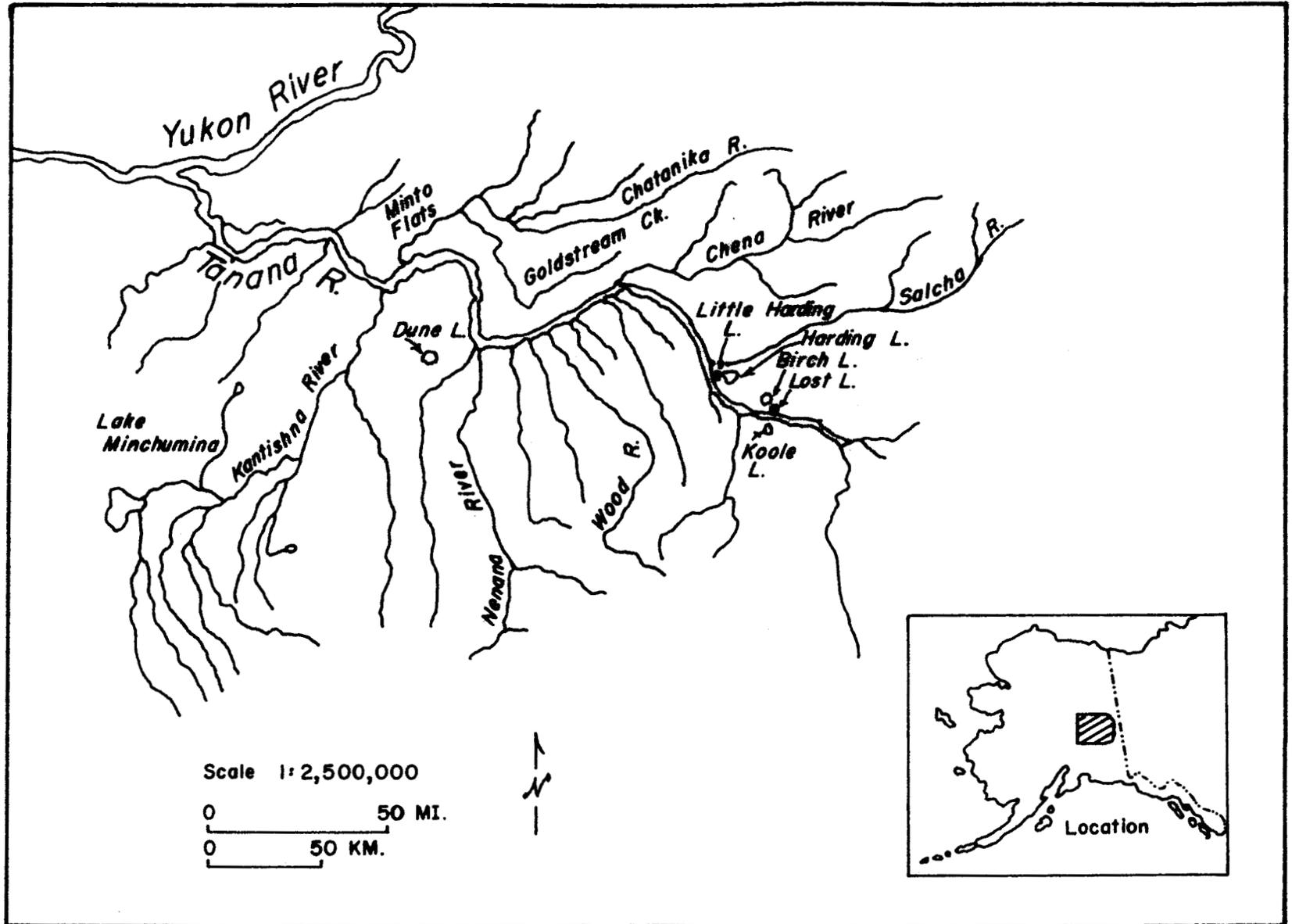


Figure 1. Location map of lower Tanana River Study Area.

