SH
11
.A73
A4
V.6

Volume 6 1964-1965

ARLIS
Alaska Resources
Library & Information Services
Anch. . . aska

STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1964 - 1965

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-6

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME
Walter Kirkness, Commissioner

E. S. Marvich, Deputy Commissioner

Alex H. McRea, Director
Sport Fish Division

Louis S. Bandirola, Coordinator

3 3755 000 46597 1

INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-6, "Sport Fish Investigations of Alaska."

The project during this report period is composed of 23 separate studies designed to evaluate the various aspects of the State's recreational fishery resources. Of these, eight jobs are designed to pursue the cataloging and inventory of the numerous State waters in an attempt to index the potential recreational fisheries. Four jobs are designed for collection of specific sport fisheries creel census while the remainder of the jobs are more specific in nature. These include independent studies on king salmon, silver salmon, grayling, Dolly Varden, a statewide access evaluation program and an egg take program.

A report concerning the residual effects of toxaphene accumulates the findings of a three-year study. The report presented here terminates this segment and is a final report. The information gathered from the combined studies will provide the necessary background data for a better understanding of local management problems and will assist in the development of future investigational studies.

The subject matter contained within these reports is often fragmentary in nature. The findings may not be conclusive and the interpretations contained therein are subject to re-evaluation as the work progresses.

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No.: F-5-R-6 Title: Inventory, Cataloging and Population Sampling of the Sport Fish and Sport Fish Waters of the Cook Inlet Drainage.

Job No.: 11-A

Period Covered: January 1, 1964 to December 31, 1964.

ABSTRACT

Twelve lakes were investigated in 1964. The largest fish populations were found in Clarence and Stephan Lakes where Arctic grayling averaged 14 inches and 12 inches in length, respectively. Three lakes were considered too shallow for overwinter survival of game fish.

Population sampling by gill net was conducted in 8 stocked lakes and 10 surveyed lakes. Clarence and Stephan Lakes produced the highest catches of inventoried waters. Highest stocked lake catches were in Echo, Finger and Bonnie Lakes.

Weiner Lake produced the highest sport catches of trout from planted waters in 1964, closely followed by Bonnie and Long Lakes. Comparing gill net and creel census catches of the various lakes, it was found that as average size increased, number of fish caught decreased.

Best fishing in unplanted waters was found at Sunshine Creek for both resident trout and migratory salmon. Combined catches of silver, pink and chum salmon at area streams exceeded .5 fish per hour.

A possible limited Arctic grayling egg-take site was located at the road culvert on Grays Creek.

Winter dissolved oxygen and pH tests disclosed that of 17 waters tested, Meiers and Irene Lakes appeared submarginal for survival of salmonids.

Public walk-in access was obtained to three easily accessible landlocked lakes, each of which is ideal for stocking trout.

RECOMMENDATIONS

1. The following lakes in the area are ideal for management and should be rehabilitated so that game fish populations may be established: Canoe Lake, Gooding Lake and Kepler-Bradley Lake in 1965, plus Triangle Lake and Long Lake in 1966. These waters presently contain high populations of stickleback.

2. The rehabilitation program should be continued on accessible lakes of high production potential which are infested with undesirable species.

3. It is recommended that the cataloging and inventory evaluation program be continued.

OBJECTIVES

1. To evaluate the extent, the potential and current use of the waters readily available to the area's anglers.

2. To investigate the sources for providing a supply of trout, char and salmon eggs for experimental hatching and rearing.

3. To investigate the feasibility of, and formulate plans for, experimental rehabilitation.

4. To investigate and measure the sport fish population trends in major recreational fishing waters which are readily available to the area's anglers.

5. To provide recommendations for the management of those waters.

TECHNIQUES USED

1. Basic inventory describing physical, chemical and biological characteristics was accomplished on 12 lakes. Half of the waters were visited by airplane, the remainder by vehicle. Lack of available time during the field season prevented surveys of Lakes A, B, C and D, and Scotty Lake.

