NORTON SOUND AREA

(Christian E. Zimmerman)

ESTIMATION OF COHO SALMON ABUNDANCE AND DISTRIBUTION IN THE UNALAKLEET RIVER

PROJECT 416

PRINCIPAL INVESTIGATOR

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RESEARCH PERIOD

May 2004 - April 2005

BUDGET

$66,281.00

WHERE DO UNALAKLEET COHO SALMON GO?

The Unalakleet River supports the largest and arguably the most important coho salmon run in Norton Sound. This run supports substantial subsistence and sport fisheries, as well as the largest Norton Sound commercial coho salmon fishery. Unalakleet River residents are concerned about a noticeable increase in sport fishing over the last 10 years. However, little is known about coho salmon distribution throughout the drainage.

OUR OBJECTIVES

Determine Unalakleet River coho salmon spawning distribution and the proportion of the run that passes the established counting tower on the North River, which would allow fisheries managers to estimate drainage-wide abundance using the North River counts.

Estimate Unalakleet River drainage coho salmon escapement and its age, sex, and length composition.

Document spawning areas and estimate the portions of the run in the Unalakleet mainstem; North Fork; and Chiroskey, Old Woman, and North rivers.

HOW WE DID IT

We used beach seines to capture coho salmon between the Unalakleet River mouth and the North River confluence. We identified gender, measured, and marked fish with

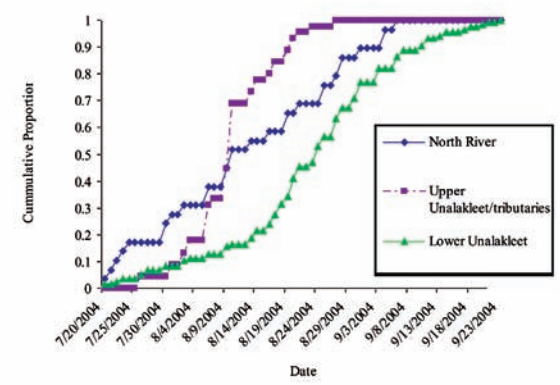
RESEARCH FRAMEWORK:
SALMON LIFE CYCLE – *PRIORITY #2*

SNAPSHOT

Unalakleet River coho salmon were tagged and tracked to better understand their distribution in the drainage and to develop a method for estimating drainage-wide abundance using an established counting site. A total coho salmon population of 73,582 was estimated in what may be two overlapping runs.

Distribution and clustering areas were identified and methodology improvements for following study years were suggested.

NORTON SOUND



The cumulative proportion of radio-tagged coho salmon moving into the Unalakleet River drainage in 2005. (Joy, ADF&G)

The furthest distance from the ocean that each radio-tagged coho salmon was detected during aerial surveys between August 15th and October 25th, 2005. (Joy, ADF&G)

a patterned punch unique to their expected placement in the run timing. We tagged 200 fish with internal radio transmitters and external spaghetti tags. We tracked these fish using four stationary towers and several aerial surveys. We also seined for and marked fish in the Unalakleet River upstream from the North River mouth, and in the North River upstream from the counting tower.

WHAT WE DISCOVERED

We estimated a population of 73,582 coho salmon for the entire drainage. We detected radio-tagged fish in every major tributary and many tertiary streams. We found most of the fish in the Unalakleet River section above the Chiroskey River and below the North Fork. Fish sampled in the North River were smaller, on average, than those taken from the Unalakleet River, although their run timing and age distribution was similar, indicating that North River tower counts may be used to estimate the total run abundance. We also found that both rivers seem to have two runs, with the earlier run being composed of smaller and younger fish.

WHAT'S NEXT?

In future years, we will need earlier and more frequent aerial surveys to better track the early part of the run. Mark-recapture studies will need to use the North River tower site as the second counting site since we didn't get enough recaptures at our upriver sites. More research is needed on the age distribution and timing of the two overlapping runs, as well as on-the-ground study of the area between the Chiroskey River and the North Fork, to better understand why the coho salmon would cluster in this area.

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

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