Genetic variation among coho salmon populations from the Kuskokwim River region and application to stock-specific harvest estimation

Abstract: We conducted a pilot survey of the genetic structure of coho salmon in the Kuskokwim River region. Our objective was to determine if sufficient genetic diversity exists among coho salmon populations in this area to use genetic methods to quantify contributions of coho salmon stocks to mixed fisheries in the Kuskokwim River and estimate abundance and run timing of coho salmon stocks in the Bethel test fishery. We surveyed genetic variation at nine microsatellite loci in coho salmon samples from the Arolik, Kanektok, Kisaralik, George, Kogrukluk, Tatlawiksuk, and Takotna rivers. Low, but significant genetic population structure was detected. Mean stock contribution estimates for simulated mixtures from Arolik/Kanektok rivers, Kisaralik/George rivers, Kogrukluk/Tatlawiksuk rivers, and Takotna River ranged from 84-94%. Levels of genetic divergence should support mixed-stock analysis for at least three groups: Kuskokwim Bay, lower-mid Kuskokwim River, and upper Kuskokwim River. Increasing the number of populations and loci surveyed will improve stock composition estimates and refine stock groups that can be identified in mixtures.

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