

FEDERAL AID IN SPORT FISH RESTORATION

Recreational Fisheries
Enhancement for Juneau

by
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Study No.:

RESEARCH PROJECT SEGMENT

State: Alaska

Project No.: F-21-R

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Study Title: RECREATIONAL FISHERIES
ENHANCEMENT FOR JUNEAU

Cooperator: Ron Josephson

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

This project was designed to enhance sport fishing opportunities in the Juneau area using a number of different means. Montana Creek in Juneau was stocked with steelhead trout, *Salmo gairdneri*, smolts. Work was continued at Snettisham Hatchery on the development of the Peterson Creek steelhead trout stock for planting in the Juneau area. Twin Lakes in Juneau was stocked with coho salmon, *Oncorhynchus kisutch*, for a land-locked freshwater lake sport fishery. In an effort to produce an earlier run of coho salmon in the Juneau area, two new coho salmon brood stocks were selected and obtained for culture at Snettisham Hatchery.

Key Words: Steelhead trout, *Salmo gairdneri*, coho salmon, *Oncorhynchus kisutch*, enhancement, stocking

INTRODUCTION

Southeast Alaska has a series of hatchery programs, including state, private, and federal operations. The majority of these programs are primarily aimed at producing fish for commercial

user groups, but the general hatchery production also provides substantial benefit to sports fisheries. Although the state hatchery system has projects in Southeast that are specifically aimed at the sport fishing public, there is a need to target sport fisheries in areas accessible to most sportsmen. These fisheries need to be near the major population centers and accessible to shore-based fishermen. Juneau recreational marine anglers have indicated a desire for increased availability of coho salmon, *Oncorhynchus kisutch*, during July and August. Utilization of different coho salmon stocks at Snettisham Hatchery will allow us to determine whether these stocks improve the summer fishery. All major population centers in southeast Alaska have limited road access to fishing streams, and most fishing areas near roads are highly utilized and may suffer from chronic over-fishing. This project proposes to provide two highly desirable salmonids, coho salmon and steelhead trout, *Salmo gairdneri*, directly to the Juneau area (Figure 1) sport fishermen.

RECOMMENDATIONS

1. Continue the steelhead trout enhancement project with the emphasis on providing improved roadside angling opportunities.
2. Continue the stocking of Twin Lakes with coho salmon to provide recreational fishing opportunities in that freshwater lake system.
3. Continue testing of alternate coho salmon brood stocks at Snettisham to select a stock that offers increased opportunities for recreational fisheries.

