Essential Fish Habitat project status report

Reporting date: 10/12/2012

Project number: 2010-10

Title: Seasonal habitat use and over wintering habits of juvenile Pacific cod in coastal nursery areas

PIs: Brian Knoth, Christina Conrath, Dan Urban, Ben Laurel, and Carrie Worton

Funding year: 2010

Funding amount: $43,450

Status: ☐ Complete Incomplete, on schedule **X** Incomplete, behind schedule

Planned completion date if incomplete:
2013

Reporting: Have the project results been reported? If yes, state where the results were reported and attach an electronic copy of the report.

No results have been reported to date.

In 2011, we completed a laboratory trial examining the effects of tag implantation on juvenile cod. In mid-August we installed the passive acoustic gate at the entrance of Anton Larsen Bay. During the summer and fall of 2011, we were successful in tagging only 7 juvenile cod with acoustic transmitters. We periodically tracked these cod through the late fall/early winter and removed the passive array in March 2012.

In 2012, we successfully tagged 14 additional juvenile cod in Anton Larsen Bay during late August/early September. At this time, we also installed the acoustic receivers to document cod movements and out migrations. Active tracking of these fish is ongoing and will continue through November. We anticipate removing the acoustic receivers by the end of November before weather conditions deteriorate and hinder our ability to access the bay.

Results: What is the most important result of the study? **(The following results are based primarily on the 7 juvenile cod tagged in 2011)**

1) Results from the laboratory trial suggest that intra-peritoneal tag implantation is a valid tagging technique for juvenile Pacific cod. In the laboratory, we implanted dummy transmitters in 5 juvenile cod and monitored the fish for up to six months. The cod continued to feed and grow throughout the trial. At the end of the trial, an examination of the fish revealed that the incisions healed with no visible signs of infection.

2) Habitat use of juvenile cod during the fall months was highly variable. Depth range of re-located tagged cod ranged from 11.5 to 86.5 ft. At these depths, the drop camera revealed the bottom substrate varied from a bare sediment/shell mix in the deeper depths to a combination of the bare sediment/shell mix and kelp (*Agarum cribrosum* and *Laminaria* sp.) in the shallower depths.

3) In 2011, cod out migrations commenced as early as September 4th and coincided with when it appears the water column is becoming isothermal. The one exception was an adult cod (48 cm TL) that out migrated on 11/15. Data collected from the 14 cod tagged in 2012 will help clarify is water temperature is a possible mechanism causing juvenile cod out migrations.

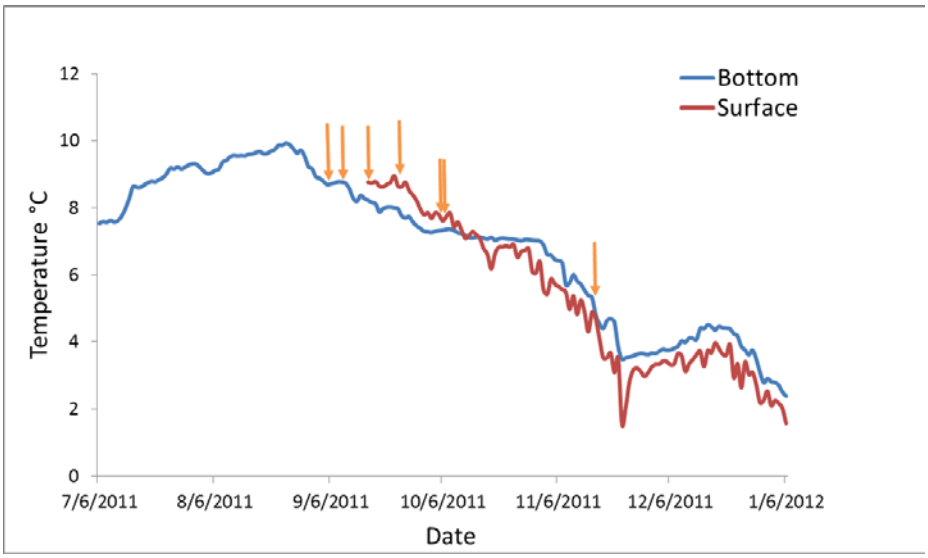

Figure 1- Timing of cod out migrations (orange arrows) in relation to water temperature at Anton Larsen Bay in 2011.