

Alaska Department of Fish & Game Coded-Wire Tag Recovery Support – Year 1

by

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EXECUTIVE SUMMARY

Support from the Northern Fund was used to help the Alaska Department of Fish and Game's (ADFG) Mark, Tag, and Age Laboratory meet one of its primary obligations: to provide fisheries managers with the data needed to effectively manage southeast Alaska Chinook and coho salmon fisheries, assess the efficacy of enhancement programs, and meet US/Canada Pacific Salmon Treaty (PST) obligations. To accomplish this task, coded-wire tags (CWTs) were recovered from Transboundary River (TBR)-related fisheries in southeast Alaska and decoded to identify an individual's hatchery of origin, brood year, and age. Approximately 21% of the Chinook and coho caught in the commercial and sport fisheries of southeast Alaska were sampled during each week of the fishing season for CWTs to meet obligations prescribed within the PST. Of the 749,681 chinook and coho salmon sampled in SEAK fisheries between July 1st, 2015 and June 30th, 2016, a total of 20,525 had CWTs and were consequently of hatchery origin. These recovery data were imported into a relational database, merged with catch statistics, and posted to the internet as they were generated so that fishery biologists could manage TBR-related fisheries in real-time.

Key words: Chinook, coho, coded-wire tag, hatchery, Pacific Salmon Treaty.

INTRODUCTION

The Coded Wire Tag section of the ADFG Mark, Tag, and Age (MTA) Laboratory serves as the centralized state resource responsible for tracking and managing salmon resources using coded wire tags (CWTs) and as such, serves as an integral part of the coordinated coast-wide CWT program that is regulated and monitored by the Pacific Salmon Commission (PSC). These microscopic CWTs are recovered from Chinook and Coho salmon caught in Transboundary River (TBR) and southeast Alaskan fisheries and decoded to determine hatchery of origin and age. Each day during the fishing season, CWT recovery data are combined with release and catch / sample data in an online relational database and used to generate estimates of hatchery contribution, quantify survival of hatchery-reared salmon, estimate the timing of runs through commercial fisheries, and determine the proportion of Canadian and Alaskan salmon caught in TBR fisheries. These data allow biologists to manage fisheries in real time and ensure compliance with the U.S./ Canada Pacific Salmon Treaty (PST) agreement involving resource allocation and management of transboundary stocks.

The ADFG's CWT recovery effort and the associated database is part of a cooperative coast-wide coded wire tagging program that is coordinated by the Pacific Salmon Commission (PSC). As a member of the PSC, which also includes agencies from California, Oregon, Washington, Idaho, and British Columbia, ADFG is obligated to provide accurate CWT data to the PSC in a timely fashion so that members can meet Treaty obligations and manage salmon resources effectively. The agreement among PSC members assures scientists and managers that at least 20% of commercially caught Chinook and Coho salmon will be sampled for the presence of CWTs. As a result, over 1.2 million heads weighing approximately 875 tons have been sent to the MTA Laboratory in Juneau to date for CWT removal and decoding.

The objective of this project was to ensure that the MTA Lab continued fulfill its obligation to provide CWT recovery data to ADFG and PSC members in a timely manner – data that are needed to effectively manage Chinook and Coho resources in southeast Alaska and Transboundary River / Treaty-related waters. These data consequently allows fellow PSC participants to meet their state and Treaty obligations regarding Chinook and coho salmon fisheries management.

METHODS

Chinook and Coho salmon heads were collected from fishery locations throughout southeast Alaska by ADFG port samplers. Because samplers cannot visually detect the small CWTs that are located in the nasal tissues of a tagged individual, they identified each tagged fish by the absence of the adipose fin which was removed during the smolt stage when fish were tagged. To comply with treaty regulations and meet statistical requirements, at least 20% of Chinook and Coho salmon commercially caught in Treaty-related waters were sampled for the presence of CWTs.

All heads from adipose-clipped fish were shipped to the MTA Laboratory for CWT recovery. Although all CWT salmon released in Alaska have had their adipose fin removed, not all adipose-clipped salmon have CWTs. Consequently, each sample was scanned with a metal detector to determine if a CWT is present. All heads were scanned, CWTs removed from the tissue, and tags decoded within a week of receipt. All CWT tag codes were read using a high resolution digital stereomicroscope and each CWT was decoded twice by different readers to maintain data quality. Because CWTs are unique among hatcheries and years, tag codes were used to identify each individual's brood year and hatchery of origin. All associated CWT recovery data (hatchery of origin, brood year, release numbers, sample location, etc.) were entered directly into an online relational Oracle database which conforms to the data standards established by the members of the PSC. Once in the database, these data were merged with catch estimates and sampling statistics.

RESULTS

A total of 749,681 Chinook and coho salmon were sampled from TBR-related troll, gillnet, and seine fisheries throughout southeast Alaska between 7/1/15 and 6/30/16 for CWTs. This represented 21% of the total commercial catch. Fish from troll fisheries arrived at the Lab in spring, summer, and winter, whereas samples from gillnet and seine fisheries arrived in late spring through early fall. A total of 20,525 of these sampled fish had CWTs and were sent to the MTA Lab for tag recovery and decoding. All CWTs were recovered and analyzed within the week they were received. Data from recovered tag codes were entered into an online relational database and merged with the associated hatchery release information and catch data to generate estimates of hatchery contribution. All this information was posted to the MTA Laboratory website in real time so that the data were instantly accessible to fishery managers as well as other users via online reports available at <http://mtalab.adfg.alaska.gov/CWT/reports/>.

DISCUSSION AND CONCLUSIONS

All our proposed objectives and timelines were met. Sample sizes from TBR-related fisheries met proposed expectations during the grant period. Lab technicians consistently met the requirement that the CWTs must be recovered, decoded and entered into the database within a week of receipt. They also successfully posted all results to the MTA Lab website as they were generated. Specimens and data flow through the lab were monitored continuously by personnel to ensure efficient and timely data production. Because each sample was bar coded, the CWT laboratory supervisor and the MTA Lab program director were able to monitor production in real-time using Oracle-based queries.

Support from the Northern Fund helped the MTA Lab meet its primary obligations: to provide fisheries managers with the data needed to efficiently manage southeast Alaskan salmon fisheries and meet US/Canada Pacific Salmon Treaty obligations. Because CWT recovery results were posted to the web the instant data were generated, the benefits to its users, primarily fishery biologists at ADF&G, CDFO and the Pacific Salmon Commission (PSC), was immediate such that the data could be used to manage southeast Alaskan fisheries in real-time. All past and present CWT recovery data are stored in a relational

Oracle database that is accessible to online to users through a variety of customizable web-based reports. In addition to providing summary information, raw data can be downloaded directly to Excel spreadsheets. Three backup copies of the database are made weekly and stored in off-site locations for security purposes.

An official summary of the financial expenditures will be sent to the PSC NF separately by ADF&G Commercial Fisheries Division Administrative staff. We did not deviate significantly from the projected budget described in the original proposal. The majority of funds provided salaries and benefits for laboratory staff directly involved with dissection, processing, and reading of otoliths, as well as entry of associated data into the online Oracle database. This amounted to approximately 12 months of technician time.