

Case Study

Counting fish with the Gemini sonar - salmon migration

Products: Gemini sonar
SeaTec software

Client: Prince William Sounds
Science Centre

Location: Alaska, USA

Background

Prince William Sound Science Centre (PWSSC) is a community-based non-profit research organisation based on the Prince William Sound, Alaska, United States of America. Founded in 1989, PWSSC has connected science with its community's cultural and economic needs. Their main geographical area of interest is the drainages to the Copper River (where the Gulf of Alaska meets the Prince William Sound) and its waters between Cape Suckling and Cape Clear.

Maintaining an accurate count of salmon travelling up and downstream is a common industry challenge and in the Copper River where it is essential to allow for proper management of the species.

Systems are currently already installed to count fish however these are at a point which is approximately 35 miles from the nearest ocean entry point to the Copper River Delta. The belief is that a significant number of fish are not counted, escaping between the point the fish enter the river and when they pass the counters at Miles Lake.

Project

PWS was interested in an alternative cost-effective solution to improve the success of counting Copper River salmon, through the deployment of an automated sonar system in the lower portion of the Copper River Delta.

Following a review of sonar technology PWSSC elected to trial the Tritech Gemini 720i multibeam sonar. The Gemini sonar was deployed via a simple pole/skiff mount for in-river testing, this consisted of 2" aluminium poles with tapped mounts that permitted adjustment of the viewing angle. Operating at 720 kHz enabled both close and long-range data capture, providing an 8mm range resolution with an angular resolution of 1 degree. A wide



120 degree swathe covered by 256 x 1 degree beams results in an effective angular resolution of 0.5 degrees for images of superb clarity.

PWS utilised the standard Gemini software to assist in counting the migrating salmon as a viable alternative to existing technology. SeaTec software from Tritech has the potential to perform enhanced target identification, classification and tracking however PWSSC chose to utilise a simple counting programme to record upstream and downstream passage of fish. This gave PWSSC a measurement of the time of passage between each time period for the salmon migration.

Solution

The Gemini 720i multibeam imaging sonar is rapidly becoming the preferred tool for object tracking and target detection. Using the Gemini 720i, the salmon count project team on the Copper River Delta in Alaska were able to observe the fish for much longer than previously achieved, which assisted in the identification and timely logging of targets.

This trial demonstrated the feasibility of the system as a quick and cost-effective method for accurate salmon counting utilising Gemini's basic software functions. Through the customisation of SeaTec algorithms the Gemini system has the potential to offer enhanced tracking and counting capabilities for a number of specific target types.