Volume 7 1965-1966

STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1965 - 1966

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-7

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME
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INTRODUCTION

This report of progress consists of Job Segment Reports conducted under the State of Alaska Federal Aid in Fish Restoration Project F-5-R-7, "Sport Fish Investigations of Alaska."

The project during this report period is composed of 18 separate studies. Some are specific to certain areas, species or fisheries, while others deal with a common need for information. Each job has been developed to meet the needs of various aspects of the State's recreational fishery resource. Seven jobs are designed to pursue the cataloging and inventory of the numerous State waters. These jobs, which are of a continuing nature, will eventually index the potential recreational fisheries. Four jobs are directed toward specific sport fish studies. These include specialized efforts toward the anadromous Dolly Varden of Southeastern Alaska, the silver salmon in Resurrection Bay, the king salmon stocks on the Lower Kenai Peninsula, the king salmon stocks in Upper Cook Inlet, and the Arctic grayling of the Tanana River system.

The statewide access program is developing rapidly. Our efforts in investigating existing and potential recreational sites and access has resulted in favorable action being taken on our proposals and recommendations submitted to the land management agencies at both the State and Federal levels.

The remaining jobs included a specialized creel census effort in Southeastern, an egg-take program designed to establish indigenous egg-take sources, and evaluation of the Fire Lake system.

Three special reports have been completed from past studies on the Dolly Varden study. These appear in the Department's "Research Report" series and are a direct result of the Federal Aid In Fish Restoration Program. To date, the following reports have been published: Research Report No. 3, "Some Migratory Habits of the Anadromous Dolly Varden Salvelinus malma (Walbaum) in Southeastern Alaska," 1965, Robert H. Armstrong; Research Report No. 4, "Annotated Bibliography on the Dolly Varden Char," 1965, Robert H. Armstrong; and Research Report No. 5, "Age and Growth of Anadromous Dolly Varden Char Salvelinus malma (Walbaum), in Eva Creek, Baranof Island, Southeastern Alaska," 1966, David W. Heiser.

The material contained in this progress report is often fragmentary in nature. The findings may not be conclusive and the interpretations contained herein are subject to re-evaluation as the work progresses.

Volume 7 Report No. 15-A

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No.: F-5-R-7 Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in the Interior of Alaska.

Job No.: 15-A

Period Covered: July 1, 1965 to June 30, 1966.

ABSTRACT

Four lakes and four streams were surveyed during the reporting period, and eighteen lakes were test netted for fish population composition and analysis. Winter oxygen determinations were made on 22 lakes to learn their potential for future stocking and subsequent fisheries management.

Annual assessment of the stocked lakes was continued to determine fish population trends and the success of the existing stocking program.

A second transplant of adult lake trout was made into Harding Lake from Monte Lake in the Alaska Range.

Arctic grayling were experimentally introduced into Interior waters to establish new fisheries and to determine their winter oxygen requirements.

Creel census data from the Unalakleet River Military Sport Fishing Camp is compiled and discussed. Fragmentary creel census data from the Eielson Air Force recreational camp on Birch Lake is also included.

A volumetric survey of Little Harding Lake was conducted for pre-rehabilitation information.

RECOMMENDATIONS

It is recommended that:

1. Inventory and cataloging of Interior Alaskan waters be continued with increased emphasis on the accessible streams as new road systems are constructed and completed.

2. Initial lake and stream inventory be conducted in the Nome area of the Seward Peninsula.

3. Annual test netting of stocked waters be continued to provide current information on population trends, age and growth relationships, survival, and success of present stocking policies.

4. Follow-up work be carried out on the experimental Arctic grayling introductions to assess survival, winter oxygen requirements, and growth rates.

5. Salmon surveys of Tanana River tributaries be continued for data on run timing and magnitude.

6. Undesirable fish populations in Birch Lake and Little Harding Lake be eradicated and the lakes restocked with acceptable sport fish species.

