

Life History and Demographic Characteristics of Arctic Cisco, Dolly Varden, and Other Fish Species in the Barter Island Region of Northern Alaska

Randy J. Brown
Abstract

Arctic cisco *Coregonus autumnalis* and Dolly Varden *Salvelinus malma* are major fishery resources for people in coastal regions of northern Alaska and Yukon Territories. Concerted attempts to document the presence and monitor the relative abundance of these species and others began in the 1970s in response to regional development activities associated with oil exploration and extraction. Numerous sampling projects have taken place in coastal lagoon systems from the Colville River in the west to the Mackenzie River in the east. The U.S. Fish and Wildlife Service conducted an initial four year fyke net sampling program in the Barter Island region from 1988 to 1991 and repeated the sampling program 15 years later, from 2003 to 2005, to examine long-term trends in demographic composition, relative abundance, and body condition of Arctic cisco and Dolly Varden. The relative abundance of Arctic cisco varied widely among years primarily because of the tremendous variation in the number of age 0 fish moving west along the coast. The abundance of mature-size Arctic cisco, the primary demographic group harvested in coastal fisheries, remained relatively stable across years and between the early and late years of the project. Maturity indices, age, tagging, and relative abundance data suggested that Arctic cisco encountered in the Barter Island region come from overwintering habitats in both the Colville and Mackenzie River deltas. Immature Dolly Varden dominated the catch during all sampling years. With few exceptions, the relative abundance of mature Dolly Varden, the primary demographic group harvested in coastal fisheries, remained stable across years and between the early and late years of the project. Catch rates for mature Dolly Varden declined earlier in the season than for immature fish, presumably because of time constraints associated with fall spawning in freshwater habitats. In general, body condition of Dolly Varden improved between early and late summer seasons, as expected. Information regarding other fish species, such as overwintering origins, length frequency data, or relative abundance, is presented with minimal discussion.