2. Variable mesh, 125-foot experimental gill nets, set overnight, were used for population studies on all lakes investigated.

3. Creel census at local waters was designed to learn species composition, size composition and rate of success. Census data taken by military personnel on the Military Bases were tabulated.

4. Observations for possible egg-take operations were made during the field season in connection with normal duties. A buildup of mature Arctic grayling was noted during creel census activities in late May at the road culvert of Grays Creek.

5. A Hach Colorimeter was used for dissolved oxygen and pH tests of 17 lakes during the critical period in March and April. Accuracy of the dissolved oxygen tests was checked by titration and pH tests were checked by buffers.

6. The access biologist was provided biological information on lakes in the district in order to establish the recreational value of each water. A request was made to the access biologist to attempt to have set aside for public use new roadside gravel fill locations along five Susitna River tributary salmon streams. Interviews with private landowners were made in an attempt to gain public access to three landlocked lakes suitable for future rehabilitation, stocking and management.

FINDINGS

Clarence Lake contains large populations of Arctic grayling and lake trout (Tables 1 and 2). The grayling were easily taken by hook and line and averaged 14 inches long. Angling at Stephan Lake was equally good, although the fish averaged 12 inches in length. Large populations of rainbow trout, Dolly Varden and red salmon are present at Red Shirt Lake. Rainbow Lake contains a small number of rainbow trout. The lake is oligotrophic, with little spawning area available. Larsen and Chelatna Lakes are oligotrophic and exceed 400 feet deep. Red salmon spawning populations are very large in both lakes, but resident fishes are few. Black Lake, Rocky's Lakes, Watana Lake and White Lake were also visited by air. Due to complete lake surface coverage by emergent aquatic vegetation, these waters were considered too shallow for overwinter game fish survival and were omitted from inventory.

Of the drive-in lakes, Herkimer, Corcoran and Lilly were less than 7 feet deep and are considered too shallow for overwinter fish survival. No fish were caught in Section House Lake and Buck Lake. Cleo Lake contained only stickleback, but it has a potential for a managed fishery.

A summary of population sampling results for 8 stocked lakes and 10 of the 12 inventoried waters is found in Table 2. The remaining two waters were known to contain no game fish. The Palmer Sport Fish Office maintains complete records of test net and inventory results for the above waters.

TABLE 1. - Matanuska Valley Lakes Receiving Basic Surveys, 1964

Name	Type Ingress	Location
Buck Lake	automobile	T20N R7E Sec. 16 SM*
Chelatna Lake	airplane	T27N R10W SM
Clarence Lake	airplane	T30N R9E SM
Cleo Lake	automobile	T15N R2W Sec. 24 SM
Corcoran Lake	automobile	T17N R2W Sec. 8 SM
Herkimer Lake	automobile	T17N R2W Sec. 7 SM
Larsen Lake	airplane	T27N R3W SM
Lilly Lake	automobile	T17N R2W Sec. 8 SM
Rainbow Lake	airplane	T27N R8E SM
Red Shirt Lake	airplane	T18N R5W Sec. 22 SM
Section House Lake	railroad	T24N R4W Sec. 8 SM
Stephan Lake	airplane	T30N R3E SM

* Seward Meridian

Herkimer Lake yielded the highest gill net frequency catch; 4.89 game fish per night hour. The fish are migrants, however, as the lake is only six feet deep. Next highest frequencies calculated were at Clarence Lake--4.16, and at Stephan Lake--2.77. Among the stocked waters, Echo Lake provided a high catch frequency of 2.16. Finger and Bonnie Lakes followed with catches of 1.84 and 1.6 game fish per night hour, respectively.

Creel census data indicated that Weiner Lake was the best producing stocked lake in 1964, with 1.19 rainbow trout taken per angling hour (Table 3). Bonnie and Long Lakes produced .83 rainbow trout and .79 Arctic grayling, respectively. A summary of pertinent test net and creel census data for the past several years is presented in Table 4. It was noticed that, as average size increases, net and sport catches decrease.

