

1) Study/Job Title:

Development of a Performance-Based Submerged Aquatic Vegetation Monitoring and Outreach Program for North Carolina

2) Study/Job Objectives:

1) Develop and test a sampling protocol for a long-term, in-the-water probabilistic based method to monitor the distribution and change in SAV habitat in coastal waters statewide, and evaluate the relationship between environmental conditions and SAV distribution;

2) Determine the feasibility of developing a protocol with a performance measure capable of detecting at least a 10% inter-annual change in SAV abundance;

3) Compare a point-intercept visual census technique using low-light underwater cameras with a hydro-acoustical technique to determine the most appropriate method of monitoring and data acquisition;

4) Draft a long-term statewide monitoring plan for SAV

3) Activities This Period (February to October 2009):

A. General Planning and Mobilization

Project planning was initiated during a series of phone calls and a project meeting in February 2009 between the project leaders (NOAA, ECU and NCSU), collaborating investigators (NOAA, NCDMF) and APNEP staff. The project PIs and collaborators agreed to each collaborating institution's role in the project and the overall project organization and leadership. Initially the planning included discussions about technical aspects of the project (e.g., sampling equipment, vessels, field logistics, budget processes) and study site selection (e.g., high salinity marine sites and low salinity western sound sites). Plans were made to establish a sampling schedule pending availability of funds. Sampling window dates were identified in May and July.

B. Specific APNEP Tasks

Task 1: DENR Contract 002432 with North Carolina State University (NCSU): Research and Development of a Performance-Based Submerged Aquatic Vegetation Monitoring Program. Start date = 1 June 2009, End date = 31 May 2010

Task 2: DENR Contract 002428 with East Carolina University (ECU): Performance-Based Submerged Aquatic Vegetation Monitoring Program for North Carolina. Start date = 15 September 2009, End date = 31 May 2010.

C. Specific NOAA/NCSU Tasks

Task 1: Project mobilization began in March with NOAA staff examining aerial imagery and other sources of remotely sensed information on the distribution of SAV in the targeted high and low salinity regions. Field reconnaissance began in March with investigation of potential study sites in Straights, Back Sound, Core Sound and the Newport River Estuary, Carteret County, NC.

Task 2: Using in-house equipment already available at the Center for Coastal Fisheries and Habitat Research (CCFHR), NOAA staff physically configured and tested a video camera system for transect sampling. The camera systems consisted of a Sartek Industries low light (0.003 lux) black and wide underwater video camera mounted on a PVC pole with a roller wheel (pole camera). The camera was integrated with a Sony digital video recorder, a Trimble DGPS and a laptop computer equipped with Arc Map GIS. The system also incorporated a Horita; a device enabling the DGPS locations to be stamped on each frame of the digital video. During the week of March 24 the video camera system was tested on multiple transects at three different sites in order to determine the thresholds for maximum allowable depth, water visibility and transect sampling speed.

Task 3: Based on the results of the preliminary trials, on April 15 NOAA staff tested a final configuration of the pole camera at a site in the North River Estuary (Causeway Marsh) collecting four complete transects. During the remainder of April and throughout May, data from these transects were used to develop a sample processing protocol in the laboratory. The video transects were characterized by presence/absence of seagrass and processed and stored in Arc GIS. Based on the results of this second trial, we established the Causeway Marsh site as our project sampling site representing a “typical” high salinity seagrass bed.

Task 4: During the month of June NOAA and NCSU staff conducted video transect and in-situ diver surveys of the Causeway Marsh site that included a total of 25 video transects and 20 random point diver surveys. On June 8-9 NOAA staff participated with ECU and NCSU staff to conduct acoustic transects surveys at the Causeway Marsh site. Between June and the present time NOAA and ECU staff have been processing and analyzing the data from these surveys. Preliminary results of these surveys were presented and discussed at a project meeting on 11 August 2009. Processing and data analysis are ongoing.

D. Specific ECU Tasks

Task 1: Equipment list and purchasing: Nothing was purchased, but ECU-owned BioSonics DTX Echosounder was prepared for work and calibrated. ECU vessel was reserved and paid for July 3 trip.

Task 2: Staffing (hire students and research assistants): Hired Cecilia Krahforst, ECU Biology MS student, at \$12.50/hour to perform work on this project.

Task 3: Held meetings and phone conference calls with NOAA, ECU, NCSU personnel to prepare for monitoring areas in high salinity beds in Newport River (near Beaufort, NC) and low salinity SAV communities in western Albemarle/ Pamlico Sound (Sandy Point area).

Task 4: Conducted surveys on June 8-9 using the BioSonics DTX and EcoSAV software in conjunction with NOAA and NCSU staff at the Newport River. Analyzed acoustic-transect echosounder data and sent results to NOAA for inclusion comparison with video-transect data.

Task 5: Performed recon trip to Albemarle Sound (Sandy Point area) using ECU BioSonics DTX echosounder and EcoSav software. Underwater video taken at selected sites, but no video transect data collected during this trip.

Task 6: Reported on the results of these two surveys (Task 4 and 5) at the SAV Partnership summer meeting on August 11.

4) Deviations:

Because of the confusion over the start date of the project (initially stated to be July 1 on the proposal, then listed as September 15 on the current version of the subcontract to ECU) and whether or not ECU staff could be reimbursed for work done this summer, staff did not complete all the surveys in the original proposal. ECU now has an agreement with APNEP that work beginning in June was eligible for reimbursement by APNEP (see special conditions Box 20 on Task Order).

5) Has any data been provided to any other entity before it was presented to the Division of Marine Fisheries? Is so, to whom and when?

See ECU Task 6: Reported on the results of these two surveys (Task 4 and 5) at the SAV Partnership summer meeting on August 11 in Greenville, NC (note: this meeting facilitated by NC-DMF staff).