7. Suitable sites for grayling and lake trout egg-takes be located in areas free of intensive angler use.

8. Survival and growth evaluations of adult lake trout transplanted into Harding Lake be continued and work initiated to determine the success of the lake trout spawning.

9. Investigations of Interior Alaska sheefish stocks be expanded.

OBJECTIVES

1. To assess the environmental characteristics and fish species composition of the existing and potential fishery waters of the job area and, where practicable, obtain estimates of existing or potential angler use and sport fish harvest.

2. To evaluate the application of fishery restoration measures and availability of sport fish egg sources.

3. To assist in investigating the status of public access to the area's fishing waters.

4. To investigate remote area waters for potential fly-in fisheries, determining fish species composition, quality of angling, accessibility, and value in distributing angler effort over a wider area to offer desired protection of individual fish stocks.

5. For the proper protection of the sport fish resource, to evaluate multiple water use development projects, public and private, and their effects on the area's streams and lakes.

TECHNIQUES USED

Fish populations were sampled with variable mesh gill nets for biological data including species composition, population trends, age-growth information, and effects of angler harvest.

Creel census was utilized to assess angler effort, success, and impact on sport fish stocks.

Water chemistry was performed with standard sampling equipment to determine winter oxygen levels of lakes.

Lakes and streams were surveyed; and surface area, depths, temperatures, spawning areas, and additional biological information were recorded.

Information pertaining to land uses and needs was forwarded to the land access staff for their attention.

Salmon surveys and reconnaissance flights were made with light aircraft as needs dictated.

FINDINGS

Fish Stocking Evaluations

Lakes stocked with trout and silver salmon under the present management program were gill net sampled again in 1965 as part of an annual population sampling program, to determine population trends and success of fish stockings. Table 1 shows results of test netting operations in 1965.

Mean lengths of both silver salmon and rainbow trout from the established populations remained nearly consistent with those taken in 1964. No significant variation was noted in fish condition, and growth of both species remained satisfactory.

Harding Lake was test netted in the fall of 1965 in an attempt to sample the introduced adult lake trout for population assessment. Three lake trout were taken, but they did not have the adipose fin removed as did all fish introduced in 1965. It was presumed that these fish were from the original 1963 lake trout transplant.

Evidence of successful lake trout spawning is yet to be obtained, but fish taken in the late fall of 1964 were ripe at the time of capture and were presumably in the shoals at that time for spawning. Future use of small, constant mesh gill nets might result in the capture of immature fish for examination and age determination.

Lake and Stream Surveys

Tangle Lakes System:

The two upper lakes in the Tangle Lake System were surveyed, completing the initial inventory of this lake complex.

Depths were quite shallow in both lakes and the overwintering capacity of these lakes is unknown. The population of grayling, suckers, and whitefish may be forced to leave these waters in favor of deeper, more desirable lakes of the lower system.

The upper lakes may be reached by boat and two short portages. Both lakes are large enough for use by light aircraft.

TABLE 1 - Test Netting 1965, Interior Alaska.

Name	Date	Number	Species	Length Range	Mean Length	Freq.*	% Comp.
Lost Lake (Birch)**	5-26-65	9	SS	7.2-10.5	9.10	.69	47.4
		6	Su	8.0-11.0	10.00	.46	31.6
		4	Rb	6.9-10.5	8.00	.38	21.0
	6-2-65	16	SS	4.0-11.1	6.30	1.23	88.9
		2	Rb	4.1- 5.5	4.80	.15	11.1
2-Mile Pit**	5-28-65	2	SS	7.2- 8.3	7.75	.11	100.0
Little Lake	6-2-65	10	NP	8.0-26.9	12.81	.31	100.0
Cooling Pond**	6-5-65	0					
Airport Pond	6-5-65	7	NP	18.4-25.8	22.70	.29	50.0
		7	WF	7.2-13.8	8.82	.29	50.0
Monte Lake	6-11-65	17	LT	10.3-15.6	14.42	4.85	100.0
81-Mile Pit**	7-7-65	12	Rb	6.5- 9.8	8.00	.67	100.0
Donna Lake**	7-9-65	13	Rb	8.0-15.5	14.20	.30	100.0
Craig Lake**	7-10-65	15	SS	6.0- 7.0	6.50	.31	65.2
		8	Rb	9.0-13.8	10.38	.17	34.8

* Number of fish per hour in 125' variable mesh gill net.