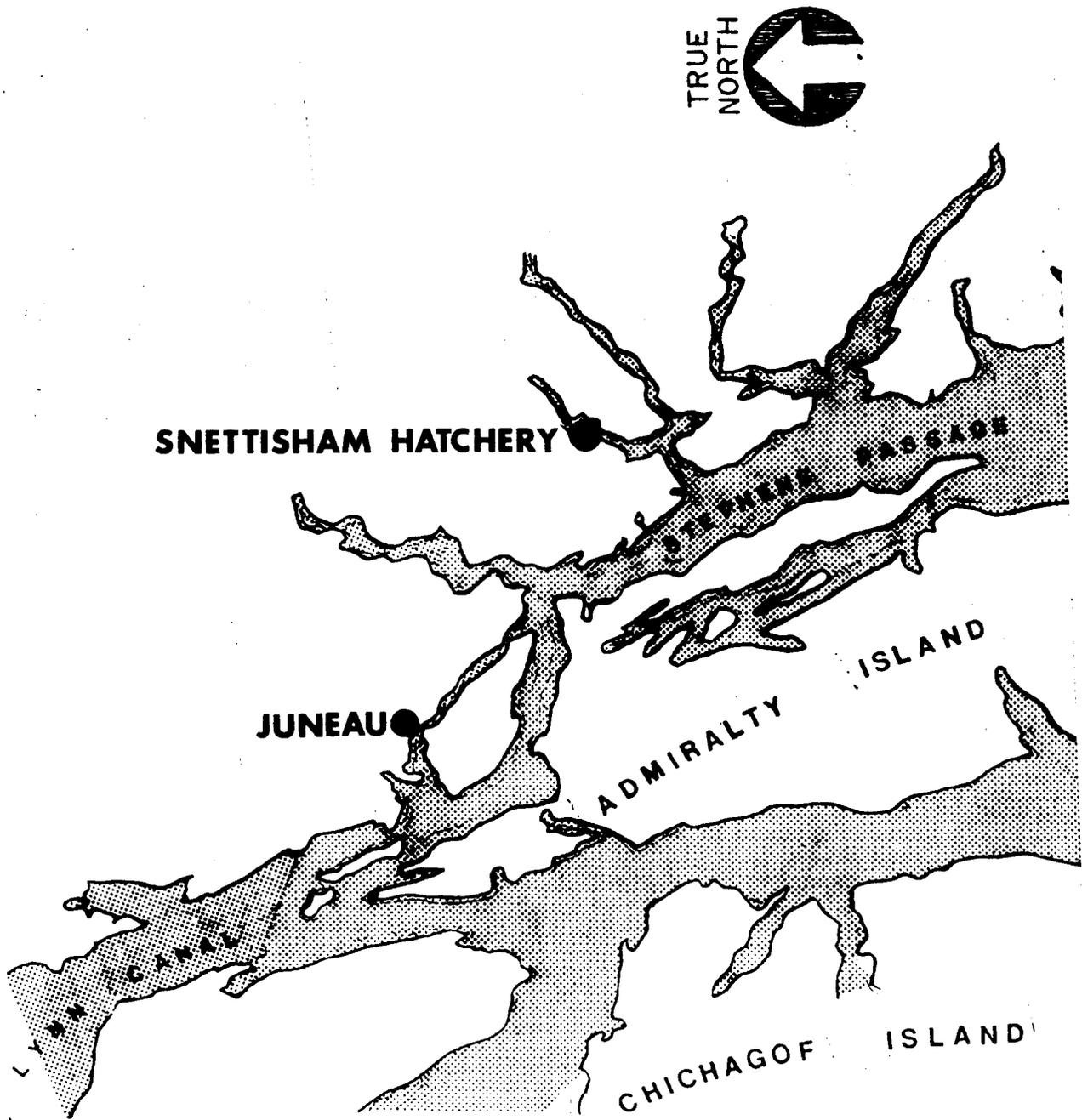


Figure 1. Project location map.

OBJECTIVES

1. Release of 3,000 steelhead trout smolts to Montana Creek in June 1986.
2. Release of 5,000 1983 brood coho salmon to Twin Lakes in spring of 1986.
3. Retain 6,000 1984 brood coho salmon for additional rearing at Snettisham prior to 1987 release.
4. Collect 30,000 Peterson Creek steelhead trout eggs for incubation and rearing at Snettisham Hatchery.
5. Collect a minimum of 150,000 coho salmon eggs from both 1985 King Salmon River and Montana Creek stocks for performance testing at Snettisham Hatchery.

METHODS AND MATERIALS

Steelhead Trout

Two separate operations were involved with steelhead trout activities: stocking and egg take.

Stocking:

The steelhead trout stock designated for the 1986 stocking of Montana Creek were from Falls Creek, near Petersburg; the eggs were collected in 1983. The eggs were incubated and subsequent fry reared at Crystal Lake Hatchery. Fish were moved from Petersburg to Juneau on the Alaska Marine Highway in a 1.5 cubic meter fiberglass transport tank mounted in a pickup truck. The truck then transported fish to a pool in Montana Creek (10 km from salt water) where they were released (Figure 2).

