

A SUMMARY  
UNALAKLEET AND NOATAK RIVER STUDIES  
1975

(From AYK Area Arctic Anadromous Fish Investigations)  
Completion Report for July 1, 1976 to June 30, 1977

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1975 Season

## INTRODUCTION

A salmon tagging project was conducted near Unalakleet, along with a salmon counting tower on the Chirosky River, a Unalakleet River tributary (Figure 22). A test fishing project was also initiated on the Noatak River near Kotzebue (Figure 23).

## OBJECTIVES

### Norton Sound - Unalakleet River

1. Develop indices of king, pink and chum salmon abundance at the Chirosky River.
2. Obtain daily and seasonal timing of salmon escapements into Chirosky River.
3. Obtain estimates of Unalakleet River king, pink and chum salmon escapements using salmon tag and tag recovery techniques.
4. Determine feasibility of assessing age composition of king salmon escapements into the Chirosky River by visual length categorization.
5. Obtain age, sex and length information of Unalakleet sub-district chum and king salmon commercial harvest and chum salmon escapements.

### Kotzebue - Noatak River

1. Determine seasonal timing of the chum salmon escapement.
2. Determine spawning distribution and abundance of chum salmon.
3. Determine age, sex and size of the chum salmon escapement.

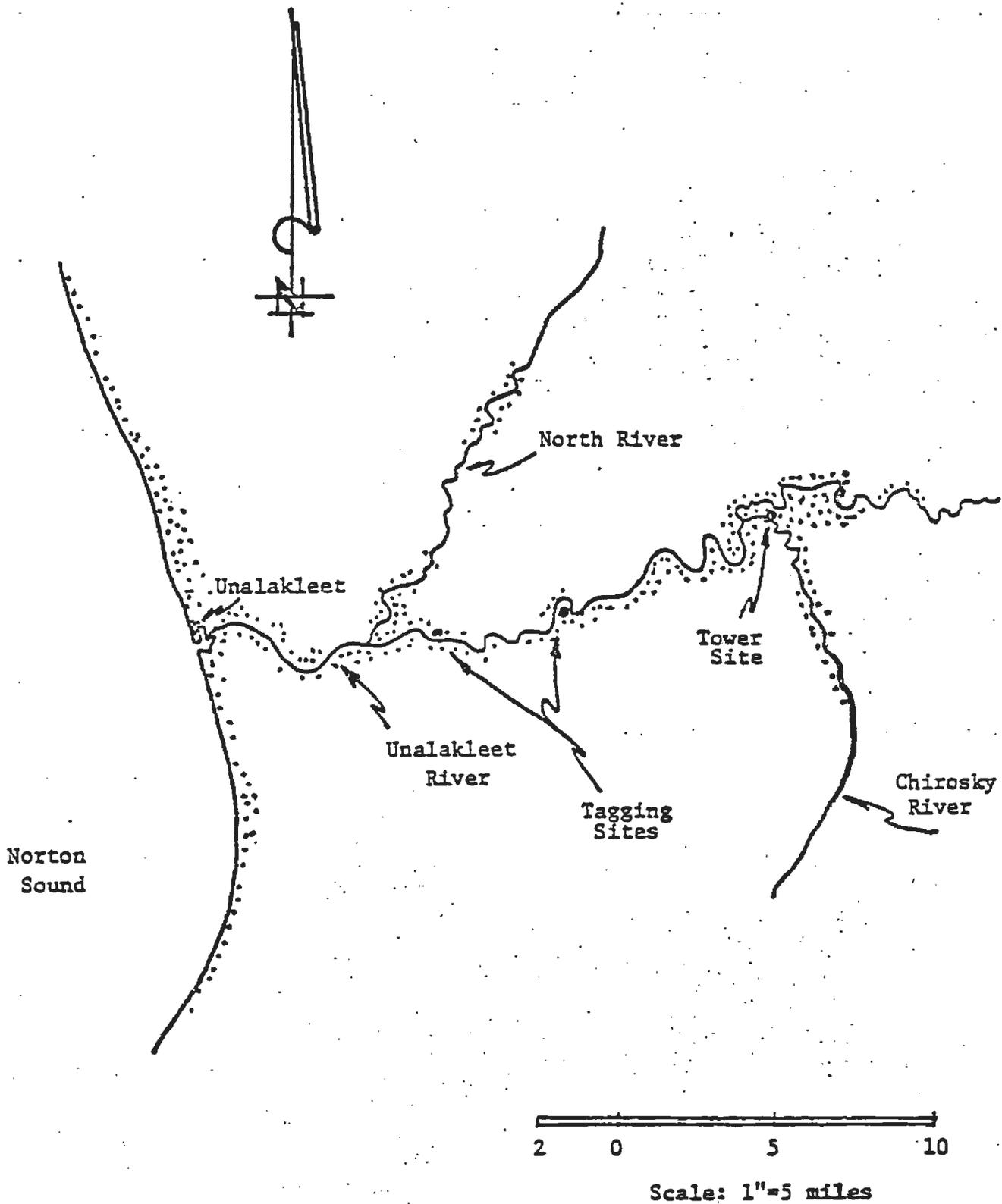


Figure 22. Unalakleet River project sites, Unalakleet River, 1975.

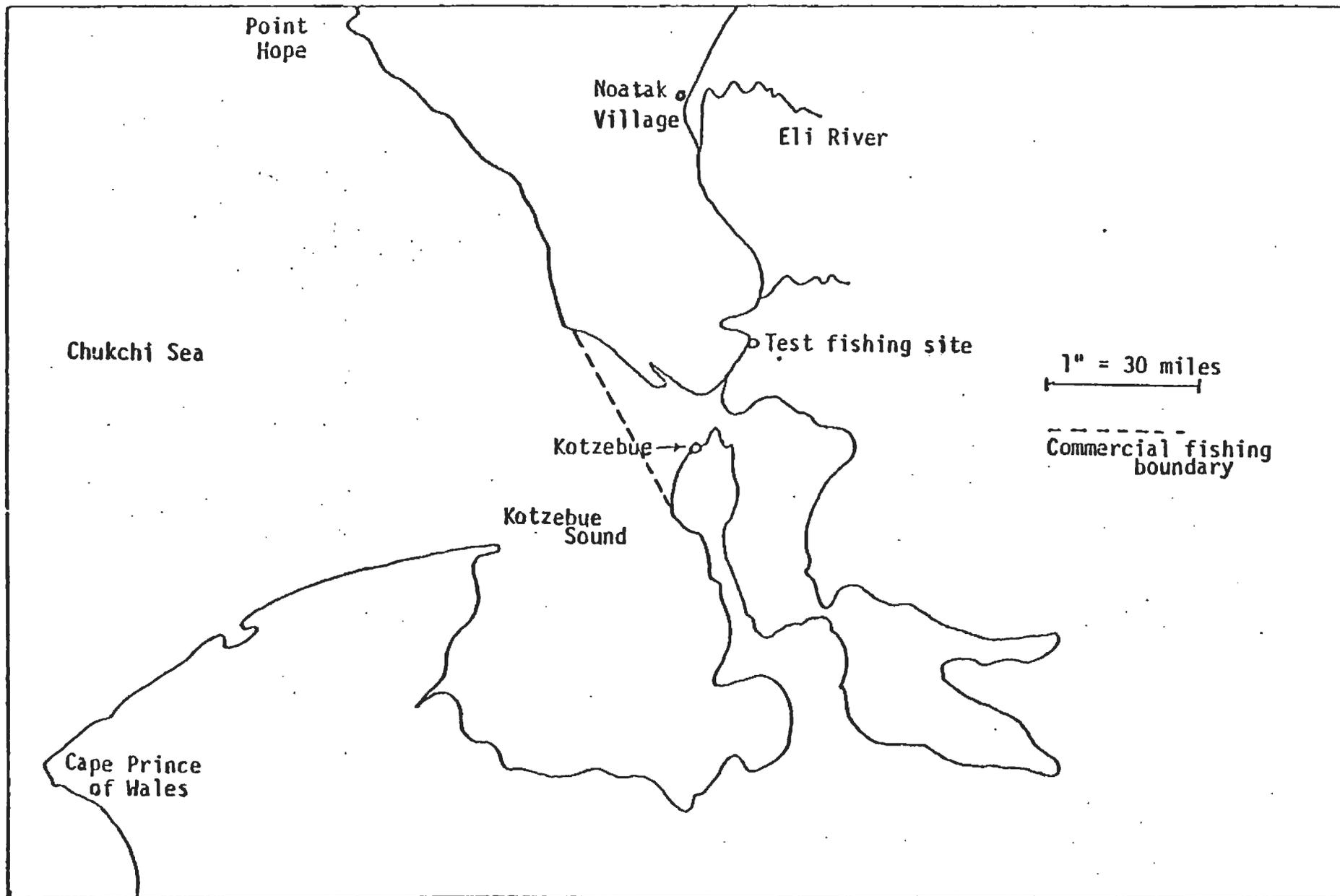


Figure 23. Noatak River test fishing site.

