Environmental Studies Program: Proposed New Study | Ongoing Study

Field	Study Information
Title	Pacific Ocean Energy and Minerals – Interagency Science and Engagement (PC-24-x05)
Administered by	Pacific OCS Region
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Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	National Oceanic and Atmospheric Administration (NOAA), Office of Coast Survey
Total BOEM Cost	$4,260,000
Performance Period	FY 2024-2025 (Phase 1); FY 2026-2028 (Phase 2)
Final Report Due	TBD
Date Revised	March 27, 2026
Problem	BOEM's jurisdiction recently expanded to include the United States (U.S.) Pacific Territories. There is limited information about midwater and benthic habitats in these areas that may be of interest for potential energy or seabed mineral resource planning in the Outer Continental Shelf (OCS).
Intervention	Partner with NOAA, USGS, and other agencies to facilitate scientific collaboration and engagement activities in OCS areas of the Central and Western Pacific.
Comparison	N/A
Outcome	Improved understanding of diversity and distribution of resources, habitats and associated biological communities to support future decision-making.
Context	The potential domain includes OCS areas in the Pacific. Highest priority areas are the central and western Pacific (e.g., Guam, Commonwealth of the Northern Mariana Islands (CNMI), and American Samoa). If data collection in nearby State or international waters will significantly improve understanding of OCS areas, some minor investment of effort outside of the OCS will be considered.

BOEM Information Need(s): BOEM needs authoritative baseline information to inform decision-making across program areas (e.g., energy, marine minerals). Proactively collecting both geologic and biological information in mid-water and benthic habitats is prudent to inform potential BOEM energy and mineral decision-making in the U.S. Pacific and particularly the Pacific Island Territories. Information from this study would inform potential planning efforts including resource assessments and assessments of potential environmental impacts and identification of potential mitigation measures, as required by the National Environmental Policy Act. The April 24, 2025 "Unleashing America's Offshore Critical Minerals

and Resources" Executive Order called for accelerated consideration of seabed mineral resources development in the U.S. OCS. That same month, Impossible Metals submitted an unsolicited request for lease sale to BOEM for seabed mineral resources OCS offshore American Samoa. Information from this study will inform Pacific seabed mineral resource planning discussions.

Background: Existing International Seabed Authority exploration contracts, industry interest, activities by other countries in their waters, and USGS seabed mineral experts all point toward the central and western Pacific as - far and away - the most promising area in the U.S. OCS for seabed minerals resources (e.g., ferromanganese crusts, manganese nodules, and hydrothermal minerals). The U.S. Congress amended the OCS Lands Act under the Inflation Reduction Act of 2022 to authorize offshore energy and mineral leasing within the U.S. exclusive economic zone adjacent to U.S. territories.

BOEM has a dramatically increasing need for environmental information in deepwater areas of the western Pacific Ocean to inform potential management decisions associated with energy and minerals. This study seeks to adapt prior successful models of deepwater interagency collaborations between BOEM, NOAA, and the U.S. Geological Survey (USGS) to the Central and Western Pacific. Due to complementary ongoing and planned NOAA and USGS efforts, BOEM has a 'low-cost' opportunity to contribute to a nimble interagency partnership effort that will help to address BOEM, interagency, and community information gaps.

Objective(s): The interagency effort will improve understanding of remote midwater and benthic habitats as well as potential seabed mineral resources in the OCS around the U.S. Pacific Territories. These data and information will inform potential 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 characteristics.
- Identify the distribution and abundance of midwater and benthic communities.
- Inform USGS seabed mineral resource models.
- Inform the understanding of environmental impacts anticipated by potential mineral development.

Methods: A broad range of interdisciplinary methods will be employed to map, sample, and characterize midwater and benthic habitats. For example, high-resolution, ship-based mapping technologies will delineate substrate types and document the distribution of benthic habitats. Uncrewed systems will provide additional imagery and enable collection of samples and environmental parameters, along with traditional sampling methods (e.g., box cores) to collect physical samples for laboratory analysis. Consideration of potential environmental impacts may also include the collection, analysis, and product development of socioeconomic data.

Given the limited initial BOEM funding for this effort and the long-lead time to appropriately plan deepwater operations in remote areas, FY25 activities focused on adding the AUV *Orpheus* to an existing

NOAA-sponsored E/V *Nautilus* expedition offshore Guam and the Commonwealth of the Northern Marian Islands (CNMI). Additional FY25 and FY26 BOEM funds will support anticipated NOAA investments for FY26 mapping activities in Guam/CNMI, American Samoa, the Palmyra Atoll, Kingman Reef, and the Howland-Baker Islands. All BOEM funds are planned for areas of the OCS where BOEM has jurisdiction. USGS Global Seabed Mineral Resources project personnel have been – and will continue to be - heavily involved in the design and execution any seabed mineral-related efforts. This includes post-cruise sample analysis and mineral-related product development.

The scope of work to date has focused on sonar mapping and visual imagery. As field work progresses, we anticipated expanding biological and geological sample collection and analysis. This would include taxonomic and genetic identification, geochemical, isotopic testing, and submission to the Smithsonian Institution under an existing BOEM-funded interagency agreement. To complement traditional taxonomic and genetic approaches, eDNA sampling may 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 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 layers.

Specific Research Question(s):

1. Do seabed minerals exist in the areas predicted by the USGS seabed mineral prospectivity models? What are the distribution and composition characteristics of seabed mineral resources in the research areas?
2. Where are the sensitive hard-bottom benthic habitats in the vicinity of areas under potential consideration for energy and mineral planning in the U.S Pacific Territories?
3. What is the community composition of midwater and hard-bottom benthic habitats in these areas? How are these species ecologically and genetically connected?
4. What preliminary information is available for consideration of socioeconomic impacts from potential development?

Current Status: FY 2026 fieldwork is being planned for geological and biological surveys in the Pacific. Vessel support will be provided by NOAA.

Publications Completed: N/A

Affiliated WWW Sites: USGS Global Marine Mineral Data Viewer

References: N/A