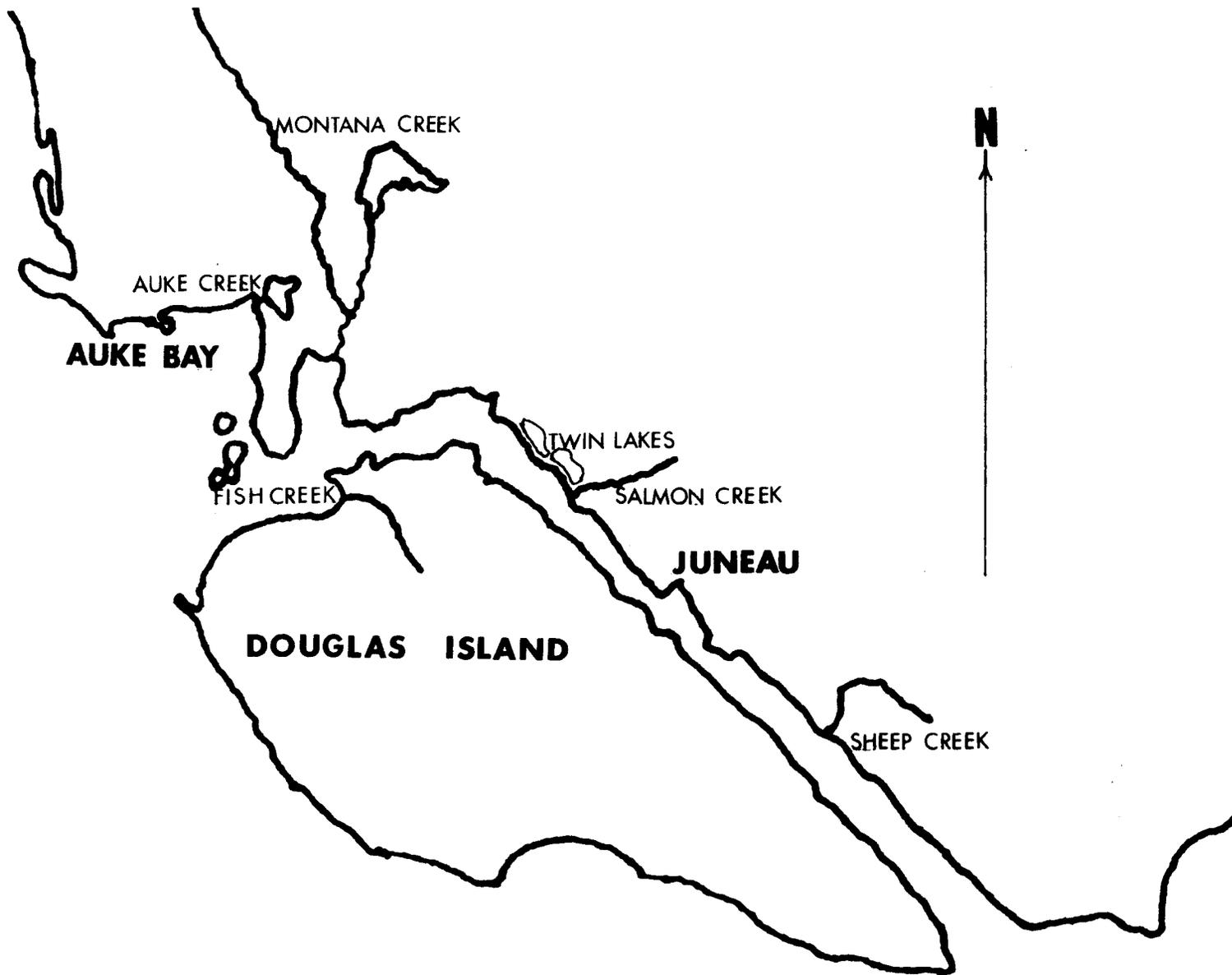


Figure 2. Location of Juneau release sites.

