



# AYK SUSTAINABLE SALMON INITIATIVE

## Project Synopsis

### NORTON SOUND AREA



(Christian E. Zimmerman)

# PROJECT 430

## PRINCIPAL INVESTIGATOR

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## RESEARCH PERIOD

May 2004 -  
June 2005

## BUDGET

\$140,010.00

## COUNTING UNALAKLEET RIVER CHUM SALMON

Unalakleet River chum salmon, exploited by commercial, sport and subsistence fisheries, have experienced weak returns in recent years leading to fishing restrictions.

Determining accurate chum salmon abundance and escapement numbers, however, has been difficult.

A test fishery on the lower river and a counting tower on the North River, a Unalakleet River tributary, provide some information on seasonal patterns and North River escapement, but more accurate drainage-wide chum salmon abundance and escapement estimates are needed.

## OUR OBJECTIVES

Initiate a multi-year study using radio telemetry and mark-recapture methods to estimate the total Unalakleet River chum salmon escapement, run timing, migration rates, and age, sex, and length composition of the population.

Compare these figures with those of the North River migrants. If these ratios are consistent, the North River escapement information may be used to determine drainage-wide population statistics.

Determine the chum salmon tributary distribution and major spawning locations throughout the Unalakleet River.

Evaluate the location for a proposed weir.

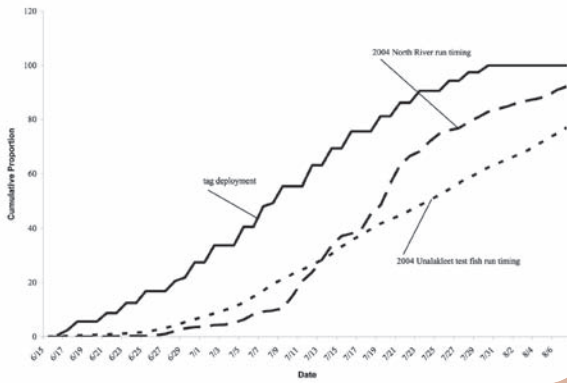
## RESEARCH FRAMEWORK:

SALMON LIFE CYCLE -  
PRIORITY #2

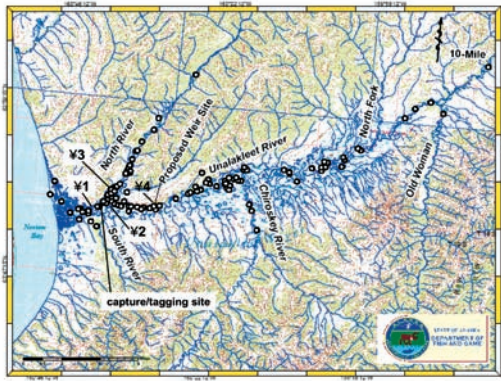
## SNAPSHOT

In the first year of a multi-year study, radio telemetry was used to gather information about the Unalakleet River chum salmon population. Researchers determined the ratio of chum salmon passing a counting tower on the North River to the total population, and the percentage of the run that traveled past a proposed weir site. They also gathered information on the run timing, migration rates, and the age, sex, and length composition of the population.

NORTON SOUND



Comparison of tag deployment with North River counting tower and Unalakleet River Test Fishery chum salmon run timing, 2004. (Estensen, ADF&G)



Unalakleet River drainage showing spawning locations of radio-tagged chum salmon (circles) determined from aerial tracking flights, the capture/tagging site, stationary receiver sites (SRS), proposed weir site, and major tributaries. (Estensen, ADF&G)

## HOW WE DID IT

We deployed 160 externally mounted radio transmitter tags. We established four stationary receiver sites along the Unalakleet River drainage. We also flew six aerial tracking flights. In addition to the tagged fish, we collected age, sex, and length data on 360 untagged fish. All tagged and sampled salmon received a secondary mark.

## WHAT WE DISCOVERED

We determined that 13% of Unalakleet River chum salmon enter the North River. Surprisingly, no tagged fish were located in the upper tributaries. Our tag deployment did not track with run timing for the test fishery or North River counting tower, which indicated that the deployment was not distributed proportionally over the course of the run. We found that migration timing was highly variable, and no clear patterns were evident. Just over half (54%) of the tagged salmon passed the proposed weir site, demonstrating how many salmon would have been counted if this site had been operational.

## PRODUCTS AND OUTREACH

Data are maintained on an electronic database and are available to other researchers.

## WHAT'S NEXT?

This was the pilot year of a multi-year study. Later years will be required to confirm the ratio of North River migrants to total abundance, and to establish patterns in run timing and migration rates. We plan to begin our aerial surveys earlier in case the late start missed early spawners in the upper tributaries.

**AYK SSI Mission:** To collaboratively develop and implement a comprehensive research plan to understand the causes of the declines and recoveries of AYK salmon.

### ARCTIC-YUKON-KUSKOKWIM SUSTAINABLE SALMON INITIATIVE

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