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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
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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.

Volume 6 Report No. 4-A

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No.: F-5-R-6 Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Lower Southeast Alaska.

Job No.: 4-A

Period Covered: May 1, 1964 to April 30, 1965.

ABSTRACT

Exploratory work on the extent of the sport fishery in the southern half of Southeast Alaska, present and potential, was continued in fiscal year 1965. Waters previously unrecorded were checked, particularly those easily accessible to the population centers. Sport catch on fresh waters was again recorded either by specific project or by opportunity. Freshwater surveys were carried out to the extent of prevailing needs. Note of species distribution of sport fish was made as influenced by the various degrees of environment. Angler needs of improvements in access and facilities for better utilization of present fish populations were noted. The location of good spawn-taking sites on local sport salmonids is under continued study. Watershed uses affecting sport fish are under constant watch. Sport fishery management recommendations are made from the findings of the project.

RECOMMENDATIONS

1. No changes are necessary in the present regulations on game fish.

2. Continuing surveillance be maintained on the fresh waters adjacent to population centers in this area to observe the effect of increased access and angling pressure on resident and anadromous stocks.

3. Continue the exploratory and investigative work of the past year.

4. Continue noting and reporting to the proper agencies development needs to facilitate angling on fish populations that are presently under harvested.

OBJECTIVES

1. To assess the environmental characteristics of the existing and potential fishery in the waters of the southern half of Southeast Alaska and, where practicable, obtain estimates of existing and potential angler use and the sport fish harvest.

2. To evaluate application of fishery restoration measures and availability of sport fish spawn harvest.

3. To assist as needed in the investigation of status and the guarantee of public access to the sport fishing waters of Southeastern Alaska.

4. To evaluate multiple use of water development projects (public and private) and their effects on the waters of the study area for the proper protection of the sport fish resources.

TECHNIQUES USED

Lakes and streams have been investigated and files maintained to provide adequate information for proper management procedures. The data collected includes:

1. Physical data incorporating water area and flows; bottom contouring; temperature ranges and stratifications; drainage; shoreline and bottom characteristics; spawning and/or rearing capacity as applicable to lakes and streams.

   Maps, aerial photographs, field measurements and observations and data from various agencies were utilized.

2. Chemical data incorporates dissolved oxygen, pH, alkalinity and turbidity evaluations as collected by methods of standard procedures.

3. Biological data incorporates determination of population composition and density, age and growth analysis, productivity studies as required, timing of runs and angler harvest as required for fishery evaluation.

   Nets, traps, seines, weirs and other devices as warranted were utilized to sample the populations.

   Creel census data were collected as available by actual angler contact, statistical evaluation or other means as required for optimum evaluation of the fishery.

When possible, trout, char and salmon egg sources were investigated and, where possible, egg takes have been conducted. Suitable trapping, weiring and holding facilities have been constructed as required. Temporary shelters have also been constructed, as required, for job personnel.

During the course of field investigations, assistance has been given to access biologists in evaluating access and/or easement needs to recreational fishery waters.

Multiple water use, development and public and private projects affecting the sport fish resources and their environment have been reviewed and assessed in terms of temporary and long duration effects on the resource.

All data collected has been biologically and/or statistically analyzed as required to provide specific recommendations for the proper protection and management of the resource.

FINDINGS

Field work was concentrated on collecting information to meet urgent management needs. References included U. S. Geological Topographic maps of scale 1:63,360, the Federal Power Commission Report - 1947, and Dr. James L. Wilding's 1939 "Alaska Lake Survey." Water chemistry has been previously reported in U. S. Fish and Wildlife, Alaska, D. J. Survey Reports for 1955.

Lake Surveys

Perseverance Lake

A 207-acre lake within easy access by road and good foot trail from Ketchikan (3-1/2 miles) with a known dominant population of eastern brook trout and a few rainbows, both of which are maintaining a stable balance of numbers. This climax situation has been reported as well as the poor return of fishing effort to the average angler in preceding Alaska Department of Fish and Game D. J. Project Reports.

