

3-2. Food Production and Salmon Growth (Oral-16)

Alaska Sockeye Salmon Scale Patterns as Indicators for Climatic and Oceanic Shifts and Anomalies in the North Pacific Ocean

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Climate change is expected to have a dramatic affect on marine ecosystems in Subarctic regions. Our ability to detect and forecast changes in offshore climatic and oceanic conditions will assist in preparing society for changes in availability of resources for harvest in the commercial, subsistent, personal use, and sport fisheries. Pacific salmon are a highly migratory species in their marine phase and record their abiotic and biotic experiences in the growth patterns on their scales. Scale pattern analysis is a prime candidate for detecting changes in the climatic and oceanic conditions in the marine environment. In this study we use time series and state space modeling approaches to determine whether we can detect major shifts and anomalies (e.g. regime changes, El Nino and La Nina events) in the climatic and oceanic conditions in the eastern and central North Pacific Ocean from measurements of the annual marine growth patterns on the scales of sockeye salmon that returned to Karluk River on Kodiak Island in the Gulf of Alaska over an 80 year time period, 1924-2003.