SUMMARY OF SEISMIC SURVEYS

America's Offshore Energy Industry

Seismic surveys are safely conducted every day around the world. In the U.S., there is an 80-year history of using seismic surveys to explore oil and natural gas reserves in the Gulf of Mexico.

WHALES

After more than 50 years of extensive seismic surveying around the world, including the Gulf of Mexico, and a decade of intense scrutiny by scientists, there is still no scientific evidence that the sound from survey activities harm marine life populations.

SEA TURTLES

In the Gulf of Mexico, seismic and other geophysical surveys have been conducted for over 50 years amid turtle populations that at the same time have been recovering dramatically well from historic harvest and fishery bycatch.

FISH

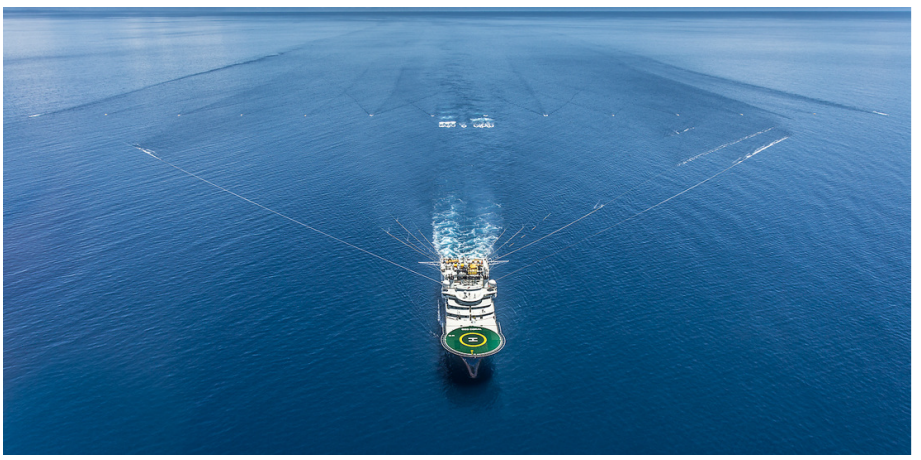
There has been no observation of direct physical injury or death to free-ranging fish caused by seismic survey activity, and there is no conclusive evidence showing long-term or permanent displacement of fish.

The offshore energy industry and its seismic exploration companies are committed to conducting operations in an environmentally responsible manner.

Mitigation measures, such as exclusion zones, soft-starts and the use of protected species observers further reduce any potential direct or indirect impacts to marine mammals and ensure that exploration is conducted safely and sustainably.

"To date, there has been no documented scientific evidence of noise from air guns used in geological and geophysical (G&G) seismic activities adversely affecting marine animal populations or coastal communities. This technology has been used for more than 30 years around the world. It is still used in U.S. waters off of the Gulf of Mexico with no known detrimental impact to marine animal populations or to commercial fishing."

William Brown
Chief Environmental Officer
Bureau of Ocean Energy Management



BOEM has spent more than $50 million on protected species and noise-related research without finding evidence of adverse effects. The offshore energy industry, the National Science Foundation, the U.S. Navy, and others have spent a comparable amount on researching impacts of seismic surveys on marine life and have found no evidence of adverse effects.

SUMMARY OF

INCIDENTAL HARRASSMENT AUTHORIZATIONS

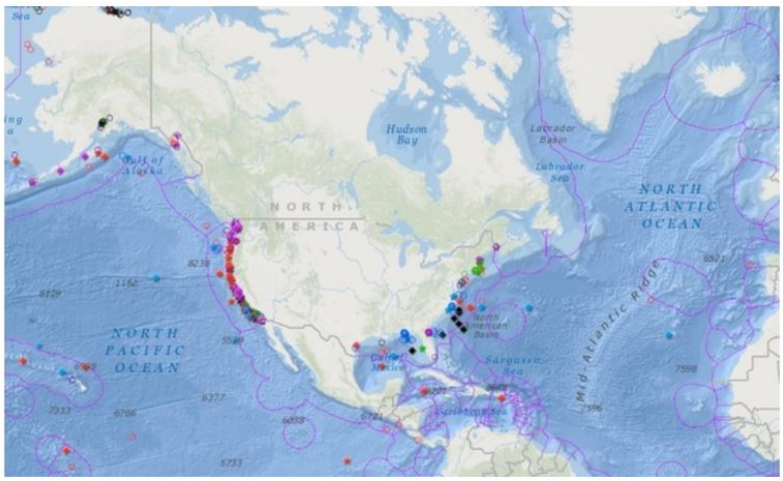
America's Offshore Energy Industry

The National Oceanic and Atmospheric Administration (NOAA) conducts extensive analyses for many ocean related activities, including energy exploration and development.

Seismic surveys are not new to the Atlantic and have been taking place for many years. Seismic surveys have been conducted during scientific research in the Atlantic Outer Continental Shelf (OCS) over the past 50 years, with the most recent of these surveys occurring in 2014, 2015, 2017 and 2018.

From September - October 2014, a scientific research survey collected data along 3,000 miles of trackline in the area of the Outer Banks, North Carolina using the same technology that is used for oil and gas exploration. In July 2015, a scientific research seismic survey was conducted off the coast of New Jersey to record sea level change and its impact on the New Jersey coastline.

During this time, NOAA's National Marine Fisheries Service (NMFS) authorized IHAs for thousands of takes of North Atlantic Right Whales for non-energy exploration surveys by companies off the U.S. Atlantic coast.



The data points visualize the general location, type, and status of Marine Mammal Protection Act incidental take authorizations.

RECENT SCIENTIFIC RESEARACH SURVEYS INCLUDE:

US NAVY

EASTERN SEABOARD

Atlantic Fleet Training & Testing (AFTT)

SCRIPPS INSTITUTION OF CONSERVATION SCIENCE

NORTHEAST ATLANTIC

Low-Energy Marine Geophysical Survey by R/V Atlantis in the Northwest Atlantic Ocean

UC SANTA CRUZ

PACIFIC COAST

PISCO rocky intertidal monitoring in California and Oregon

LAMONT-DOHERTY EARTH OBSERVATORY

MAIN HAWAIIAN ISLANDS

Marine Geophysical Surveys by the R/V Marcus G. Langseth in the North Pacific Ocean

BAY STATE WIND LLC

MASSACHUSETTS

Site Characterization of the Bay State Wind Offshore Wind Farm off the Coast of Massachusetts in the Area of OCS-A 0500

APACHE ALASKA

ALASKA

Seismic survey in Cook Inlet, Alaska

Elsewhere in the U.S. OCS, there are more than 230 active IHA's in U.S. waters. Permit holders range from the U.S. Navy to coastal restoration groups to all aspects of offshore energy exploration and development.