

## Environmental Studies Program: Ongoing Study

Field	Study Information
Title	Facilitating Interagency Partnerships in Support of Ocean Mapping, Exploration, and Characterization (NT-21-01)
Administered by	Office of Environmental Programs
BOEM Contact(s)	Mark Mueller ( <a href="mailto:mark.mueller@boem.gov">mark.mueller@boem.gov</a> )
Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	National Oceanographic and Atmospheric Administration (NOAA); National Science Foundation (NSF); United States Geological Survey (USGS)
Total BOEM Cost	\$2,980,281
Performance Period	FY 2022–2026
Final Report Due	September 30, 2026
Date Revised	September 13, 2023
Problem	The interagency National Strategy for Mapping, Exploring, and Characterizing the U.S. EEZ sets ambitious goals that align closely with BOEM mission needs, and identifies associated challenges. The Strategy (codified into law in 2022) calls for federal agencies to develop creative solutions that advance its implementation. BOEM can and must continue leading and innovating in this shared enterprise.
Intervention	BOEM can better fulfill its mission needs and help implement the National Strategy in a more cost-effective and timely way by establishing new formal interagency agreements with trusted federal partners that allow for consideration of in-scope, within-year individual project proposals and for the use of the federal partner’s procurement capabilities for needed services.
Comparison	BOEM’s Environmental Studies Program (ESP) has funded several successful, mission-driven interagency partnerships focused on mapping, exploring, and characterizing deepwater benthic environments. However, these have been limited to very large, costly endeavors requiring years of advance preparation and limited ability to adapt to changing conditions such as ship schedule changes.
Outcome	The new interagency agreements will provide more flexible internal and external mechanisms to capitalize on short-notice, highly leveraged opportunities involving vessels, submersibles, instrumentation, and scientific staff that support BOEM mission-critical research needs and shared interagency priorities.
Context	Characterizing offshore marine habitats, with a focus on deepwater benthic habitats and connectivity thereto. Spatial domain includes all OCS planning areas under BOEM jurisdiction.

BOEM Information Need(s): BOEM requires authoritative baseline information about deepwater habitats and resources to inform NEPA assessments (Affected Environment and potential impacts),

permitting/mitigation, resource evaluation, and programmatic decision making across its Regions and program areas (conventional energy, renewable energy, and marine minerals). Such information can be collected via collaborative offshore Mapping, Exploring, and Characterizing (MEC) efforts, per a 2023 law defining how federal ocean agencies can do so through a new National Strategy and supporting Administration bodies. To fully contribute to and leverage these ongoing government-wide efforts and maximize its own return on investment, BOEM's Environmental Studies Program (ESP) requires use of more adaptable procurement and interagency partnership mechanisms.

