

FY24 NOAA Ocean Exploration Competitive Grant Program Fiscal Report

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Introduction

NOAA Ocean Exploration is the only federal program dedicated to exploring the unknown ocean, unlocking its potential through scientific discovery, technological advancements, partnerships, data delivery, and education. By working closely with partners across public, private, and academic sectors, we are filling gaps in basic understanding of the deep-ocean environment and providing critical data, information, and awareness needed to protect American livelihoods, strengthen national security, and promote a vibrant U.S. economy.

With priority placed on exploration of deep waters and the waters of the U.S. Exclusive Economic Zone, NOAA Ocean Exploration applies the latest tools and technologies to explore previously unknown areas of the ocean, making discoveries of scientific and economic value. By making collected data publicly available in increasingly innovative ways, we provide a unique and centralized national resource of critical ocean information needed to inform decision-makers on ocean policy issues. And, through live exploration video, online resources, training and educational opportunities, and public events, we share the excitement of ocean exploration with people around the world and inspire and engage the next generation of explorers, helping to build the future workforce needed to increase knowledge and understanding of the ocean system and maintain our country's influence and leadership in an ever-challenging global arena.

Through the annual ocean exploration competitive funding opportunity (program authority 33 USC 3403(a)), NOAA Ocean Exploration solicits and funds projects that advance ocean exploration, technology, and maritime heritage. These funding opportunities have supported more than 285 lab-based and/or expedition-based projects since the grant program's inception in 2001. Throughout its history, NOAA Ocean Exploration's competitive grant program has supported over 566 entities and 236 principal investigators (PIs).

This report highlights NOAA Ocean Exploration's Fiscal Year 2024 (FY24) funding opportunity and provides select summary data for prior funding years (FY20-24) to demonstrate trends.

FY24 Year in Review

Overview and Summary Metrics

For the FY24 funding opportunity, NOAA Ocean Exploration priorities included interdisciplinary baseline characterizations of unknown or poorly known deep-ocean areas, processes, and resources; technological innovation or novel application to advance deep-ocean exploration objectives; and discovery and initial characterization of maritime heritage. Further information can be found in funding opportunity number NOAA-OAR-OER-2024-2007964.

In FY24, NOAA Ocean Exploration:

- Received 49 pre-proposals (\$26,548,548), encouraged 23 full proposals (\$13,259,461), received 18 full proposals (\$10,358,461), and recommended 4 proposals for funding (\$2,139,374), each between \$311,150 and \$742,677 (see **Figure 1**). The number of pre-proposals received showed a decreasing trend in both the number of submissions and the requested funds for FY20-24 (see **Figure 2**).
- Funded 2 general ocean exploration proposals, 1 technology proposal, and 1 maritime heritage proposal.
- Funded 1 ship/submersible day at sea.
- Funded 4 principal investigators from:
 - Academia (3)
 - Federal government, NOAA (1)
- Directly supported 9 graduate and undergraduate students.
- Funded 15 entities across 5 U.S. states
- Leveraged about \$106.0 thousand in external support secured by funded PIs as shared costs, in-kind contributions, etc.
- Supported 16 individuals for a cumulative total of 158 personnel months.