The climate is one of harsh contrasts, with spring coming as early as mid-April and snowfall with subfreezing temperatures occurring as late as June. The short, 3-month summers are characterized by long daylight hours and temperatures occasionally exceeding 90°F. The fall extends through early November with snowfall and decreasing temperatures. During the dead of winter from mid-November to mid-March, temperatures may plummet below -70°F. Annual precipitation averages around 11 inches, with most falling between June and September.

The lakes are generally iced over by late October and breakup can occur as late as June. Seasonal surface runoff streams flow from May through September, due to periods of spring ice melt and later summer rains. The streams fed by groundwater or springs may either run with marginal ice cover, or occasionally form glaciers over the streambed.

The Tanana Valley is relatively unglaciated. However, large quantities of gravel, sand and silt are discharged by nearby glacial melt. Lake formation occurs either from the damming of drainages leading from nearby hills, by silt from the Tanana River, by the melting of a former ice mass buried in the subglacial soil, or by the melt of permafrost brought upon by vegetative disturbance. Yearly precipitation regulates the levels of the majority of lakes, with only those near the Tanana subject to fluctuation by river regulated water tables.

Creel census studies are conducted on all high-use fisheries in the area including the Chatanika, Salcha, Little Salcha, and Chena Rivers, Badger Slough, Minto Flats and stocked lakes such as Birch, Harding, Little Harding, and Lost Lakes.

Nearly all of the important waters near the major road systems have been surveyed. A number of fly-in waters have not been surveyed or need additional data. Emphasis will be placed on surveys of lower Tanana drainage waters. Data will be collected on previously unsurveyed waters and files will be updated on waters previously surveyed. Table 1 contains scientific and common names and abbreviations of all fish mentioned in this report.

Fisheries are currently maintained in 27 lakes and ponds in the management area by stocking rainbow trout, coho salmon and grayling. Most waters stocked are adjacent to the road system; however, several remote lakes accessible only by snowmachine or aircraft have also been stocked with rainbow trout, coho salmon and grayling. The remote water stocking program is well received by sportsmen.

RECOMMENDATIONS

1. Stocking success in area lakes stocked with rainbow trout, coho salmon or grayling, should be evaluated.
2. Creel census efforts on selected high use sport fisheries should continue.
3. Whitefish population estimates should be conducted in selected segments of the Chatanika River.

Table 1. Scientific and common names of fish mentioned in this report.

Common Name	Scientific Name	Abbreviation
Round whitefish	<u>Prosopium cylindraceum</u> (Pallas)	RWF
Humpback whitefish	<u>Coregonus pidschian</u> (Gmelin)	HWF
Least cisco	<u>Coregonus sardinella</u> Valenciennes	LCI
Coho salmon	<u>Oncorhynchus kisutch</u> (Walbaum)	SS
Rainbow trout	<u>Salmo gairdneri</u> Richardson	RT
Arctic grayling	<u>Thymallus arcticus</u> (Pallas)	GR
Northern pike	<u>Esox lucius</u> (Linnaeus)	NP
Longnose sucker	<u>Catostomus catostomus</u> (Forster)	LNS
Sheefish	<u>Stenodus leucichthys</u> (Güldenstadt)	SF
Burbot	<u>Lota lota</u> (Linnaeus)	BB

OBJECTIVES

1. To evaluate stocking policies for grayling and formulate stocking recommendations for optimum survival and growth.
2. To obtain estimates of angler use and sport fish harvest on the Chatanika River whitefish fishery.
3. To obtain estimates of angler use and sport fish harvest on the Minto Flats northern pike and sheefish fishery.
4. To assist as required in the investigation of public access status to the area's recreational fishery waters.

TECHNIQUES USED

Scales used for age determination were cleaned and mounted between glass slides. A Bruning 200 microfiche reader was used to read the scales. All fish were measured for fork length in millimeters. Water samples for dissolved oxygen readings were collected using a Kemmerer water sampler and analysis was done with a Hach Model AL-36-WR kit. Graduated mesh monofilament and multifilament gill nets, 125 ft x 6 ft with five mesh sizes ranging from 1/2 in to 2 1/2 in bar measure were used to sample fish populations.