Background: The 2023 National Defense Authorization Act (in Title CIII "National Ocean Exploration"<sup>1</sup>) codified the existing federal committee organizational structure including the National Ocean Mapping, Exploration, and Characterization (NOMECE) Council and mandated continued implementation of the established National Strategy<sup>2</sup> to map the ocean throughout the U.S. EEZ, identify priority areas, and explore and characterize these priority areas. The Strategy and Implementation Plan<sup>3</sup> calls on all federal agencies with ocean interests (and represented on the NOMECE Council) to develop new ways to better leverage the expertise and resources of multi-sector partnerships and collaboration across federal agencies and non-U.S. Government entities. BOEM has contributed substantially to developing this strategy and has been instrumental in its implementation to date including shared leadership of two high profile, successful NOMECE "Flagship" projects. The ESP has previously led the way in MEC through mission-driven, NOPP-sponsored partnerships with NOAA and USGS including Atlantic Canyons, Deep SEARCH, and EXPRESS. These major efforts have significantly advanced the state of science and furthered federal resource management by increasing knowledge of continental margin geology, the types of seafloor communities, and connectivity with mid-water organisms. However, there is still incomplete information available about the distribution, composition, and sensitivity of deepwater seafloor habitats (i.e., hard bottoms, cold seeps, hydrothermal vents) and their associated benthic communities. For example, through its mapping and exploration activities, Deep SEARCH yielded the first known observation of a tubeworm in the Southeast Atlantic, and discovered a complex, 85 linear mile *Lophelia pertusa* reef system in an unexpected area. Because such deepwater habitats and fauna can potentially be negatively impacted by unmitigated OCS activities, BOEM must continue to better understand these ecosystems and their sensitivity to various impact producing factors. Though BOEM first initiated deepwater study efforts due to conventional energy activities, growing interest in critical marine minerals and the potential for offshore floating wind energy production have substantially expanded these information needs. Therefore, the mapping, exploration and characterization supported through this funding will focus primarily (but not exclusively) on these deepwater habitats in prioritized geographic areas throughout all OCS Regions. Due to the prohibitively high costs of deepwater fieldwork, BOEM must continue to collaborate with partners on research that cost-effectively addresses common information needs. Though quite successful, the historical BOEM template for deepwater research does have inherent limitations. Lessons learned suggest a more responsive, adaptive funding process guided by strategically defined criteria (such as the BOEM-led Interagency Working Group on Ocean Exploration and Characterization's National Strategic Priorities report<sup>4</sup>) could more effectively advance overlapping agency objectives and achieve the broader US government goals outlined in the National Strategy and law. By somewhat evolving the historic ESP procurement model for these types of study partnerships, BOEM's ESP can expand the range of potential partners, better respond to short-

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<sup>1</sup> <https://www.congress.gov/bill/117th-congress/house-bill/7776/text>

<sup>2</sup> <https://www.noaa.gov/sites/default/files/2022-07/NOMECEStrategy.pdf>

<sup>3</sup> <https://www.noaa.gov/sites/default/files/2021-11/210107-FINALNOMECEImplementationPlan-Clean.pdf>

<sup>4</sup> [https://www.whitehouse.gov/wp-content/uploads/2022/10/NOMECE\\_OEC\\_Priorities\\_Report.pdf](https://www.whitehouse.gov/wp-content/uploads/2022/10/NOMECE_OEC_Priorities_Report.pdf)

notice opportunities, adapt more quickly to evolving mission priorities, and maximize return on investment of federal funds.

Objectives: BOEM's ESP must demonstrate continued leadership and innovation by expanding its ability to obtain high value deepwater information through mapping, exploration, and characterization efforts that address ongoing and emerging management needs and do so in a cost-effective manner. The envisioned funding processes and results are expected to support the following objectives:

- Provide a reliable source of ESP funding that can be accessed and directed year-round to take advantage of short-notice collaborative opportunities and respond to emerging priorities.
- Reduce costs and maximize overall return on federal investments by more effectively and strategically leveraging partnerships, with preference given to projects that offer cost sharing and overlapping or complementary science/mission objectives.
- Rely on collaboratively developed, objective criteria to guide research project selection. One anticipated source for these criteria will be a new, regularly updated BOEM National Deepwater Mapping, Exploration, and Characterization Strategy that will help identify and prioritize BOEM's current geographic and topical needs.
- Employ a fair and transparent "internal proposal" submission and evaluation process.
- Continue advancing mapping, exploration and characterization of sensitive seafloor habitats and fauna to help clarify the type and degree of potential impacts from conventional energy, renewable energy, and marine minerals activities for environmental assessments and programmatic decision making.
- Provide BOEM and USGS subject matter experts more consistent access to ship time improving their ability to design and execute studies and deliver critical information.
- Encourage use of emerging technologies including remote sensing tools to survey the seafloor and water column more efficiently, in line with NOMECS Strategy Objective 4.
- Identify and map major geologic seafloor features relevant to understanding potential hazards (such as submarine landslides) and associated risks to energy infrastructure, benthic and cultural resources, and coastal tsunami risk.
- Yield information about water and seabed geochemistry (e.g., ocean acidification, methane system) to help better quantify potential baseline shifts.
- Assess relative sensitivity to impacts by comparing food-web ecology, population structure, and genetic diversity across depths and other environmental covariates.
- Provide MEC data that can also be used to inform BOEM resource evaluations; and
- Complement and build on relevant laws and Administration directives, principally the NOMECS Strategy and Implementation Plan, and maintain ties to the associated implementation bodies.