The best stream fishing for resident salmonids was at Sunshine Creek, Fish Creek, Grey's Creek and Deception Creek (Table 5). Each stream yielded better than .6 fish per hour, most of them taken following the spring spawning runs.

All streams except Cottonwood Creek yielded catches exceeding .5 salmon per angling hour, consisting chiefly of silver and pink salmon (Table 5). Sunshine and Kashwitna Creeks produced more than 1.0 salmon per hour of effort. Sunshine Creek was exceptional for both trout and salmon catches in 1964. A new road passes within one mile of its mouth, and until this year it was inaccessible and seldom fished.

TABLE 2. - Population Trend Study by Sampling Net, 1964

Lake	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Aver. Length	Total Nets	Night Hrs/ Net	Freq- uency	Percent Compos- ition
Bonnie	Rb	8	4	10	5	3	2				9.7	2	10	1.60	100
Chelatna	LT				3	15	5	1			14.3	3	9.50	.84	46.2
	WF			2	6	8	2				13			.63	34.6
	RS									8	22.8			.28	15.4
	SS								1	1	21.3			.07	3.8
Clarence	Gr				5	5	7				13.9	1	6.25	2.72	65.4
	LT					2	1	5		1	17.9			1.44	34.6
Corcoran	Rb	2	2	1	1						10	1	4.50	1.33	100
Echo	Rb	5	27	8		1					8	2	9.50	2.16	100
Falk	Rb				1	7	2				14.2	2	9.50	.52	100
Finger	Rb			2	1	3	1				13.1	2	9.50	1.84	20.2
	SS		25	3							8				79.8
Herkimer	Rb	3	5	3	1						8.4	1	4.50	2.67	54.5
	SS	7	3								6.6			2.22	45.5
Knik	Rb					1	1				15.1	2	9.50	.10	100
Larsen	DV		1	1	1	1	3	4	2		15.5	3	6.75	.64	54.2
	RS									11	24.4			.54	45.8
Lilly	Rb		2	2	1						9.4	1	4.50	1.11	100

TABLE 2. (Cont.) - Population Trend Study by Sampling Net, 1964

Lake	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Aver. Length	Total Nets	Night Hrs/ Net	Freq- uency	Percent Compos- ition
Long (Mile 86)	Gr		4		1	1	2	2			12.5	2	10	.60	83.60
	Burbot			1							10.4				8.20
	Sucker							1			17.8				8.20
Rainbow	Rb		1		2	2	1				12.8	2	6.75	.44	100
Ravine	Rb		1		1	1					10.7	2	9.50	.16	100
Red Shirt	Rb			1		1	1	4	1		16.4	3	6.75	.40	27.60
	DV									1	21.8			.05	3.40
	WF		1	5	5	7	1				13.3			.94	65.60
	RS								1		19.6			.05	3.40
Section House	No Fish														
Stephan	Gr		2	12	14	12					11.9	3	6.75	1.98	39.50
	LT		1	1	2		4	4	2	1	16.2			.74	15
	WF						1				16.2			.05	.01
	Sucker							46			17			2.27	45.50
Weiner	Rb			3	3	1					11.3	2	9.50	.37	100

TABLE 3. - Summer Creel Census Results of Matanuska Valley Stocked Lakes, 1964

Lake	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Length Unknown	Aver. Length	Percent Compos-ition	Total Anglers	Fish Per Hour
Bonnie	Rb		3	15	7	36	2		1		8	12.7	100	28	.83
Echo	Rb	1	2	1	8	8	11	4	3			14.4	100	73	.18
Falk	Rb			5	19	13			1			12.7	95	51	.27
	SS					2						14.0	5		
Finger	Rb			1	21	32	7	4				13.2	86.7	87	.33
	SS	2	6	2								8.0	13.3		
Knik	Rb					1	1			2		19.4	100	6	.19
Long (Mile 86)	Gr		1	2	1	1	3	1	1		19	14.0	100	20	.79
Ravine	Rb			9	8	2	1					11.5	100	17	.37
Weiner	Rb		5	28	12	3					18	10.5	100	25	1.19