Egg Take:

Peterson Creek steelhead trout eggs were obtained for culture at Snettisham Hatchery by remote egg takes. Periodic foot surveys were initiated in late April to determine the presence of spawning trout. When sufficient numbers were present, a four- or five-person crew equipped with an electroshocker, gillnet, and dip net captured adults in prespawning condition. The gametes were collected dry and held separately in plastic bags. The bags were placed on a 2.5-cm foam pad over a layer of ice in a cooler. The cooler with gametes was then transported to Snettisham Hatchery by aircraft where the eggs were fertilized, water hardened, disinfected, and seeded for incubation. Culture techniques followed standard hatchery procedures.

Twin Lakes

Coho salmon from the 1983 brood at Snettisham Hatchery were retained for stocking in Twin Lakes (Figure 2). They were reared for 2 years using standard cultural techniques and fed a commercial salmon diet. The fish were transported in 121-liter plastic containers supplied with oxygen. Loading density was 0.24 kg per liter. A Bell-212 helicopter carried the containers of fish from Snettisham hatchery to Twin Lakes where they were released into the lake.

In February 1986, 11,000 coho salmon fingerlings at Snettisham Hatchery were transferred to a vertical rearing container. These coho salmon will be retained for stocking in Twin Lakes early in 1987.

Coho Salmon Brood-Stock Selection

Montana Creek and King Salmon River coho salmon brood stocks were selected for evaluation at Snettisham. The performance of these stocks will be compared to the Speel Lake stock, which is presently at Snettisham Hatchery.

A goal of 150,000 eggs from each stock was set; using an assumed fecundity of 3,000 eggs, this equals 50 females. Operations were directed toward that objective.

Montana Creek:

Coho salmon at Montana Creek were collected from pools in the upper portion of the creek using a gillnet and electroshocker during the third week of October. The egg-take schedule (Appendix Table 1) developed for this system was adhered to. The fish collected were held in two 1- x 1- x 2.5-m wire mesh pens secured in protected locations; the fish were allowed to ripen in these pens. Eggs and sperm were collected and held separately until pathology samples had been screened for bacterial kidney disease (BKD). After screening, gametes from BKD-negative fish were fertilized, water hardened, disinfected, and placed in incubators at Snettisham Hatchery. Incubation and rearing at Snettisham followed standard hatchery procedures.

King Salmon River:

A weir was installed in the King Salmon River on 18 September 1986 to collect coho salmon for egg takes. The weir was also used to count a portion of the escapement to ensure adherence to the egg-take schedule (Appendix Table 2). On the day the weir was installed, an upstream survey was conducted to count coho salmon already in the system. Fish were collected and held in three wire-mesh pens similar to those used at Montana Creek. Egg-take activities in late October followed the same methodology as at Montana Creek. Incubation and rearing at Snettisham Hatchery followed standard procedures.

RESULTS

Steelhead Trout

Objectives for steelhead trout were not met for stocking, but they were exceeded for the egg take.

Stocking:

On 8 June 1986, 2,440 steelhead trout smolts (mean size of 48.1 g) were released in Montana Creek. The trout were healthy and lively when released. They were observed swimming upstream against a strong current, indicative of their good health. The objective of 3,000 smolts was not met because of the limited availability of this species; in order to produce smolts as desired for this project, extended rearing is required. In April 1985 the steelhead trout destined for Juneau release were coded-wire tagged and held at Crystal Lake Hatchery. At that time there were only 3,002 steelhead trout of the right age available. Survival over the 13-month period was 81%, which is an acceptable survival for that species over that period of time.

Egg take:

In 1986 collection of Peterson Creek steelhead trout eggs occurred on 3 days: 9, 13, and 16 May 1986. A total of 31,510 green eggs were collected, transported to Snettisham Hatchery, and placed in incubators. An estimated 20,604 emergent fry were ponded on 24 July from the 1986 steelhead trout egg takes. They are presently being reared for future release.