Methods: A combination of two different funding mechanisms is anticipated to help fulfill the above BOEM objectives and those of the broader NOMECS Strategy. First, new inter-agency agreements (IAAs) with NOAA and USGS (and/or possibly National Science Foundation) to acquire vessel/submersible/sensor and targeted scientific staff support. NOPP involvement or sponsorship will be pursued where appropriate. These IAAs would build on the existing PC-20-03 "Fostering a Cohesive Interagency Offshore Mapping and Hard Bottom Habitat Characterization Program" project, which is limited to the

Pacific. Second, a subset of available ESP funds will be reserved or “set aside” every year to be allocated over time to low-cost/high-value interagency opportunities.

A fair and transparent internal proposal submission and evaluation process will rely on collaboratively developed, objective criteria to help identify and prioritize eligible projects according to BOEM’s current geographic and topical needs. One anticipated source for these criteria will be a new, regularly updated BOEM Deepwater Mapping, Exploration, and Characterization (DMEC) Strategy that will be developed by a newly established team of the same name, composed of SMEs from every Region and relevant Programs. The team will receive and evaluate proposed project ideas/requests (a template will be provided) involving known and emerging fieldwork opportunities (such as available ship time). Preference will be given to highly leveraged projects that cost-effectively meet near to mid-term programmatic and science needs. Identifying needs and opportunities will also involve regular discussion with key federal partners that share science and mission objectives (primarily NOAA and USGS), and with non-USG entities where appropriate. Guided by the defined strategic/mission priorities and their situational awareness of regional/programmatic activities, the DMEC team will provide their input to the ESP Chiefs who will make specific funding recommendations to the DES Chief.

Discrete projects can include a broad range of interdisciplinary methods that advance mapping, sampling, and characterization of deepwater habitats. Some examples:

- Ship-based acoustic mapping can be used to measure bathymetry and delineate substrate types and the distribution of important hard bottom areas.
- Unmanned submersibles can provide seafloor imagery and enable collection of chemical, biological and geological samples.
- Trained scientific staff using laboratory materials/protocols (such as traditional taxonomic and genetic techniques) can analyze community composition and impact sensitivity.
- eDNA sampling and referencing can shed new light on biodiversity and species distribution.
- Data management best practices (such as submitting coral and sponge locations in a format consistent with the NOAA Deep Sea Coral Research and Technology Program national geodatabase) can promote data access and usability.

Results will be made available via final reports, peer-reviewed literature, etc. Select data can be archived through the NOAA National Centers for Environmental Information.

Specific Research Question(s):

1. Where are the sensitive hardbottom benthic habitats in deepwater areas of the OCS that could be leased for conventional energy, renewable energy, or marine mineral activities?
2. What are the current and projected environmental conditions and biological composition of these habitats? How are species ecologically and genetically connected?
3. How can BOEM and federal partners best collaborate to achieve agency mission objectives and further achievement of the five primary goals of the NOMECS Strategy and the Objectives and milestones of the NOMECS Strategy Implementation Plan?

Current Status: Interagency Agreement with NOAA obligated with four project modifications to date. Interagency Agreement with the National Science Foundation for efficient procurement of the Academic

Research Fleet. New Interagency Agreement with U.S. Geological Survey in development with BOEM's Marine Minerals Division. First two supported projects' field data collection successfully completed including using the novel Saildrone Surveyor to map, explore, and characterize seafloor and water column features in priority areas of the Aleutian Island Chain.

Publications Completed: None

Affiliated WWW Sites: <https://www.noaa.gov/nomec>

References: None