

AFSC/ABL: Taku chum SSSF diet and energy data

Molly Sturdevant

This study is a cooperative effort between Douglas Island Pink & Chum (DIPAC), the University of Alaska Fairbanks, School of Fisheries and Ocean Sciences (UAF, SFOS), the National Oceanic & Atmospheric Administration, Auke Bay Lab (ABL), and the Alaska Department of Fish & Game (ADF&G) to determine the potential for interactions between DIPAC hatchery chum salmon (*Oncorhynchus keta*) fry and wild chum salmon fry in Taku Inlet, Southeast Alaska. We analyzed patterns in spatial and temporal distribution, size, and condition of juvenile chum salmon collected in the littoral and neritic waters of Taku Inlet in 2004 and 2005. Energy density and diet of wild and hatchery chum salmon fry in Taku Inlet were analyzed and compared to data obtained later in the season for chum salmon stocks caught in Icy Strait. The greatest potential for wild/hatchery interactions was in the outer inlet, directly following early hatchery releases (May 9-11). Peak outmigration for wild chum salmon fry coincided with early hatchery releases; in contrast, most wild chum salmon fry had already emigrated from the estuary by the time of late hatchery fry release (May 22 – June 1). In both years, hatchery fry were rare in the inner inlet, but comprised over 95% of the catch in the outer estuary during the peak of outmigration. Hatchery chum salmon were significantly larger than wild fry in both beach and neritic samples. Wild and early hatchery chum salmon were smaller in the littoral than the neritic habitat, indicating that both groups moved from shallow to deeper water with ontogeny. In spite of large differences in abundance, no negative correlation between abundance of hatchery fish and condition of wild fish was identified. Both wild and early hatchery chum salmon fry showed apparent growth through the season, while late hatchery fry appeared to leave the estuary soon after release. Regardless of origin, most chum salmon juveniles emigrated from the study area in late May and early June, indicating a high probability for mixed-stock schools. Hatchery chum salmon juveniles were initially larger and had greater energy content than wild fish; however, energetic values converged by mid-June in Taku Inlet. In Icy Strait, energetic condition of wild and hatchery chum salmon juveniles was also similar. Multivariate analysis of 54 prey measures indicated that diets of the two groups were distinctly different throughout the season in all Taku Inlet locations and converged in Icy Strait.