

Run Timing, Migratory Patterns, and Harvest Information of Chinook Salmon Stocks within the Yukon River

Yukon River Chinook salmon (*Oncorhynchus tshawytscha*) stocks were assayed for diversity at 34 microsatellite loci to examine stock structure and evaluate mixed-stock analysis (MSA) potential. Laboratories from three agencies, U.S. Fish and Wildlife Service, Department of Fisheries and Oceans Canada, and the Alaska Department of Fish and Game, collaborated in the survey of microsatellite diversity. Each laboratory surveyed a subset of the microsatellite loci. Allele frequencies were subsequently pooled to form a single, joint baseline. Yukon River Chinook salmon stocks are geographically structured, with moderate divergence ($F_{ST} = 0.044$) within and among geographic regions. Using the 10 most powerful loci, accuracy to country of origin is >99%, ranges from 94%–99% for eight regional groupings, and 86%–99% for individual stocks (for the 19 individual stocks, 16 > 90%). The standardized Pacific Salmon Commission Chinook Technical Committee 13-locus baseline produced comparable results. Microsatellite analysis can be used to accurately and precisely allocate Chinook salmon in mixtures to region and, in many cases, drainage and tributary of origin, providing managers with a powerful tool for assessing and regulating fisheries.

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