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STATE OF ALASKA

Walter J. Hickel, Governor

ANNUAL REPORT OF PROGRESS, 1966 - 1967

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-8

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME
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INTRODUCTION

This report of progress consists of findings and work accomplished under the State of Alaska Federal Aid In Fish Restoration Project F-5-R-8, "Sport Fish Investigations of Alaska."

The project during this report period is composed of 20 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 are divided into logical utilization areas and are jobs of a continuing nature. It will be many years before an index of the potential recreational fishing waters is completed. Six jobs are directed toward specific sport fish studies. These include special efforts toward the anadromous Dolly Varden of Southeastern Alaska, silver salmon in Resurrection Bay, king salmon stocks on the lower Kenai Peninsula, king and other salmon stocks in Upper Cook Inlet, and Arctic grayling and sheefish in Interior Alaska. Special reports have been prepared on specific phases of the Dolly Varden life history and appear in the Department's special "Research Report" series.

The Statewide access evaluation remains one of the most important jobs conducted under this Federal Aid Program. It provides the Department with a tool to recommend withdrawal of suitable access sites on potential recreational fisheries throughout the State.

The remaining jobs include creel census efforts on specific fisheries in high use areas of the State, an egg-take program directed toward locating suitable indigenous stocks, perfecting advanced techniques in taking, handling and rearing species that are not normally associated with standard fish cultural practices, and continuation of the evaluation of the Fire Lake System.

The material contained in this report is often fragmentary in nature. The findings, evaluations and interpretations contained herein are subject to re-evaluation as the work progresses and additional data are collected.

RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.
Project No: F-5-R-8 Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southeast Alaska.
Job No: 1-A

Period Covered: July 1, 1966 to June 30, 1967

ABSTRACT

Inventory and cataloging of Southeast Alaska waters continued during the 1966-67 fiscal year as a continuation of prior studies.

Previously unsurveyed waters and those currently incorporated in the fisheries management program were investigated for basic inventory data and information upon which to direct future fishery management practices.

A total of 30 lakes received investigational work during the study period. Twelve lakes received initial or supplemental fish stockings.

The experimental kokanee transplant in Thayer Lake, Admiralty Island, was continued, marking the second consecutive year a successful transplant of spawning, adult kokanee has been accomplished.

An experimental egg take for steelhead trout was conducted on Klakas Lake outlet, Prince of Wales Island.

Complete files pertaining to the investigational work accomplished during the 1966-67 study period are maintained in each area field office.

RECOMMENDATIONS

1. The program of investigational work be continued on both new waters and those currently included in the management program.
2. Work be continued in areas adjacent to expanding road systems and in newly accessible areas to provide information for the development of new recreational fisheries.
3. The experimental transplant of adult kokanee be continued in Thayer Lake, Admiralty Island.
4. Efforts be continued to locate suitable sites for the artificial spawning of anadromous fish species.
5. Evaluations of our currently stocked and managed waters, and stocking policies, be continued.
6. No immediate changes be made in the Southeast Alaska sport fish regulations.

OBJECTIVES

1. To assess the physical and biological characteristics of the existing and potential recreational fishery waters within the job area.
2. To evaluate the degree of success obtained from past fishery restoration measures.

3. To evaluate multiple water use development projects (public and private) and their effects on the area's streams and lakes for the proper protection of the sport fish resources.
4. To assist, as required, in the investigation of public access status to the area's fishing waters.

TECHNIQUES USED

Information from prior studies conducted by the Alaska Department of Fish and Game was used for directing some phases of work activity.

Priority was given to needed investigational work in areas in close proximity to the population centers, and in areas of expected access development.

Fish population analysis was accomplished in the waters investigated with 125 x 6-foot (standard variable mesh) gill nets. The nets are constructed of five, 25-foot panels varying in bar mesh size from 1/2 to 2-1/2 inches, and designed to capture all age groups of fish.