The population of fish in the lake was checked with experimental gill nets and sport gear during this work period. Eastern brook trout weighing up to 2-1/2 pounds were taken in the nets and rainbow were taken by trolling a fly. A method of fishing that will consistently put fish from this lake into anglers' creels has not been worked out to date.

Heart Lake (No Name on USGS Map Ketchikan B-5)

The name assigned this lake is not official but merely descriptive. The reason for the survey was that the foreseeable

extension of the South Tongass Highway will make this body of water comparatively accessible to hikers.

The lake has a maximum outflow of an estimated 75 cfs., minimum flow of 1 cfs., and a normal flow of 3 cfs. The bottom of this cirque type lake is rock with some drift of muck and other alluvial material. The surface was still frozen when visited on July 9. The depth is estimated to be greater than 75 feet. The lake lies at an elevation of 1,550 feet on a northeast slope of Revillagigedo Island above George Inlet. It was barren of fish as expected. The outlet is 2 miles long to salt water and impassable for fish. The watershed is relatively small, an estimated 600 acres, predominantly alpine, and entirely enclosed in the South Tongass National Forest. It may be seen clearly on U.S. Geological Survey Topographical Map, Ketchikan Quadrangle (B-5).

Whitman Lake

The general characteristics and location of this body of water have been previously noted in the Alaska Department of Fish and Game D-J Project Reports. It was gillnetted and produced four eastern brook trout measuring 7-1/2 to 8-1/2 inches in 6 net days. It is known to have produced larger fish by gillnetting 10 years ago when a 22-inch fish was taken. Domestic use of the watershed precludes intensive management at this time.

Buckhorn Lake

This lake lies between George and Carroll Inlets near their confluence and drains into Carroll Inlet 3 miles away. The estimated maximum flow is 250 cfs. with a minimum of 7 cfs. and a normal flow of 10 cfs. The drainage area is 595 acres and the lake surface is 141 acres at an elevation of 1,118 feet. The drainage is largely alpine with considerable scrub timber. There are many impassable falls at the outlet. The lake is estimated to be over 100 feet deep. The bottom appears to be talus and muck. Food organisms are in good numbers. There are good spawning and rearing areas present. The lake was gillnetted for 6 days and no fish were taken, confirming the opinion that it is barren. Access is by plane, 12 miles from Ketchikan, or by boat and a 3-mile hike through the woods and muskeg. The lake lies completely within the Tongass National Forest. Its use to date has been as a base of operations for early season deer hunters.

Burnett Lake

A scenic lake on Etolin Island draining into Burnett Inlet from the east through a mile of stream. The lake lies at an elevation of 212 feet. The maximum outflow is estimated

to be 1,500 cfs. with a minimal flow of 20 cfs. and an average flow (Federal Power Commission) of 80 cfs. The drainage area is 4,281 acres, half of which is alpine with the lower part timbered. The bottom appears to be talus, gravel and alluvium and the depth is in excess of 150 feet. There are good spawning and rearing areas in the lake and tributaries. The lake was gillnetted for 6 net days, from July 11 to July 14, and produced 20 cutthroat 7-1/2 to 17 inches long and 32 Dolly Varden 5-1/4 to 8 inches long. Access is by plane from Wrangell, 26 miles, or by boat and hike through the woods. The lake may be seen on U.S.G.S Map, Petersburg (A-2) and is completely within the Tongass National Forest. Angler use to date has been meager.

Lake Nellie

This lake lies in the group draining through Lake Shelokum and into Bailey Bay off North Behm Canal. The surface is 205 acres at an elevation of 425 feet. The depth is estimated to be over 100 feet and the bottom is talus, gravel and muck. Spawning and rearing areas are good, maintaining a climax population of eastern brook and Dolly Varden with the latter more numerous. The maximum flow is estimated to be 1,000 cfs. and the minimum flow 6 cfs. with a normal flow of 10 cfs. The lake was gillnetted 6 net days and produced 2 brook trout (planted U.S.F.S 1931-1932) and 12 Dolly Varden or hybrids of the two. Larger fish are known to be in the lake. Access is by plane from Ketchikan, 45 miles, or Bell Island Resort, 6 miles. The lake may be seen on U.S.G.S. Map, Bradfield Canal (A-5) and has a drainage of 2,784 acres. The outlet has barrier falls impassable to fish from Shelokum Lake below. The lake and drainage lie within the South Tongass National Forest. Angler use to date is nil.