** Lake stocked with trout or silver salmon under present management program.

NP - Northern Pike
SS - Silver Salmon
Rb - Rainbow
LT - Lake Trout
WF - Whitefish
Ci - Cisco
Su - Sucker
Gr - Grayling

TABLE 1 (Cont.) - Test Netting 1965, Interior Alaska.

Name	Date	Number	Species	Length Range	Mean Length	Freq.*	% Comp.
Little Donna Lake**	7-13-65	19	Rb	6.0-15.1	12.16	1.58	100.0
Jan Lake**	7-15-65	9	Rb	6.0-12.5	8.63	.37	45.0
		20	SS	6.5- 7.6	7.02	.83	55.0
Lisa Lake**	7-15-65	8	Rb	11.6-19.2	15.06	.22	13.1
		61	SS	7.5- 9.5	7.59	1.91	96.9
Bolio Lake**	7-16-65	4	Rb	9.5-15.5	13.33	.08	.93
		43	SS	6.5-13.8	7.61	.89	99.07
Mark Lake**	7-16-65	6	Rb	6.0- 8.5	7.38	.16	40.0
		15	SS	4.8- 7.5	6.65	.41	60.0
Tangle Lake (#2)	7-23-65	7	Gr	8.0-15.2	13.50	.88	.09
		52	WF	7.8-16.0	12.00	6.5	.67
		19	Su	10.0-20.8	17.10	2.38	.24
Tangle Lake (#3)	7-22-65	3		7.5-14.0	11.10	.38	.05
		31	WF	8.3-17.0	12.00	3.88	.53
		25	Su	9.5-21.5	18.00	3.13	.42
Eielson Float Plane Pit	7-29-65	13	WF	7.3-13.0	10.39	.68	.93
		1	Su	6.8	6.80	.05	.07
Harding Lake**	9-10-65	6	NP	10.0-24.3	18.90	.06	54.6
		5	Ci	7.5- 8.6	8.10	.05	45.4
	10-6-65	3	LT	22.0-23.5	22.60	.03	4.0
		2	NP	19.9-23.5	21.70	.02	2.7
		70	Ci	5.0-11.0	8.00	.73	93.3

These lakes have considerable fishing and scenic value. The possibility of a system of portage trails has been discussed previously with both Department and BLM access personnel. Further investigation of these possibilities is recommended.

Fort Greely Area:

Two lakes were investigated in the Big Delta area. North and South Twin Lakes are located on the Fort Greely Army Reservation in the Bolio Lake area.

The lakes, each approximately 30 acres in size, have no inlets or outlets. Depths of both appear adequate, approximately 35 feet.

Limited gill net sampling of the lakes revealed a population of suckers in North Twin and no fish in South Twin.

The Twin Lakes may have a potential for chemical rehabilitation and, ultimately, the construction of a two-mile access trail from the Richardson Highway. Military regulations and policies, however, could preclude or influence management plans for these lakes.

Nenana-Healy Area:

Streams accessible by the Nenana-Healy Highway, currently under construction, were surveyed during 1965.

Four streams, although small in size, comprise the major roadside fishery between Fairbanks and the town of Healy.

Clear, Julius, Chief and Pangengi Creeks, all located between the towns of Nenana and Healy, support considerable spring and early summer grayling fishing.

Evidence of angler use was impressive along Pangengi and Chief Creeks, although the mid-summer flow of each was only 10-15 cfs. Resident Dolly Varden are reported in the headwaters of these creeks, but their existence could not be verified by observation or test angling.

