Taku River Adult Coho Augmentation
- 2017 -

Final Report

June 20th, 2018

Prepared by:

Taku River Tlingit Fisheries

ACKNOWLEDGEMENTS

This project was funded through the Northern Fund of the Pacific Salmon Commission (PSC) and implemented by Taku River Tlingit Fisheries.

The following groups or individuals should be recognized for their help with this project: Mark Connor (TRT Lands and Fisheries Coordinator); Logan O'Shea, Freedom Stone, Angus Mackay and Victor Keong (from the PSC) for coordination under the Northern Fund, DFO for providing substantial support.

INTRODUCTION

Background:

The Taku River coho salmon stock assessment project is a cooperative effort between Canada and the United States, led by and Fisheries and Oceans Canada (DFO) and the Alaska Department of Fish and Game (ADF&G). This project was initiated in 1987 and has been operated primarily off of federal funding since that time. However, in 1999 the Pacific Salmon Commission identified the need to have an approved biological escapement goal for this major stock of coho salmon producing an estimated 65,000 to 440,000 adult coho salmon annually, many of which are caught in commercial, First Nation, and recreational fisheries in British Columbia and Southeast Alaska. Thus, additional funding was necessary to run the adult project through the majority of the adult run; moreover, it was agreed that smolt tagging numbers had to be increased in order to boost the coded wire tag (CWT) marked fractions in order to satisfy the sample sizes required for new stratified coho salmon smolt estimation analyses and to increase the accuracy and precision of not only the coho salmon harvest estimates but for Chinook salmon with the understanding that new directed Chinook fisheries were in the foreseeable future. The Northern Fund has provided assistance since 2006 that has augmented the program by permitting the use of three traplines during spring smolt tagging and ensured that the adult mark-recapture project would run through early October each year.

Each spring since 1991, coho salmon smolts have been tagged with CWTs as they emigrate from the Taku River. In the following year, returning adults are sampled for these tags using fish wheels and set gillnets operated near Canyon Island in the lower Taku River in the U.S. At the same time, adults are tagged as part of a two-event mark-recapture study to estimate the in-river abundance and sampled for age, sex, and length composition data. A short distance upriver, in Canada, adults are inspected in the commercial gillnet fishery. Typically the commercial fishery does not operate the full length of the coho run requiring additional efforts to obtain this information. Data gathered from these efforts have provided estimates of in-river abundance and escapement since 1987, estimates of harvest, exploitation, survival, smolt abundance, and total run since 1992, and run forecasts since 1996. These combined efforts in-river along with adult sampling programs in the various marine fisheries allow detailed stock assessment analyses.

Coho salmon returning to the Taku River pass through an offshore troll fishery before entering inside waters where they encounter seine, drift gillnet, and recreational fisheries. After entering the river, the remaining coho salmon encounter drift/set gillnet fisheries in Canada. Such a resource is worthy of a stock assessment program that directly estimates production parameters such as harvest, escapement, exploitation rate, smolt production, survival rates and brood year production. This project will provide annual estimates of escapement necessary to refine escapement goals and forecast runs. Improved escapement goals and run forecasts along with in-season abundance estimates allow implementation of abundance-based management. This project is consistent with Goal 1 of the Fund.

Objectives:

The purpose of this project was to collect data necessary to facilitate the generation of an in-season abundance estimate for adult Taku River Coho salmon.

METHODS

Personnel from ADF&G, DFO, and TRTFN (Taku River Tlingit First Nation) captured and tagged adult coho salmon using two fish wheels at Canyon Island as the first of two sampling events. If fish wheels areere inoperative for more than two consecutive days, gillnets were used to capture coho salmon at Canyon Island during the hiatus. Coho salmon were carefully removed from the fish wheels or gillnets and placed into a trough filled with water. All healthy coho salmon 350 mm mid-eye to fork of tail and larger caught in either fish wheels or gillnets had their length and sex recorded and were tagged with an individually numbered "spaghetti" tag sewn through the dorsal musculature just below the posterior portion of the dorsal fin. All fish were released at the site of capture. Past studies on coho salmon have shown that the loss of spaghetti tags between the marking site at Canyon Island and the recapture area located just upriver above the border is rare (Yanusz et al, 1999), so no secondary mark was added to tagged fish. Additionally, the loss of the primary spaghetti tag has been viewed as inconsequential as fish are normally recovered within three weeks of tagging and tagging scars are still visible and serve as a secondary mark (Yanusz et al. 1999). Operation of the fish wheels or gillnets ended in early October.

Coho salmon that had been CWTd as smolts in 2016 were recaptured as adults as they returned to the Taku River to spawn. This is the recapture component ("Event II") of the mark-recapture experiment for estimating smolt abundance as well as adult abundance. Adult coho salmon will be captured using gillnets and inspected for missing adipose fins and floy tags (early September to early October). The marked fraction for adipose fins and floy tags contributed to the estimation of the number of smolts that emigrated from the Taku River in 2016, and the number of adult coho returning in 2017.

All adult sampling information was entered electronically by 31 October. All fish sacrificed as part of CWT sampling, had their heads and pertinent information delivered to the ADF&G Mark, Tag, and Otolith Lab.

Estimates of smolt abundance were generated using the relationship between the catch per unit of effort during smolt trapping and the adult runs over time. This estimate was then used to forecast adult run the following year.

RESULTS

The TRTFN field participation in this project involved 2 fishers using 1 drift net and 1 set net and occurred between September 17 and Oct 4, 2017.

A total of 686 Coho and 86 sockeye were captured. A total of 17 Coho spaghetti tags were recovered and 6 coded wire tags.

PROJECT PERFORMANCE REVIEW

Below is a list of the measures for project success from the original proposal. After each is a brief review of post-project performance.

Undertaking Coho test fishery to provide data for in-season abundance estimate: COMPLETED

Keeping to the prescribed timeline: SUCCESSFUL

Staying within the original budget: SUCCESSFUL