Water chemistry and lake productivity measurements were accomplished with the aid of a Hach electrical colorimeter. Data obtained included dissolved oxygen, pH, total alkalinity and calcium hardness.

Physical survey data obtained included stream flows, water temperatures, lake depths and bottom contours, evaluations of spawning and rearing habitat, and assessments of aquatic food sources.

Volumetric surveys were conducted with plane-table survey instruments and electrical recording fathometers.

Weirs, seines, and fyke nets were used to capture fish for artificial spawning and live fish transplants.

Watershed uses and water developments were monitored for their effects on sport fish resources, and recommendations made.

FINDINGS

Kokanee Transplant

A transplant of adult kokanee, Oncorhynchus nerka (Walbaum), from Distin to Thayer Lake was accomplished during September, 1966, marking the second consecutive year of introduction.

The introductions of spawning kokanee into Thayer Lake were made in an attempt to establish a self-sustaining population of forage fish for the existing cutthroat trout, Salmo clarki.

As reported previously in the 1964-65 Dingell-Johnson project report, the kokanee are susceptible to capture by standard trapping methods only when they are spawning on the shoal areas and along the lake margin.

A total of 1,105 mature, spawning kokanee was captured in fyke nets during a 3-day period. The fish were held in wire-mesh live boxes, and flown to Thayer Lake, an approximate 5-minute flight.

Mortality during the capture, holding, and transportation phases was light and restricted to the few fish which were "gilled" in the wings and leads of the fyke nets. No other observable mortality occurred.

It can be noted that the fish are quite hardy and tolerate capture and handling exceptionally well.

Egg counts from a number of captured females indicated an average of 125 eggs per kokanee. Random examination of the transplanted fish showed a sex composition of 70 percent females.

With completion of the second kokanee transplant, 1,819 spawning adult kokanee have been introduced into Thayer Lake, representing two separate age classes. It is anticipated a third transplant will be conducted in 1967; this will complete one full life cycle of the kokanee.

Fish Stockings

The lakes depicted in Table 1 were those stocked with Arctic grayling, Thymallus arcticus (Pallas), and rainbow trout, Salmo gairdneri (Richardson), in upper Southeast Alaska during 1966. Goat Lake, which was barren, was stocked for the first time. Lower Dewey Lake was rehabilitated and restocked the same season, 1966. The remaining lakes were planted as a continuation of the existing stocking program.

TABLE 1 - Lake Stockings, Upper Southeast Alaska, 1966.

<u>Lake</u>	<u>Location</u>	<u>Species</u>	<u>Number</u>
Antler	Berners Bay	Grayling	50,000
Glory	Juneau, Mainland	Grayling	50,000
Peterson	Juneau, Mainland	Rainbow (Steelhead)	17,000
Dewey, Lower	Skagway, Mainland	Rainbow	5,000
Surprise	Kruzof Island	Grayling	70,000
Beaver	Baranof Island	Grayling	20,000
Goat	Stikine River	Rainbow	15,000

Success of the grayling introductions in upper Southeast Alaska lakes has been excellent in terms of both survival and growth. In the Sitka area, as in the other areas, grayling averaged approximately 10 inches long the first year. The growth rates exhibited have been comparable with that of rainbow trout plants.

Although growth and size of the introductions have been satisfactory, the grayling have not as yet added a great deal to the angler bag. This is due partly to inaccessibility, the abundant food supply available to the initial stockings of grayling, and angler unfamiliarity with the species.

It appears that until both the available food supply and the grayling population stabilize, and the fish reach a size desirable to the sport angler, the desirability of grayling for Southeast Alaska stockings will remain undetermined.

Volumetric Survey

A volumetric survey of Gen-Gen Lake was made in the fall of 1966 to determine the feasibility of future chemical rehabilitation and restocking.

Gen-Gen Lake is located in Nakwasina Passage approximately 14 miles north of Sitka on Baranof Island. The lake lies 1-1/2 miles off the beach.

