

BOEMRE ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Pacific

Planning Area: Oregon-Washington, and Northern California

Title: Survey of Benthic Communities near Potential Renewable Energy Sites Offshore the Pacific Northwest (PC-10-07)

Cost: \$1,598,846

Period of Performance: FY 2010 - 2014

Conducting Organizations: Oregon State University, Oregon awarded through the Pacific Northwest Cooperative Ecosystem Studies Unit (Cooperative Agreement, M10AC20002)

BOEMRE Contact: Lisa Gilbane

Description:

Background: An agreement was made and entered into by the Department of the Interior, BOEMRE, for the purpose of scientific research that will provide a regional understanding of the distribution and location of physical properties and invertebrates on the seafloor for Federal waters in the Pacific Northwest. The wave and wind climates along the west coast of North America represent one of the best prospects for the development of offshore renewable energy yet initial assessments of the potential ecological effects of wave energy has only just begun. This program of research on benthic invertebrate communities and habitats of the Outer Continental Shelf (OCS) off of Washington, Oregon, and northern California will assess baseline biological and geological patterns in areas of potential marine renewable energy development.

Objectives: The objective of this study is to understand species-habitat relationships and develop predictive capabilities of where benthic invertebrate species of interest and unique communities occur. In order to develop species-habitat relationships, this study will identify, analyze, and report on key factors that drive invertebrate species and distributions.

Methods: Study methods to achieve the objective include the following:

1. Coordinate Scientific Review Group meetings

Three individuals have been chosen to serve as the Scientific Review Group for the duration of the study to provide scientific review of field methods and data analysis. This group has met and more meetings will occur throughout the study.

2. Synthesize existing physical and biological datasets

Existing datasets will be analyzed together with new sampling to determine the distribution of species and habitat associations more broadly throughout the region and, potentially, how they vary over time. Existing datasets include:

- The Surficial Geologic Habitat (SGH) map that currently covers Oregon and Washington will be updated to include newer data and extended to include data in northern California;

- *Delta* submersible video from the NOAA's National Undersea Research for invertebrates. Analysis of footage will characterize the invertebrate communities at shelf depths across a large area; and
- Sources of data for soft substrate invertebrate communities, which to date include EPA's Environmental Monitoring & Assessment Program.

3. Sampling Plan refinement of sampling design and logistics

A sampling plan of locations and dates for the 2010 cruise season was submitted to BOEMRE for review. Once the multi-beam sonar mapping and ground-truth samples identify where hard bottom areas exist, a 2011 sampling plan for the video surveys will be developed. The sampling plan will focus on surveying depths or habitat types that have not previously been covered.

4. Field sampling

Surveys and sample collections have begun in six areas on the Pacific OCS that have the potential to be developed for renewable energy. Seafloor habitat information is being collected by multi-beam sonar and sediment collection using methods similar to Oregon and California mapping programs. Biological sampling includes using box cores and remote observation vehicles outfitted with collecting devices to collect and identify both hard bottom and soft substrate organisms.

5. Data analysis, synthesis, and reporting

Collected data will be synthesized with existing biological and physical data sets from adjacent areas to build community profiles and identify unique species assemblages. Ordination, cluster, and other multivariate analyses will be used to identify and display spatial patterns in benthic invertebrate and sediment characteristics. All collected data will be available on an existing online data viewer in a GIS-based format that is readily accessible. Bimonthly and annual reporting is required.

Importance to BOEMRE: BOEMRE requires knowledge of the seafloor environment and of biological communities that may be affected by renewable energy activities. Understanding species-habitat associations throughout the region will be a powerful tool to plan lease sales for renewable energy for the Pacific Northwest and for determining the nature and extent of further seafloor explorations.

Current Status: The contract was awarded to Oregon State University on June 02, 2010, the post-award meeting was held on July 27, 2010, and field collections began in August, 2010.

Final Report Due: March 2014

Publications: None at this time

Affiliated Websites: <http://hmsc.oregonstate.edu/overview.html> and <http://pacoos.coas.oregonstate.edu/>

Revised date: December 15, 2010