Clear Creek is particularly heavily utilized for early season grayling fishing by personnel of the R.C.A., B.M.E.W.S. site in the area.

Upon completion of the highway system, these small streams will be subjected to heavy angler utilization. It appears likely that protective measures may eventually be necessary to protect these streams adequately.

Names and locations of surveyed waters are given in Table 2. Complete survey data for each body of water is on file at the Fairbanks Fish and Game office.

TABLE 2 - Lakes and Streams Surveyed 1965-1966, Interior Alaska

Name	Location	Latitude	Longitude	Quadrangle
Lakes:				
Upper Tangle Lk. (#3)	Denali Hwy. - 18 Mile	62°58'	146°05'	Gulkana D-5
Upper Tangle Lk. (#2)	Denali Hwy. - 18 Mile	62°58'	146°05'	Gulkana D-5
North Twin	Donnelly Dome Area	63°52'	145°50'	Mt. Hayes D-4
South Twin	Donnelly Dome Area	63°52'	145°50'	Mt. Hayes D-4
Streams:				
Pangengi Creek	Nenana-Healy Hwy.	63°56'	149°03'	Healy D-5
Chief Creek	Nenana-Healy Hwy.	64°02'	149°10'	Fairbanks A-5
Tangle Lake #2 (Inlet)	Denali Hwy. - 18 Mile	62°58'	146°05'	Gulkana D-5
Tangle Lake #3 (Inlet)	Denali Hwy. - 18 Mile	62°58'	146°05'	Gulkana D-5

Lake Trout Transplant

Harding Lake, located 44 miles south of Fairbanks, received a supplementary stocking of 235 adult lake trout during June, 1965. Fish for this second plant were taken from Monte Lake located in the Robertson River drainage of the Alaska Range.

Monte Lake lies approximately nine miles south of the Alaska Highway-Robertson River bridge, and adjacent to the river It is approximately one hour and fifteen minutes flight time from Harding Lake.

The fish population of Monte Lake is comprised of indigenous lake trout; no other species of fish were taken during the transplant. The fish ranged from 10 to 20 inches long with a mean length of 15 inches. Scale analysis revealed an age of 8 to 10 years. Appearance of the fish indicated slow growth, possibly due in part to the absence of a suitable forage species. However, all fish were mature adults capable of spawning. Prior to introduction of the trout into Harding Lake, their adipose fins were removed for future identification.

The fish were captured by both hook and line and gill nets. Variable mesh gill nets were fished for one- to two-hour periods to minimize the gill net injury and loss.

Fish mortality can be attributed primarily to gill net-induced injuries. Of the 361 lake trout handled, 56 were killed in the nets, 46 died during the holding period, and 24 died while enroute and immediately after entering Harding Lake. The delayed mortality also appeared to be directly related to net injuries as the dead fish exhibited the characteristic discoloration and bruised flesh commonly caused by gill nets.

Transportation techniques were similar to those of the original 1963 transplant (Job No. 13-A, Dingell-Johnson Project Report, Vol. 5). A military H-21 helicopter was used to transport the fish. Approximately 100 gallons of oxygenated water, iced to maintain mid-forty-degree temperatures, were used during the flight. The trout were carried in loads of 104, 112, and 43 fish respectively. The temperature of Harding Lake at the time of introduction was 55°F.

The lake trout withstood the flight and transportation phase in excellent condition. The major obstacle was the relatively high incidence of injury and loss caused by the large mesh portion of the gill nets. It is recommended that one-inch constant mesh be utilized in future operations of this type. A total of 487 mature adult lake trout was successfully stocked in Harding Lake in the 1963 and 1965 transplants.

Eyed Eggs Stocking

In addition to the 235 adult lake trout transplanted into Harding Lake in June of 1965, a stock of 88 thousand lake trout eyed eggs was made into Harding Lake on December 31. Approximately 20 percent of these eggs were already hatching at the time of stocking and were thus in the alevin stage.