FINDINGS

Dissolved Oxygen Testing

Sixteen Interior waters were tested for dissolved oxygen content during the winter of 1978-79. All lakes currently managed for sport fishing had sufficient oxygen to overwinter fish (Table 2). Only three lakes were depleted of oxygen or had levels so low as to preclude them from further management consideration.

Fish Sampling in Area Waters

Eighteen lakes in the Fairbanks area were sampled to determine species composition and stocking success (Table 3). Roy Lake, near Central, Alaska was test netted under the ice on November 10 and four Age II coho salmon averaging 344 mm (13.5 in) were captured. This is considered good growth for landlocked coho salmon, although not as good as in 1977, when Age II coho salmon from Roy Lake averaged 409 mm (16.1 in) (Kramer 1978). Due to the small catch in 1979 (only 4) it is difficult to give a reason for this difference in growth. More testing is necessary.

Dune Lake, a fly-in lake located 24 mi southwest of Nenana, was stocked with grayling fry in 1976 after test netting revealed no fish were present in the lake. In 1979 the grayling ranged in fork length from 290 to 345 mm (11.4 to 13.6 in) and averaged 316 mm (12.4 in). This is good growth for Age III grayling, as Age III grayling captured from the Chena River in 1979 averaged only 197 mm (7.8 in) (Hallberg 1980).

Table 2. Fairbanks area waters tested for dissolved oxygen, 1979.

Water	Date	Ice Depth (in)	Water Depth (ft)	Snow Depth (in)	Sample Depth (ft)	D.O. ppm
Eielson AFB:						
Bear Lake (small portion)	3/26	28	19	8	5	4.0
Bear Lake (large portion)	3/26	28	21	12	5	0.0
Twin Lakes (Big)	3/26	22	8.5	12	5 7.5	7.0 6.0
Twin Lakes (Little)	3/26	23	12	12	5	1.0
Tar Kettle Lake	3/26	20	13	11	5	0.0
28-Mile Pit*	3/26	21	16	16	5	9.0
Lily Lake* (Engineer Hill)						
Sample 1	3/27	25	7.5	14	5	4.0
Sample 2	3/27	25	7.5	14	4	1.6
					5	0.2
Grayling Lake*	3/28	25	13	1	5	6.0
Hidden Lake*	3/28	20	15	18	5	3.0
Pike Lake	3/28	21	8.5	12	5	0.0
Rainbow Lake	3/28	24	20	12	5	3.0
Scout Lake	3/28	24	15	12	5	5.0

Table 2. (Cont.) Fairbanks Area Waters tested for dissolved oxygen, 1979.

Water	Date	Ice Depth (in)	Water Depth (ft)	Snow Depth (in)	Sample Depth (ft)	D.O. ppm
Manchu Lake*	3/28	22	8.5	15	5	10.0
Mullens Pits (large)	3/29	25	14	12	5	5.0
Mullens Pits (small)	3/29	23	7.5	16	5	0.0
338.7 Pit	3/29	20	15	16	5	0.8
Moose Lake (North half)	3/30	29	20	14	3	6.0
					5	6.0
					7	1.8
					8	0.8
					10	0.8
Moose Lake (South half)	3/30	29	17.5	14	3	5.0
					5	4.0
					6	0.8
					9	0.0
					15	0.0

* Indicates lakes currently managed.

Table 3. Fish sampling summaries, 1979.

