

# PERFORMANCE REPORT

**STATE:** Alaska

**GRANT NO.:** F-10-33

**GRANT TITLE:** Sport Fish Investigations in Alaska

**PERIOD COVERED:** July 1, 2017 – June 30, 2018

**STUDY NO. AND TITLE:** S-2-28 Region II Sonar Research and Development

## **STUDY OBJECTIVES:**

The purpose of the regional sonar program is to provide technical expertise to develop, maintain, and update sonar projects in areas where other escapement estimation techniques are inadequate.

## **RESULTS/DISCUSSION:**

Continued assistance was provided in operating Adaptive Resolution Imaging Sonar (ARIS) at Kenai River mile 13.7. A total of five ARIS systems were required to provide sufficient coverage. Four sonars (one nearshore and one offshore, on each of two banks) were deployed to provide near-complete coverage of the main river cross-section. A fifth sonar was deployed in conjunction with a fixed tripod weir to provide complete coverage of a minor channel on the right bank of the river. Chinook salmon passage was estimated at the RM 13.7 site from July 1 – August 20, 2017, and from May 16 – Jun 30, 2018. ARIS fish-length threshold estimates were produced inseason while ARIS-based mixture model estimates were produced post season. Final estimates from 2017 and 2018 will be provided in the Fishery Data Series reports listed below.

Assistance was provided to Homer area staff in Dual Frequency Identification Sonar (DIDSON) operations at the Anchor River weir site and in selecting a new site for video weir and ARIS operations on Deep Creek. DIDSON and ARIS were used to estimate Chinook salmon passage in the spring when river water levels were too high for video weir installation. Personnel were trained in use of DIDSON and ARIS data collection and post processing software for the purpose of enumerating Chinook salmon passage. Assistance was provided for DIDSON and ARIS deployment and operations from May 11 – May 30, 2018.

In order to estimate Chinook salmon passage on the Kasilof River, staff tested an ARIS model 1800 at the existing Kasilof River sockeye salmon sonar site in August 2017 as a potential replacement for DIDSON which had been used to estimate sockeye passage at the site since 2010. The DIDSON units used on the Kasilof River did not provide the necessary resolution to accurately differentiate large Chinook salmon from other smaller species of salmon. Replacing DIDSON with ARIS results in improved image resolution at far range and provides the ability to accurately measure, identify, and estimate passage of large ( $\geq 75$  cm) Chinook salmon. Non-DJ funds became available for a cooperative project between Sport Fish Division and Commercial Fish Division to estimate large Chinook salmon passage ( $\geq 75$  cm) using ARIS. Expertise was provided

to purchase equipment, develop an operational plan for data collection and processing, and to assist with inseason operations. One ARIS unit was deployed from each bank beginning on June 15, 2018. Commercial Fish staff operated the equipment and provided ARIS files to Sport Fish staff which processed the files to obtain fish length measurements. Estimates of large ( $\geq 75$  cm) Chinook salmon passage were produced inseason and will be published in the Fishery Data Series report listed below.

**FINAL REPORT STATUS:**

This is the final performance report on this objective for the F-10-33 grant period.

Final Kenai River mile 13.7 Chinook salmon passage estimates will be reported in two Fishery Data Series reports titled:

Key, B.H., J.D. Miller, and J. Huang. *In prep.* Chinook Salmon Passage in the Kenai River at River Mile 13.7 Using Adaptive Resolution Imaging Sonar, 2017. To be completed by December, 2018.

Key, B.H., J.D. Miller, and J. Huang. *In prep.* Chinook Salmon Passage in the Kenai River at River Mile 13.7 Using Adaptive Resolution Imaging Sonar, 2018. To be completed by May, 2019.

Final Kasilof River Chinook salmon passage estimates will be reported in the Fishery Data Series report titled:

Miller, J., S. Maxwell, B. Key, B. Glick, and A. Reimer. *In prep.* Late Run Kasilof River Chinook salmon sonar assessment, 2018. To be completed by February, 2019.

**PREPARED BY:** James Miller

**DATE:** August 6, 2018