AYK SSI PROPOSAL 2009

Project Title: Upper Yukon River Drainage Anadromous Waters Cataloging

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Study Location: Yukon River

Abstract: In August 2009 ABR, Inc.—Environmental Research & Services (ABR) was contracted by the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative (AYK-SSI) to survey headwater tributaries to the Upper Yukon River. The primary objective of these surveys was to identify salmon bearing streams so they could be nominated for inclusion in the State of Alaska's Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes (also known as the Anadromous Waters Catalog [AWC]). Following Alaska Department of Fish and Game (ADF&G) protocols, ABR conducted a gap analysis to determine candidate sampling locations (stream reaches) in the Upper Yukon River region of Alaska which could provide information on the presence and upstream extent of anadromous fish species. This information on salmon occurrence is critical in managing salmon and their habitat in areas of interior Alaska that may increasingly be impacted by human activities.

Two teams of ABR biologists surveyed streams in 2 periods (14–17 August and 20–24 August). Sampling in the first period was conducted in streams to the east of Fairbanks near the Salcha and Chena Rivers as well as in tributaries to Birch Creek. Fish surveys mainly were accomplished with electrofishing techniques. Low water levels and low fish abundance prompted the survey teams to relocate west of the Livengood area for the second sampling period, in tributaries to Hess Creek and Beaver Creek as well as the Tolvana River and Chatanika River. Sampling methods were augmented in the second period to include minnow trapping and dip netting. Water levels and fish densities remained low in the second period, however, and ABR suspended the sampling early on 24 August 2009 due to lack of significant anadromous salmon observations and concerns over the best use of resources for accomplishing project goals.

In total, ABR surveyed 63 stream stations in 48 distinct tributaries over 9 days of sampling. Seven species of fish were encountered with arctic grayling (Thymallus arcticus) and slimy sculpin (Cottus cognatus) being by far the most prevalent species observed. Anadromous salmon were observed in only 4 of 48 stations (6%), including one stream already nominated to the AWC (Beaver Creek). The remaining salmon were observed in lower reaches of streams very near previously cataloged anadromous waters. In 23 of 63 stations surveyed no fish of

any kind were observed. Where fish were present, densities were low throughout both survey periods.

Two other fish surveys in the Upper Yukon River region, conducted by ADF&G and U. S. Fish and Wildlife Service (USFWS) between 2004 and 2009, also revealed relatively low fish densities and species richness. Buckwalter et al. (2004) found anadromous salmon in only 17% of 121 stations surveyed using mostly electrofishing techniques in 2004. In 2008 and 2009, USFWS biologists sampled 8 headwater streams in the region using a variety of sampling techniques during multiple site visits. Of 183 sampling records at more than 50 stations using 10 different sampling techniques, only 19 records of Chinook and coho salmon were made. No salmon were captured using electrofishing techniques in the USFWS surveys.

We conclude that likely low natural salmon densities in headwater tributaries to the Upper Yukon River were reduced further in late summer 2009 by record low rainfall in interior Alaska in July 2009. Future fish sampling in tributaries to the Upper Yukon River should take rainfall and stream flow conditions (and environmental conditions in general) into consideration prior to sampling whenever possible. In addition, multiple sampling techniques and sample timing strategies over the course of the sampling season may be necessary to ensure that “false negatives” are not reported with respect to anadromous salmon occurrence in these headwater streams.