

Title: Status of Sheefish in Highpower Creek and Upper Kuskokwim River

Project Number: OSM Project 12-312

Project Objectives and Results:

1. Determine the status of the sheefish in the vicinity of Highpower Creek by:

- a. Documenting the locations of radio-tagged sheefish during the spawning period;
- b. Verifying spawning areas by conducting site visits and capturing fish to assess their spawning condition; and,
- c. Determining the migratory timing and seasonal distribution of radiotagged sheefish through aerial tracking surveys and ground-based stationary tracking stations.

2. Conduct site visits and capture sheefish to assess spawning condition on suspected spawning areas on the East Fork Kuskokwim River and Kongeruk River to verify whether spawning is occurring there.

3. Collect tissue samples from each sheefish captured at spawning areas for future genetic stock identification analysis.

4. Describe habitat characteristics of the areas used for spawning.

During 2012, we attempted to capture and tag sheefish bound for spawning locations at or near Highpower Creek in the upper Kuskokwim River drainage. Previous radiotelemetry studies (FIS 06-305 and FIS 10-305) never detected any radio-tagged sheefish at the mouth of Highpower Creek, which has been documented as a spawning area. Through conversations with residents of Telida and Nikolai, sheefish were seen in abundance and harvested at the mouth of Highpower Creek throughout September during the 1980's and earlier, but have not been seen in the past 20 years. The project design was to capture and implant 30 radio transmitters into sheefish captured on the North Fork of the Kuskokwim River. Half of the transmitters were to be deployed downriver of Telida to compensate for uncertainty in migration dates or the inability to capture sheefish at the mouth of Highpower Creek because this spawning stock may be no longer viable.

Forty radio transmitters were procured and 25 of these transmitters were deployed in sheefish that were captured and tagged on the North Fork of the Kuskokwim River several miles above the mouth of the East Fork of the Kuskokwim River during 18-28 August 2012. During 11-18 September 2012, an attempt was made to deploy the remaining 15 radio transmitters at and near the mouth of Highpower Creek. Despite long days of intensive fishing with hook and line gear, set nets, and drift gillnet techniques, no sheefish were captured.

The 25 sheefish that were radiotagged in the lower North Fork of the Kuskokwim River were tracked through an array of seven stationary tracking stations located from Aniak to Telida and two aerial tracking

flights conducted on 25 September and 1 October. Of these, 10 were not seen to enter a spawning area, 10 travelled to the confluence of the East Fork of the Kuskokwim River and Tonzona River, 1 travelled downriver from the capture location and up the Big River, and 4 went to a location on the South Fork of the Kuskokwim River near the confluence with the Little Tonzona River. The latter may represent an additional and at present an undocumented spawning location. Compared to previous studies, the post-spawning outmigration from the East and South Forks was about two weeks later. This was probably due to high water events as a result of unseasonably large amounts of rain during late September 2012. Habitat characteristics such as Ph, turbidity, flow, spawning substrate, and water temperature were recorded at the mouth of Highpower Creek and on the Swift Fork of the Kuskokwim River, into which Highpower Creek flows. Overall the habitat characteristics noted for the Swift Fork are similar to that recorded for known spawning areas such as the Big River, Middle Fork of the Kuskokwim River, and other sheefish spawning habitats in the Yukon River drainage, but dissimilar for the mouth of Highpower Creek. It is the belief of the project biologist that sheefish may have used the slower-flowing Highpower Creek to rest prior to spawning on the Swift Fork. An attempt will be made again in 2013 to capture sheefish that will spawn in the vicinity of Highpower Creek.