Lake Shelokum

This lake has been reported previously (Alaska Department of Fish and Game D-J Project Report - 1960) and was gillnetted for a population check when work was being done in the vicinity. The nets were fished 6 net days, July 14 to 17, and took 12 Dolly Varden 6-1/2 to 7-1/2 inches long. Rumor had larger fish (5-pound eastern brook trout) in the lake, but none of this size were netted. This lake is unique in that it has a thermal spring tributary.

Woodpecker Lake (No Name on USGS Map Ketchikan D-6)

A previously unsurveyed lake holding considerable evidence of sport fish potential. It is a tributary to Wolverine Creek, north of Yes Bay, North Behm Canal. There are falls in the outlet isolating the lake from migratory fish. The lake is 157 surface acres at elevation 450 feet. The maximum outflow is estimated at 1,000 cfs., the minimum at 7 cfs., and

the normal at 10 cfs. Bottom is composed of rock and alluvium and the depth is over 100 feet. Spawning and rearing grounds are good. The lake was gillnetted for 6 net days (July 17 to July 20). Cutthroat (29) and Dolly Varden (5) were taken, ranging from 7 to 12 inches. The drainage area is 4,320 acres completely within the South Tongass National Forest and is about 1/3 alpine above the timbered areas. The lake may be seen on U. S. G. S. map, Ketchikan (D-6). Angler use to date is nil. The Commercial Fisheries Division of the Alaska Department of Fish and Game planted eyed sockeye eggs in the inlet in 1956. No sockeyes were noted. Access is by plane.

Walker Lake (No Name on USGS Map Ketchikan C-2)

This is a relatively large lake (384 acres) located on the mainland east of South Behm Canal between the heads of the Walker Cove and Rudyerd Bay drainages. Several maps show it draining into Walker Cove in error as it is the head of Rudyerd River. The drainage area measures 8,275 acres in the South Tongass National Forest. The maximum outflow appears to be 1,000 cfs., with a minimal flow of 10 cfs. and a normal flow of 20 cfs. The bottom is talus rock with some finer material at the mouths of the tributaries. Spawning and rearing areas are good. The lake was gillnetted July 17 to July 20 using two nets (6 net days) and no fish were taken. The lake appears very deep and lies at elevation 1,011 feet. There are many falls in the outlet which are barriers to migratory fish. Access is by plane.

St. Nicholas Lake

A good-sized lake (269 acres) lying on Prince of Wales Island near the pass between Hollis and Craig. (See U.S.G.S. Map, Craig B-3). The lake has often been noted but never checked. It lies at an elevation of 850 feet and drains into Port St. Nicholas about 5 miles downstream. There are a number of falls in the outlet which are barriers to migratory fish. The drainage area measures 2,240 acres and the outflow from the lake is estimated at 900 cfs. maximum, 7 cfs. minimum and 10 cfs. normal. The lake appears to be over 100 feet deep but with a number of shallow bedrock reefs and a rock and alluvium bottom. The water is tea colored. Spawning and rearing areas are excellent. The lake was gillnetted July 20 to July 25 for 5 net days. The catch was 19 cutthroat and 74 Dolly Varden. The cutthroat were 8 to 13 inches long and the dollies were 6-1/2 to 10 inches long. Access is presently by plane and the lake drainage is enclosed by the South Tongass National Forest.