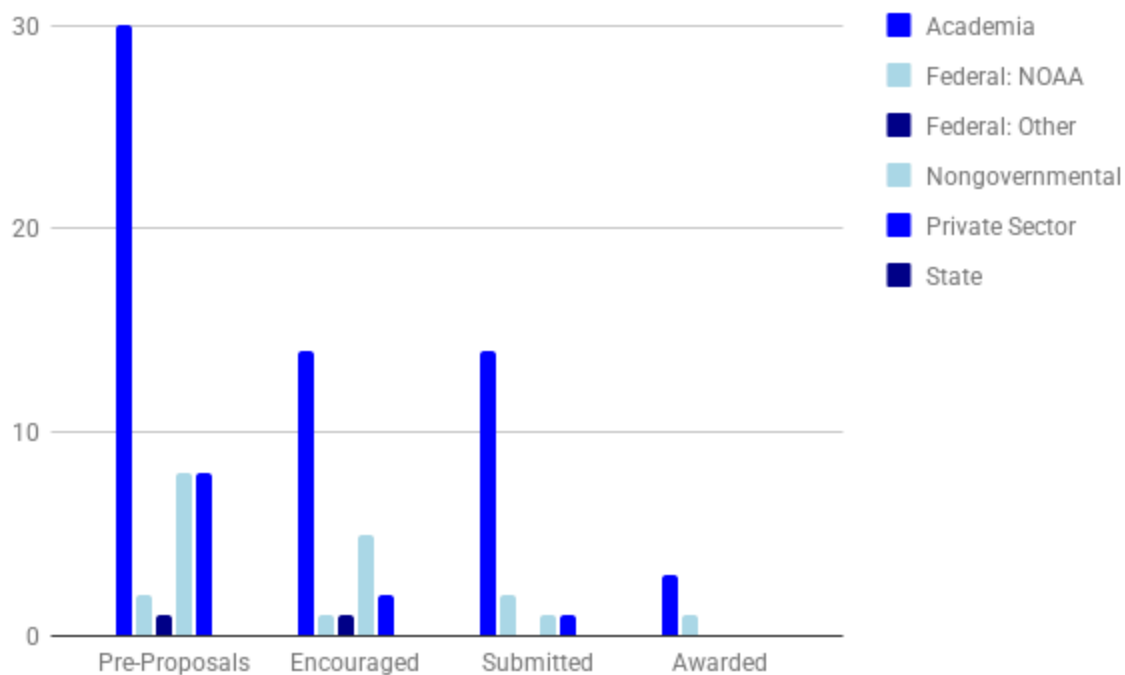


Figure 1. Distribution of FY24 NOAA Ocean Exploration funding opportunity pre-proposals received, pre-proposals encouraged to submit as full proposals, full proposals received, and proposals awarded funding across different sectors of ocean exploration, including academic, federal (NOAA and other), nongovernmental (e.g., philanthropic), private sector, and state entities.

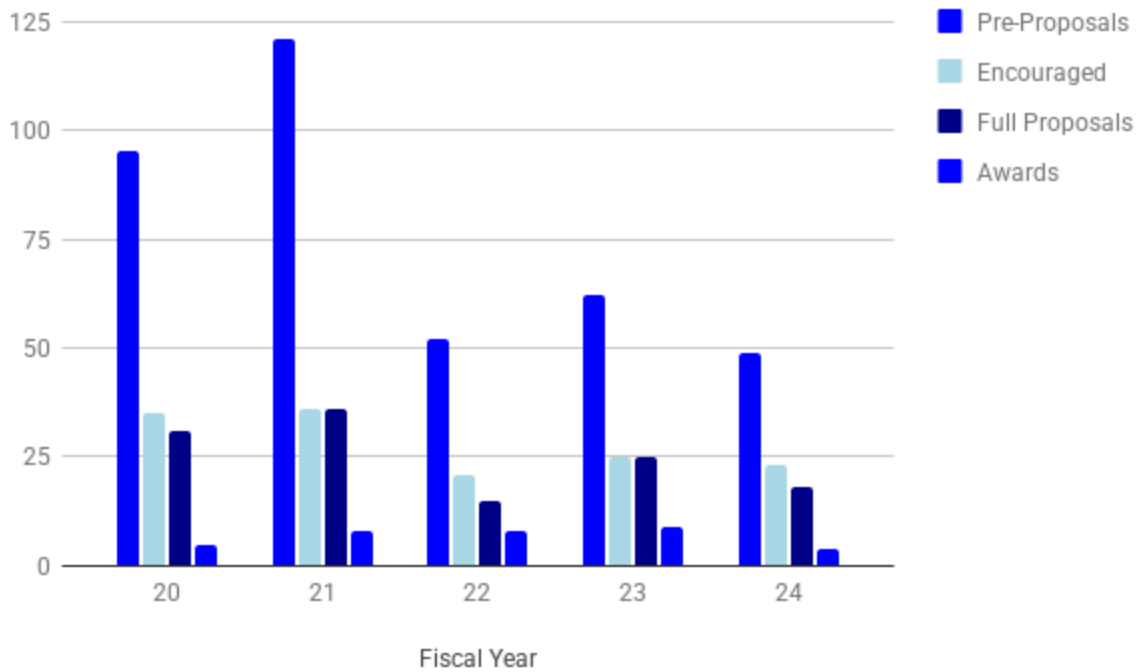


Figure 2. Distribution of NOAA Ocean Exploration funding opportunity pre-proposals received, pre-proposals encouraged to submit as full proposals, full proposals received, and projects awarded funding, FY20-24.

