

Migration Timing and Seasonal Distribution of Broad Whitefish, Humpback Whitefish, and Least Cisco from Whitefish Lake and the Kuskokwim River, Alaska, 2004 and 2005

Abstract

During 2004 and 2005, radio transmitters were surgically implanted and used to track the migration of 54 broad whitefish *Coregonus nasus*, 60 humpback whitefish *C. pidschain*, and 53 least cisco *C. sardinella* in the Kuskokwim River watershed. All fish implanted with transmitters were captured at Whitefish Lake, except 33 broad whitefish that were tagged during 2005 at fish wheels operated in the mainstem Kuskokwim River near Kalskag. Movements of radio-tagged whitefish were monitored using fixed receiver stations, boats, and fixed-wing aircraft. Migration of radio-tagged whitefish from Whitefish Lake occurred from May to October. Many of the whitefish migrated up the Kuskokwim River from early June through late September. Broad whitefish were tracked in the fall to possible main channel spawning areas near the Swift and Kuskokwim river confluence and over 500 river kilometers (rkm) to an area between the villages of McGrath and Medfra. Humpback whitefish radio-tagged at Whitefish Lake migrated to suspected spawning habitats in the Holitna, Swift, and Big rivers, indicating multiple spawning aggregates use this lake. These suspected spawning locations were characterized by swift current and gravel substrate. Humpback whitefish traveled over 600 rkm to reach the Big River location. Success at tracking the movements of radio-tagged least cisco was minimal and only one least cisco was tracked to a suspected spawning location in the Holitna River in September 2004. Both broad and humpback whitefish showed inter-year fidelity to Whitefish Lake as a feeding area. Technical difficulties with transmitters and fixed receiver stations, and difficulties conducting flights during peak spawning times from late September to November because of poor weather and aircraft/pilot availability limited the effectiveness of tracking fish to spawning areas in both years.

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