Lake Marge

A promising body of water on Prince of Wales Island above Summit Lake between Copper Harbor and the West Arm of Cholmondeley Sound. It is 96 surface acres at elevation 1,750 feet. The outlet drains into Summit Lake, thence

through Lake Mellen and into Copper Harbor, a distance of about 5 miles along the stream. Flow from the lake is estimated 75 cfs. maximum, 1.5 cfs. minimum and 2 cfs. normal. The bottom of the lake is muck and alluvium. Spawning areas appear adequate with good rearing areas. Depth appears to be over 100 feet. The lake was gillnetted July 20 to July 25 (10 net days) and no fish were taken. Many falls in the outlet deny access to migratory fish. Notable was the abundance of scuds (Amphipoda). Access is by plane and the drainage (486 acres) is entirely within the South Tongass National Forest. The lake may be seen on U.S.G.S. Map, Craig (A-2).

Big Bostwick Lake (No Name on USGS Map, Ketchikan B-6)

This lake lies on Gravina Island within 3 miles west of Ketchikan. It is occasionally fished by plane as the hike from Tongass Narrows is without benefit of a trail. Depth is known to be over 100 feet and the bottom is alluvium and muck. The lake is 83.2 surface acres at an elevation of 475 feet. The outlet flows an estimated 500 cfs. maximum, 4 cfs. minimum and 8 cfs. normal into Bostwick Inlet. Low water flows are thought to prevent migratory fish from ascending the stream. However, cutthroat, Dolly Varden, silver salmon, sockeye salmon, stickleback and cottoids have been observed in the system. Spawning and rearing areas are good. The watershed is 1,120 acres, mostly within the South Tongass National Forest.

Little Bostwick Lake (No Name on USGS Map, Ketchikan B-6)

This lake lies on Gravina Island below Big Bostwick Lake about 4 miles from Ketchikan. This body of water resembles a pool in that it is quite small (7 acres) and not very deep (35 feet). It lies at an elevation of 375 feet and the bottom is largely detritus with some gravel area. The outlet flows an estimated maximum of 600 cfs., a minimum of 5 cfs. and a normal 11 cfs. Migratory fish ascend the outlet from Bostwick Inlet when water levels permit. Spawning areas are excellent in the inlet and the lake is a good rearing unit in its entirety. Fish noted in the lake were cutthroat, Dolly Varden, cottoids, stickleback, silver and sockeye salmon. The drainage includes Big Bostwick Lake and totals 1,542 acres.

Downdraft Lake (No Name on USGS Map, Ketchikan A-6)

This alpine type lake lies on Gravina Island between Bostwick Inlet and Clarence Strait 12 air miles southwest of Ketchikan. There is no official name for the lake and the one used here is purely descriptive. The lake is 76.8 surface acres at an elevation of 1,510 feet. The outlet flows an estimated maximum of 400 cfs., a minimum of 1 cfs. and normally 3 cfs. There are many barriers in the form of

falls between the lake and Bostwick Inlet. The lake bottom is mostly talus and gravel. Rearing areas appear fair but spawning grounds are only barely adequate. The lake was gillnetted 2 net days (August 11 to August 12) and no fish were taken nor any noted in the lake visually. The watershed is 307 acres and lies completely within the South Tongass National Forest. Access is by boat and a 2-1/2 mile hike through the woods or by plane. Aircraft access should be used with caution as a wind condition makes take off from the lake impossible at times.

No. 1, Gravina Island (No Name on USGS Map, Ketchikan B-6)

This lake is the largest of a group of 6 small lakes lying on Gravina Island between Ketchikan and the head of Blank Inlet near Judy Hill. There are no known official names for any of these lakes. This lake has 36 surface acres and runs to over 40 feet in depth. The watershed is 320 acres and is partially in the South Tongass National Forest and the Tongass Narrows Withdrawal for the developmental needs of the city of Ketchikan. The elevation of the lake is 90 feet and it drains into Blank Inlet. Flows are an estimated maximum of 50 cfs., a minimum of .3 cfs. and normally 1 cfs. The lake bottom is slab-rock and muck. Spawning grounds are adequate and rearing area is good. The outlet is impassable for migratory fish because of falls. A fish check was made with gill nets and produced 13 cutthroat, 7-1/2 to 13 inches in 5 net days (August 22 to August 27). Angler use is very light, probably because of the necessary crossing of Tongass Narrows. It is easily reached from the head of Blank Inlet by a 1/3-mile hike through the woods.

