Upper Teslin Chum Tracking Pilot Program

The Yukon River Restoration & Enhancement Fund
CRE-46N-08

Prepared for:
The Yukon River Panel

Prepared by:
Department of Lands & Resources
Teslin Tlingit Council

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Abstract

Little is known about the upstream reaches of the chum salmon migration in the Yukon River watershed. Anecdotal reports, traditional knowledge and preliminary surveys indicate that fall chum do travel up Teslin River and arrive in Teslin Lake; however the timing and habitat use is not well-characterized. In order to further develop our understanding of this stock and how and when fish use different habitats in this area, we proposed a radio-tagging project to be carried out in this area. A pilot project to assess feasibility was carried out in September and October 2008. Nets were set in the Teslin River near Johnson's Crossing, Yukon, two days a week for a six-week period anticipated to overlap the peak of the run. Three male chum were caught during the course of the study. Given the lack of any bycatch of other species of fish, we hope to repeat the study next fall in order to ascertain whether or not the low numbers are an aberration of this season. This further work will allow us to determine whether or not it is feasible and/or desirable to expand the project to radio-tagging.
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Background

The chum salmon (*Onchorynchus keta*) in the Teslin River watershed represent a poorly understood and unique stock. This run is likely one of the longest documented migrations made by this species in the world. While some are known to spawn in several locations along the lower Teslin River, there is little to no information available regarding the destinations of those that may spawn in tributaries of Teslin Lake, and/or at the mouths of tributaries in the lake. Over the years, chum salmon have been caught sporadically in Teslin River and Teslin Lake, suggesting spawning either in the lake or associated tributaries. Spawning has been documented in the Teslin River towards the confluence of the Teslin and Yukon River. The Teslin Tlingit First Nation is currently very interested in developing a greater understanding of this chum stock in the upper reaches of its migration. Conservation and protection of spawning areas will be very important especially in light of increased development along the lake and tributary streams.

Methods

The Teslin Tlingit Council Department of Lands & Resources engaged Elder Don Henry, resident of Johnson's Crossing, to carry out the survey. A 21 foot wooden river boat equipped with a 50HP Evinrude motor and oars was used for the survey. Each day of sampling, two nets (4.5" mesh; 60' long by 8' and 12' deep) were set at two different locations on the Teslin River downriver from Johnson's Crossing (see map). Nets were set shortly after sunrise (between 8:30 and 9:00 AM), checked every two hours, and pulled as it was getting dark (6:00 PM at the latest).

When a fish was caught, it was extricated from the net and held by Don while his assistant clipped the right and left auxiliary appendages (for replicate tissue samples) using dog nail clippers and placed them in ethanol (sample bottles provided by DFO). The fish was sexed and its full length estimated by eye, then it was placed in the water and released once it appeared sufficiently revived.

After the sampling was complete, information and DNA samples were collected through an interview by TTC's Fish & Wildlife Officer, who compiled the report and submitted it along with samples to DFO.

Net Sites

The sites were chosen for their current and historic use as locations for netting Chinook salmon (*Onchorynchus tshawytschaw*), and their suitability was supported by a technical contact representing Department of Fisheries and Oceans. Site 1 is located at the current Smarch family fish camp (Fish Camp) on the west side of Teslin River. Site 2 is on the east side of the river at the base of a bluff across from site 1. Site 3 is at an old fish camp, approximately 200 m downriver from Fish Camp on the west of the River. Site 4 is the furthest downriver at roughly 2 miles (3.2 km) downriver from the bridge, at a wide bend in the river next to protruding gravel bar.

Table 1: Net Sites

Week	Dates	Site*			
		1	2	3	4
1	Sept 20, 21	X		X	
2	Sept 27, 28	X		X	
3	Oct 4, 5			X	X
4	Oct 11, 12		X	X	
5	Oct 17, 18		X	X	
6	Oct 25, 26		X	X	

