

# EVOSTC ANNUAL PROJECT REPORT

**Project Number:** 10100132

**Project Title:** PWS Herring Survey: Assessment of Juvenile Herring Abundance and Habitat Utilization

**PI Name:** Richard E. Thorne

**Time period covered:** Oct 1, 2010 to August 31, 2011

**Date of Report:** August 28, 2011

**Report prepared by:** Richard E. Thorne

**Project website (if applicable):** pwssc.org

## Work Performed:

The primary objective of the project is to improve understanding of habitat utilization by juvenile herring, especially age 0. Four cruises were successfully completed. The first was a juvenile herring survey of nine locations in November 2010. The second was a juvenile herring survey of ten locations in March 2011 (Fig. 1). This included the nine locations that had been surveyed the previous November (Simpson Bay, Zaikof Bay, Whale Bay, Paddy Bay, Lower Herring Bay, West and East Twin Bays on Perry Island, Eaglek Bay, Port Fidalgo and Windy Bay to Canoe Pass). The tenth location, Main Bay, was sampled opportunistically as a result of an aerial observation of juvenile herring at that location. The third cruise was an adult herring survey in March/April 2011 in cooperation with ADF&G. An August juvenile herring survey was just completed. It was conducted in cooperation with aerial surveys of juvenile herring conducted by Evelyn Brown. Basic analysis of the first three surveys is nearly complete.

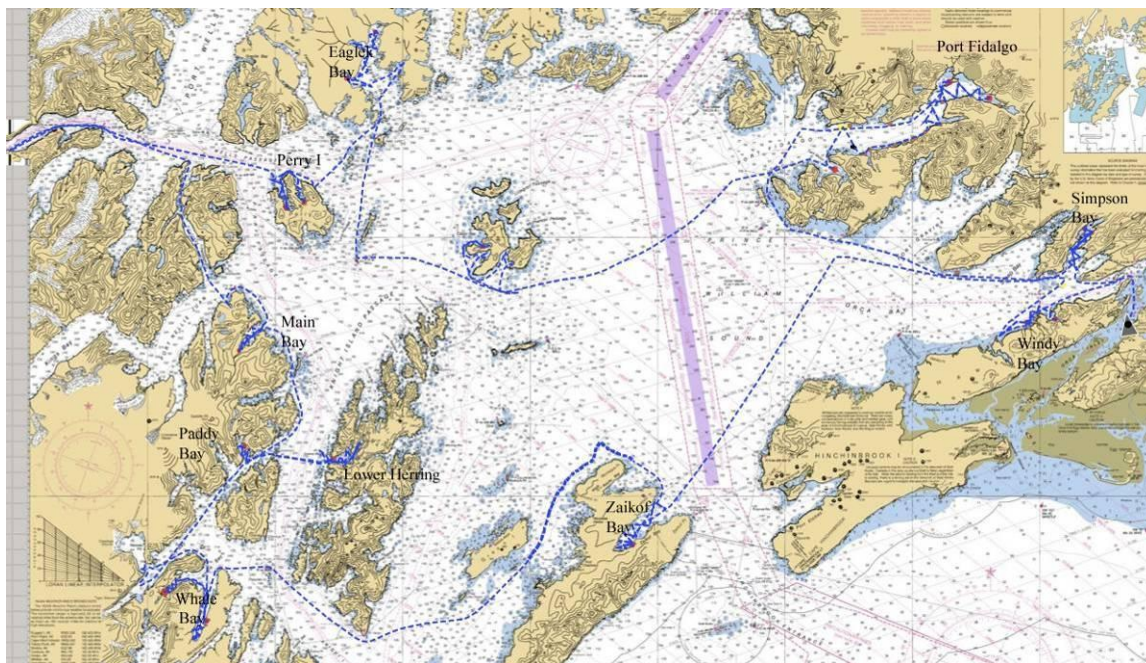


Figure 1-Vessel track for March 2011 juvenile herring cruise with sampling locations, courtesy of David Janka, MV Auklet

Figure 2 compares fish biomass from the upper 25 m (the age 0 herring habitat) for pre-and post winter cruises for the past two years. Most notable trends were the disappearance of age 0 herring from Whale Bay for spring 2011 and the relative high abundance in spring 2011 for Simpson Bay and Paddy Bay. The results suggest that juvenile

herring over-winter movements may be more dynamic than previously suspected. The other major discovery was high abundance of age 0 herring at ice edges in several locations (Fig. 3). Presence of ice in bays may protect age 0 herring from avian and marine mammal predation and may be an important factor for age 0 herring survival.