No. 2, Gravina Island (No Name on USGS Map, Ketchikan B-6)

This small lake lies within a third of a mile of No. 1 and is of the same type. Its surface measures 19.2 acres and lies at elevation 125 feet. The bottom is slab-rock and detritus with adequate spawning ground and good rearing areas. The outlet drains into Tongass Narrows some 1-1/2 miles with barriers to fish in the form of falls and beaver dams. Flows range from an estimated maximum of 20 cfs., a minimum of .3 cfs. and a normal of 1 cfs. The watershed measures 15 acres in the South Tongass National Forest and the Tongass Narrows Withdrawal. The lake was netted for 5 net days (August 22 to August 27) and produced 21 cutthroat from 7-1/2 to 13 inches. Angler use is meager although the lake is easily reached from the head of Blank Inlet and a 3/4-mile hike through the woods.

No. 3, Gravina Island (No Name on USGS Map, Ketchikan B-6)

This is another small lake in the group of 6 on Gravina Island 2-1/2 miles south of Ketchikan. It is the third largest with 16 surface acres and a watershed of 10 acres. Flows are an estimated 20 cfs. maximum, with no reliable figures on minimal or normal flows due to domestic drawdown. The outlet is blocked by a 5-foot crib and fill dam and flows into

Tongass Narrows opposite Ketchikan. The bottom is bedrock, slab-rock and detritus. Spawning grounds are adequate and rearing area is good. Gill nets were used for 5 net days (August 22 to August 27) and took 28 cutthroat 7-15 inches long. The drainage area is in the Tongass Narrows Withdrawal. Angler use is minor although the lake is relatively easy to reach by a 3/4-mile hike from the head of Blank Inlet or along the pipeline 1.3 miles from Tongass Narrows.

No. 4, Gravina Island (No Name on USGS Map, Ketchikan B-6)

This is more of a puddle than a lake and has 4.1 surface acres. It lies with the group of 6 in the Judy Hill area of Gravina Island. The water level varies 3 feet by slow seepage, and depth does not appear to be over 7 feet when spilling, Sticklebacks were noted but no other fish were seen. The lake lies at elevation 150 feet, with falls in the outlet that are barriers to fish, and drains into Blank Inlet. It did not appear to be over 4 feet deep when checked.

No. 5, Gravina Island (No Name on USGS Map, Ketchikan B-6)

Also one of the group of 6 small lakes in the Judy Hill area of Gravina Island. It has a surface area of 5.1 acres and appears to be completely bottomed with organic detritus. Depth is not over 20 feet. It lies at an elevation of 150 feet and drains into lake No. 1 and thence into Blank Inlet. There are falls which are barriers to fish between lakes No. 1 and 5. An old beaver dam is holding the level of No. 5 two and one-half feet above normal level. No fish were noted either visually or with spin gear. The lake drainage is small (5 acres), and most of it lies in the South Tongass National Forest.

No. 6, Gravina Island (No Name on USGS Map, Ketchikan B-6)

The last of the group of waters in the Judy Hill area of Gravina Island. This pond has a surface area of 5 acres and lies at an elevation of 145 feet. It drains into No. 2 Gravina and there are no barriers to fish migration between the two lakes, with the possible exception of low flows. Water flows from the lake range from an estimated 20 cfs. maximum to a .3 cfs. minimum with a normal flow of .7 cfs. The pond was fished with spin gear and 2 cutthroat 10 inches long were taken. They had been feeding on sticklebacks. Spawning and rearing areas are adequate. The easiest access is by foot from the head of the small cove in the upper end of Blank Inlet and a 1/2-mile hike through the woods. The pond drainage area is 5 acres and almost all of it is in the South Tongass National Forest.

