

## Environmental Studies Program: Studies Development Plan | FY 2020–2022

Title	Fostering a Cohesive Interagency Offshore Mapping and Hard Bottom Habitat Characterization Program
Administered by	Pacific OCS Region
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Procurement Type(s)	Interagency agreement
Performance Period	FY 2020–2022
Date Revised	March 7, 2019
PICOC Summary	Write one or two sentences for each of the following elements, as appropriate.
<i><u>Problem</u></i>	There is limited information about the location and community composition of ‘sensitive’ seafloor habitats (e.g., hard bottom, seeps) that may be affected by leasing activities along the Pacific Outer Continental Shelf (OCS).
<i><u>Intervention</u></i>	Interdisciplinary research to improve knowledge of sensitive seafloor habitats for responsible planning of Pacific OCS energy development.
<i><u>Comparison</u></i>	N/A
<i><u>Outcome</u></i>	Improved understanding of diversity and distribution of hard bottom habitats and associated biological communities in the vicinity of ongoing and proposed BOEM activities.
<i><u>Context</u></i>	The potential domain includes northern and south-central California, and Oregon. If BOEM activities expand to other Pacific OCS Region geographies, we would consider including them in out years.

**BOEM Information Need(s):** The BOEM Pacific OCS Region needs authoritative baseline information to inform decision making across program areas (e.g., conventional energy, renewable energy, marine minerals). Proactively collecting the information on identification, biodiversity, ecology, and food-web dynamics of deepwater benthic communities—including commercially important fish—is prudent to inform National Environmental Policy Act (NEPA) documents and potential mitigations.

**Background:** Pacific OCS Region has a dramatically increasing need for deepwater benthic information to inform potential management decisions associated with conventional energy, renewable energy, and marine minerals. This study seeks to adapt the past successes of prior deepwater BOEM - National Oceanic & Atmospheric Administration (NOAA) - U.S. Geological Survey (USGS) interagency efforts in the Gulf of Mexico and Atlantic to the Pacific. Due to complementary ongoing field efforts and new budget initiatives at NOAA and USGS, BOEM has a ‘low-cost’ opportunity to initiate a more cohesive and nimble interagency effort in partnership to address regional needs. Fieldwork funded by this study will expand upon and complement previous work under Cal DIG (*California Deepwater Investigations and Groundtruthing*) I ([PC-17-02](#)) and II ([PC-19-06](#)).

**Objectives:** The interagency effort will improve understanding of the functional characteristics of benthic habitats within the wider California Current ecosystem and inform near-term and future management decisions for multiple agencies. This adaptive effort will allow BOEM to quickly leverage opportunities with interagency partners within the overall area of interest. Objectives associated with BOEM funding include:

- Identify and map major geologic features and seafloor.
- Identify the distribution and abundance of benthic communities and selected commercially important fish and invertebrate species.
- Validate recently developed fisheries based analyses and deep-water coral and sponge habitat suitability models.
- Assess relative sensitivity of selected areas by comparing food-web ecology, coral age-structure, and genetic diversity across depths and environmental gradients.

**Methods:** A broad range of interdisciplinary methods will be employed to map, sample, and characterize hard bottom habitats, including deep coral and chemosynthetic communities. High-resolution, ship-based mapping technologies will delineate substrate types and document the distribution of hard bottom areas. Unmanned systems will provide additional seafloor imagery and enable collection of seafloor samples and environmental parameters. Collected data will be analyzed using appropriate laboratory materials/protocols and software systems in order to describe community composition, complexity, and sensitivity to impacts. Subset of field activities will include remotely operated vehicle (ROV) operations for the collection of limited coral and sponge samples for taxonomic, genetic identification, isotopic testing, and submission to the Smithsonian Institution under an existing BOEM Agreement. To complement traditional taxonomic and genetic approaches, environmental deoxyribonucleic acid (eDNA) sampling will be incorporated to continue assessing its use as a biodiversity tool. Data management best practices and annotation consistent with the Coastal and Marine Ecological Classification Standard will be followed to ensure information accessibility, with coral and sponge locations submitted in a format consistent with the NOAA Deep Sea Coral Research and Technology Program (DSCRTP) national geodatabase. Study results will be made available via peer-reviewed literature, a final report, and as datasets in usable formats such as geographic information system (GIS) layers.

**Specific Research Question(s):**

1. Where are there sensitive hard bottom benthic habitats in the vicinity of potential conventional and renewable leasing areas of the Pacific OCS?
2. What is the community composition of these sensitive habitats? How are these species ecologically and genetically connected?

**References:**