TABLE 4. - Test Net and Creel Census Summary, by Year, Matanuska Valley

Lake	Year	Species	Average Length, Net Catch	Fish/Night Net Hour	Fish/ Angling Hour
Bonnie	1963	Rb	11.3	2.00	.89
	1964	Rb	9.7	1.60	.83
Echo	1961	Rb	12.5		
	1963	Rb	10.0	1.60	.10
	1964	Rb	8.0	2.16	.18
Falk	1963	Rb	8.8	1.06	.30
		SS	13.1		
	1964	Rb	14.2	.52	.27
Finger	1963	Rb	11.1	3.10	
	1964	Rb	13.1	1.84	.33
		SS	8.0		
Knik	1961	Rb	18.0		
		SS	11.5		
	1963	Rb	12.9	.41	
	1964	Rb	15.1	.10	.19
Long (Mile 86)	1963	Rb	22.5	.53	
		Gr	10.8		
	1964	Gr	12.5	.10	.79
Ravine	1963	Rb	9.3	1.10	
	1964	Rb	10.7	.16	.37
Weiner	1961	Rb	8.5		
		DV	8.5		
	1963	Rb	8.2	2.14	.31
		DV	7.3		
	1964	Rb	11.3	.37	1.19

TABLE 5. - Summer Creel Census Results of Matanuska Valley Unstocked Waters, 1964

Water	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Length Unknown	Aver. Length	Percent Compos-ition	Total Anglers	Fish Per Hour
Caswell Creek	Rb			2								10	100	15	.07
	SS								2	3		20.5	20	30	.51
	PS						2	4	4	9		20.1	76		
	DS									1		28	4		
Cotton-wood Creek	Rb	2	2	3	4	2					5	10.3	100	30	.24
	SS								4	6	32	21.5	33.9	70	.42
	RS									8	71	23.3	63.7		
	PS									3		19	2.4		
Deception Creek	Rb			2			1			1	4	10	27.6	27	.61
	Gr		1	3	1						6	10	37.9		
	DV		1	3	1						5	10	34.5		
	PS										6	-	66.7	6	.56
	DS										3	-	33.3		
Fish Creek	Rb	1	13		3						19	8.2	100	18	1.50
Goose Creek	Rb				1		1					12	66.6	4	.38
	Gr				1							10	33.4		
Grey's Creek	Rb		2	5	3	3	1				2	11.5	9	81	.69
	Gr		8	10	17	9	7	1			110	12.1	91		
Kashwitna River	Rb		5	3	3		2					10.3	26	62	.48
	Gr		3	8	8	5	3					11.1	54		
	DV			2	1	2	1					12.6	12		
	WF				2	2						13	8		
	SS							4	7	14		21.7	100	13	1.00

TABLE 5. (Cont.) - Summer Creel Census Results of Matanuska Valley Unstocked Waters, 1964

Water	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Length Unknown	Aver. Length	Percent Composition	Total Anglers	Fish Per Hour
Little Willow Creek	Rb			1		1			1	1		14.6	50	33	.18
	Gr			1	2							11	37.5		
	DV			1								10	12.5		
	SS										1	-	9.1	11	.85
	PS							2	1	3	1	19.8	63.6		
	DS							1		2		20.3	27.3		
Meadow Creek	Rb	3	6	4		2	2		1		45	10.3	100	34	.52
Montana Creek	Rb			3	4	3	2		2			13	35.9	60	.25
	Gr		2	7	6	6		1				11.4	51.3		
	DV		1	1	1	1						14.2	10.3		
	WF					1						14	2.5		
	SS							8	13	28	10	21.7	40.1	98	.64
	PS						2	15	15	33	3	19.6	46.3		
	DS									20		26	13.6		
Nancy Creek	Rb		3	1	2	5	2	2	1		3	13.5	100	16	.44
Sheep Creek	Rb			4	1	5	3					13.2	65	47	.25
	Gr			1	1		1	1				13.3	20		
	DV			2								10	10		
	WF					1						14	5		
	PS							11	4	11	15	19.1	42.7	51	.59
	SS							1		2	1	23.5	4.2		
	DS									40	11	26.4	53.1		