As a part of the lake surveys, considerable gillnetting with standard 125-foot sampling nets was done. The presence of natural or introduced fish populations was verified beyond reasonable doubt by this method. The waters netted are listed in Table 1.

TABLE 1. - Result of Population Sampling of 17 Lower Southeast Alaska Lakes in 1964

Lake	Date Stocked	Species	Catch	Species	Size
Tyee	July 1962	grayling	0 (6nd*)		
Summit	July 1962	grayling	0 (10nd)		
Big Goat	July 1962	grayling	0 (6nd)		
Woodpecker	May 1953	sockeye	5 (6nd)	Dolly Varden	7-13"
			29	cutthroat	7-13"
Perseverance	1931, 1932	eastern brook	12 (6nd)	eastern brook	9-16"
Nellie	1931	eastern brook	2 (6nd)	eastern brook	8- 9"
			12	Dolly Varden	7- 9"
Whitman	1931	eastern brook	4 (6nd)	eastern brook	8- 9"
Shelokum	1931	eastern brook	12 (6nd)	Dolly Varden	7- 8"
Gravina #1	1931	eastern brook	13 (5nd)	cutthroat	8-12"
Gravina #2	1931	eastern brook	21 (5nd)	cutthroat	7-13"
Gravina #3	1931	eastern brook	28 (5nd)	cutthroat	7-17"
Downdraft			0 (2nd)		
St. Nicholas			19 (5nd)	cutthroat	8-13"
			74	Dolly Varden	6-11"
Marge			0 (10nd)		
Buckhorn			0 (6nd)		
Walker			0 (6nd)		
Burnett			20 (6nd)	cutthroat	7-17"
			37	Dolly Varden	5- 8"

* nd - net days

Angler Access

The recorded information on sport fish access and development in this office has been reviewed with Access Biologist Ed Cramer in a survey of angler use of the waters of this district and the sport fishery potential as known to date. Any and all information available on fishing locations of Southeastern Alaska was listed for use in assessing future angler activity.

Waters Considered for Rehabilitation

Perseverance Lake, populated with eastern brook trout, was gillnetted for 6 days. Twelve char, ranging from 9 to 16 inches long, were taken in the nets. Further checking with spin gear produced 2 rainbow trout, 10 and 11 inches long. Continuing studies will be conducted to evaluate this lake for possible inclusion in the rehabilitation program.

Freshwater Sport Fishery

The stream and lake fishery in the Lower Southeast Alaska waters is largely a spring and summer activity. A considerable number of people charter planes to the more inaccessible waters, particularly those waters where shelter from inclement weather is available. The waters close to the settlements are often reached by skiff or other boat and the heaviest fishing effort is put on these locations. Aircraft charter or large boat use is beyond the financial convenience of the greater number of anglers, minimizing the angler use of the more inaccessible locations. Generally, the fishing is best at those locations least fished.

Weather is an important factor in the angler utilization of the fresh waters. Heavy winds with low clouds and rain deny access to the fishing locations. Conversely, fair, warm weather brings out the anglers in considerable numbers. Table 2 is a list of the locations and dates checked for sport fishermen. The winter fishery is motivated by the availability of steelhead which attract relatively few anglers.

An examination of the data shows the cutthroat trout to be the high summer catch by species, which is to be expected as it is very popular and available during the period people normally fish the fresh water. Rainbow are probably the most popular fish but are in somewhat shorter supply. Dolly Varden are taken when in good condition by most anglers but are not specifically sought out. Silver salmon are usually taken in salt water but a few anglers intercept them in the lower reaches of the streams while they are still in prime condition. Steelhead anglers are a group apart, rather few in number and oblivious to most adverse weather conditions during the winter when these fish are prime in the streams.