A significant sport fishery is lacking for the resident Dolly Varden because of the difficult access and undesirable size of the fish. The population is badly stunted; the fish average approximately seven inches long.

Access to the lake is limited to hiking up the lake outlet from tidewater or utilizing a small float plane. There is a logging road under construction, to be completed within a year, that will provide a more desirable route to the lake. After completion it is expected that the recreational potential of Gen-Gen Lake will be greatly increased.

The lake has a surface area of 79 acres, a maximum depth of 80 feet and a total volume of 3,347 acre feet.

With the improved access provided by a road, Gen-Gen Lake is considered an excellent prospect for future chemical rehabilitation and restocking with a more desirable sport fish species.

Lake Investigations

Shown in Table 2 are the new waters investigated in upper Southeast Alaska during the 1966 summer field season. Four of the 13 lakes surveyed were found devoid of fish life. The remaining waters had either been stocked at an earlier date or supported natural fish populations.

The previously discussed waters that received initial lake surveys were also test netted with variable mesh gill nets for the determination of fish population size and composition.

A number of additional lakes were gill netted for population analysis, and for an evaluation of past stocking policies.

Gill netting summaries for all waters investigated during the 1966 field season are presented in Table 3.

Multiple Use Evaluations

Multiple use studies in upper Southeast Alaska during the 1966-67 work period were limited to several smaller projects.

Stream discharge was metered at monthly intervals throughout the winter season to determine normal winter flow of the Katlian River, located ten miles north of Sitka.

There is considerable industrial interest in the Katlian River drainage for a possible pulp mill site including a large impoundment and subsequent high water usage. This made necessary the determination of normal low winter flows to insure the maintenance of adequate stream flows for salmon spawning, passage, and rearing. It was found that the flow decreased from approximately 100 cfs in November and December to a low of 50 cfs in mid-March, and then began to rise again with the spring runoff. From the work accomplished, observations of past winter flows and weather, it is thought that these flows approach the average, and winter flows of less than 50 cfs could be detrimental to existing salmon runs, as well as resident fish stocks.

A municipal water development project on Indian River, located within the City of Sitka, was monitored throughout its construction. Recommendations were made regarding gravel removal, diversion channel location, and the prevention of undue siltation to protect the downstream fishery resource.

Assistance was given to the U. S. Fish and Wildlife Service in a continuing assessment of the Blue Lake, Baranof Island, rainbow population.

Annual population analysis has been conducted in an attempt to determine the spawning success of the population following the construction of the Blue Lake Dam, the source of power and water for the City of Sitka and the pulp mill located at Silver Bay.

Despite inundation of considerable spawning area, the population appears to be in excellent condition and supporting itself through natural reproduction.

Lower Southeast Alaska

The Ketchikan area possesses a great number of lakes and streams, a number of which have been investigated in varying degrees to meet the fishing pressure needs. As a result of these inventories a number of lakes have been incorporated in the fisheries management program.

TABLE 2 - Lakes Investigated in Upper Southeast Alaska, 1966.

<u>Name</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Quadrangle</u>
Benzeman Lake	Baranof Island - Necker Bay	56 47 00 N	134 58 00 W	Port Alexander D-3
Deer Lake *	Baranof Island - Mist Cove	56 31 00 N	134 42 00 W	Port Alexander C-3
Hidden Falls Lake	Baranof Island - Kasnyku Bay	57 13 00 N	134 53 00 W	Sitka A-3
Kasnyku Lake *	Baranof Island - Waterfall Cove	57 11 00 N	134 05 00 W	Sitka A-3
Rostislaw Lake, Lower *	Baranof Island - Chatham Strait	56 29 30 N	134 41 30 W	Port Alexander B-3
Unnamed (Paddy Lake)	Baranof Island - Nakwasina Pass	57 14 45 N	135 29 30 W	Sitka B-5
Unnamed (Gen-Gen Lake)	Baranof Island - Nakwasina Pass	57 16 30 N	135 27 00 W	Sitka B-5
^u Biorka Lake	Biorka Island - Central	56 50 40 N	135 32 00 W	Port Alexander D-5
Unnamed (Sukoi Lake)	Kruzof Island - Sukoi Inlet	57 16 00 N	135 45 30 W	Sitka B-6
Black Lake	Skagway - Skagway River	59 29 00 N	135 16 15 W	Skagway B-1
Dewey Lake, Lower	Skagway - Mainland	59 26 30 N	135 18 00 W	Skagway B-1
Icy Lake	Skagway - Mainland	59 28 00 N	135 17 00 W	Skagway B-1
Lost Lake *	Skagway - Taiya River	59 31 00 N	135 22 35 W	Skagway C-2

