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STATE OF ALASKA

William A. Egan, Governor



ANNUAL REPORT OF PROGRESS, 1965 - 1966  
FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-7  
SPORT FISH INVESTIGATIONS OF ALASKA

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## INTRODUCTION

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

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

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

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

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

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

## RESEARCH PROJECT SEGMENT

STATE: ALASKA Name: Sport Fish Investigations of Alaska.

Project No.: F-5-R-7 Title: Investigation of Anadromous Dolly Varden Populations in the Hood Bay Drainages, Southeastern Alaska.

Job No.: 2-B

Period Covered: June 1, 1965 through December 1, 1965.

## ABSTRACT

The Dolly Varden life history investigation was begun in the spring of 1962 at Lake Eva on the northeastern corner of Baranof Island. Substantial information was collected at the Lake Eva study area on age and growth, migration habits, food and feeding habits, and maturity composition of the 1964 in-migrants. The Lake Eva facility is described, and the results of some of these prior studies are discussed in past reports (Armstrong 1963, 1965a, 1965b; Blackett and Armstrong 1965; Heiser 1965).

Previous studies in 1964 at Lake Eva (Blackett and Armstrong, 1965) indicated that a stream system without a lake would be more suitable for studying the spawning habits and requirements of the Dolly Varden, as well as other segments of the life history. For this reason the study area in 1965 was changed to Hood Bay Creek, a non-lake system, located in the South Arm of Hood Bay on the west side of Admiralty Island. The primary emphasis of study at this site was to collect basic information on fish usage, maturity composition of the in-migrants, extent of spawning, and spawning habits and requirements. Analysis of these data has provided the necessary background for a more comprehensive study to be conducted in 1966. This study will require the construction of a permanent weir in the study creek. Results of the 1965 investigation will not be reported at this time, but will be presented as a Research Report on the spawning behavior, fecundity, and early life history of the Dolly Varden.

## RECOMMENDATIONS

All of the 1965 objectives should be continued in 1966 with the exception of objectives 3, 8 and 9. Objective 3 was accomplished as an aspect of the Dolly Varden egg-take investigation (Project F-5-R-7, Job 1-A) and also at Hood Bay Creek in 1965. Information collected on objectives 8 and 9 is also considered to be sufficient for the present.

The 1966 study should be primarily concentrated on the spawning habits and requirements of Dolly Varden with emphasis on obtaining more comprehensive and specific information than in 1965. Techniques should be initiated in 1966 to provide a basis for obtaining consecutive data on the Hood Bay stocks in future years. In addition, a program should be begun to investigate the migration habits of char entering and leaving Hood Bay Creek. Accomplishment of these recommendations will require that a two-way permanent weir be constructed across Hood Bay Creek in June of 1966, and will require that all in-migrant char be tagged with consecutively numbered dart tags.

In addition to continuing the 1965 objectives, the following specific objectives are recommended for the 1966 study:

1. Obtain supplemental data pertaining to gonad characteristics, ovary weight, egg diameters and fecundity.
2. Determine age and length of the 1966 potential spawners.
3. Determine distribution and progress of movement of Dolly Varden to the spawning sites.
4. Determine sex ratios on the spawning site and degree of intermingling or schooling of spawning char.
5. Estimate total egg deposition, number of females spawning, number of redds constructed, number of eggs deposited per redd and potential egg survival (an expansion of 1965 objective number seven).
6. Determine frequency of spawning.
7. Determine if mortality of char occurs after spawning and obtain an estimation of mortality rate of spawned-out char.
8. Determine the number of Dolly Varden entering and leaving Hood Bay Creek.
9. Instigate a program to determine the migration habits of Dolly Varden entering and leaving Hood Bay Creek.
10. Evaluate foot survey data collected in 1965 on number of Dolly Varden estimated to be in the creek.

#### OBJECTIVES

1. Determine the degree of usage of a non-lake system for spawning purposes.
2. To locate the natural spawning sites in a non-lake system.
3. Determine the adaptability of Dolly Varden to hatchery techniques and methods of capture for taking spawn from native stocks.
4. Determine the exact timing of spawning in the non-lake system.