The eggs had been obtained by Fishery Biologist Fred Williams from Lake Susitna during October and were eyed in the Fire Lake Hatchery at Eagle River.

Shipment from the hatchery to Fairbanks was via commercial airliner. Styrofoam egg baskets cooled with ice protected the eggs during shipment.

Prior to the stocking, Harding Lake was investigated to locate favorable substrate for the alevins to burrow into and to assure that dissolved-oxygen concentrations would be adequate.

The eggs were placed in covered wire hatching baskets suspended just above the substrate. The baskets were designed to protect the eggs from predation while allowing the newly hatched alevins to escape and continue their development in the lake substrate.

The baskets were placed at 2 locations with depths of 7 and 26 feet as a check on any differential hatching rate or success which might be attributed to variations in depth. No appreciable differences were noted when the egg baskets were lifted for periodic checks. A final check one month after planting showed approximately 15 percent of the eggs unhatched with no viable eggs present. It is therefore estimated that approximately 75 thousand eggs were successfully hatched in this operation.

Grayling Introductions

There are many lakes north of the Alaskan Range unsuitable for fish introductions due to winter oxygen depletion. A great number of these, although unsuitable for trout, still retain one or two ppm oxygen and may be adequate for Arctic grayling.

An experimental series of grayling introductions was made in the spring of 1965 with a two-fold purpose; first, to enhance the area's fishery, if possible, by establishing new populations in these waters of low oxygen retention; second, to determine the winter oxygen requirements of Arctic grayling through follow-up investigations. It is hoped that guidelines for Interior Alaska grayling introductions can ultimately be formulated.

Four lakes, Lost, Hartman, 31 Mile, and ARR #4, were stocked in the area of Fairbanks and Delta Junction. These are all known to retain little oxygen during the late winter months, but are easily accessible and can be investigated throughout the winter.

The "Independent Lakes" group, located southeast of Delta Junction between the Johnson and Little Gerstle Rivers, was also selected for stocking and future investigations. The eight lakes in this group, range in size from one to eight acres. They are well suited to this project due to their close proximity, accessibility, size, and varying oxygen levels. The nearest lake is approximately one-half mile from the Alaskan Highway, and the farthest is three and one-half miles. The area can be easily traveled by foot in the summer and with relative ease on snowshoes in the winter.

The eight lakes were stocked with Arctic grayling fingerlings in June of 1965. The lakes nearest the highway were stocked by back packing the fish in water-filled plastic bags inflated with oxygen, and the four more inaccessible ones were aerial stocked with the aid of a military H-21 helicopter.

This particular lake complex appears to be a potentially fine fishing area. If the fish plants prove successful, a foot trail constructed through this lake group would undoubtedly bring many anglers into these lakes.

Numbers stocked into individual lakes are depicted in Table 3. Table 4 presents results of dissolved-oxygen determinations in the 12 lakes stocked with grayling.

TABLE 3 - Grayling Stocking 1965.

Lake	No. Stocked	Tank Temp. °F.	Sur. Temp. °F.
A.R.R. Pit #4	3,500	43	60
31 Mile Pit	2,000	44	59
Hartman Lake	20,000	45	60
Lost Lake (Quartz)	25,000	60	61
Independent Lakes			
#1	2,000	59	63
#2	2,000	60	61
#3	2,000	60	62
#4	2,000	60	61
#5	3,000		
#7	3,000		
#8	3,000		
#9	3,000		

TABLE 4 - Dissolved-oxygen Content of Grayling Lakes.

