

Red Dog Mine June 2015/Wulik River Dolly Varden Enumeration Project
Trip Report
May 30 to June 13, 2015

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On May 30, 2015, three biologists from ADF&G travelled to Red Dog Mine to deploy a DIDSON® (Dual frequency IDentification SONar) side-scanning sonar in the lower Wulik River to count the outmigration of anadromous Dolly Varden that move from overwintering locations in the river into the Chukchi Sea. This project was designed to act as a check or replacement for the fall-time aerial surveys conducted in the Wulik River to count the overwintering population before freeze-up. This was the second year of this project.

The site chosen to operate the sonar was chosen based on the location of overwintering radio-tagged Dolly Varden that were tagged in September 2014 in the mainstem Wulik River near the outlet of Ikalukrok Creek. On May 31, a tracking flight was conducted to determine the distribution of overwintering fish for the purpose of locating a site below most or all of the radio-tagged fish, in attempt to get the most complete count. Of the 17 tagged fish, 15 were located, and 14 of these were within 1-3 river mi from the tagging location, of which one was presumed dead due to the mortality code emitted from the tag. One fish was found just 1 mi up from the outlet with Kivalina Lagoon, however there was no suitable camping or sonar sites this low. We settled on a narrow point of river with no braids approximately 4 river mi up from the lagoon entrance to camp and run the sonar (Figure 1).



Figure 1. Photo of DIDSON sonar in operation with Vexar fence installed to keep fish from passing behind it.

From the evening of May 31th through the morning of June 12th, the sonar transducer emitted a beam horizontally across the river, which was one to seven feet deep at this location. Generally, Dolly Varden in the Wulik River don't begin to move downstream until the freshet has passed and the water begins to clear up. Therefore, we attempted to deploy the sonar while the water was still high and before

outmigration had begun. Installation of the sonar went well and based on repeated testing with weighted objects drifted downriver from a boat in front of the transducer we were confident that it was calibrated correctly.

It appears our timing was good, as counts for the first three days there was almost no fish movement across the beam. As the water continued dropping, fish counts began to pick up, and by the last day there were thousands of fish a day moving in both directions through the beam. Counts completed though 1200 on June 10th were 16,359 fish moving downstream and 19,083 fish moving upstream, with much milling behavior observed (see example in Figure 2.). There are an addition 36 hours of files to be completed so these totals with change some, and once completed I will add them to the final project memo.

In addition, 17 seine hauls were conducted during times when there was a four person crew to operate the seine in order to determine what species are moving past the sonar. A total of 129 Dolly Varden and 28 Arctic grayling were caught, with most Arctic grayling caught above the sonar. It is likely that few Arctic grayling moved down below the sonar and were just setting up in feeding locations.

The milling behavior (clouds of fish moving back and forth across the sonar) made it difficult to interpret true outmigration numbers, and it was impossible to determine if we were seeing the same groups of fish repeatedly moving back and forth or not. Regardless, the sonar project produced much better results than in 2014, and logistics ran much more smoothly. Once final counts are completed, a memo will be distributed with final results and recommendations.

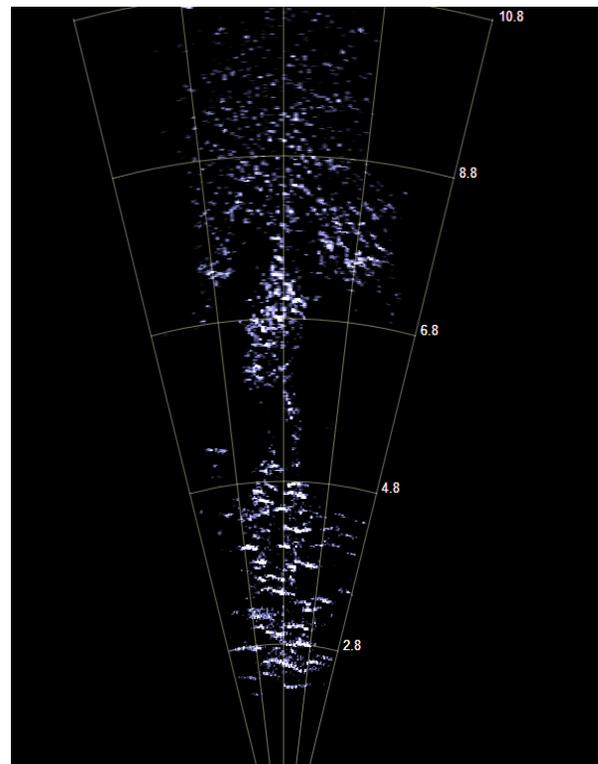


Figure 2. Example of still-shot from Wulik River sonar, showing approximately 40 Dolly Varden moving through the beam within 5 m of the sonar unit.