AFSC/ABL: Southeast and Prince William Sound, Alaska Herring Microsatellite data, 2007-2008

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Herring is one of the most energy-rich fish in the Alaskan ecosystem, and when populations struggle over time, such as the Lynn Canal population, there is management concern. Prior to 1983, Lynn Canal herring supported a productive sac roe fishery, a bait fishery, and a winter food and bait fishery. All commercial fisheries were closed in 1983 and remain so today. The purpose of this study was to examine the genetic structure of Lynn Canal herring and determine if it was discrete from other collections in southeast Alaska. We used microsatellite DNA to examine both spawning and non-spawning aggregates (collected in two consecutive years) in Lynn Canal, and compared them to two Southeast Alaska populations: Prince of Wales Island (southernmost waters) and Sitka Sound on Baranof Island (outer-coast). In addition we examined two collections from Prince William Sound (approx. 850 km NW) as a means to compare extent of divergence over large tracts of unsuitable spawning habitat. Because the geographic location of Lynn Canal is somewhat isolated and schools are known to over-winter in the area, we hypothesized that Lynn Canal herring experience reduced gene flow. The results of our study showed allele frequencies from 16 loci were highly similar across all collections, including the distant Prince William Sound. This investigation concurs with previous studies that there is a large amount of movement among herring in the Gulf of Alaska. We conclude that Lynn Canal herring are part of a meta-population that is possibly Gulf – wide or larger.