Name	Date	Sample Depth	Ice Depth	Snow Depth	ppm oxygen
A.R.R. Pit #4	12-20-65	2'	15"	14'	2.6
		8'			0.0
	1-19-66	2'	17"	17"	0.0
Hartman Lake	12-20-65	2'	17"	4'	7.7
		5'			4.6
	1-19-66	3'	32"	12"	2.0
		5'			1.5
Independent Lakes					
#1	3-25-65	Sur.	36"	6"	0.0
	1-26-66	2'	18"	12"	0.0
#2	3-25-65	Sur.	36"	8'	0.0
	1-26-66	2'	18"	12"	3.5
		8'			2.7
#3	3-25-65	5'	35"	6'	0.6
	1-27-66	2'	20"	10"	2.2
		12'			1.0
#4	3-25-65	10'	36"	4"	1.6
		25'			0.8
	1-27-66	2'	18"	12"	1.5
		10'			0.3
#5	4-12-65	Sur.	37"	3"	5.5
#7	4-23-65	7'	36'	0	5.0
		10'			0.4
	2-2-66	3'	38"	0	0.3
		7'			0.0
#8	4-23-65	10'	35"	2"	2.6
		15'			2.2
	2-2-66	3'	30"	4'	4.0
		15'			3.5
#9	4-23-65	10'	35"	4"	3.6
		15'			2.8
	2-2-66	2'	18"	12"	8.0
		20'			5.5
Lost Lake (Quartz)	12-16-65	2'	15"	10"	3.9
		8'			2.5
	2-2-66	2'	18"	16"	1.0
31 Mile Pit	12-20-65	2'	15"	12"	0.9
		9'			0.6
	1-19-66	2'	18"	16'	0.8
		8'			0.2

Unalakleet River Military Fishing Camps

The Eielson Air Force Base recreational fishing camp operated on the lower Unalakleet River again during the summer of 1965 as in previous years.

Fort Wainwright, which ran a similar sport fishing camp one mile downstream from the Eielson camp in 1963 and 1964, did not open their camp in 1965.

The location and operation of the Eielson camp remained similar to that of 1963 and 1964, and a nearly identical number of men participated. The men were flown to the camp by military aircraft, and were supplied with boats, motors, tents and other necessary equipment for their three-day stay.

A total of 142 Air Force personnel utilized the camp in 1965 for a total catch of 1,649 salmon and 354 fish of other species including Arctic grayling, whitefish, and Dolly Varden. For the 3-day stay, the average catch per angler was 11.6 salmon and 5.3 fish of other species.

Creel census returns for 1965 show a 58.1 percent increase in the salmon catch above that of 1964. Chum and pink salmon contributed most to the increased catch. It may also be significant that, with one camp operating in 1965, fewer anglers utilized the primary fishing area.

Creel census taken at the camp and forwarded through military channels to the Department of Fish and Game office in Fairbanks appeared reasonably accurate during the 1965 season, although, as usual, a number of creel census forms were deficient in information.

Table 5 depicts the 1965 sport fish catch at the Eielson sport fishing camp on the Unalakleet River and is compared with 1963 and 1964 catch figures.

TABLE 5 - Eielson Unalakleet Fishing Camp Creel Census.

	1963	1964	1965
Total Anglers	277	150	142
Angler Days		446	428
Angler Hours	8168	4223	3074
Total Salmon Catch	1075	692	1649
Total Fish Catch*	2856	1895	2403
King	174	39	84
Chum	576	85	699
Pink	0	364	695
Silver	325	204	171
Grayling	702	340	159
Dolly Varden	1079	806	553
Whitefish	0	57	42
Salmon per Angler	3.8	4.6	11.6
Fish per Angler*	10.3	12.6	16.9
Salmon per Angler Hour	.13	.16	.54
Fish per Angler Hour*	.34	.44	.75

*All species, including salmon.
1965 data for period June 18 to August 30.

Birch Lake Military Recreation Camp

Eielson Air Force Base also operates a recreational camp on Birch Lake, located on the Richardson Highway 54 miles south of Fairbanks. The camp is a permanent installation located on a military withdrawal, and is operated approximately three months during the summer season.