The 3 projects funded through the Ocean Exploration Fiscal Year 2024 Funding Opportunity are noted in **Table 1**. More details about each project are in **Appendix A**.

Project Title	Entity, PI	Theme	Expected Close Out
Exploring the Wisconsin Shipwreck Coast National Marine Sanctuary at Scale	Wisconsin Shipwreck Coast National Marine Sanctuary, Russ Green	Maritime Heritage	05/2026

Characterizing Mesophotic Fish Assemblages of Puerto Rico’s Western EEZ	University of Miami, Richard Coleman	Exploration	08/2026
Exploration and Characterization of Deep-Pelagic Crustacean Diversity in the Southern California Exclusive Economic Zone	University of California (UC), San Diego (UCSD), Anela Choy	Exploration	08/2026
Rapid Assessment of Infaunal Biodiversity in the Deep Sea (RAID)	Florida State University (FSU), Jeroen Ingels	Technology	08/2026

Table 1. Funded projects for the Ocean Exploration Fiscal Year 2024 Funding Opportunity (arranged alphabetically by project title).

Each year, NOAA Ocean Exploration attempts to balance the distribution of funds across the three themes (ocean exploration, technology, and maritime heritage). Final allocation of funds is based on the number of project proposals received in each of the three focus areas. Both the theme ranking and overall competition rank are evaluated. **Figure 3** shows the distribution of awards by theme for FY20-24.

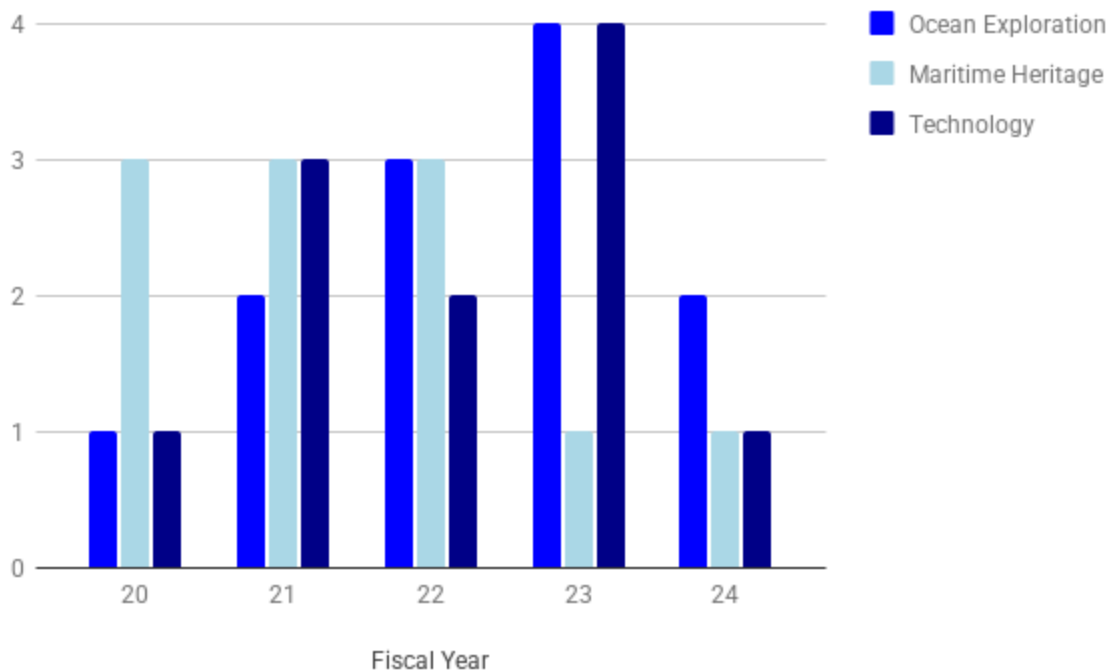


Figure 3. Distribution of NOAA Ocean Exploration funding opportunity awards by theme, FY20-24.

