

Northwest Alaska Dolly Varden spawning stock assessment

Abstract: From June 2001 through June 2003, the Alaska Department of Fish and Game, Division of Sport Fish, conducted a study on Dolly Varden *Salvelinus malma* in northwestern Alaska to: 1) enumerate overwintering aggregations using aerial surveys in the Wulik, Kivalina, and Noatak drainages; 2) assess the accuracy of aerial counts of overwintering and spawning aggregations of Dolly Varden for a typical small-order spawning tributary in the Noatak River drainage, Kagvik Creek; and, 3) collect life history information on Dolly Varden returning to Kagvik Creek to spawn. Because of frequent rain and inclement weather during the study, most of the project objectives were not achieved. Only a few and mostly incomplete aerial survey counts of the Wulik, Kivalina, and Noatak drainages were conducted. During the summers of 2001 and 2002, a weir was constructed across Kagvik Creek to capture and enumerate Dolly Varden migrating upstream to headwater spawning areas and downstream to overwintering areas. The weir counts were also to provide a complete census of all fish in the system to compare against aerial survey counts. In 2001, the weir could not withstand repeated high water events, and only 63 fish (29 males, 19 females) were captured moving upstream and none were captured moving down before field operations ceased several weeks early (2 August). In 2002, a stronger weir was constructed, and consequently the field season lasted longer before the weir succumbed to high water on 31 August. In 2002, 342 fish (103 males, 236 females) were captured moving upstream; however, the weir was disabled before downstream movement had begun. Twenty-four radio transmitters were also deployed in 2002 in spawning Dolly Varden in attempt to find overwintering locations via aerial tracking events conducted throughout the winter. Several overwintering locations were found and fish tended to aggregate near the outlet of tributary rivers in the mainstem Noatak. Two fish were found overwintering in the Wulik River the following year. Based upon our results with two different weir designs, it does not appear that weirs are an effective way to capture spawning Dolly Varden in small headwater streams in the Noatak drainage. The inability to fly aerial surveys when desired illustrates the idea that other means of enumerating Dolly Varden in northwestern Alaska such as sonar should be explored.

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