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STUDY AFS 41-4

STATE OF ALASKA

Jay S. Hammond, Governor

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Abstract by
Position

Virgil Umphenout



RC341

Annual Performance Report for

A STUDY OF CHINOOK SALMON
IN SOUTHEAST ALASKA

by

Paul D. Kissner

ALASKA DEPARTMENT OF FISH AND GAME
James W. Brooks, Commissioner

SPORT FISH DIVISION
Rupert E. Andrews, Director
W. Michael Kaill, Chief, Sport Fish Research

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Vigil Kmpheour

In Area 3, the procedures used in Area 2 were followed, except that it was additionally assumed that fish migrating from Area 1 to Area 2 continued to migrate to Area 3 at the same rate. This assumption made possible an estimation of numbers migrating from Area 1 to Area 3.

The same procedures were extended to obtain Area 4 estimates.

During mid-September and mid-October minnow trapping was conducted throughout the Taku River Drainage to determine inter-stream migration and rearing habitat of juvenile chinook salmon. Approximately 100 minnow traps were set per trip in the Nakina, Nahlin and mainstem Taku rivers. Traveling by Alouette II helicopter permitted coverage of the 352 kilometer distance in two or three days. Traps were left to soak in all areas for at least 24 hours.

FINDINGS

1975 Drift Gill Net Mesh Study

Gill net mesh studies were conducted in the Taku Inlet gill net fishery during 1975 to attempt to harvest the various size ranges and age classes of maturing chinook salmon in proportion to their abundance. The 8" and larger mesh gill nets, which have been fished during "king season" for the last 80 years are highly selective to chinook from 660 to 900 mm mid-eye to fork length (Figure 1). This subjects nearly 99% of the female Taku chinook population to the gill net fishery but only about 16.6% of the males. The harvest of large numbers of female chinook from this declining stock is unacceptable and studies indicate the chinook that mature at a younger age have a tendency to pass the trait to their progeny (Ellis and Noble, 1961). Therefore by annually allowing the escapement of large numbers of these small males, the age, size and reproductive potential of the run will decrease. During 1975 over 75% of the escapement into the Nakina River were one- and two-ocean precocious males. In other years between 48.1% and 73.8% of the escapement have been precocious males.

If a gear could be developed that would harvest the majority of these small males and allow most of the females to escape, the gill net fishery would be beneficial to the Taku chinook population.

The 5 3/8" stretched measure nylon mesh gill net was most efficient in catching chinook salmon from 500-599 mm mid-eye to fork length. Chinook over 700 mm were mostly caught when they become entangled by their teeth or mouth parts. Figure 2 indicates the length frequency of chinook harvested by this net compared to the length frequency of chinook collected on the Taku River spawning grounds during 1974 and 1975. The length frequency of chinook on the spawning grounds was probably not greatly altered by the fishing of mature stocks during either of these years because early closures of the gill net and troll fisheries, which were designed to protect the returning runs, were put into effect.