Water	Date	Species	No.	Age	Fork Length (mm)		Weight (g)		Frequency*
					Range	Mean	Range	Mean	
Roy Lake (7 mi W Central)	11/10	SS	4	II	306-382	344			0.17
Dune Lake (25 mi SW Nenana)	6/4	GR	21	III	290-345	316	295-494	361	Hook & line
Geskakmina Lake (35 mi W Nenana)	6/5	SS	8	II	170-205	186	47-72	58	Hook & line
Richardson Hwy Lakes									
Birch Lake Pit	9/18	GR	2	IV	155-205	180	28-85	56	0.08
Grayling Lake	9/18	BB	1			310			0.04
		LCI	8		240-335	287			0.33
		GR	6	I	105-115	112	14-14	14	0.25
		SF	3	V	380-435	403	509-594	547	0.12
			2	VI	420-435	427	707-764	735	0.08
Hidden Lake	9/8	GR	3	0	130-130	130	28-42	37	0.12
			7	I	130-220	193	28-141	103	0.29
			5	IV	205-225	217	113-141	127	0.21
		HWF	1	VI		435		1,472	0.04
		NP	1			640		2,604	0.04
31-Mile Pit	9/18	GR	57	0	100-130	115	28-28	28	2.40
			5	III	205-230	216	113-141	130	0.21
			2	IV	220-230	225	141-141	141	0.08
Johnson Road Pit #1	9/18	GR	4	I	120-130	125	14-14	14	0.17
			3	III	200-215	205	85-99	94	0.12

Table 3. (Cont.) Fish sampling summaries, 1979.

Water	Date	Species	No.	Age	Fork Length (mm)		Weight (g)		Frequency*
					Range	Mean	Range	Mean	
Johnson Road Pit #2	9/18	GR	1	I		115		14	0.04
			2	III	265-270	267	212-226	219	0.08
		BB	2		410-470	440			0.08
Bathing Beauty Pond	9/19	GR	7	I	127-165	138			0.29
28-Mile Pit	9/19	SS	14	0	102-115	110			0.58
			1	II		178			0.04
Nenana Hwy Lakes									
Nenana Pond	10/17	SS	2	0	105-110	108	14-14	14	0.08
			10	II	235-270	250	170-198	173	0.42
			RWF	1		345			0.04
Steese Hwy Lakes									
29.6 Mile Pit	9/26	GR	1	I		140		28	0.04
		RWF	23		265-325	292			0.96
		HWF	1			385		906	0.04
		LNS	2		220-470	345			0.08
30.6 Mile Pit	9/14	GR	10	I	110-120	114	28-28	28	0.42
			16	IV	195-260	232	85-226	155	0.67
31.6 Mile Pit	9/14	GR	2	II	200-220	210	85-113	99	0.08
			2	III	220-230	225	113-156	134	0.08
		BB	1			310			0.04
		RWF	1			430			0.04

Table 3. (Cont.) Fish sampling summaries, 1979.

Water	Date	Species	No.	Age	Fork Length (mm)		Weight (g)		Frequency*
					Range	Mean	Range	Mean	
33 Mile Pit	9/14	GR	17	II	200-225	212	113-141	121	0.71
		BB	1			485			0.04
		RWF	2		380-390	385			0.08
33.5 Mile Pit	9/14	GR	2	I	110-145	127	28-28	28	0.08
			3	II	195-230	208	113-141	122	0.12
			3	IV	270-300	287	226-283	264	0.12
34.6 Mile Pit	9/14	GR	4	IV	240-275	254	170-255	205	0.17
36.5 Mile Pit	9/14	GR	1	I		105		28	0.04
			20	II	195-230	215	85-141	120	0.83
			RWF	4	350-430	386			0.17

* Fish per hour in 125 ft graduated mesh sets.

Geskakmina Lake, a fly-in lake 35 mi west of Nenana, was stocked with coho salmon in 1977 after test netting revealed no fish were present in the lake. In 1979 the coho salmon ranged in fork length from 170-205 mm (6.7 to 8.1 in) and averaged 186 mm (7.3 in). This growth is comparable to Age II coho salmon caught in Birch Lake in 1977 (Kramer 1978) which averaged 202 mm (8 in).

Fifteen managed gravel pits were also test netted for age and growth information. Thirty-One Mile Pit on the Richardson Highway contained young-of-the-year grayling and Age III grayling which were not stocked by the Department. Based on observations by biologists and local residents it is believed that these fish were successfully spawned by grayling previously stocked by the Department. Further observation will be necessary to substantiate this.

