Sex ratios of juvenile and adult Chinook salmon in the Kuskokwim and Yukon rivers

Abstract

Some populations of Chinook salmon (*Oncorhynchus tshawytscha*) from western Alaska display persistent and often extreme adult sex ratio bias. Sex ratio bias in Pacific salmon is known to occur during early juvenile development and in adults during ocean migration. In this study we used a combination of phenotypic sex and a genetic sex marker, the growth hormone pseudogene (*GHp*), to distinguish between these two possibilities in Chinook salmon from the Kwethluk, Tuluksak, and Gisasa Rivers in western Alaska. The primary objectives were to; 1) compare the genetic and phenotypic gender of adult Chinook salmon, and 2) estimate the genetic sex ratio of age-2. Chinook salmon juveniles. Three results support a tentative conclusion that sex ratio distortion in these populations is due to gender-biased marine survival rates related to gender differences in life history strategies. These results are; 1) adult genetic and phenotypic sex ratios are generally similar and are male-biased, 2) juvenile genetic sex ratios are not male-biased, and 3) the average age-at-maturation for males is significantly less than for females. Our conclusion is tentative because some results allow for alternative interpretation. Six recommendations for further study are provided to verify the conclusion.

Key Words: Chinook salmon, sex-ratio bias, genetic sex marker, Yukon River, Kuskokwim River, *Oncorhynchus tshawytscha*.

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