

Lipid Content of Immature Chum Salmon (*Oncorhynchus keta*) Affected by Pink Salmon (*O. gorbuscha*) Abundance in the Central Bering Sea

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Lipid is the principal energy storage constituent in salmonids, including chum salmon. Chum salmon migrate in the Bering Sea for foraging during the summer, and immature fish begin moving southward for overwintering in autumn. Variability of lipid content in fish can depend on foraging conditions during the growing season; therefore, lipid content during the summer can be regarded as a reliable marker for chum salmon body condition. We analyzed the lipid contents of 461 immature chum salmon collected in the central Bering Sea from 2002 to 2007. Individual variation of log-transformed lipid content was tested using generalized linear models and biological and environmental variables. A model that included fish size and pink salmon CPUE was the most effective at describing variation of lipid content in immature chum salmon. Lipid content of immature chum salmon decreased as pink salmon CPUE increased. The negative correlation between chum salmon lipid contents and pink salmon CPUE is consistent with the hypothesis of inter-specific exploitative competition for food items. The main prey of chum salmon is gelatinous plankton in odd-numbered years and crustaceans in even-numbered years. Lipid composition of gelatinous plankton is substantially lower than that of crustaceans. Results suggest the nutritional condition of immature chum salmon may be related to the shift of prey items through inter-specific interactions, which might occur during occupation of the surface layer by large numbers of pink salmon.