* Lake devoid of fish life.

TABLE 3 - Test Netting Summaries, Upper Southeast Alaska, 1966.

Lake Name	Number of Fish	Species*	Length Range (Inches)	Length Mean (Inches)	Frequency**	Percent Composition
Admiralty Island						
Thayer Lake	44	CT	7.0 - 10.2	8.2	0.80	49
	46	DV	5.5 - 10.4	7.5	0.83	51
Biorka Island						
Biorka Lake	2	RB	10.5 - 14.5	12.5	0.05	100
Baranof Island						
Beaver Lake	20	GR	6.7 - 9.3	7.7	0.39	100
Benzeman Lake	27	DV	7.1 - 18.5	12.1	1.28	100
Deer Lake	None					
Hidden Falls Lake	20	DV	5.1 - 19.0	10.6	0.40	100
Kasnyku Lake	None					
Rostislaf Lake	None					
Unnamed (Paddy Lake)	7	CT	7.2 - 12.1	9.1	1.40	100
Chichigof Island						
Suloia Lake	7	DV	7.0 - 9.3	7.9	0.31	100
Kruzof Island						
Surprise Lake	42	GR	7.1 - 9.2	8.1	0.88	100
Unnamed (Sukoi Lake)	4	RB	7.5 - 9.6	8.8	0.16	100
Petersburg Area, Mainland						
Swan Lake	14	RB	7.1 - 16.4	11.3	0.58	100
Scenery Cove Lake	276	DV	3.3 - 22.0	8.6	5.77	100
Skagway Area, Mainland						
Black Lake	4	DV	10.0 - 21.0	14.1	0.31	100
Lost Lake	None					

* DV - Dolly Varden CT - Cutthroat trout RB - Rainbow trout GR - Grayling

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

Investigation of fish population trends was conducted on 13 of these lakes that had received previous management work, and 4 new bodies of water received initial biological investigation during the 1966 season.

Waters having potential for foreseeable recreational development received high priority within the inventory program. Two of these lakes, one new and one previously stocked, are within 20 miles of Ketchikan.

Data obtained during the course of the lake inventory program is reviewed in the lake survey section.

Lake Surveys

Lunch Creek Lakes (2) (unofficial name):

These two lakes of 6.1 acres (upper) and 19.6 acres (lower) are located at the head of Lunch Creek three miles from the end of the North Tongass Highway on Revillagigedo Island. The lakes, which are in excess of 75 feet deep, lie at elevations of 1,250 and 1,550 feet respectively, and are barren of fish life. The water is quite clear with some muskeg stain. The upper lake drains into the lower one. Shorelines are mostly steep bedrock with some gravel and sand beach. The inlets are excellent for spawning. There are barrier falls between the lakes and below the lower one. The surrounding ground is spruce-hemlock forest with alpine openings above 1,800 feet, the watershed totals 610 acres for the two lakes. The lakes are located in the Tongass National Forest. No trails or any other development of recreational facilities are present on these lakes. It is recommended these waters be stocked with game fish.

Notch Mountain Lake (unofficial name):

This lake was initially surveyed in 1960, and stocked with rainbow trout in 1961. A check was made on the status of the established rainbow population on August 25, 1966. After eight net days with multi-mesh gill nets, three rainbow were taken. One of these was a fish of the original plant.

