

# Deep-Sea Corals and Chemosynthetic Communities in the Gulf of Mexico

## Characterizing Distributions through Data Synthesis and Predictive Modeling

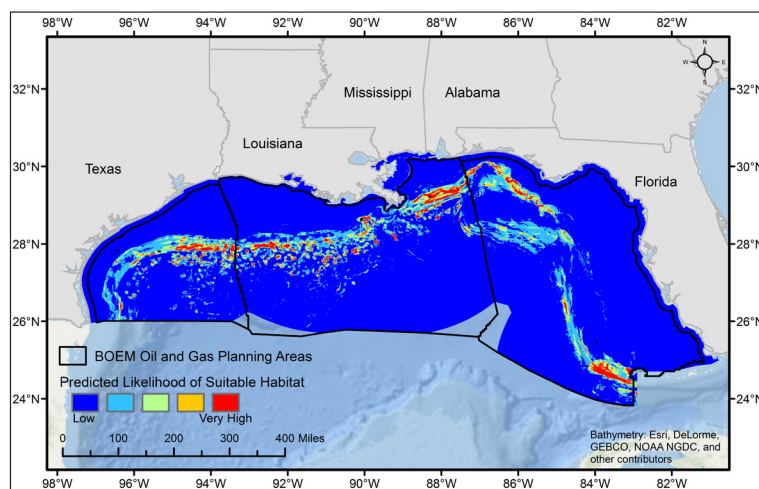
### Background

The U.S. Gulf of Mexico (GOM) Outer Continental Shelf (OCS) contains an area of 160 million acres for which the Bureau of Ocean Energy Management (BOEM) oversees the responsible development of oil, gas, and other mineral resources. Information on the distribution of sensitive biota such as deep-sea corals and chemosynthetic communities in the region is critical for BOEM's environmental assessments and the activity review process.

### Objectives

BOEM has partnered with NOAA's National Centers for Coastal Ocean Science (NCCOS) to:

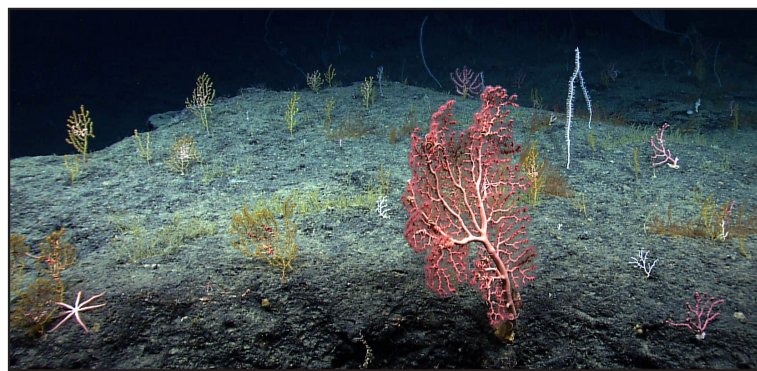
- Develop a comprehensive database containing both presence and absence information for deep-sea coral and chemosynthetic communities in the U.S. GOM OCS.
- Characterize the potential distributions of deep-sea corals and chemosynthetic communities in the U.S. GOM OCS using spatial predictive models to map the probability of their occurrence across the region.



Credit: NOAA NOS/NCCOS

### Approach

NCCOS is compiling and evaluating all available data from field surveys that could be used to determine georeferenced presence and absence information for deep-sea corals and chemosynthetic communities in the U.S. GOM OCS. For selected field surveys, NCCOS is extracting georeferenced presence and absence information by processing raw survey records. This may include video from submersibles and remotely operated vehicles (ROVs), sonar and imagery from autonomous underwater vehicles (AUVs), 3D seismic data, museum records and historical deepwater trawl data. In addition, NCCOS is using the NOAA Deep Sea Coral Research and Technology Program's geodatabase of



Credit: NOAA Okeanos Explorer Program, Gulf of Mexico 2014 Expedition

deep-sea coral and sponge locations in U.S. waters to access deep-sea coral presence information, identify taxonomic groups of corals for modeling, and validate models.

NCCOS is developing spatial models that predict the probability of occurrence of deep-sea corals and chemosynthetic communities in the U.S. GOM OCS using the presence and absence information in the database and spatial predictor variables, including environmental, oceanographic and geomorphological datasets.

### Products

- A comprehensive, quality-controlled database containing presence and absence information for deep-sea corals and chemosynthetic communities in the U.S. GOM OCS.
- Maps of the predicted probability of occurrence of deep-sea corals and chemosynthetic communities specifically tailored for environmental assessment, management, and decision-making needs in the region; maps include measures of model performance and spatial depictions of prediction certainty.

### Additional Online Resources

National Centers for Coastal Ocean Science

<https://coastalscience.noaa.gov/projects/detail?key=35>

NOAA Deep Sea Coral Data Portal

<https://deepseacoraldata.noaa.gov/>

Bureau of Ocean Energy Management, Gulf of Mexico Region

<https://www.boem.gov/Gulf-of-Mexico-Region/>

<https://www.boem.gov/Studies/>

### More Information

For more information about this project, contact:

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Credits: Sandra Brooke et al., NOAA-OAR/OER, HBOI (top); Ocean Exploration Trust (middle); Lophelia II: Reefs, Rigs, and Wrecks 2009 Expedition (bottom).

NCCOS supports the achievement of NOAA's coastal missions by providing cutting-edge research, scientific information, and tools that help balance ecological, social and economic goals.