

Humpback Whitefish *Coregonus pidschian* of the Upper Tanana River Drainage

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Abstract

Humpback whitefish *Coregonus pidschian* are the primary fishery resource in the upper Tanana River drainage. Subsistence users in the region have reported that their catches have been less in recent years than they remembered in the past, suggesting that fish abundance in the region may have declined. Previous fisheries investigations in the region identified that humpback whitefish were present but provided no information on life history, migration, or habitat use that could be used to evaluate local residents' concerns. A multi-year investigation was therefore initiated. It proceeded in a step-wise fashion through several stages beginning with systematic sampling to confirm species identification and describe the demographics of the population; then to otolith chemical analyses to determine if the population ranged downstream to marine water; from there to radio telemetry to identify migrations and important habitats; and finally to directed sampling on spawning areas to provide additional demographic information with which to evaluate radio telemetry data. Sampling data revealed that humpback whitefish were the only whitefish species available in the open river and lake systems of the upper Tanana River drainage. Most fish were mature adults. The average age was 6.7 years and ages ranged from 1 to 26 years ($n = 153$). Otolith chemical analyses of ten fish failed to find the high levels of strontium that would result from a migration to marine water, indicating that the population remained in freshwater. Radio tag relocations from 222 tagged humpback whitefish revealed that most fish followed an annual pattern of migration within the upper drainage that included using: 1) lake habitats for feeding in the spring and early summer; 2) river habitats by mid to late summer for migration to spawning areas; 3) two swiftly-flowing, gravel substrate regions of rivers for spawning; and 4) flat-water, soft-substrate habitats of rivers or open lake systems for overwintering. Radio tag data indicated that most humpback whitefish spawned on sequential years rather than on alternate years. These data provide a basis for guiding fishing practices and development activities in the region to minimize impacts on the fishery and ensure continued productivity. Projects designed to estimate the abundance of humpback whitefish from the two identified stocks could be developed if that information became a priority.