TABLE 5. (Cont.) - Summer Creel Census Results of Matanuska Valley Unstocked Waters, 1964

Water	Species	No. in Two Ince Size Groups 6	8	10	12	14	16	18	20	20+	Length Unknown	Aver. Length	Percent Compos-ition	Total Anglers	Fish Per Hour
Sunshine Creek	Rb		2	1	1							9.5	11.8	7	1.78
	Gr		1	7	10	11						12.1	85.3		
	WF					1						14	2.9		
	SS						3	8	6	32		21.8	64.5	21	2.08
	PS						6	9	6	6		18.6	35.5		
Willow Creek	Rb		1	3							9	9.5	11.5	108	.58
	Gr		7	25	6	2					47	10.0	77		
	DV	1	2	2			1				5	9.6	9.7		
	WF					1	1					15.0	1.8		
	PS						3	22	16	31	1	20.1	60	72	.95
	DS									42	7	26.1	40		
Wolverine Lake	Rb		2	1	6	4	1				1	12.0	100	15	.30

TABLE 6. - Winter Sport Fishery Creel Census Results, Matanuska Valley, 1964

Lake	Species	No. in 2" Size Groups 6	8	10	12	14	Tot. Fish	Avg. Lgth.	Percent Compos-ition	Total Anglers	Hours Fished	Fish Per Angler	Fish Per Hour
Big	DV			2	1		3	10	60	2	10	2.5	.50
	SS	2					2	5	40				
Finger	Rb					1	1	14	100	2	8	.5	.13
Ravine	Rb		5	5			10	8.6	100	2	8	5	1.25
Wasilla	Rb	6	9	4			19	7.5	67.8	11	34	2.5	.82
	SS	9					9	5	32.2				
Wolverine	Rb		1	4	1		6	9.5	100	4	12	1.5	.50

TABLE 7. - Summary of Creel Census Taken by Military Personnel of Fort Richardson and Elmendorf AFB, 1962-64

Lake and Year	Species	No. in Two Inch Size Groups 6	8	10	12	14	16	18	20	20+	Total Fish	Average Length	Percent Composition	Total Anglers	Hours Fished	Fish Per Hour
Battery																
1963	Rb	51	520	393	112	14	2	1			1,093	9.1	100	210	764	1.43
Green																
1963	Rb			1	1	5					7	13.1	100	33	65	.11
1964	Rb	1	9	19	4						33	9.6	100	57	112.5	.29
Otter																
1962	Rb		2	2	3	6	14	10	1	5	43	16.4	100	34	118	.36
1963	Rb		2	8	3				2	3	18	13.4	100	10	30	.60
1964	Rb	4	3	11	24	39	38	19	4	5	147	14.2	100	157	434	.34
Six Mile																
1963	SS			3	2	2					7	11.7	100	1	4	1.80

