

Summer Energetic Condition of Juvenile Sockeye Salmon in the Gulf of Alaska

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This study investigates the interannual differences in juvenile salmon diet, energetic content, size, and migration patterns in the Gulf of Alaska (GOA) with regard to the El Niño-Southern Oscillation (ENSO) cycle, which changed from a positive to negative anomaly during 2010 and 2011. Variability in the ENSO cycle has been shown to influence physical and biological characteristics of the surface waters in the GOA that may control marine food habits, growth, and condition of juvenile salmon inhabiting coastal surface waters. The GOA also experienced variability in sea level pressure, sea surface temperature, surface water nutrient concentration, and the Pacific Decadal Oscillation index during our study years that added to the contrast in ocean conditions. All juvenile salmon for this study were collected with a surface rope trawl and analyzed in NOAA's Fishery Ecology Diet and Zooplankton (FEDZ) laboratory in Juneau for food habits and determination of energetic status. This study observes marine conditions during early ocean residence and the influence on recruitment to local fisheries using the record high (2011) and below average returns (2012) of pink salmon to Southeast GOA as an example. The sampling area and duration was extended in 2011 to include Central and Southeast Alaska during summer and fall to observe seasonal and regional differences in juvenile salmon migration timing, community structure, marine food habits, and energetic content. The Gulf of Alaska Integrated Ecosystem Research Program (GOAIERP) fisheries oceanography surveys has created a unique opportunity for observing juvenile salmon abundance, community structure, energetic content, and diet relative variability in ocean conditions and recruitment strength to the fishery. Preliminary results for pink salmon in Southeast GOA collected in July show a decrease in size and weight from 2010 to 2011 indicating that condition during the first year at sea may be correlated with recruitment to the fishery.