Essential Fish Habitat project status report

Reporting date: 10/13/10

Project number: 2009-3, 2010-1

Title: Recruitment and response to damage of an Alaskan gorgonian coral

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Funding year: 2010

Funding amount: FY2009 $38,000, FY2010 $32,900

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

Planned completion date if incomplete: This is a multi-year study that requires an additional site visit and observations. Field operations are scheduled to finish July 2011. Laboratory analysis of settlement substrata will be completed by August 2011. Video processing from scuba observations will be completed by November 2011. A draft manuscript shall be completed by Spring 2012.

Reporting: No reporting has occurred yet.

Results: In August 2009, a team of four divers located and tagged 48 *Calcigorgia spiculifera* colonies in Kelp Bay, Southeast Alaska. Of that total, 9 colonies were fitted with settlement rings equipped with natural rock tiles. The settlement rings were epoxied to the seafloor and on future site visits, a subsample of the tiles will be collected and inspected for adhesion of coral planulae, i.e., recruitment. The remaining 39 tagged colonies were ascribed to three damage treatment groups and a control group to assess the sensitivity and recovery of disturbed coral. The damage treatments were designed to mimic actual damage that can occur from passing fishing gear. These treatments were performed *in situ* and included deflection, gorgonin excision, and branch severance. Video of each colony was recorded before and after the treatments were performed to establish baseline coral characteristics and to identify immediate treatment effects. The deflection treatment was completed by passing a simulated trawl footrope over each colony. This resulted in immediate dislodgement of one coral colony. In June and September of 2010, tagged colonies of *Calcigorgia spiculifera* were revisited in Kelp Bay. Video of each colony was recorded to identify medium-term (10 and 13 months) treatment effects. Although thorough analyses of video observations are not scheduled to be complete until 2011, preliminary observations of damaged corals revealed a surprising level of resiliency. For example, one colony that was broken from its holdfast during the deflection treatment still had living tissue despite the fact that it had been laying on the seafloor for over a year. Furthermore, some colonies that had gorgonin (soft tissue) removed during the treatment process showed signs of tissue regeneration. Overall though, the treatments have had negative effects on most colonies and many have

necrotic tissues or have shed branches and a few colonies have disappeared completely. Subsequent monitoring of the damaged corals will further detail the long-term effects of disturbance on survival and growth. Also in June and September, a subsample of tiles were collected and inspected for adhesion of coral planulae, i.e., recruitment. Although we have yet to observe new coral recruitment onto the tiles collected thus far, we have seen colonization by many other organisms including anemones, bryozoans, tunicates, and hydroids. Recruitment of *C. spiculifera* is likely sporadic and rare rather than periodic and seasonal so it is not surprising that we have not observed recruitment to date. However, the fact that we are observing recruitment onto our tiles by other organisms is encouraging that the substrates we have selected will be suitable for coral adhesion.