4. Determine and describe physical and chemical properties of chum salmon spawning areas.

## METHODS AND MATERIALS

Methodology for these projects may be reviewed in AFC-55-2 (Cunningham 1976).

## RESULTS AND DISCUSSION

Tabular and graphic data may be reviewed in AFC-55-2 (Cunningham 1976).

### Chirosky River salmon counting tower

1. An actual count of 29 king, 13,081 pink and 3,138 chum salmon were enumerated past the Chirosky River tower in 1975.
2. Expanded 10-minute counts resulted in an estimated escapement of 24 king, 14,742 pink and 3,162 chum salmon.
3. In 1975 chum and pink salmon migration peaks occurred during the period of July 18-20 and July 20-26 respectively.
4. Peak chum and pink salmon hourly migration occurred during the period from 2100 to 0200 hours.
5. The 1975 estimated age composition of the king salmon escapement to the Chirosky River was as follows: 3.4% age 4<sub>2</sub>, 41.4% age 5<sub>2</sub>, 31.1% age 6<sub>2</sub>, 20.7% age 7<sub>2</sub> and 3.4% age 8<sub>2</sub>.
6. In 1975, the Chirosky River chum escapement was composed of 27.1% age 3<sub>1</sub>, 48.1% age 4<sub>1</sub>, and 24.8% age 5<sub>1</sub> salmon.
7. In 1975, no net upstream migration of salmon was observed during the hourly period from 0700 to 1300 hours, during the four days a 24-hour counting schedule was maintained.
8. In 1975, the Chirosky River salmon escapement rate appeared to be temperature dependent.

9. In 1975, 43 tagged pink and 21 tagged chum salmon were documented passing the Chirosky River counting tower.
10. In 1975, 32 subsistence fishermen interviewed harvested 163 king; 74 coho; 4,758 pink and 2,038 chum salmon in the Unalakleet area.
11. Chirosky River water volume discharge rate was computed to be 314.7 ft<sup>3</sup>/sec.; 266.6 ft<sup>3</sup>/sec. and 152.4 ft<sup>3</sup>/sec. for July 15, 20 and 24 respectively.

#### Unalakleet River salmon tagging

1. In 1975, 360 chum, 1,099 pink and 6 king salmon were tagged.
2. In 1975, tagged salmon recoveries were made by the following methods; 51 subsistence caught, 18 sport, 20 carcass and 64 documented passing the Chirosky River tower.
3. Population estimates for the 1975 chum and pink salmon escapement to the Unalakleet River drainage above the Unalakleet-North River confluence are 27,678 and 156,059 fish respectively.
4. Population estimate ranges at the 95% confluence limit are from 12,575 to 40,253 and from 85,156 to 226,962 for chum and pink salmon, respectively.
5. In 1975, 1,638 king, 3,157 coho, 12,376 pink and 48,771 chum salmon were commercially harvested in the Unalakleet subdistrict.

#### Noatak River salmon test fishing

1. In 1975, two 25 fathom set gill nets of 5-7/8" stretch mesh were fished a total of 442 hours catching 1,440 chum salmon with a seasonal catch per unit effort of 3.4.
2. In 1975, chum salmon escapement to the Noatak River was composed of the following age classes: 6.0% 3<sub>1</sub>, 42.2% 4<sub>1</sub>, and 41.8% 5<sub>1</sub>.

3. In 1975, chum salmon harvested in the Kotzebue commercial fishery was composed of the following age classes: 2.6%  $3_1$ , 70.9%  $4_1$  and 26.5%  $5_1$ .
4. Noatak River water volume discharge rate was computed to be  $4,060 \text{ ft}^3/\text{sec.}$  on August 8, 1975.
5. In 1975, there appeared to be a 1-day delay from the time the chum salmon arrived at the test net site approximately 14 miles upstream from the mouth of the Noatak River.
6. In 1975, chum salmon were first caught at the test fishing site on July 27 with the salmon run peaking on August 10.