Between FY20 and FY24, NOAA Ocean Exploration funded proposals received from academia, federal agencies, nongovernmental organizations, and the private sector. Overwhelmingly, academia has received the most funds (see **Figure 4** and **Figure 5** for distribution of awards and funds). Reasons for disproportionate funding may include the high level of proposal submissions and academics’ reliance on grant funding as their primary funding source. NOAA Ocean Exploration recognizes that nongovernmental and private-sector entities have an increasing role in ocean exploration, maritime heritage, and technology development, and NOAA Ocean Exploration continues to consider opportunities to engage these entities.

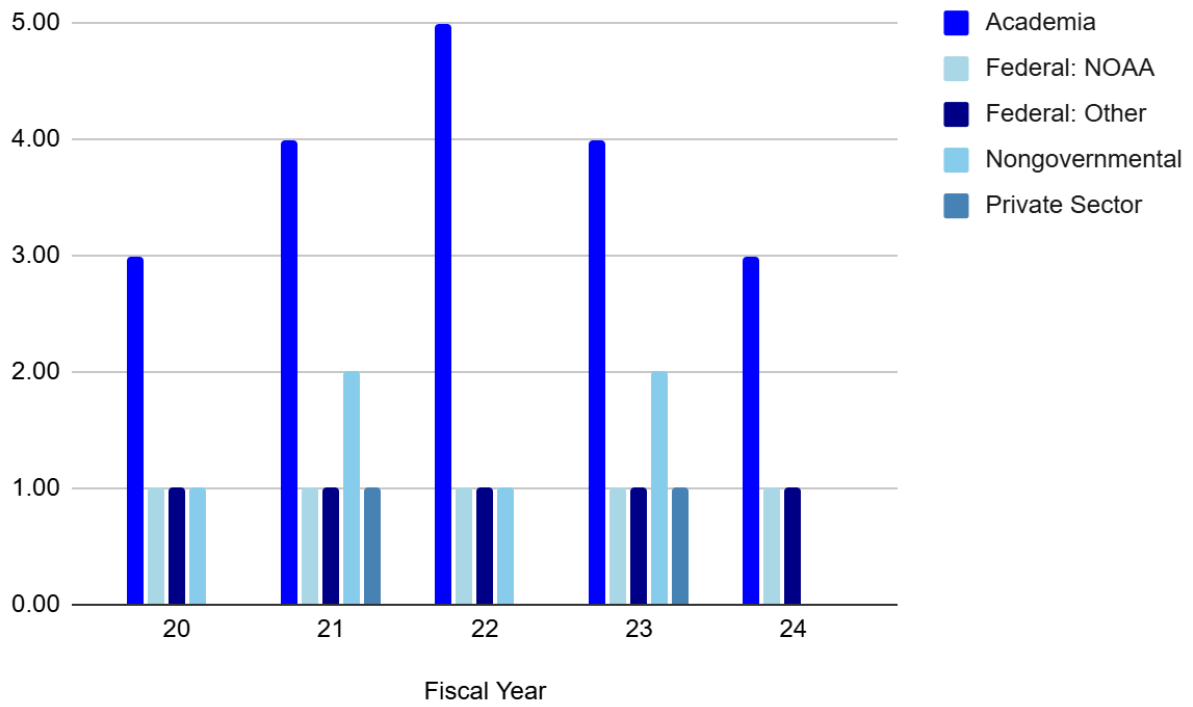


Figure 4. Distribution of NOAA Ocean Exploration funding opportunity awards by sector, FY20-24.