This lake has a relatively small watershed, approximately 560 acres, and the water is rather dark with muskeg stain. It does not produce an abundance of trout. Access is by plane, 16 miles from Ketchikan. There is no shelter or skiff on the lake.

Moira Lake (unofficial name):

This lake was planted with rainbow trout in 1961 and checked in 1966. Two multi-mesh nets were set for three days and took five rainbow trout eight to nine inches long. A population has been established, but does not appear to be great in number. The lake lies 29 miles southwest of Ketchikan and is presently accessible by airplane. There are no sportsmen facilities on this lake.

Second Kegan Lake (unofficial name):

This 544-acre lake lies above Kegan Lake on West Arm of Moira Sound, Prince of Wales Island. It is 29 miles from Ketchikan. Its elevation is 960 feet, and it drains into Kegan Lake. Netting with multi-mesh gill nets for six net days produced no fish. There are impassable falls in the outlet stream. The drainage area is 2,112 acres, and there are two connected smaller lakes above that drain into this one. Spawning grounds in the inlet appear to be adequate for recruitment needs. Access is presently by plane. The lake appears capable of supporting a population of trout or grayling when introduced. There are presently no recreational developments on the lake.

Dickman Bay Lake (unofficial name):

This 339-acre lake lies on Prince of Wales Island one mile inland, and 397 feet above Dickman Bay off Moira Sound. It has a rock and gravel bottom with some muck. There are barrier falls in the outlet. The lake was netted with multi-mesh gill nets for six net days and produced no fish. The watershed is mostly forested with spruce-hemlock-cedar growth and contains 4,815 acres. Access presently is by float plane from Ketchikan, 32 miles away, or it can be reached from the beach in Dickman Bay via a 1-mile hike through the woods. The spawning gravel in the inlets appears adequate. The lake is without facilities for sportsmen.

Niblack Lake (unofficial name):

This lake is also in Moira Sound on Prince of Wales Island. It has 403 surface acres and appears to be over 150 feet deep at an elevation of 460 feet. The bottom and shores are rock and muck. Two lakes above provide an overflow of approximately five cfs into the west end of the lake. The stream has adequate spawning gravel to maintain a game fish population. The lake lies in the Tongass National Forest and there are no recreational developments established. Multi-mesh gill nets were set for six net days, and three Dolly Varden were taken. The watershed is 2,262 acres of mostly spruce-hemlock-cedar forest with alpine areas above 1,800 feet. Access is presently by plane, 21 miles from Ketchikan.

The lake has no visible surface outlet and seems to drain underground.

Black Bear Lake:

This lake was surveyed in 1955, found barren and planted with rainbow in 1956. An excellent fishery developed three years later. The lake lies on Prince of Wales Island at an elevation of 1,650 feet, and drains 1,395 acres into Big Salt Lagoon near Klawak. A vertical falls of over 200 feet near the lake denies access to fish. A gill net check was made between July 18 and 21, 1966. Six net days with multi-mesh nets produced 13 rainbow trout, 6 to 16 inches long. Spawning areas, although limited, are adequate to maintain the population which supports a well-known fishery. Growth rate of the fish is good. Access is presently by plane, 50 miles from Ketchikan. There is a shelter and skiff for sportsmen on this lake.

Clover Lake:

A 186-acre lake above Clover Bay on Prince of Wales Island was surveyed in 1955, found barren, and planted with rainbow trout in 1956. A fishery developed thereafter among airborne anglers but has declined in recent years. The lake watershed is small, 621 acres, and there are many barrier falls in the overflow that runs into Clover Bay. Two multi-mesh gill nets were set on July 18, 1966, and fished three days. Four rainbow trout were taken ranging 8-1/2 to 19 inches long. The population is maintaining itself and, although relatively small, may be all the lake will support. Access is by plane, 26 miles from Ketchikan. There are no recreational developments on this lake.