Facilities include semi-modern cabins and trailer houses for lodging; a snack bar and cafe; and boats and motors for water skiing, boating, and fishing. The camp, unlike the Unalakleet River site, is used largely by family groups for weekend outings and an opportunity for swimming, boating, and relaxing.

There is considerable fishing effort in spite of the relatively poor angling available in Birch Lake. Fragmentary creel census was taken at the camp and forwarded to the Fairbanks Sport Fish office during the summer of 1965. The creel census data, although incomplete, indicates that a total of 228 anglers spent 708 hours fishing with an average catch of 1.28 fish per angler. The mean length of the 288 morthern pike caught was 17.3 inches. This fishery would undoubtedly be considerably larger if a more desirable size fish was available.

With completion of the Birch Lake rehabilitation project and subsequent restocking, it can be expected that the approximately 10,000 military personnel utilizing this camp annually will add significantly to the angling pressure.

Information in Table 6 presents angler effort, catch, and mean size of fish taken.

TABLE 6 - Eielson Recreation Camp 1965 Birch Lake Creel Census.

Number of Angler Trips	228
Hours Angled	708
Total Catch	
Northern Pike	288
Whitefish	3
Fish per Angler	1.28
Fish per Angler Hour	.41
Average Length (Northern Pike)	17.3

1965 data dates from May 27 to August 30.

TABLE 7 - Lakes Tested for Dissolved Oxygen.

Name	Date	Sample Depth	Ice Depth	Snow Depth	PPM Oxygen
Airport Pond	4-26-65	2'	14"	0	5.2
		6'			3.0
		9'			2.7
Ball Park Pond	1-20-66	2'	24"	12"	7.5
		5'			7.5
		10'			1.0
Blair Lake	2-17-66	3'	31"	20"	9.0
		10'			9.0
Bolio Lake	3-8-66	Sur.	39"	6"	6.5
		8'			6.0
		16'			2.0
Craig Lake	4-11-65	10'	36"	4"	9.4
Dot Lake	1-28-66	3'	30"	12"	0.0
Independent Lake #6	4-23-65	8'	36"	3"	9.5
		37'			4.8
	2-2-66	2'	24"	6"	5.0
		40'			3.7
Lisa Lake	4-11-65	6'	35"	0	4.8
Lost Lake (Birch)	4-1-65	10'	34"	12"	8.5
		20'			5.8
West Craig Lake	4-11-65	20'	36"	6"	0.0

Little Harding Lake Survey

Little Harding Lake was volumetrically surveyed during the summer of 1965. The lake has a surface area of 54 acres, a maximum depth of 28.5 feet, and a volume of 811 acre-feet. The watershed drained is approximately 700 acres. The lake has no permanent inlet, is surrounded by extensive bog and muskeg areas, and ultimately drains into Harding Lake via a small intermittent outlet.

The present fish population is comprised entirely of northern pike, Esox lucius, which have entered from Harding Lake during high water periods. Fort Wainwright conservation personnel furnished equipment during the summer of 1965 to construct a culvert barrier on the outlet of Little Harding Lake to preclude this upstream movement of fish.

Little Harding is a productive body of water and appears capable of producing an excellent population of trout upon completion of chemical treatment. It is easily accessible from Fairbanks and will be especially popular for ice fishing.

Winter Oxygen Analysis

A number of new lakes were tested for winter oxygen levels to determine their potential for future fish introductions.

As in previous years, some currently stocked lakes were also sampled to supply additional or comparative data.

A number of waters were found marginal or unsuitable for trout, but are considered to have potential for grayling plants.

Table 7, appended to this report, depicts winter oxygen sampling data.