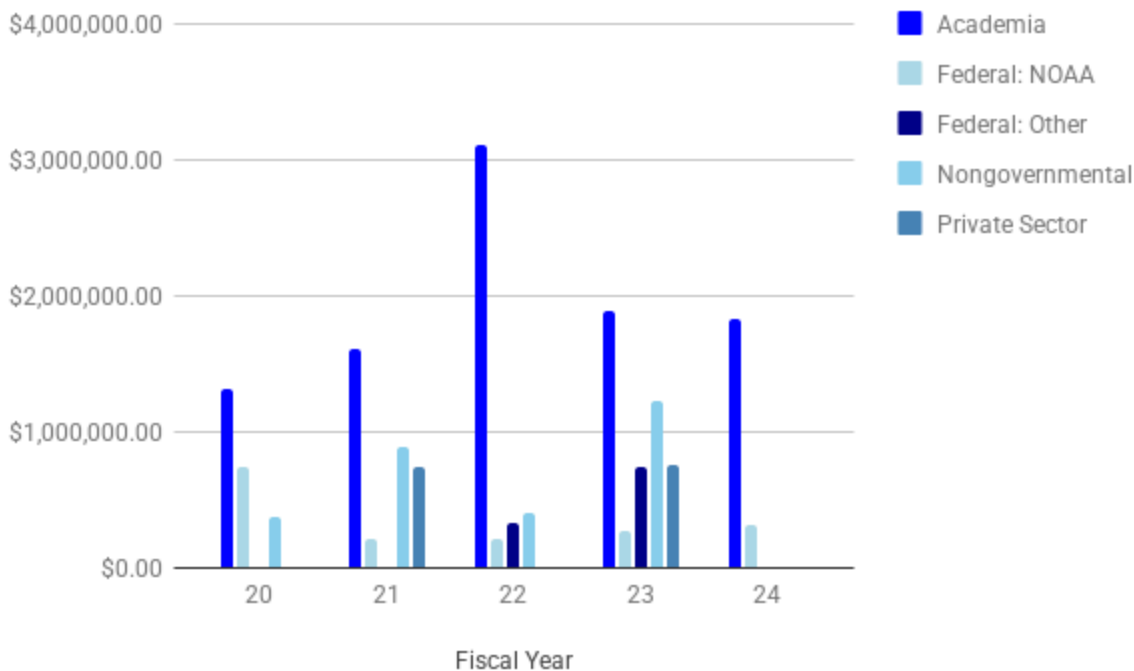


Figure 5. Distribution of NOAA Ocean Exploration funding opportunity funds by sector, FY20-24.

In support of these opportunities, NOAA Ocean Exploration encourages interdisciplinary exploration that can be accomplished through partnerships between academia, government agencies, nongovernmental organizations, the private sector, and state entities. In this way, the NOAA Ocean Exploration funding opportunity supports collaboration networks across the entire ocean exploration community.

Funded proposals often leverage additional support in the form of cost-sharing, ship time, in-kind contributions, and other services, resources, and personnel time not covered by NOAA Ocean Exploration funding. Funded projects leveraged over \$10.1 million in additional support between FY20 and FY24 (see **Figure 6**). In FY24, leveraged support included ship time, platform assets, and salary funding. Leveraged support (both technical and monetary) is opportunistic and is controlled by factors external to NOAA Ocean Exploration. Sometimes this support includes funding from other agencies or entities. Leveraged support and outside funding are not required to receive funding via the NOAA Ocean Exploration funding opportunity.