Wolf Lake:

This lake was found barren when first surveyed in 1962. It has 103 surface acres at elevation 1,175 feet, above and north of Twelve Mile Arm, at Kasaan Bay on Prince of Wales Island. It was planted with 10,000 rainbow trout fry in 1963. It was checked with two multi-mesh gill nets on July 18, 1966. These fished 3 days to catch 7 rainbow trout, 7 to 11 inches long. The catch indicates a spawning population but no great standing crop of fish. The lake is small in size with a watershed of 973 acres. Angler use of the lake, due to the lack of shelter or skiff, has not been heavy. Access is by plane, 41 miles from Ketchikan or a 2-mile hike from the beach.

Lake Josephine:

A high lake, 1,830 feet, on Prince of Wales Island between the head of the West Arm of Cholmondeley Sound and Copper Harbor. It was first surveyed and found barren in 1960. The watershed measures 967 acres. A plant of 46,000 eyed grayling eggs was made in 1964. Two multi-mesh gill nets were set along the north shore on July 27, 1966, and were fished for three days. No fish were taken. The lake has a long period of ice cover and may consequently never be a heavy fish producer. Access is presently by plane, 39 miles from Ketchikan. There is a sportsman shelter above this lake.

Summit Lake:

A 350-acre body of water lying in the divide at 1,298 feet elevation between West Arm of Cholmondeley Sound and Copper Harbor on Prince of Wales Island. Depth appears to be in excess of 200 feet. Lake Marge above the lake drains into it and both inlet and outlet have many barrier falls impassable to fish. The watershed is 2,030 acres. The first survey of the lake was made in 1960 and no fish were found. A plant of 40,000 eyed grayling eggs was made in 1962. A check on the grayling was made on July 27, 1966, with two multi-mesh gill nets. Five grayling, 12 to 13 inches long, were netted. These fish had very

small heads and profiles similar to a lake whitefish, Coregonus clupeaformis, indicative of the excellent growth demonstrated. It is hoped that a self-maintaining population has developed, although there are no reports of anglers taking fish from this lake to date. Access is by plane, 38 miles from Ketchikan. There are no recreational facilities on this lake.

Halfmoon Lake (unofficial name):

One of the lakes lying above Lake McDonald at 812 feet elevation on the base of the Cleveland Peninsula. It measures 269 surface acres and appears to be over 200 feet deep, with steep bedrock sides. There is an alluvial fill in each end of the lake and a tributary stream. The outlet is over a bedrock dike and barrier falls to another lake below. The drainage area into the lake is 9,570 acres. A survey was made of it in 1960 and no fish were found. A total of 46,000 eyed grayling eggs were planted in the major inlet in 1964. There have been no reports of fish in the lake. Two multi-mesh gill nets were set on July 27, 1966, off the main inlet and fished three days. No fish were taken and the reason for the apparent lack of survival is undetermined. Access is by plane, 50 miles from Ketchikan. There is no recreational development on the lake.

Tyee Lake:

This lake is a sub-alpine body of water, 404 acres, at elevation 1,370 feet, and drains over a series of falls into the mouth of the Bradfield River. The outlet is named Tyee Creek and flows approximately two miles from the lake to tidewater. Depth of the lake is in excess of 100 feet. The sides of the lake are steep and of bedrock or talus. The major inlet stream has filled the basin at the upper end of the lake with gravel and sand. The lake watershed is 9,500 acres. Shallows, or shoal areas, are minimal in the lake. A check was made with two multi-mesh gill nets which were fished six net days near the inlet on August 22, 1966. No fish were taken, which appears to indicate no survival of the eyed egg plant of Arctic grayling made in 1962. Further effort will be made to establish a grayling population in this lake using fry. The lake should be an excellent addition to the sport fishery of Ketchikan and Wrangell. Access to the lake is by plane, 60 miles from Ketchikan, or 49 miles from Wrangell, but has no facilities for camping.

