Density Dependent Growth of Pink Salmon *Oncorhynchus gorbuscha* in the Bering Sea

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Growth variations of pink salmon and the factors influencing them were examined using data collected by Japanese salmon research vessels in the Bering Sea during 1974–1995. Catch-per-unit-effort (CPUE) of pink salmon changed differently for odd and even year stocks in the Bering Sea (Fig. 1). CPUE in odd years increased after 1989, but those in even years remained at a low level. Mean fork lengths of pink salmon in odd years were larger than those in even years from 1974 to 1987, but mean fork lengths in odd years decreased to the size of the fish in even years during 1989 and 1993 (Fig. 2). Scale measurement data indicated that coefficients of variation in the second year ocean growth (8.1–8.8%) were larger than those for coastal growth (3.6–4.8%) and the first year ocean growth (4.0–4.6%) for both stocks. CPUE of pink salmon showed a negative relationship with the coastal and second year ocean growth (Fig. 3, 4). Pink salmon growth partly showed a significant negative relationship with the CPUE of other salmon species, but was not significantly correlated to sea surface temperature and zooplankton biomass. These results suggest that the density of pink salmon is one of the factors influencing growth variations of pink salmon, especially in the coastal and second year ocean life.

Fig. 1. Year to year changes in CPUE of pink salmon.

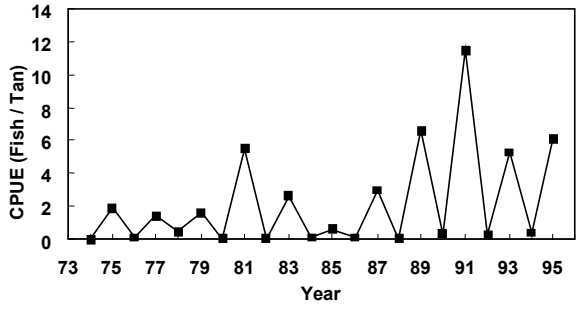


Fig. 2. Year to year changes in fork length of pink salmon.

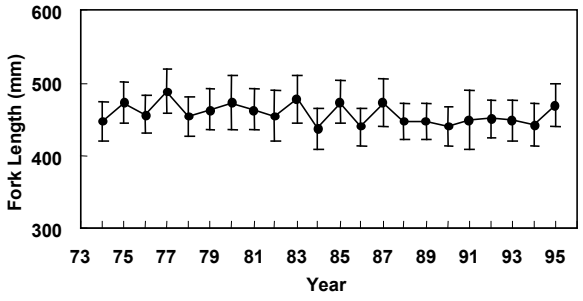


Fig. 3. Relationship between CPUE and coastal growth (W10) of pink salmon.

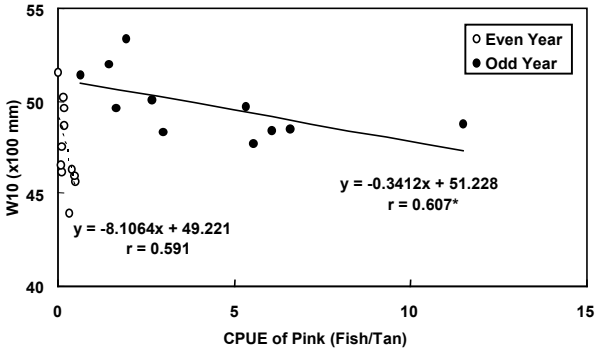
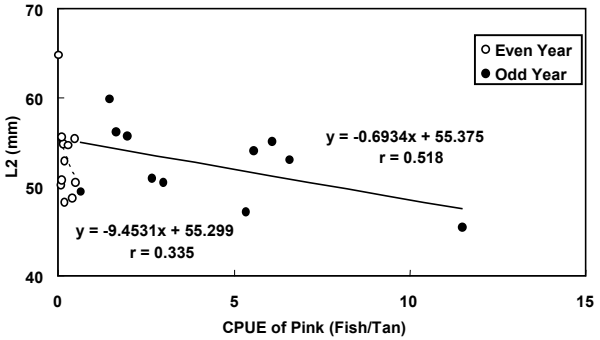


Fig. 4. Relationship between CPUE and the second year of ocean growth of pink salmon.



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