United States Department of the Interior

U.S. Fish & Wildlife Service
Fishery Assistance Office
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IN REPLY REFER TO:

DAUM

November 3, 1989

MEMORANDUM

TO: Files

FROM: FAO Staff Biologist

SUBJECT: Trip Report - 1987 Chandalar River Chinook Salmon Telemetry Results

From July 11 - July 30, 1987 adult chinook salmon *Oncorhynchus tshawytscha* were radio-tagged on the lower Chandalar River and tracked upstream to locate spawning grounds. Fish were captured at the sonar site (22 km upstream from the Chandalar River mouth) with a 18.3 m long by 3.7 m deep multifilament gill net with 10.4 cm bar mesh. Telonics radio transmitters (153 MHz) were esophageally implanted and then fish were tethered in the river for up to five hours before release. Radio-tagged fish were tracked with a Telonics TR-2 receiver/scanner and two forward-looking H-configuration antennae mounted, downward at a 45° angle, on the wings of a fixed-wing aircraft (Piper supercub, Cessna 207, or Cessna 206 on floats). Tracking flights followed river meanders, generally at 92 m above ground level and at 129 km/h (supercub) or 145-177 km/hr (Cessnas). Positions of all tagged fish located were recorded on 1:250,000 scale USGS topographical maps.

Results

Fifteen chinook salmon were tagged, 10 males and 5 females. One fish died before release and 11 fish were located at least once after release. Five tracking flights were flown, with the Piper supercub being the most successful at finding tagged fish (Table 1).

Table 1. Tracking dates, aircraft type, and percent found for radio-tagged chinook salmon on the Chandalar River, 1987.

Date	Aircraft	Fish at Large	Number Found	Percent Found
07/21	Cessna 206	4	2	50
07/25	Cessna 206	8	4	50
07/28	Cessna 207	13	4	31
08/05	Piper supercub	14	10	71
09/03	Piper supercub	13	8	62

Of the 10 tagged chinook salmon that were tracked upstream, 6 fish were relocated in a clear water creek adjacent to the mainstem Chandalar River about 15 km upstream from Venetie Village (Table 2, Figure 1). Approximately 30 chinook salmon and numerous redds were observed in this area. The farthest upstream observations were of two tagged males, 68 and 64 km up the East Fork Chandalar River. Two chinook salmon were caught in Arctic Village (276 km up the East Fork) around July 25 (Joe Firmin, personal communication). Tagged males had a tendency to move farther upstream than tagged females. From limited movement information, it appears that some males do not move directly to one specific spawning area, but move throughout upper portions of the drainage (fish numbers 3 and 5, Table 2).

Recommendations

1. Piper supercub aircraft should be used for radio tracking salmon in meandering, braided river systems.

2. Telemetry flights should be flown at 250 to 350 m above ground level to aid in transmitter signal detection.

3. Female chinook salmon may be more desirable for radio telemetry studies focusing on identification of spawning grounds; some males may wander throughout a drainage, spending little time at any one specific spawning area.

4. Mortality switches should be installed in all salmon radio transmitters.

5. External attachment of transmitters may be more desirable from the standpoint of fish health and signal transmission.

6. Telemetry receivers with data loggers placed upstream and downstream from the tagging site would help identify which fish were still in the study area and available for tracking.

David M. Daum

cc: R. Bailey, USFWS-FMS, Anchorage
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Table 2. Location of radio-tagged chinook salmon, Chandalar River, 1987.

Fish # (sex)	Date Tagged	Frequency (153 MHz +)	Date Tracked	Location[a](Comments)
1 (M)	07/11	.000	07/28	68 km up East Fork
			08/05	58 km above Venetie
			09/03	46 km above Venetie (probable carcass)
2 (M)	07/13	.021	-	(died before release, used on fish #14)
3 (M)	07/16	.032	07/21	34 km up East Fork
			07/28	10 km up East Fork
			08/05	64 km up East Fork
			09/03	41 km above Venetie (probable carcass)
4 (F)	07/17	.043	08/05	15 km above Venetie (redds and fish in small clear creek)
			09/03	71 km above camp (probable carcass)
5 (M)	07/18	.052	07/21	68 km above camp
			07/25	26 km above Venetie
			07/28	82 km above Venetie
			08/05	28 km above Venetie
			09/03	16 km above Venetie (in clear creek, probable carcass)
6 (M)	07/23	.060	-	(never located)
7 (F)	07/23	.070	07/25	4 km below camp
			08/05	15 km above Venetie (in clear creek)
			09/03	16 km above Venetie (in clear creek, probable carcass)
8 (M)	07/23	.080	07/25	2 km above camp (died after release)
			08/05	2 km above camp (found on beach 09/02)
9 (F)	07/23	.090	07/25	4 km below camp
10 (F)	07/25	.100	-	(never located)
11 (F)	07/25	.110	08/05	7 km above Venetie
12 (M)	07/26	.121	08/05	15 km above Venetie (in clear creek)
			09/03	4 km below camp (probable carcass)
13 (M)	07/27	.129	-	(never located)
14 (M)	07/27	.021	07/28	19 km above camp
			08/05	15 km above Venetie (in clear creek)
			09/03	71 km above camp (probable carcass)
15 (M)	07/30	.143	08/05	15 km above Venetie (in clear creek)
			09/03	2 km above Venetie (probable carcass)

[a]river distances: mouth--camp=22 km; camp--Venetie=74 km; Venetie--East Fork=63 km.