5. Determine reproductive behavior by observation of natural spawning fish and supplemental live box studies of induced spawning.
6. Determine physical and chemical conditions of the spawning site.
7. Determine the success of egg deposition, fertility and potential egg survival.
8. Determine the embryological development in relation to temperature units and time of hatching under natural and hatchery conditions.
9. Determine the age composition and growth rates of rearing fish in the non-lake system.

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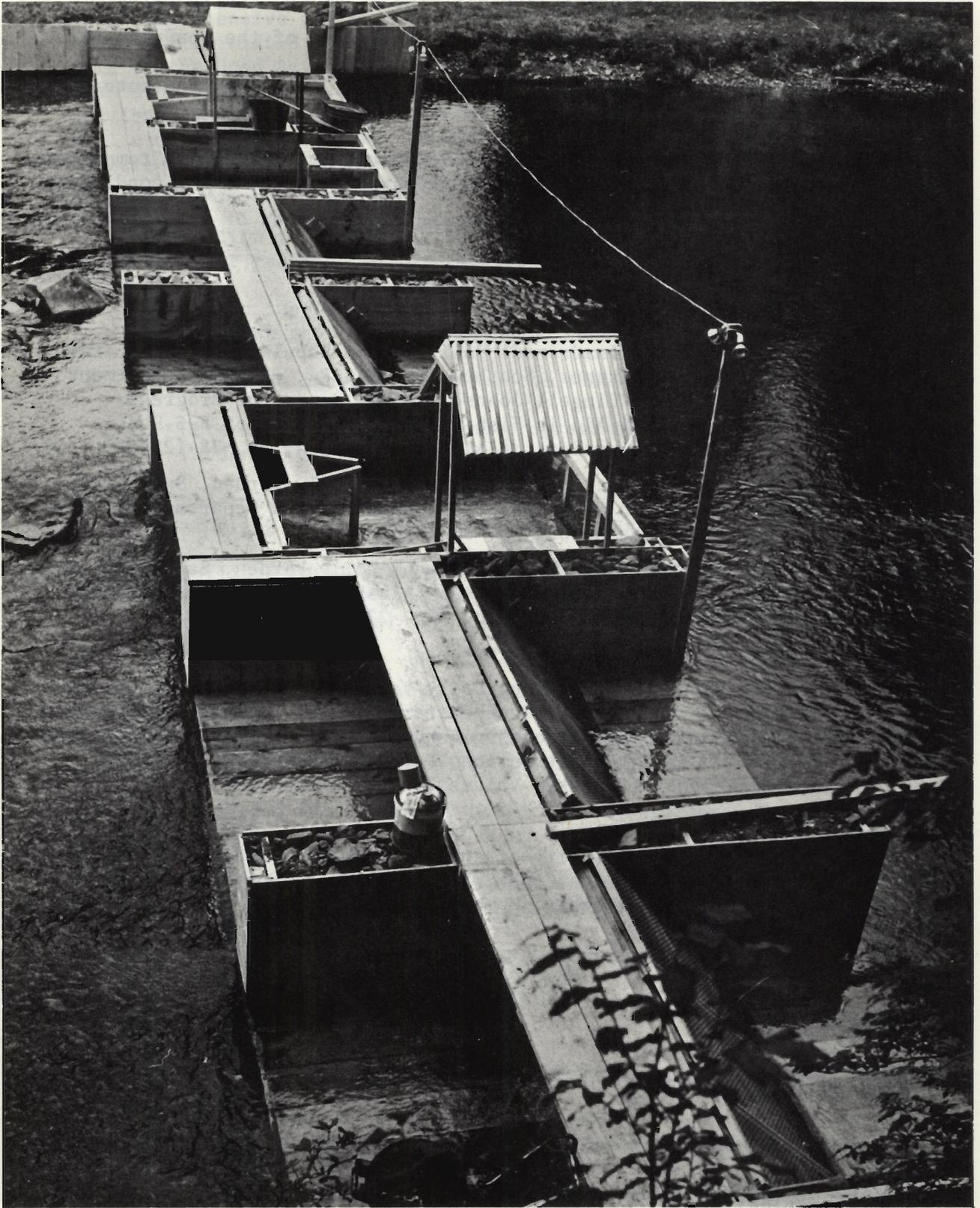
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Date: March 15, 1966

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The Hood Bay Creek Weir Where Research on Dolly Varden is Being Conducted.