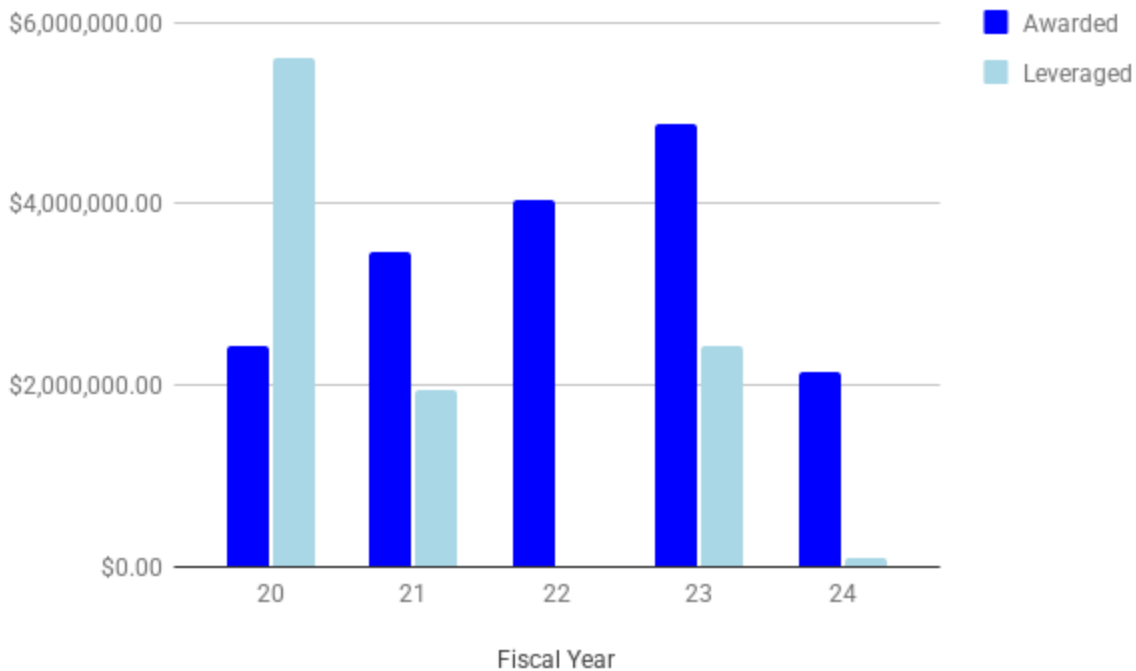


Figure 6. Funding awarded via the NOAA Ocean Exploration funding opportunity and support leveraged, FY20-24.

PIs, co-PIs, and other significant contributors funded by NOAA Ocean Exploration between FY20 and FY24 represent a variety of entities both domestically and internationally. **Figure 7** is a visual representation of the collaborative nature of NOAA Ocean Exploration-funded projects and shows the wide reach of NOAA Ocean Exploration’s funding opportunity beyond the 3 principal investigators who were directly funded. The directionality of the arrows in **Figure 7** indicates the direction of collaboration from awarded entities to collaborating entities. Each point in the network represents one entity and may represent multiple projects if awards were given to multiple principal investigators from an entity between FY20 and FY24. This institutional network depicts 92relationships between 99 unique entities. These collaborations have resulted in the inclusion of sectors that did not directly receive NOAA Ocean Exploration funding between FY20 and FY24, specifically state and foreign entities.