LeDuc Lake:

A 704-acre lake at elevation 1,384 feet, above the LeDuc Fork of the Chickamin River. Drainage area is 4,564 acres. It is an alpine basin with little timbered area around the lake. Depth is estimated over 200 feet and the shore is very rough. Rainbow trout were planted by the Fish and Wildlife Service in 1955, and a balanced population of these fish has established itself. The lake is not heavily fished due to the distance from Ketchikan, 52 air-miles away. A multi-mesh gill net was set near the outlet on August 25 and fished three days. Fourteen rainbow trout, 8 to 16 inches long, were taken. The outlet stream was checked with sport gear and 6 rainbow trout were taken in one hour, 9 to 14 inches long. The lake appears to have an excellent self-maintaining rainbow population and will provide fine fishing for anglers visiting it. Presently, there are no angler facilities on the lake.

January Lake:

This lake lies at 640 feet elevation on Revillagigedo Island between Grace and Manzanita Lakes. It has a surface of 186 acres and drains over several impassable falls into Manzanita Creek above the barrier falls in that stream. The water is slightly colored with muskeg stain. An area of 1,345 acres drains into the lake. Most of this area is spruce-hemlock-cedar forest. The lake appears to be over 75 feet deep with notable shallow areas occupied by nuphar and potamogeton beds. The bottom is gravel and sand with organic detritus in the shallow areas and level bottom areas. A small plant of 3,000 rainbow trout fry was made in 1961, following previous survey work which disclosed the absence of fish. A multi-mesh gill net was set in the lake on August 22, 1966, and retrieved three days later with 8 rainbow trout, 9 to 15 inches long. The lake appears to have established a population of rainbow trout that is maintaining itself. Access is presently by plane, 29 miles from Ketchikan. There are no angler facilities on this lake.

Big Goat Lake:

A lake of 672 surface acres lying at elevation 1,775 feet, above Wilson Lake on the South Behm Canal Mainland and draining into South Arm of Rudyerd Bay. It is estimated to

be over 200 feet deep with steep bedrock shores. The main tributary is from Little Goat Lake and flows a normal 15 cfs. Many cataract-type small tributaries drain snowfields above. The surrounding drainage area is 5,120 acres, alpine and very scenic. The outlet falls over a bedrock dike some 1,300 feet in the first 1/4 mile from the lake. Previous surveys disclosed that the lake was barren of fish. A plant of 45,000 eyed Arctic grayling eggs was made in the inlet in 1962. A gill net check disclosed none of these fish in 1964. A plant of 53,000 grayling fry was made in 1965. Two nets were set off the inlet stream on August 25, 1966, and retrieved four days later. They held 7 grayling of the original plant that were 15 to 16 inches long and 26 of the 1965 plant that were 7 inches long. It is not known if a self-maintaining population has established itself, but fish should be able to spawn successfully in the major inlet. Access is by plane, 42 miles from Ketchikan. There is a shelter and skiff on the lake.

Upper Checats Lake:

A very scenic lake at elevation 710 feet in the head of Checats Creek on the mainland off South Behm Canal. The surface measures 845 acres and a depth of 400 feet has been measured. The lake shores are steep and rugged. There is beach shore at the head of the lake but little anywhere else. Several precipitous inlets are tributary with the major one located at the head of the lake. Spawning area is adequate in both the outlet and inlet. The outlet stream has high barrier falls and the drainage measures 4,530 acres. There are two more lakes in the system below this one. The lake was planted with 70,000 eyed rainbow eggs in 1954 by the Fish and Wildlife Service. A fine fishery subsequently developed. Two multi-mesh gill nets were set on August 25, 1966, and fished for four days. They took 27 rainbow trout ranging 7 to 16 inches long. The fish population seems to have stabilized with the productive potential of the lake and is maintaining an excellent fishery. The lake is reached by plane, 36 miles from Ketchikan. There are two shelters for sportsmen on this lake and one or more skiffs.

Egg Take Operations

The search for egg-take sources for trout, char and salmon continues. A number of sites were checked with varying degrees of success. There is a narrow set of limits imposed by size of stream that can be handled with a small weir, size of fish population present, type or strain of the desired species and the logistical aspects.

