Essential Fish Habitat project status report

Reporting date: October 15, 2010

Project number: FY09-10

Title: Natural and man-made disturbance of eelgrass beds in northern southeastern Alaska: damage and recovery

PIs: Patricia Harris

Funding year: FY09

Funding amount: $8K

Status: ☒ Complete ☐ Incomplete, on schedule ☐ Incomplete, behind schedule

Planned completion date if incomplete:

Reporting: Preliminary results were reported on a poster presented at CERF (Coastal and Estuarine Research Federation) meeting November 2009. A NOAA Tech. Memo. is in preparation comparing five eelgrass beds sampled from 2007-2010 with baseline data collected from 1998-2006.

Results: In 2010, we resampled eelgrass *(Zostera marina)* beds at Funter Bay and Crab Bay in southeastern Alaska to examine changes in eelgrass characteristics and associated fish assemblages from earlier years. Eelgrass was sampled again at Auke Nu Cove, Bay Creek, and Bridget Cove near Juneau, but we did not resample fish assemblages at those sites in 2010.

Eelgrass bed areas did not change appreciably at Crab Bay, Bay Creek, and Bridget Cove from 2009 measurements. The Funter Bay bed, however, was reduced by approximately 4.2 hectares from 2009 measurements, apparently by the grazing of green urchins (*Strongylocentrotus droebachiensi*). At the west, seaward margin of the bed, we found numerous urchins with bare ground seaward of them and relatively dense eelgrass above them on the beach. Since 2009, the Auke Nu Cove bed area has been further reduced. The entire portion of the south bed and a large portion of the bed seaward of the -0.5 m tide height on the northern side of the bed were bare in 2010. The cause for the reduced area at Auke Nu was not apparent.

In 2010, eelgrass dry biomass was similar to baseline values in undeveloped beds (Crab Bay, Funter Bay, and Bridget Cove), but reduced in developed beds (Auke Nu Cove and Bay Creek). Eelgrass densities in 2010 were significantly lower in all beds except Bridget Cove, and percent cover was lower in all beds in 2010 when compared with 2009 values. Canopy height remained the most stable eelgrass variable.

In 2010, fish catch per unit effort (CPUE) at Funter Bay was close to the mean CPUE for baseline years (2001-2003), but declined in the portion of the bed with the most dramatic decline in eelgrass cover (68 percent cover in 2009 to 1 per cent in 2010). At Crab Bay, CPUE remained at depressed levels, especially in the area where eelgrass percent cover remained low. In portions of both beds where catch was low, species richness was also lower than baseline values.

Given the high variability of eelgrass characteristics and fish assemblages from year to year, long-term or even moderately long-term changes in eelgrass communities are best evaluated by multi-year sampling. The paper in preparation will compare baseline data 2001-2003 (Crab Bay, Funter Bay), 2004-2006 (Auke Nu Cove, Bay Creek, and Bridget Cove) with 2008-2010 data.