

# **Fostering Cooperative Efforts Between the Upper Yukon River Villages by Employing a Local Hire to Assist in Age, Sex, and Length Data Collection and Learn Sonar Operations on the Chandalar River Sonar Project 2006**

## **URM-07**

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### **Introduction:**

#### *Summary:*

Although the Alaska Department of Fish and Game (ADF&G) has primary management authority over fisheries activities to ensure adequate spawning escapement, the US Fish and Wildlife Service (USFWS) works cooperatively with ADF&G in the collection of data which assists in better management. The Assessment and Monitoring Branch of the Fairbanks Fish and Wildlife Field Office in cooperation with the ADF&G, Yukon Flats National Wildlife Refuge (YFNWR) and the Council of Athabascan Tribal Governments (CATG) recruited and employed an intern and technician/boat operator (with boat), for training and assistance on the Chandalar River Sonar Project during the 2006 field season. The intern received training in basic sample collection protocols and techniques, sonar operation, data processing and recording, as well as basic computer skills. All assigned tasks were completed on time and personnel received an above average rating on their performance. A total of 179 carcasses were sampled, all within a 0.4 km reach and were considered to be the same sampling site. Preliminary ages for the 2006 Chandalar chum salmon vertebra are 3% age-3, 32% age-4, 61% age-5, and 4% age-6.

#### *Objectives:*

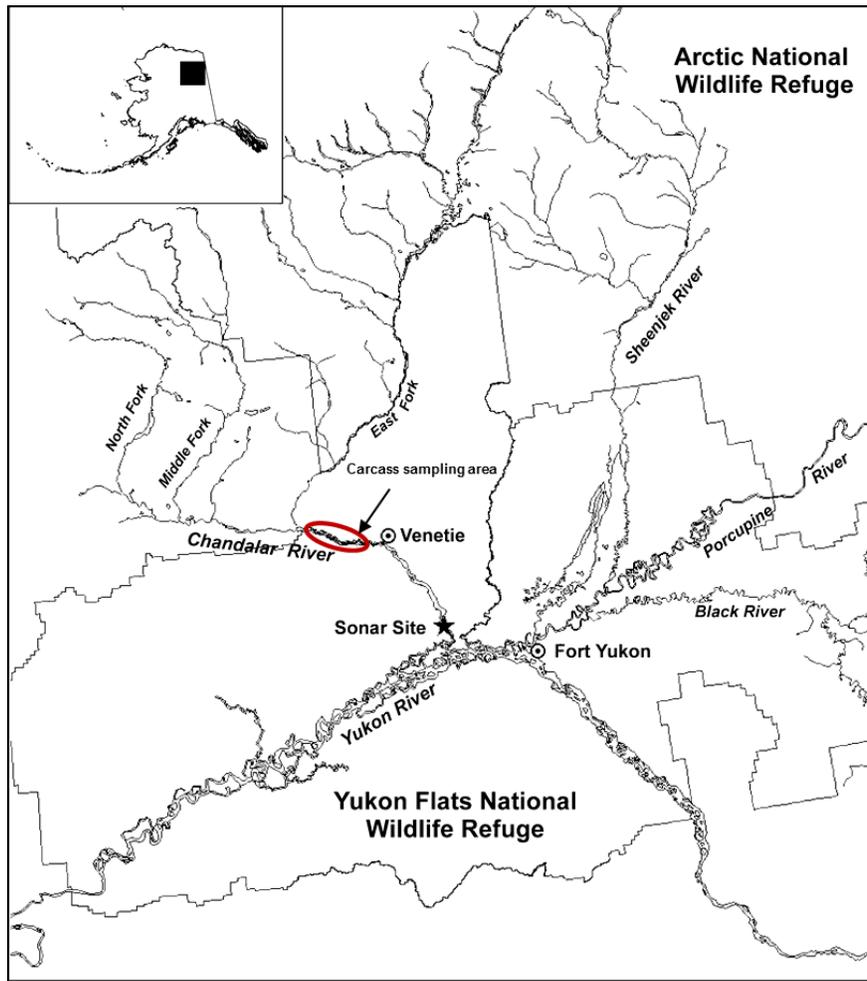
Objectives of this project are two-fold;

1. Build capacity with the youth from the upper-Yukon River villages. This was achieved by:
  - a. Recruiting a local youth from the upper-Yukon River village of Beaver, AK
  - b. Providing basic sonar and biological training appropriate for Biological Technicians
  - c. Providing required safety training in watercraft, aviation, and bear/firearms safety

- d. Developing the public speaking and outreach skills of the candidate hired
2. Collect age, sex, and length (ASL) data to determine trends in the Chandalar River fall chum salmon population returning to the spawning grounds. ASL data was collected from carcasses found on the spawning grounds using the following methods:
  - a. Length measurements were collected using standard measuring boards
  - b. Sex was determined by dissecting carcasses and visually identifying sex organs
  - c. Age was determined from vertebrae removed from specimens

**Study Area:**

The Chandalar River is a fifth-order tributary of the Yukon River, draining from the southern slopes of the Brooks Range (Figure 1). It consists of three major branches: East, Middle and North Forks. Principal water sources include rainfall, snowmelt, and to a lesser extent, melt water from small glaciers, and perennial springs (Craig and Wells 1975). Summer water turbidity is highly variable, depending on rainfall. The sonar site is located at River Kilometer 21.5; known spawning is located at River Kilometer 48.3 (Figure 1).