A site on the outlet of Klakas Lake, Prince of Wales Island was selected and a weir installed on April 11, 1966. Steelhead were found in the stream on this date that had apparently spawned at water temperature 37° F. The first steelhead was trapped on May 6, and a spent female was trapped on May 9. No other fish entered the trap and the operation was discontinued on May 19.

A flight was made on May 13 to check Klakas Creek and others. A spent female steelhead was taken below the weir. No other fish were seen. An air inspection was then made of Stanley Creek (too large to handle), Eagle Creek (no fish seen), and Black Bear Creek in Union Bay (no fish). After this flight and date, no other checks were made to locate a suitable site.

Lake Investigations

The waters shown in Table 4 are those which were investigated during the 1966-67 fiscal year. The gill nets were used in exploration of new waters and to assess growth rates of stocked rainbow trout and Arctic grayling.

Scale samples for age and growth analysis were taken from gill-netted fish from a number of the lakes. This data is presented in Table 5.

Lake Stockings

A total of five lakes in the Ketchikan area received fish plants during 1966. Arctic grayling were stocked in three and rainbow trout in two. Numbers of fish stocked in the respective waters are depicted in Table 6.

TABLE 4 - Test Netting Summaries, Lower Southeast Alaska, 1966,

Lake Name	Number of Fish	Species*	Length Range (Inches)	Length Mean (Inches)	Frequency**	Percent Composition
Revillagigedo Island						
Lunch Creek (2)	None					
Notch Mountain	3	RB	9 - 17	11.6	.03	100
January	8	RB	9 - 15	13.0	.11	100
Prince of Wales Island						
Moira	5	RB	8 - 9	8.5	.08	100
Second Kegan	None					
Dickman Bay	None					
Niblack	3	DV	10.5 - 13.0	11.6	.09	100
Black Bear	13	RB	6 - 16	8.6	.20	100
Clover	4	RB	8.5 - 19.0	13.0	.06	100
Wolf	7	RB	7 - 11	7.6	.11	100
Josephine	None					
Summit	5	GR	12 - 13	12.5	.08	100
Mainland						
Halfmoon	None					
Tyee	None					
LeDuc	14	RB	8 - 16	11.8	.20	100
Big Goat	33	GR	6 - 16	8.6	.19	100
Upper Checats	27	RB	7 - 16	12.2	.14	100

* DV - Dolly Varden CT - Cutthroat trout RB - Rainbow trout GR - Grayling

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

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TABLE 5 - Age and Growth Analysis of Some Southeast Alaska Lakes, 1966.

Lake	Species	Stock Date	Age & Length (Inches)											
			1	L	2	L	3	L	4	L	5	L	6	L
Notch Mountain	RB	1961			2	9					1	17		
Summit	GR	1962						5	12-13					
Big Goat	GR	1965	26	7										
	GR	1962						7	14-15					
LeDuc	RB	1955	1	8	6	8-11	3	10-11	8	11-14	1	13		
Black Bear	RB	1956			1	8					3	14-16		
Clover	RB	1956							1	14			1	19
Wolf (Prince of Wales)	RB	1963	6	7			1	11						
January	RB	1961			2	9	4	9-12			2	15		
Upper Checats	RB	1959			2	7	8	10-12	9	11-16	2	15-16		

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TABLE 6 - Lake Stockings, Lower Southeast Alaska, 1966.

<u>Lake</u>	<u>Location</u>	<u>Species</u>	<u>Number</u>
Snow	Naha R. System	Grayling	25,000
Orton	Naha R. System	Grayling	25,000
Mahouny, Upper	Ketchikan Rd. System	Grayling	20,000
Donkey	Ketchikan Rd. System	Rainbow	6,000
Walker	Rudyerd Bay	Rainbow	7,000

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Though Dating Back to Ancient Times, Nets are still a Valuable Tool of Fishery Workers.