TABLE 2. - Freshwater Creel Census 1964

Date	Location	Anglers	Cutt	Rb	DV	Coho	St.	Total	Hours	C.P.U.E.
1/ 4	Naha River	4					12	12	24	.50
1/ 5	Naha River	4					9	9	12	.75
1/ 8	Karta River	3			3		1	4	15	.27
1/10	Naha River	6						0	30	
1/11	Naha River	2					13*	13	12	1.08
1/12	Naha River	1					1	1	3	.33
1/14	Fish Creek	1					20*	20	4	5.00
4/11	Helm Lake	1	15					15	2	7.50
4/12	Helm Lake	2	7					7	2	3.50
4/16	Karta River	3					15*	15	22	.68
4/18	Yes Bay	2	1	1			6	8	10	.80
4/19	Yes Bay	2		2			4	6	6	1.00
5/ 2	Sea Level	4					10	10	16	.63
5/16	Karta River	6			10		8	18	30	.60
5/17	Yes Bay	3			15		5	20	15	2.50
6/13	Short Creek	2	3		3	1		7	8	.88
6/23	Checats Creek	2	5	20				25	12	2.08
7/25	Naha River	10	8	20	10			38	42	.90
7/26	Naha River	2	5	20	6			31	10	3.10
8/21	Winstanley Creek	3	40					40	18	2.22
8/22	Winstanley Creek	3	24					24	21	1.14
8/30	Fish Creek	2	7					7	12	.58
9/ 6	Port Stewart	5	27	1	7			35	30	1.17
10/15	Klawak Creek	2				10*		10	13	.77
11/ 5	Naha River	2	2		3		2	7	10	.70
11/ 6	Naha River	2	1	2	1		6	10	16	.63
11/18	Karta River	3			6		1	7	24	.29
11/21	Naha River	4					6	6	12	.50
11/22	Naha River	4					14	14	14	1.00
12/ 5	Naha River	4	7	6	4		12	29	28	1.04
	Total	94	152	72	68	11	145	448	473	.95

* Fish in excess of the legal limit released.

Fish Availability and Angler Effort

The timing of anadromous fish runs and angler harvest are in direct relationship. Also, a direct relationship exists between the good summer weather and the fishing effort. A plot (Figure 1) shows the timing of the runs of the several sport salmonoid fish. The fishing effort follows the same lines except that during the winter months (November through March) the fish are present (king salmon and steelhead) but few anglers avail themselves of them.

Experimental Fish Introductions

Two lakes, Josephine on Prince of Wales Island and Halfmoon on the Cleveland Peninsula, were planted on June 16 with 46,000 eyed Arctic grayling eggs each. Both lakes were known to be barren of fish by 6 gill net days with no catch of fish.

Two lakes close together (400 yards) and above the South Tongass Highway (no official names) were planted June 30, with rainbow eyed eggs. These were Cliff Lake (the upper), 20,000 eyed eggs, and Steep Lake, 18,430 eyed eggs. These lakes were barren.

Heart Lake (no official name) on Revillagigedo Island above Mahoney Lake was planted July 9 with 21,336 eyed rainbow eggs. This lake was devoid of fish.

Assistance was given on a steelhead egg take on Admiralty Island. On May 22, all the fish at Pleasant Bay weir (14 females and 11 males) were spawned and 34,500 eggs were taken. There was some over-retention in this "one shot operation" with the result that the pickoff was greater than normal. Pleasant Bay stream appears not to yield enough fish to support an annual egg take.

A check was made on back Behm Canal at Checats Creek to evaluate the system for egg taking. The stream can be weired at two locations. A wide spot in the bed was noted near the beach. The visit was made on June 26. No steelhead were noted and the rainbow trout that were examined had finished spawning several weeks previously. A second site would be easier to handle in high water although the initial cost would be higher due to air transportation of the materials. Further work will be done to assess the magnitude and timing of this run.

Several other locations are in need of investigation with egg takes in mind. Among these are the streams in the heads of Willard, Fillmore and Nakat Inlets and the outlets of Klakas and Santa Anna Lakes. All are reported to have good runs of steelhead.

