Essential Fish Habitat project status report

Reporting date: 10/2/12

Project number: 2008-01

Title: Nearshore Fish and Habitat Assessment

PIs: Johnson, Thedinga, Lindeberg, Harris

Funding year: FY08

Funding amount: $91K

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

Planned completion date if incomplete:

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

Pat Harris has completed the eelgrass monitoring paper (see last year's status report).

Completed: NOAA Tech. Memo. (in press; will be available in November 2012).

Results: What is the most important result of the study?

We studied three eelgrass (*Zostera marina*) beds in the City and Borough of Juneau (CBJ), Alaska to track changes associated with coastal development. These beds were initially sampled as part of a baseline eelgrass inventory from 2004 to 2007. Between 2008 and 2011, beds were remapped and resampled for eelgrass variables (e.g., percent cover, faunal assemblage). Eelgrass area declined at all beds from baseline (2004 to 2007) to post-baseline (2008 to 2011) years. Areal loss of eelgrass was twice as great at the bed with the most recent and intense development (Auke Nu Cove, 61% loss) compared with losses at the previously developed Bay Creek (29%) and undeveloped Bridget Cove (30%) beds. The largest loss of eelgrass at Auke Nu Cove was along the seaward edge of the entire bed and was probably related to increased turbidity. In contrast, the seaward extent of eelgrass at Bay Creek and Bridget Cove remained relatively stable. Differences in eelgrass characteristics between baseline and post-baseline years and developed and undeveloped beds were also apparent. Mean percent eelgrass cover and shoot density declined from baseline to post-baseline years at all beds, but declines at developed beds (42 to 51%) were approximately twice those at the undeveloped bed (23 to 25%). Additionally, biomass declined (45 to 48%) at developed beds but increased (17%) at the undeveloped bed. Faunal assemblages changed with eelgrass loss. Coincident with the complete loss of eelgrass at one seine site, mean catch-per-unit-effort of fishes declined from 401 to 140, and the number of fish species declined from 19 to 16. Seine catch of green sea urchin (*Strongylocentrotus droebachiensis*) increased from baseline to post-baseline years at Auke Nu Cove; urchin grazing likely accounted for some of the observed loss in eelgrass at the cove. Monitoring of these three eelgrass beds will provide resource managers with useful information to evaluate possible effects of future coastal development upon this important nearshore habitat. We recommend biennial monitoring of these beds that includes, at a minimum, mapping seaward eelgrass boundaries and sampling percent eelgrass cover by tidal elevation. Coincidently, fauna should be sampled with a beach seine to monitor abundance of indicator fish and invertebrate species.