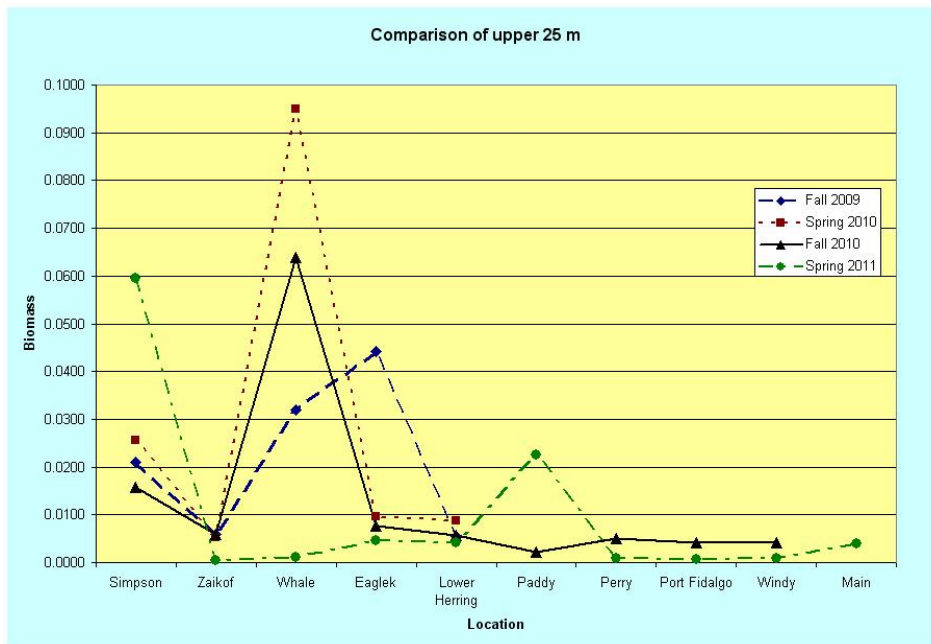


Figure 2. Overall comparison of biomass in the upper 25 m for various cruises and locations.