**Figure 1.** Map of the Chandalar River, showing carcass sampling area and the location of the Chandalar River sonar escapement project site.

## **Licenses and Permits:**

### **Methods:**

#### *Operation:*

This was a cooperative project among USFWS-Fairbanks Field Office, the YFNWR, ADF&G, and CATG. The USFWS provided training in sonar and ASL collection. The YFNWR helped conduct the interview and assisted in the recruitment for the project, plus some transportation and field lodging costs. ADF&G provided the lab analysis on the ASL data. CATG assisted with transportation and field logistics.

In early spring 2006, USFWS personnel recruited and trained a local from the village of Beaver to assist with sonar operation and ASL data collection on the Chandalar River sonar project. Training continued during the field season. The intern was provided experience with both split-beam and DIDSON sonar along with the appropriate biological and safety training which included, but was not limited to: basic sample collection protocols and techniques, sonar operation, data processing and recording, basic computer skills, Department of Interior Boater's Safety Certification, First Aid, CPR, as well as Bear Safety and Firearms Certification. The existing sonar project on the Chandalar River provided the stage for practical work experience during the field season.

Collecting vertebrae, sex and length data from all accessible carcasses of fall chum salmon within a given area on the spawning grounds was completed during one sample period. The goal was to collect as many samples spread out during three sampling periods throughout the season. Ideally, a target of 180 chum salmon carcasses (60 per trip) in numerous, separate time strata throughout the season would be collected (Molyneaux and DuBois 1996). However, water levels and crew time commitment for sonar duties affected the sampling window for carcass sampling. The project involved one trip from sonar camp to the spawning grounds located 8km above the village of Venetie (Figure 1).

#### *Data Analysis:*

A total of 179 spawned out fall chum salmon were sampled for ASL data. Vertebrae were cleaned and aged by counting growth annuli. ASL data were collected as outlined in Clutter and Whitesel (1956) and used to determine trends in the Chandalar River fall chum salmon populations; such as: male/female spawner ratios, spawner-age relationships, and overall changes in fish lengths over time. The age then determined by reading the annuli after samples had been preserved and prepared by ADF&G. Fish were measured to the nearest 5 mm, mid-orbit of the eye to the fork of the tail. The sex of specimens was determined by dissection of the carcass and visual identification of reproductive organs or by external morphology (Morrow 1980).

**Results:**

The intern was under the direct supervision of the crew leader for the Chandalar Sonar Project. The intern received training in basic sample collection protocols and techniques, sonar operation, data processing and recording, and basic computer skills. All assigned tasks were completed on time and personnel received an above average rating on their performance.

Boat service for transportation of personnel from the sonar camp to points upriver for ASL collection during sampling was provided by L.P. Williams for a total of \$1,100. All fuel, boat, and motor maintenance were the responsibility of the boat owner/operator. The intern worked throughout the season with two breaks at a cost of approximately \$7,438.

The crew was shown sampling procedures on two chum salmon at the Chandalar camp. On September 17, the crew departed camp for the known spawning grounds upriver from Venetie. A total of 179 carcasses were sampled, all within a 0.4Km reach and were considered to be from the same sampling site. Preliminary ages for the 2006 Chandalar chum salmon vertebra are 3% age-3, 32% age-4, 61% age-5, and 4% age-6. This age structure is fairly consistent with those observed in the lower Yukon River Test Fishery samples (Bonnie Borba, ADF&G, personal communication).

The new data will be added to data that have been previously collected and will assist managers and researchers in the development of salmon management plans by providing post-season stock assessment data. This proposal meets many of the goals and objectives in the US and Canada Yukon River Joint Technical Committee Plan and the Yukon River Salmon Research and Management Fund.

**Conclusion:**

This was a one year project proposing to recruit, contract, and provide on the job training to a local from a village in proximity to the Chandalar River sonar project. It provided experience with both split-beam and DIDSON sonar along with appropriate biological training required for an intern recruited from the village of Beaver to collect ASL data.

The number of Natives hired for the Fish and Wildlife Service under the local-hire provision is less than 6%. The lack of education and information is a large contributor to the problem. Outreach and education for recruitment in future seasons are both strong components of this project and should be continued. This can be accomplished with a series of presentations given post season during CATG meetings and at local high schools. Local hire for projects such as the fall chum salmon sonar enumeration project would not only strengthen relationships between the fishery managers and the subsistence users of the resources, but it would also help the local people better understand the importance of the sonar project in the management of their subsistence resources.

**References:**

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Molyneaux, D. and L. DuBois. 1996. Salmon age, sex, and length catalog for the Kuskokwim Area, 1995 progress report. Alaska Department of Fish and Game, Regional Information Report Number 3A96-31, Anchorage, Alaska.