TABLE 8. - Lakes Tested for Dissolved Oxygen Content, 1964

Name	Date	Location			Depth of:			O_2 Sample		
		Twp	Rge	Sec	Water	Snow	Ice	Depth	p.p.m.	pH
Beaver	4/8/64	17N	3W	3-9	8'	8"	36"	5'	5.6	6.40
Bonnie	4/20/64	20N	6E	23	18'	12"	43"	5'	10.6	7.20
								10'	9.2	
Bumblebee	4/10/64	19N	4W	30	7'	12"	41"	5'	5.3	6.90
Canoe	4/13/64	17N	1E	13	28'	1/2"	39"	5'	6.0	7.30
								10'	2.9	
Echo	4/8/64	17N	1E	24	38'	7"	35"	5'	6.6	7.25
								10'	5.0	
Falk	4/8/64	17N	2E	16	28'	10"	30"	5'	3.5	6.70
								10'	3.3	
Finger	4/7/64	17N	1E	33-34	39'	3"	37"	5'	5.7	7.05
								10'	5.3	
Gooding	4/7/64	18N	1E	23-27	18'	4"	34"	5'	8.3	6.60
								10'	5.2	
Irene	4/13/64	17N	1E	13	36'	1/2"	40"	5'	1.2	7.20
								10'	0.3	
Knik	4/8/64	16N	3W	19	31'	8"	36"	5'	3.0	6.90
								10'	2.4	

TABLE 8. (Cont.) - Lakes Tested for Dissolved Oxygen Content, 1964

Name	Date	Location			Depth of:			O_2 Sample		
		Twp	Rge	Sec	Water	Snow	Ice	Depth	p.p.m.	pH
Long (Mile 86)	4/20/64	20N	7E	20-21	43'	5"	46"	5'	10.3	7.50
								10'	10.1	
Loon	4/8/64	18N	3W	36	16'	11"	38"	5'	9.7	6.30
								10'	3.6	
Lynn	4/10/64	19N	4W	25	31'	12"	44"	5'	8.2	6.80
								10'	7.5	
Meiers	4/8/64	17N	1E	18	64'	6"	38"	5'	0.3	6.20
								10'	0.1	
								15'	0.0	
								25'	0.0	
								40'	0.0	
Ravine	4/20/64	20N	6E	19	24'	4"	47"	5'	8.8	7.20
								10'	5.3	
Rocky	4/8/64	17N	3W	16-21	15'	10"	35"	5'	8.9	6.60
								10'	6.3	
Weiner	4/20/64	20N	7E	22	39'	12"	40"	5'	5.0	7.20
								10'	4.9	

Less fishing effort was noted during the 1964 ice fishery season than during several previous winter fishing seasons. The few anglers contacted indicated that Ravine Lake produced the best catches, followed by Wasilla Lake (Table 6). Validity of this table is questionable as only a few anglers were interviewed.

The 1962-63-64 creel census data taken by military personnel at Fort Richardson and Elmendorf Air Force Base lakes are summarized in Table 7. Best catches were from Battery Lake and Six Mile Lake which yielded more than 1.4 fish per angling hour.

Possibility for a limited Arctic grayling egg-take was discovered in late May at Gray's Creek. An estimated 1000 adult fish in fully ripe condition were present at the downstream end of the road culvert, although the culvert does not appear to present a barrier to upstream migration. A brief but concentrated sport fishery developed in the culvert vicinity.

Lakes presently stocked, and those having potential for development were sampled for dissolved oxygen content and pH during late winter (Table 8). Of the 17 waters tested, Meiers and Irene Lakes appeared questionable for survival of salmonids.

Interviews with two private landowners resulted in permission for walk-in easements to three landlocked lakes along the Matanuska Valley road system. The lakes, listed below, present optimum situations for stocked management, are easily accessible, and are near population centers. Formal easement instruments are under preparation by the Access Biologist. Rehabilitation and management will proceed as rapidly as possible.

Lake	Surface Acreage	Location
Long	74.2	T17N R1E Sec. 13 SM
Reedy	21	T18N R1E Sec. 8 SM
Triangle	15	T17N R1E Sec. 14 SM

Prepared by:

Dan McGinnis
Fishery Biologist

Date: March 15, 1965

Approved by:

s/ Louis S. Bandirola
D-J Coordinator

s/ Alex H. McRea, Director
Sport Fish Division