



## GULF OF MEXICO CALL AREA

# Proposed Survey Activities

Survey Type	Use	Survey Equipment and Methods
<b>High-Resolution Geophysical</b>	Shallow Hazards Archaeological Bathymetric Charting Benthic Habitat	Sub-bottom profiler Side-scan sonar Multibeam echosounder Magnetometer
<b>Geotechnical/ Sub-bottom Sampling</b>	Geological	Vibracores Deep borings Cone penetration tests
<b>Biological</b>	Benthic Habitat	Grab sampling Benthic sled Underwater imagery Sediment profile imaging
	Avian	Aerial digital imaging Visual observation from boat or airplane
	Bat	Ultrasonic detectors installed on survey vessels used for other surveys
	Marine fauna (marine mammals, sea turtles)	Visual observation from boat or airplane
	Fish	Direct sampling of fish and invertebrates

## High-Resolution Geophysical Survey Equipment and Methods

Survey Type	Use	Survey Equipment and Methods
<b>Sub-bottom Profiler</b>	Collect geophysical data on shallow hazards, archaeological resources, and subsurface sediments	Typically, a high-resolution CHIRP System sub-bottom profiler is used to generate a profile view below the bottom of the seabed, which is interpreted to develop a geologic cross-section of subsurface sediment conditions under the track line surveyed. Another type of sub-bottom profiler that may be employed is a medium penetration system such as a boomer, bubble pulser, or impulse-type system. Sub-bottom profilers are capable of penetrating sediment depth ranges of 3 m (10 ft) to greater than 100 m (328 ft), depending on frequency and bottom composition.
<b>Side-scan Sonar</b>	Collect geophysical data on shallow hazards and archaeological resources assessments	This survey technique is used to evaluate surface sediments, seafloor morphology, and potential surface obstructions. A typical side-scan sonar system consists of a top-side processor, tow cable, and towfish with transducers (or "pingers") located on the sides, which generate and record the returning sound that travels through the water column at a known speed.
<b>Multibeam Echosounder</b>	Bathymetric charting	A depth sounder is a microprocessor-controlled, high-resolution, survey-grade system that measures precise water depths in both digital and graphic formats. The system would be used in such a manner as to record with a sweep appropriate to the range of water depths expected in the survey area. Multibeam bathymetry systems may be more appropriate than other tools for characterizing those WEAs containing complex bathymetric features or sensitive benthic habitats, such as hard bottom areas.
<b>Magnetometer</b>	Collect geophysical data on shallow hazards and archaeological resources assessments	Magnetometer surveys detect and aid in the identification of ferrous or other objects having a distinct magnetic signature. The magnetometer sensor is typically towed as near as possible to the seafloor and anticipated to be no more than approximately 6 m (20 ft) above the seafloor.