**Highlighted cells indicate a salmon was caught during this set.*

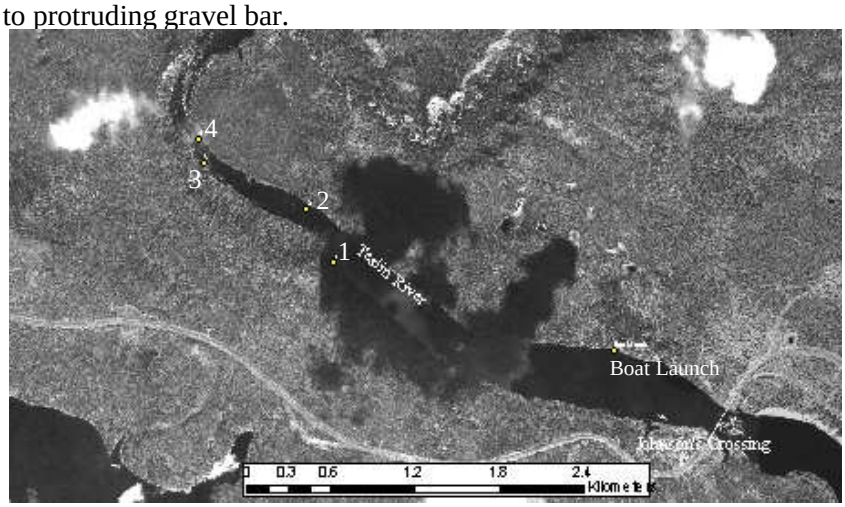

Figure 1: Net Sites

Results & Discussion

Three fish were caught during the course of the sampling. All were male chum salmon, exhibiting signs of spawning, caught at site 3. Two were caught as the net was being pulled and it was getting dark, one on September 21, and one on October 5. The third was caught on October 11 at 10:30 AM. The only bycatch recorded was a loon who became entangled in the net on the final day of netting (October 26) and was discovered dead as the net was being pulled. The first two fish revived quickly after being replaced in the water. The third had been dead an estimated 20 minutes in the net when it was discovered; it was placed on the shore for the eagles. The first salmon caught was described as being "rubbed out" and "worn out", similar to the state of Chinook salmon by the time they reach this point in their migration, whereas the other two appeared to still be in good shape. The chum averaged 20 inches in length, and Don indicated that this was similar to the sizes he had seen in previous years. He noted that although they would usually catch one or two a year when fishing for lake trout in the fall, he could not recall a time when they had caught more than three in a year.


Figure 2: Site no. 3

Previous anecdotal data and preliminary surveys led us to believe that more chum would be migrating this far upriver, as they have been known to be found in Teslin Lake as well. It is possible that high water contributed to the low catch (at least three feet above normal for the time of year). The high water may have made available sloughs and tributary streams that are not usually accessible to fish and may represent preferred spawning habitats that allowed them to shorten their migration. On October 11th Don set a net for trout overnight up in the lake near the mouth, and had no success. He expressed surprise at the lack of any fish of any species. Don further noted that when setting nets for food he sets at night, and has always had poor luck attempting to fish during the day and speculated that the net was too visible. Potential solutions include a finer net, or setting at night (which is not likely to be logistically feasible).

Relevance to R&E Plan Priorities and Joint Technical Committee

This project hoped to contribute to understanding habitat use by migrating and spawning adult chum salmon (R&E Priority no. 5, JTC Plan 2.1.1). The low capture number does not allow for any statistical significance; however all of the fish were caught at one site, which may at least provide some insight into site selection for future work. By engaging a local fisherman to conduct the study, we have increased technical community capacity, and encouraged stewardship through a better understanding of the practice and importance of technical surveys, in line with R&E priority no. 4.

Implications for Future Studies

This project was designed as a pilot project to test the feasibility of catching chum salmon on the Teslin River for radio-tagging in order to better understand migration and spawning behaviour and habitat selection in this area. Given the low rate of capture, the study should be repeated without expanding its operations in order to evaluate the effects of factors such as weather and unseasonably high water. In this case, repeating the study under more 'typical' conditions may give us a more realistic outlook on the possibilities for telemetry work. In addition, some variables such as type of net may be adjusted in accordance with technical advice.

Acknowledgements

This project would not have been possible without the work carried out by Elder Don Henry and Citizen Donny Henry, and technical support from Mary-Ellen Jarvis and Patrick Milligan with DFO.

Final Budget

	Amount $
Capital	
Operation & Maintenance (Equipment Rental)	1764
Administration	750
Personnel (Wages)	2485.33
Total In-kind	500
Total	5499.33