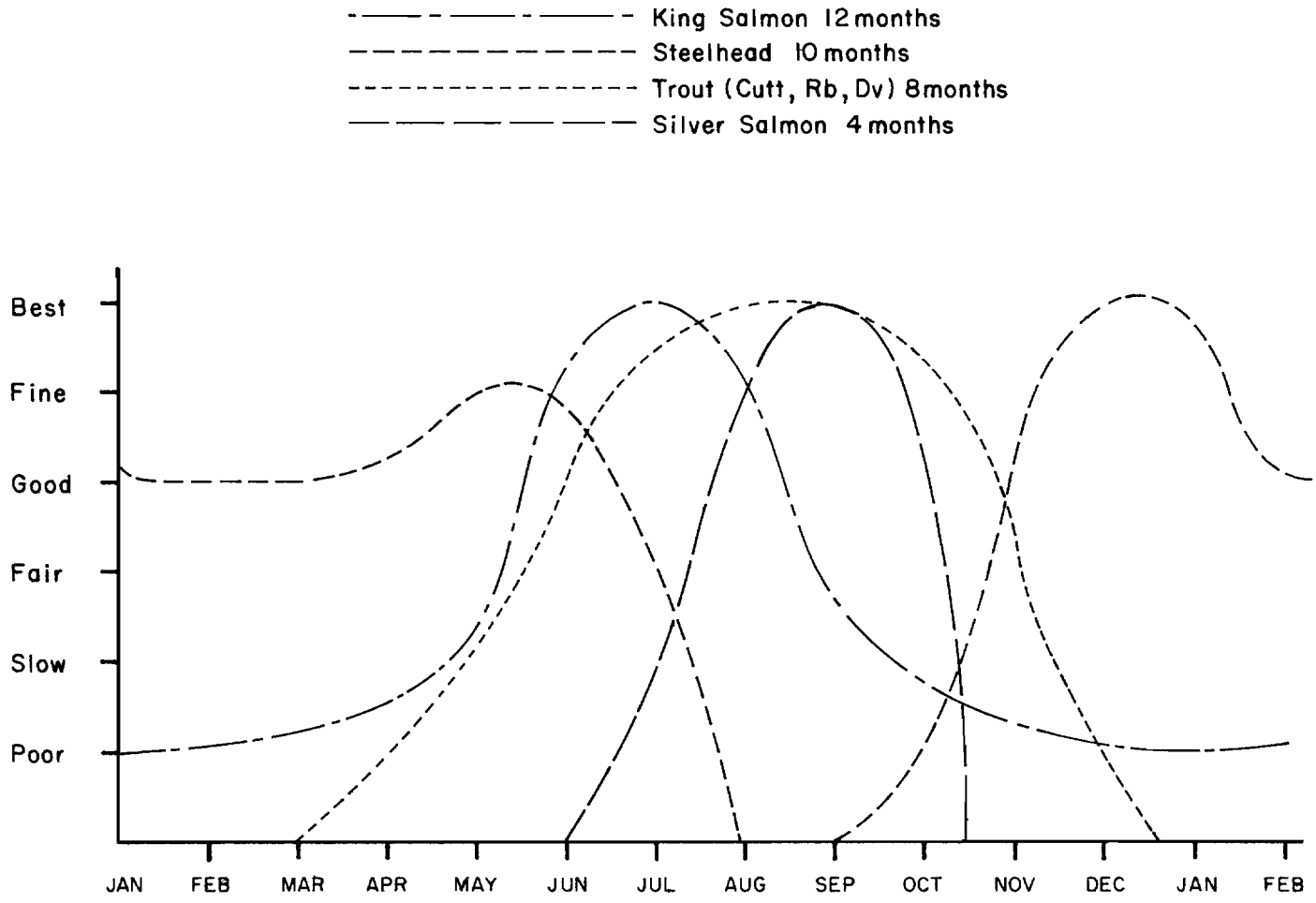

Figure I. Annual Fishing Periods — Ketchikan District

LITERATURE CITED

Topographic Maps, U.S.G.S. Quadrangles Dixon Entrance, Craig, Ketchikan, Bradfield Canal, Petersburg and Port Alexander; Scale 1:63,360.

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Artificial spawning of steelhead trout provides for the re-establishment of this species in depleted or unpopulated watersheds.