

Sheenjek River Chinook Salmon Genetic Sampling

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1. Introduction:

Summary:

Chinook salmon are an important species for commercial and subsistence fisheries throughout the Yukon River drainage in both the U.S. and Canada. The proportion of Canadian-origin Chinook salmon in fishery harvests in the U.S. waters of the Yukon River is necessary information for meeting the obligations of the Yukon River Salmon Agreement between the United States and Canada. The recent development of baseline genetic data for Chinook salmon populations in the Yukon River drainage has allowed for the use of GSI to deliver stock composition estimates at a regional and country of origin level (Templin et al. 2005, Beacham and Candy 2006). However, under-represented upper river stocks in this baseline remain a concern because of the lack of representative populations near the border between the U.S. and Canada (Flannery et al. 2006, and Beacham et al. 1989). Therefore, the Alaska Department of Fish and Game (ADFG) proposes to collect between 50 and 150 tissue samples from Chinook salmon in the Sheenjek, Colleen, Black, Charlie, Kandik, or Nation rivers (drainages additional to the Sheenjek were approved for sampling in the amended proposal) to improve this database and assist in defining scientifically-based escapement goals for Canadian-origin salmon.

Objectives:

The objective of this study is to collect biopsy samples from Chinook salmon *Oncorhynchus tshawytscha* in the Sheenjek River (an Upper Yukon River tributary) to add to the Yukon River genetic stock identification (GSI) baseline database. Collecting samples from this population will aid in the identification of stocks of Chinook salmon in Yukon River fisheries. Knowledge of the run timing and migration patterns of Chinook salmon is vital to management of these populations in the Yukon River. The ability to identify this upper river stock via genetic markers will also help fill in an existing knowledge gap. In addition to GSI sample collections, age, sex, and length (ASL) data will be collected to assess the quality of escapement for the Chinook salmon run in the Sheenjek River.

2. Methods:

No samples were collected this year. On August 2nd-3rd, Nick DeCovich flew an aerial survey of several river systems in the Upper U.S. portion of the Yukon River. Rivers flown included the Charley, Kandik, Nation, Salmon Fork of the Black, Colleen, and Sheenjek rivers. Spawning Chinook salmon were observed in the Charley and Colleen rivers only, and few fish were seen in

each (29 and 31 respectively). The Kandik, Nation, and Salmon Fork of the Black rivers were all flowing high due to recent rains and seeing into the water column was challenging yet possible in shallow areas. The Sheenjek was running quite high and muddy with no visibility into the water column. Given these conditions it was decided that field work would not be cost effective and no effort was made to collect samples in 2010.

3. Results:

This was the fourth attempt by ADFG to collect samples under this project. We believe our method of waiting until conditions are optimal before beginning efforts is sound. While we were unsuccessful again due to forces beyond our control, we also did not spend any funds from this project in 2010. We believe our amended proposal, which allows for sampling other Yukon River drainages in the region if conditions prohibit sampling the Sheenjek, has a high likelihood of success if weather conditions are favorable. We recommend the funding for this project be extended through the summer of 2011.

Budget summary:

| Item | Cost |
|--|-------------------|
| Raft rental AK raft and kayak | \$562.50 |
| Misc equipment | \$206.95 |
| Yukon Air Service | \$562.50 |
| Frontier airlines (Fairbanks to Ft. Yukon) | \$232.00 |
| Lodging in Fairbanks | \$278.00 |
| Total spent | \$1,841.95 |

Note: all expenses incurred in 2007. No project funds were used in 2008-2010.

References:

- Beacham, T. D., C. B. Murray, and R. E. Withler. 1989. Age, morphology, and biochemical genetic variation of Yukon River Chinook salmon. *Transactions of the American Fisheries Society* 118:46–63.
- Beacham, T. D., and J. R. Candy. 2006. Stock identification of Yukon River Chinook and chum salmon using microsatellite DNA loci. Final report to Yukon River Panel Restoration and Enhancement Fund Project CRE 79-05. 14 pp.

Flannery B., T. Beacham, M. Wetklo, C. Smith, W. D. Templin, A. Antonovich, L. Seeb, S. Miller, O. Schlei, J. K. Wenburg. 2006. Run timing, migratory patterns, and harvest information of Chinook salmon stocks within the Yukon River. Alaska Fisheries Technical Report 92, U.S. Fish and Wildlife Service, Anchorage.

Templin, W. D., R. L. Wilmot, C. M. Guthrie III, and L.W. Seeb. 2005. United States and Canadian Chinook salmon populations in the Yukon River can be segregated based on genetic characteristics. Alaska Fishery Research Bulletin 11(1):44-60.