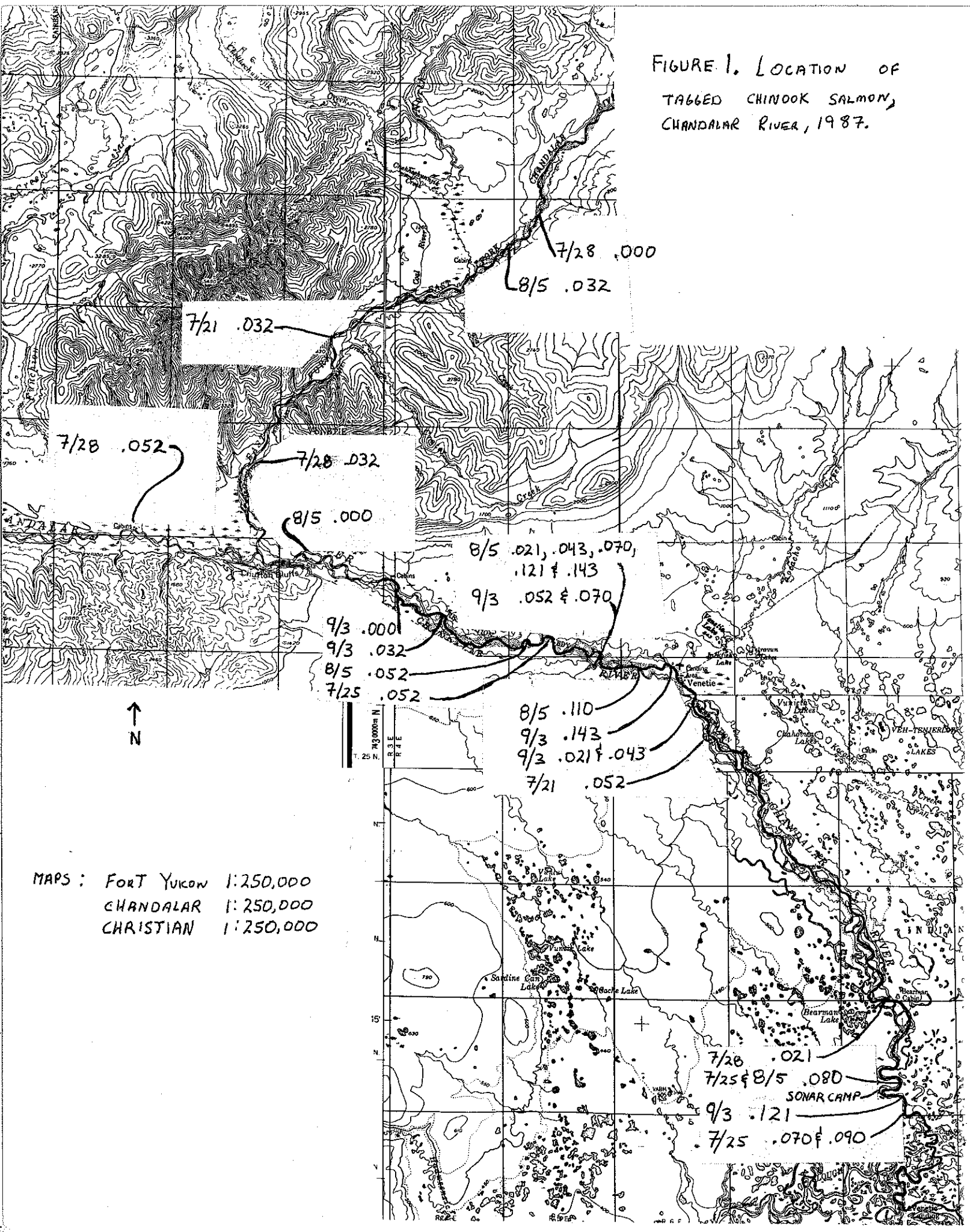

FIGURE 1. LOCATION OF TAGGED CHINOOK SALMON, CHANDALAR RIVER, 1987.

MAPS: FORT YUKON 1:250,000
CHANDALAR 1:250,000
CHRISTIAN 1:250,000