

Age, Sex, and Length Composition of Fall Chum Salmon on the Chandalar River to Provide Postseason Stock Assessment

R&M#06-07

Project Proponent: Jeff Melegari, USFWS-Fairbanks Fish and Wildlife Field Office, 101 12th Avenue, Room 110, Fairbanks, Alaska, 99701, jeff_melegari@fws.gov

Project Partner: Bonnie Borba, ADF&G-Alaska Department of Fish and Game, Division of Commercial Fisheries, 1300 College Road, Fairbanks, Alaska, 99701

1. Introduction:

Objectives:

To quantify age, sex, and size composition of fall chum salmon in the Chandalar River.

2. Study Area:

Some logistics and preparation began in early July. Sampling occurred on October 6-7, and cleaning of the vertebrae occurred over the following two weeks. Age data was received from ADF&G in mid-March. The study area was at the fall chum salmon spawning grounds within the Chandalar River drainage upriver from the village of Venetie (see map on next page).

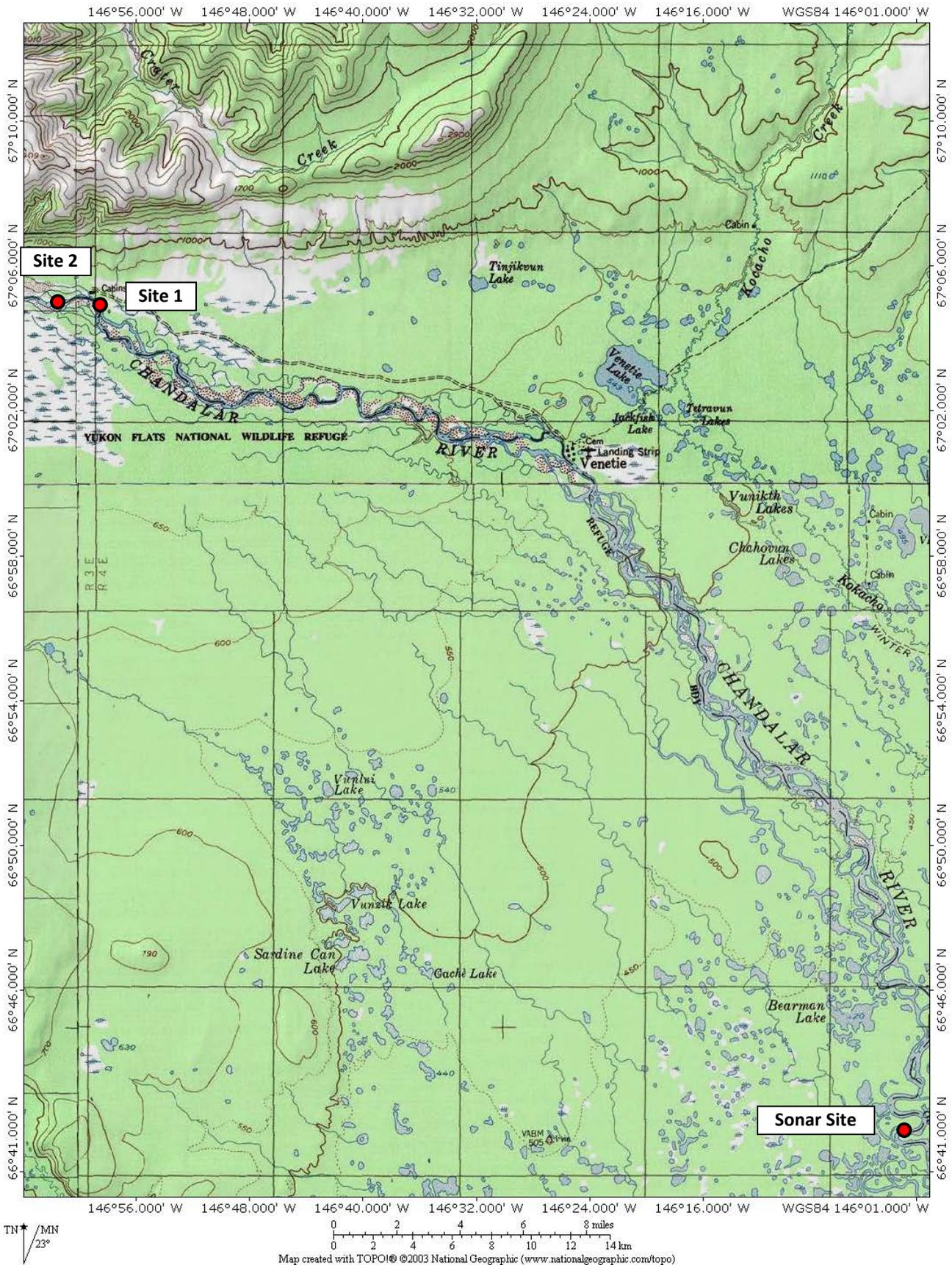


Figure 1. — Map showing sample locations and sonar site.

3. Methods:

Age, sex, and length data will be used to determine trends in the Chandalar River fall chum salmon populations, and for run reconstruction and forecasting. A helicopter was chartered to transport FWS technicians to the spawning grounds approximately 8 km above the village of Venetie during October 6-7, 2007 for data collection. A helicopter was used to survey the spawning area for concentrations of carcasses. Upon location of concentrations of carcasses, all fish at a particular site were sampled to reduce possible sampling bias. Fish were measured to the nearest 5 millimeters, mid-eye to the fork of the tail (METF). The sex of specimens was determined by external morphology or, if sex was not obvious from external characteristics, by dissection of the carcass and visual identification of reproductive organs. Vertebrae were collected, cleaned, and prepared, then provided to Alaska Department of Fish and Game (ADF&G) for aging.

4. Results:

During October 6-7 sex and length data, and vertebrae were collected from fall chum salmon at two sites on the spawning grounds (Figure 1). The GPS locations of the sites were: N 67° 05.001' W 146° 58.577' (site 1); N 67° 05.060' W 147° 01.640'. Samples were collected from 180 carcasses, 75 females, 105 males. After being boiled and cleaned samples were sent to ADF&G to be aged.

5. Discussion:

Ages were successfully determined from 175 of the samples. There were two primary age classes in the samples, 0.3 and 0.4, from brood years 2003 and 2002 respectively, and a small number of fish from age classes 0.2 and 0.5 (Table 1). Age class 0.3 was predominant overall, accounting for 65% of the total samples, and age class 0.4 accounted for 25% of the total. Both female and male samples were predominantly age class 0.3 (63% and 67% respectively), followed by age class 0.4 (22% and 28% respectively). Also included were age classes 0.2 and 0.5 accounting for 8%, and 3% of the total samples respectively. The sex ratio of the samples was 41% female overall. Females ranged from 480 to 630 mm METF and males ranged from 500 to 660 mm METF (Table 2). For length-at-age measurements, mean lengths of male fish were generally larger than females.

Table 1. — Age and sex of fall chum salmon carcasses sampled on the spawning grounds in the Chandalar River, Alaska, 2007. Ages determined from vertebrae.

Sample size		Brood year and age			
		2004	2003	2002	2001
		0.2	0.3	0.4	0.5
Female	72(41%)	8 (11%)	45 (63%)	16 (22%)	3 (4%)
Male	103(59%)	6 (6%)	69 (67%)	28 (27%)	0 (0%)
Total	175(100%)	14 (8%)	114 (65%)	44 (25%)	3 (2%)

Table 2. — Length at age of female and male fall chum salmon carcasses sampled on Chandalar River spawning grounds, Alaska, 2007.

Age	Female					Male				
	N	Mid-eye to fork length (mm)				N	Mid-eye to fork length (mm)			
		Mean	SE	Median	Range		Mean	SE	Median	Range
0.2	8	543	13.2	540	480-590	6	573	15.6	585	510-620
0.3	45	551	3.5	550	500-600	69	583	3.8	580	590-655
0.4	16	564	5.6	560	530-600	28	604	6.1	600	550-660
0.5	3	607	18.6	620	570-630	0	—	—	—	—
Total	72					103				