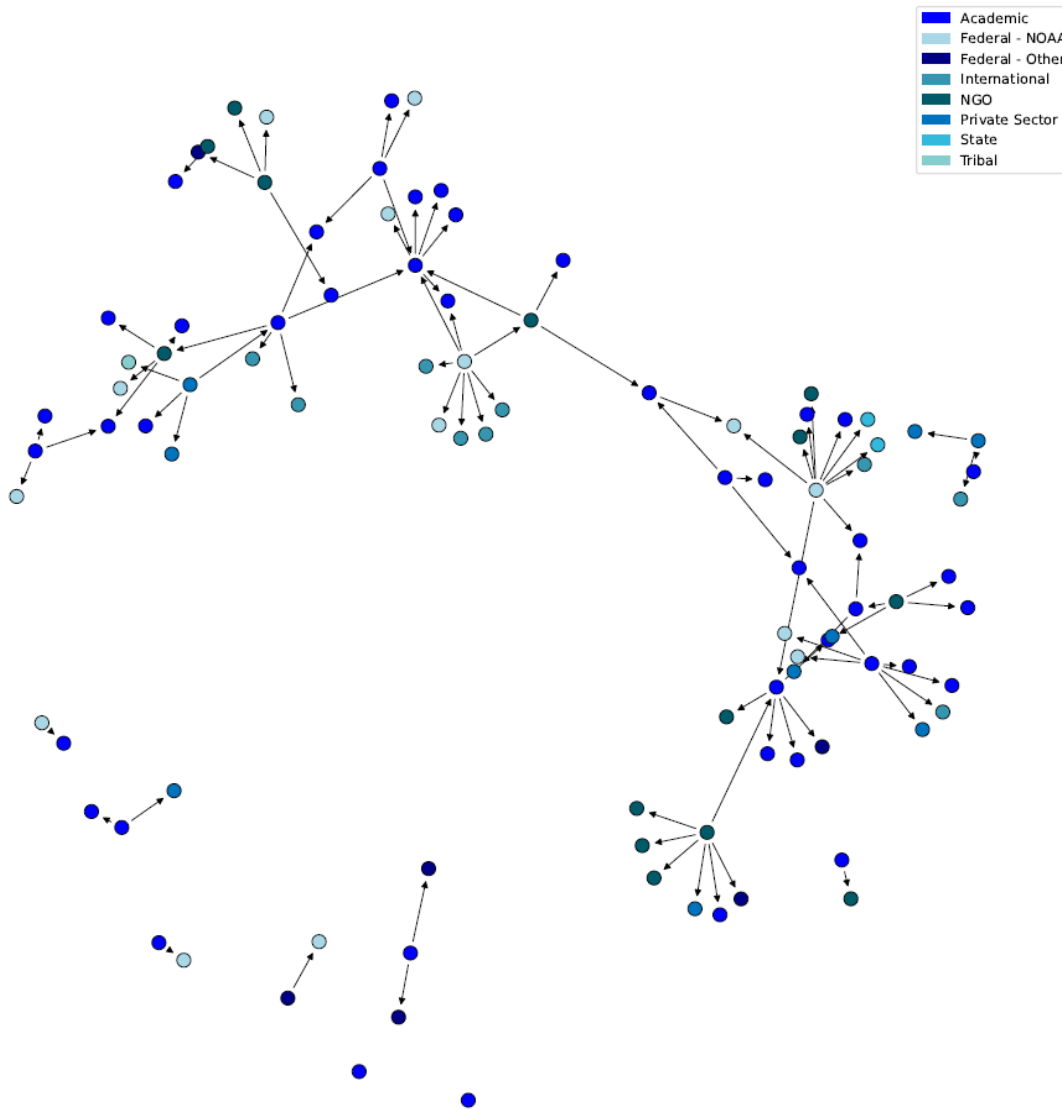


Figure 7. Collaboration network of principal investigators, co-principal investigators, and other significant contributors funded via the NOAA Ocean Exploration funding opportunities, FY20-24.

Grants Closeout During FY24

14 grants were closed out during FY24. The final reports and publications for these projects will be archived with the [NOAA Institutional Repository](#) once available.

Acknowledgments

The authors would like to thank those staff members who contributed to the “FY24 Annual NOAA Ocean Exploration Competitive Grant Program Fiscal Report.” We would like to especially

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Sources for Additional Information

Searchable online table for past NOAA Ocean Exploration funding opportunity projects from FY02 through present: <https://oceanexplorer.noaa.gov/about/funding-ops/ffo-recipients.html>

NOAA Ocean Exploration and Research bibliography:
<https://libguides.library.noaa.gov/oceanexplorationbib>

Appendix A: Abstracts of FY24 Funded Projects

Title: Exploring the Wisconsin Shipwreck Coast National Marine Sanctuary at Scale

Principal Investigator: Russ Green, NOAA Wisconsin Shipwreck Coast National Marine Sanctuary

Theme: Maritime Heritage

Abstract: Well preserved by cold freshwater, the Great Lakes possess some of the most extraordinary potential for archaeological investigation of historic shipwrecks anywhere in the world. Many of these shipwrecks have yet to be discovered or explored. This research team will explore and document a collection of nationally significant shipwrecks — five recently located but not yet documented — in the deep waters (130-480 feet) of Lake Michigan’s Wisconsin Shipwreck Coast National Marine Sanctuary. They will use a hybrid autonomous underwater vehicle/remotely operated vehicle (AUV/ROV) equipped with novel acoustic, imaging, and laser scanning sensors, and develop new archaeological methods to capitalize on the efficiencies of autonomous and uncrewed vehicles. This project will produce baseline data and information — including still and video imagery and photogrammetric and laser-scan models — that will inform the sanctuary’s monitoring and preservation efforts and contribute to the understanding of the role of the Great Lakes in our nation’s maritime heritage.