Twin Lakes

The stocking objective of 5,000 1985 brood coho salmon for Twin Lakes was met; on 7 February 1986, 5,010 coho salmon were stocked there. The mean size was 35.3 g. Angler effort and success at

Twin Lakes was not quantified during this report period; however, these fish were caught in a youth fishing derby, and anglers at other times have been observed at the lake with catches of coho salmon.

Coho Salmon Brood-stock Selection

Egg-take objectives for coho salmon were exceeded for the Montana Creek stock but not met for the King Salmon River stock.

Montana Creek:

An estimated 160,853 green eggs were collected from 50 females on 24 October 1985 at Montana Creek. There were no adults that tested positive for BKD. The eggs produced an estimated 143,201 emergent fry on 25 May 1986. These fish are being reared at Snettisham Hatchery using standard procedures. The egg take exceeded the objective of 150,000 green eggs.

King Salmon River:

An estimated 82,977 green eggs were collected from 29 females on 23 October 1985 at King Salmon River. There were no adults that tested positive for BKD. These eggs produced an estimated 68,284 emergent fry on 25 May 1986. These fish are being reared at Snettisham Hatchery using standard procedures. The egg take did not meet the objective of 150,000 green eggs because of high mortalities of fish held for brood stock. A total of 90 females and 74 males were placed in pens during 18 to 26 September. The pens were placed in a sheltered location. Coho salmon held in this manner usually do very well once they have "colored up". In 1985 many fish were quite silver and even suffered some scale loss. It was hoped that the cold water would aid in the survival of these fish; however, there were 80 mortalities (45 females and 35 males). Of the remaining live fish only 29 females were ripe;

these fish were used for the egg take. The remaining females were not available for egg-take use as the schedule allowing a total of 60 females to be captured had already been exceeded.

DISCUSSION

At this interim stage of the project, the results have been positive. The benefits of the various project tasks (steelhead trout releases, Twin Lakes stocking, and coho salmon brood selection) will be evaluated later. The success of steelhead trout and coho salmon brood-stock projects will depend on the variations of ocean conditions and survivals and contributions of these species will vary from year to year. We can expect that Juneau anglers will enjoy a steelhead trout fishery at Montana Creek. The trial coho salmon broods are expected to enter the Juneau marine fishery earlier than Speel Lake stocks. These stocks could then be developed at Snettisham and significantly increase sport opportunities for marine anglers. The Twin Lakes stocking has benefitted local anglers in the past. A youth fishing derby has become an annual affair and hundreds of youngsters participate. The lake also supports fishing in summer and winter by anglers of all ages. The stocking programs as well as the steelhead trout and coho salmon broodstock projects should be continued.

APPENDIX

Appendix Table 1. Montana Creek (111-50-052) coho salmon egg removal schedule. MEG = 150 and DEG = 500

If total escapement enumeration is:	Left in stream: <u>a/</u>	Removed for hatchery: <u>b/</u>
Less than 150	150	None <u>c/</u>
More than 150 + 88	150 + (60% over 150)	(40% over 150)
More than 238 + 88	230 - (50% over 238)	35 + (50% over 238)
More than 326 + 88	247 + (40% over 236)	79 + (60% over 326)
More than 414 + 88	282 + (30% over 414) <u>d/</u>	132 + (70% over 414)

(Cumulative)

a/ No less than 50% of stream allocation shall be female.

b/ No more than half of which may be female, and the total shall not exceed the hatchery's specified egg-take goal. All pre-egg-take mortalities count as part of the hatchery allocation.

c/ Some of the next segment's hatchery allocation may be taken, however, if the area biologist is reasonably certain the MEG will be achieved.

d/ If and when the stream achieves its DEG, then a 90% removal rate is allowed (10% for stream).

Appendix Table 2. King Salmon River (111-17-10) coho salmon egg removal schedule.

Escapement $\frac{1}{2}$	Hatchery may take
Fall Survey Counts	25% of the counted escapement
	No more than 60 females may be used for egg take purposes