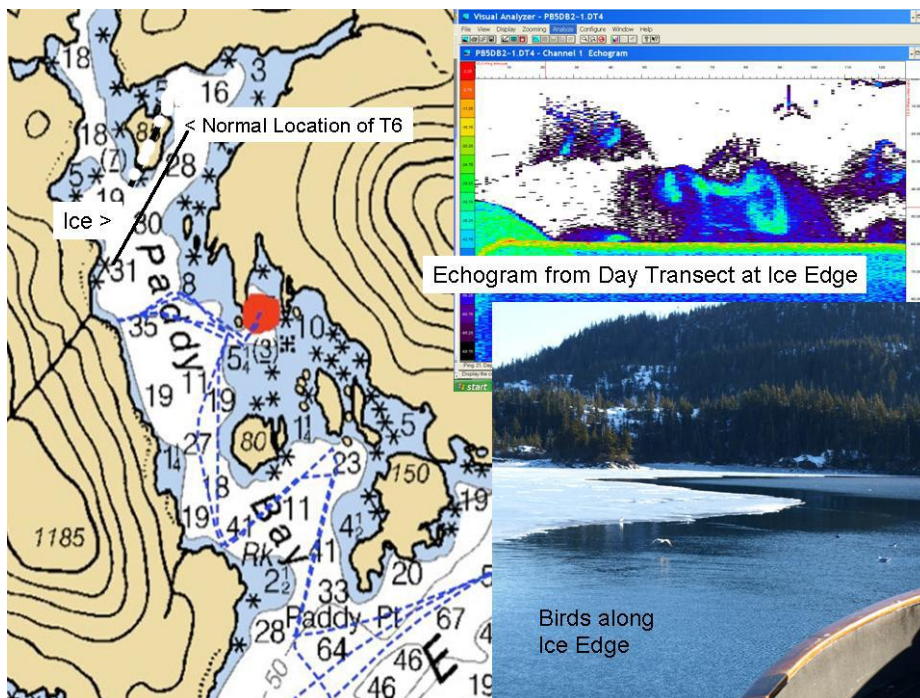


Figure 3. Locations of transects on Paddy Bay and associated illustrations including echogram of age 0 herring.

A brief summary of the adult herring cruise follows. The adult herring cruise was conducted from March 29 to April 2, 2011. The survey, conducted aboard the MV Auklet, covered Port Gravina, Port Fidalgo and Galena Bay (Fig. 4). Port Gravina was searched during both day and night on March 29, but no concentrations of herring were located. All of Port Fidalgo was searched during the day March 30, and the search extended north to Galena Bay. Herring schools were located in the outer portion of Galena Bay, and a daytime acoustic survey was conducted (Fig 5). The herring were deep in the water column, typically 90 to 170 m. Six Steller sea lions and two humpback

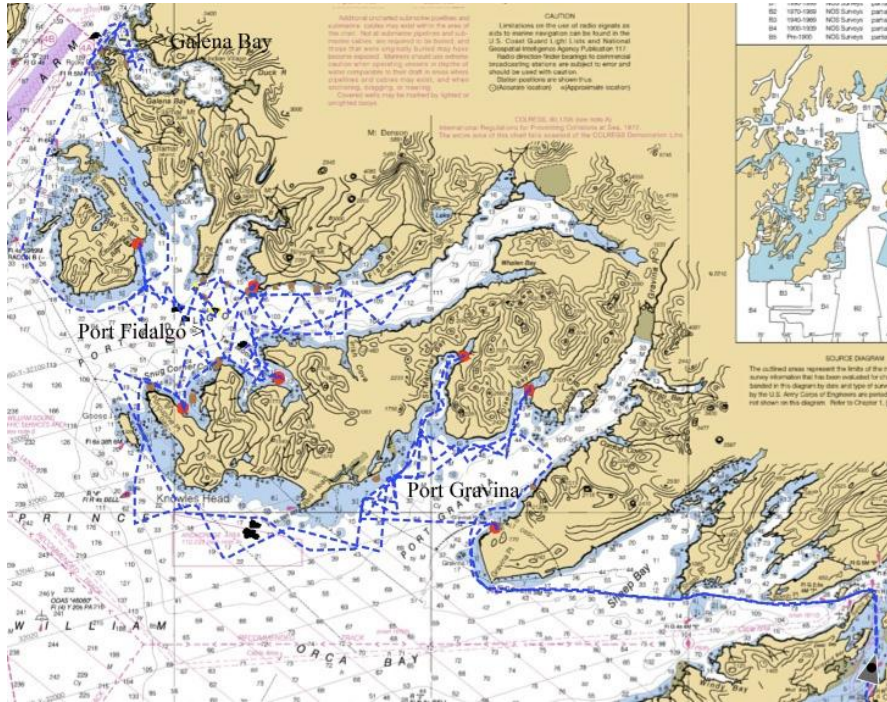


Figure 4. Cruise track for spring 2011 adult herring cruise, courtesy of David Janka, MV Auklet