Title: Characterizing Mesophotic Fish Assemblages of Puerto Rico’s Western EEZ

Principal Investigator: Richard Coleman, University of Miami

Theme: Exploration

Abstract: Mesophotic (“middle light”) coral ecosystems provide habitat for an array of vulnerable and ecologically and commercially important fish species. At ocean depths between the brightly lit shallows and the dark deep ocean (30-150 meters/98-492 feet) in tropical and subtropical regions, these ecosystems are difficult to access, meaning they’re relatively unexplored, and our knowledge about the fish that inhabit them is limited. Using advanced deep-diving techniques and data collection methods, this research team will explore the mesophotic coral ecosystems off the western coast of Puerto Rico to better understand these ecosystems and how they are used as habitat by their associated fish communities. Technical divers will conduct complementary stereo-video and visual surveys to document fish occurrence, size, and abundance as well as evidence of marine debris, bleaching, disease, and other threats. They’ll also collect samples of select uncommon, rare, and unknown species for further study and water samples for eDNA analysis. The results of this project will inform the conservation and management of Puerto Rico’s mesophotic coral ecosystems and the fish communities they support and serve as a baseline against which to assess future changes.

Title: Exploration and Characterization of Deep-Pelagic Crustacean Diversity in the Southern California Exclusive Economic Zone

Principal Investigator: Anela Choy, University of California, San Diego

Theme: Exploration

Abstract: The deep ocean is the largest living space on Earth, and the deep-pelagic (or water column) species that live there are important food sources for marine predators, including ecologically, culturally, commercially, and recreationally important species. Scientists have much to learn about the biodiversity and ecology of deep-pelagic crustaceans and their associated communities. During this lab-based project, the research team will study the biodiversity of crustaceans collected from the deep waters off Southern California, with a focus on three orders of dominant crustaceans (Decapoda, Lophogstrida, and Mysida). Specifically, they will identify — or document and describe if unknown — recently collected crustaceans from five sites based on their morphology (form and structure). These identifications will be complemented with DNA studies. Using this information, they will characterize crustacean community composition in the study area. Upon completion of their research, they will deposit the samples and the associated genetic material and data in national collections and databases and produce a pictorial guide of deep-pelagic crustaceans. This work will support future water column exploration, research, and monitoring throughout the ocean to help us better understand the value and services of our natural marine resources and inform their sustainable management and use.

Title: Rapid Assessment of Infaunal Biodiversity in the Deep Sea (RAID)

Principal Investigator: Jeroen/Sandra Ingels/Brooke, Florida State University (FSU)

Theme: Technology

Abstract: Small, infaunal organisms (less than 1 millimeter) in the deep sea comprise some of the most diverse and functionally relevant communities in the ocean. Because of their high density, diversity, widespread distribution, and short life cycles, they are useful marine health sentinels. Reliable taxonomic identification of these organisms—the basis for ecological studies and environmental assessments—relies mainly on time-consuming, manual identification, which requires years of taxonomic expertise. In parallel, emerging innovative optical and digital imaging techniques are revolutionizing assessments of marine biodiversity in scientific and industrial applications. This project aims to address taxonomic bottlenecks by using automated microscopy imaging (via a FlowCAM's and PlanktoScope image capture system) coupled with machine-learning-based image classification to efficiently identify small-sized invertebrates in deep-sea sediment samples. "Legacy" sediment samples to test this method were collected throughout the Gulf and Mid Atlantic regions and are meant to represent a diverse assemblage of habitat types to expand potential applications. Methods developed by this project aim to quickly capture large-scale biodiversity data for deep-sea ecological assessments, restoration, and resource management purposes. The project will pave the way towards developing a tool

capable of providing fast biodiversity characterization for use by diverse end users, including applications in academia and industry.