Prepared by:

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Fishery Biologist

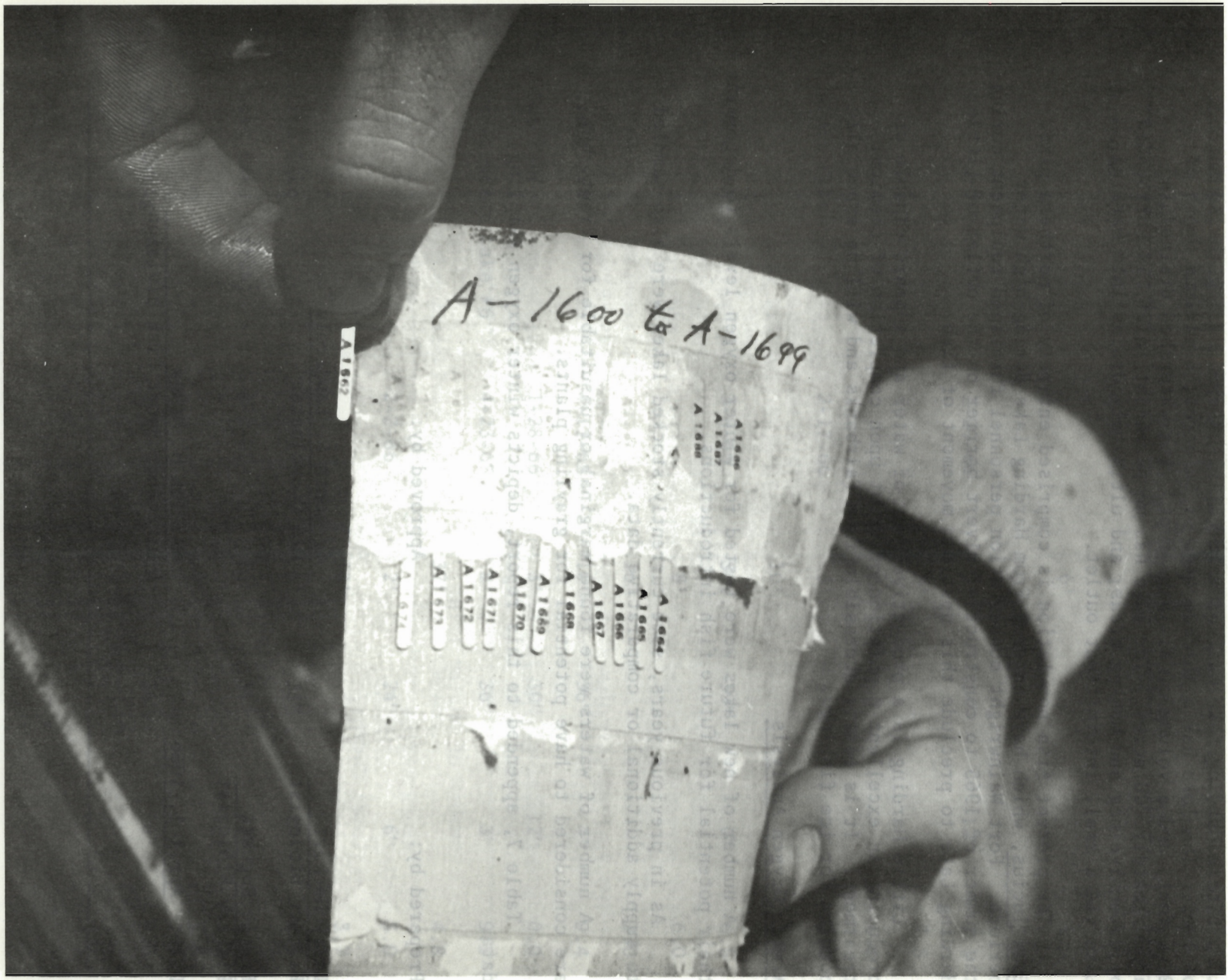
Eugene Roguski
Fishery Biologist

Date: April 1, 1966

Approved by:

S/ Louis S. Bandirola
D-J Coordinator

S/ Alex H. McRea
Director, Sport Fish Division



Subcutaneous Tags are Used to Determine Migration Patterns of Grayling.