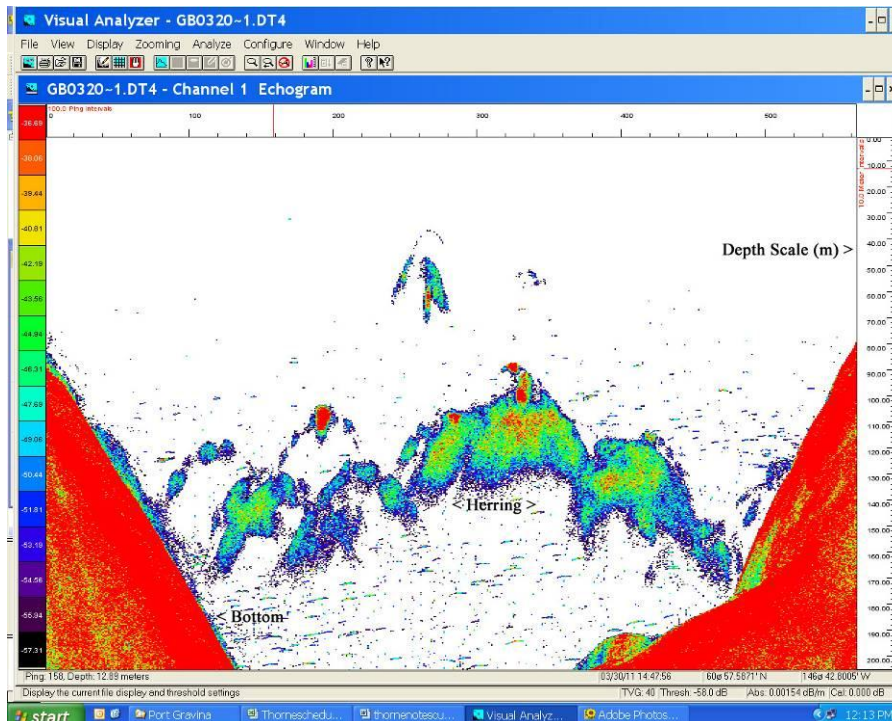


Fig. 5. Echogram of deep, daytime herring schools in Galena Bay

whales were foraging in the area. A second acoustic survey was run at night March 30 in Port Fidalgo. The transects started off Bligh Island and extended past Graveyard Point. Several whales and about seventy Steller sea lions had been observed in this area. Several herring schools were measured including large schools along the transect off Graveyard Point. During day, March 31, transects were run from Graveyard Point and east past Fish Bay. The transects extended across Port Fidalgo. Several schools were measured. The night acoustic series extended out of Two Moon Bay and west to Snug Corner Cove. No schools were detected within Two Moon Bay, but schools were located offshore of both locations. The final acoustic series was conducted the night of April 1 in Port Gravina, from Olsen Bay to Redhead. Very few herring were located, and those tended to be inshore and very near bottom. In general, the fish distribution was more characteristic of early to mid-March. Herring were virtually absent from Port Gravina, where they are usually concentrated and starting to spawn by April 1.

The just completed juvenile herring cruise concentrated on Simpson Bay and vicinity and was synoptic with an aerial survey by Evelyn Brown. It should provide valuable information on the summer period distribution of herring. A cruise report is available upon request.

**Future Work:**

Efforts during the next year are expected to remain unchanged from that proposed, namely pre- and post winter surveys of juvenile herring at six locations including the four SEA bays, plus a small adult survey in late March.

**Coordination/Collaboration:**

This project is one of several survey efforts coordinated under the Prince William Sound Herring Survey Program.

**Community Involvement/TEK & Resource Management Applications:**

We worked closely with ADF&G on surveys and samples. The overall PWS Herring Survey Program has an extensive community involvement, including the use of local fishermen to obtain samples.

**Information Transfer:**

Papers Published: Thorne, R.E. and G.L. Thomas 2011. The Role of Fishery Independent Data, Chapter 12, In, Janice S. Intilli (ed) Fisheries Management. Nova Science Publishers, ISBN 978-1-61209-682-7.

Poster presented at Alaska Marine Science Symposium in January 2011.

Four presentations accepted for the American Fisheries Society Annual Conference in Seattle, Sept 4-8, 2011.

Data archive effort underway in conjunction with the Oil Spill Recovery Institute. Objective is to archive all herring acoustic data collected since 2000.

**Budget:**

Budget expenditures are proceeding as projected.