Creel Census

A spear fishing season for whitefish in the Tanana River drainage was initiated in 1970 to provide an additional method for sport fishermen to harvest these desirable fish. A creel census has been taken every fall since 1972 on the Chatanika River where most of the fishing pressure occurs. A creel census station was set up at the Elliott Highway Bridge to count fishermen and their catch. The census covered 42% of the possible fishing time throughout the period from September 12 through October 12, 1979.

An expansion of the data to 100% shows that 393 fishermen spent 917 hours to spear 319 humpback whitefish, 1,807 least cisco, and 57 round whitefish (Table 4).

Whitefish speared per hour decreased from the previous high in 1978 of 5.7 per hour to 2.4 per hour. The 5.7 fish per hour in 1978 was unusually high for this fishery as in the years 1972-1977 the average fish speared per hour was only 2.1.

Spearing success was very low until September 28 when the river, which had been muddy most of the summer, became clear. Ninety-eight percent of the humpback whitefish and 83% of the least cisco speared in the fishery were harvested from September 28 to October 12. A summary of spear fishing harvests in the Chatanika River from 1972 to 1979 is presented in Table 5.

Population estimates were not made during 1979 due to the severe muddy water condition of the Chatanika River.

A creel census on the Minto Flats northern pike and sheefish sport fishery was attempted, but due to high and muddy water conditions throughout most of the period, little fishing was done and the creel census was abandoned.

Lake Stocking

Two gravel pits and four lakes were stocked in the Fairbanks area during 1979 (Table 6). Birch Lake was stocked with 101,314 rainbow trout. These fish were held over the winter in the hatchery and planted as subcatchables (17.9 per lb) in May. A detailed analysis of the survival, growth and contribution to the creel census of these fish is presented by Doxey (1980).

Table 4. Chatanika River whitefish harvest summary September 12 - October 12, 1979 in area of Elliot Highway bridge.

	<u>Calculated Totals</u>
Number of fishermen	393
Number of angler hours	917
Total harvest	2,183
Fish/angler hour	2.4
Fish/angler trip	5.5
Mean hours/angler trip	2.3

Calculated fish harvest by species:

	<u>Number</u>	<u>Percent of Harvest</u>
Humpback whitefish	319	15
Least cisco	1,807	83
Round whitefish	57	2

* Although there was no creel count near the Steese Highway bridge, it is estimated that between 400-500 whitefish were speared in that vicinity.

Table 5. Chatanika River whitefish harvest summary, 1972-1979.

Year	Date	Angler Hours	Hours Per Trip	Whitefish Per Hour	Total Whitefish Harvested
1972	Oct. 1-16	302	1.7	2.3	701
1973	Sept. 1-Oct. 7	1,356	2.5	2.2	3,032
1974	Sept. 1-Oct. 4	1,054	2.6	1.8	1,924
1976	Sept. 1-Oct. 12	300	2.7	1.8	540
1977	Sept. 1-Oct. 16	416	1.7	2.4	986
1978	Sept. 9-Oct. 21	968	2.0	5.7	5,515
1979	Sept. 12-Oct. 12	919	2.4	2.4	2,183

Table 6. Lake stocking, Fairbanks District, 1979.

Lake	Location	Date	Species	Size /lb	Number
Birch Lake	55 miles S.E. of Fbks.	5/21-24	RT	17.9	101,314
Les Lake	Healy	7/19	SS	140	491
Nenana Pond	2 miles S. of Nenana	7/19	SS	140	6,030
28-Mile Pit	28 miles S.E. of Fkbs.	7/19	SS	140	1,963
Little Harding Lake	45 miles S.E. of Fbks.	7/19	SS	140	15,046
Lost Lake	55 miles S.E. of Fbks.	7/19	SS	140	30,049

RT - rainbow trout
SS - coho salmon

Les' Lake, located approximately 13 mi east of Clear, Alaska on the Rex Trail, was experimentally stocked with coho salmon. If successful, the residents of the Healy-Clear area will have a new sport fishing opportunity.

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