THESIS ABSTRACT

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TITLE: Age Composition and Growth Rates of Chinook Salmon From Northern California's Troll Fishery

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Age composition and growth rate investigations of the chinook salmon, Oncorhynchus tshawytscha, were conducted April 15 to September 15 in 1970, 1971, and 1972. Specimens for the study were collected on commercial trolling vessels in northern California waters.

Age determinations were made by visually interpreting and mapping scales from 1331 chinook salmon. Scale mapping, as a technique for determining age, proved to be unreliable in detecting the first ocean annulus and also required much person judgments in the interpretation process. The criteria used to interpret life history types and ages of chinook salmon are discussed.

Three-year-old and four-year-old chinook salmon were the predominant age groups in the catch, and chinook salmon with ocean-type scales far outnumbered those with stream-type scales each year. Data were collected in 1972 to illustrate the distribution of age classes and their numbers along the coast at different times of the season. Areas of substantial illegal fish (shaker) concentrations were Trinidad, Eureka, and Fort Bragg.

Calculated growth in length of chinook salmon was determined by back-calculating to successive annuli on 210 scales. The body-scale relationship for chinook salmon was calculated to be $L = 2.607 + 4.521S$. Ocean-type chinook salmon grew fastest in their first and second years of life, whereas stream-type chinook salmon, because of their one plus years residence in fresh water as juveniles, grew slowest in their first years and fastest in their second years of life.