



Applied science for informed decision making

May 17, 2013

Welcome to the first edition of *BOEM Science Notes*.

We hope to keep our community of stakeholders informed on our ongoing research as it is taking place in the field. Each *Science Note* will feature a BOEM study or other item of interest. As always, thank you for your continued interest in our programs.

Sincerely,

Robert LaBelle

Science Advisor to the BOEM Director and Acting Chief Environmental Officer

Scientists Discover New Marine Life in Atlantic Canyons

A team of federal and university scientists exploring the Norfolk Canyon on a month-long expedition discovered an expansive, "bustling field of chemosynthetic mussels" and the presence of gas seeps in the canyon about one mile below the ocean surface. Chemosynthetic animals have internal microorganisms that ingest and convert molecules such as methane or hydrogen sulfide to produce energy and biomass.

On May 8, maneuvering the Jason remote operating vehicle (ROV) around the canyon, they "came across densely packed mussels that carpeted the bottom as far as the Jason cameras could see." The patches were packed with live mussels, plus a variety of fishes and invertebrates. The methane seep site that the mussels use for nutrition is one of the few currently known off the U.S. Atlantic coast.

The discovery took place as part of the Deepwater Atlantic Canyons study funded by the Bureau of Ocean Energy Management (BOEM), the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS). Led by Principal Investigators Dr. Steven Ross (University of North Carolina at Wilmington) and Dr. Sandra Brooke (Florida State University), the researchers were ecstatic when cameras mounted on the Jason zoomed in on this exciting find. The science team includes researchers from seven universities, three federal agencies, and several private sector and oceanographic organizations working aboard the NOAA ship Ronald H. Brown. This expedition builds on discoveries made last year by explorers on NOAA Ship Okeanos Explorer.



A lithodid crab seen on the mussel bed at 1,600 meters. Image courtesy of Deepwater Canyons 2013 - Pathways to the Abyss, NOAA-OER/BOEM/USGS

Scientists took samples of seep-associated animals, bacteria on the sediment surface and other specimens. Associated fish and invertebrates will be studied to determine whether the methane is indirectly providing food for a wider community of animals living around the seep. The community structure, biodiversity, life histories and genetic structure of the animals will be studied.

Researchers set sail from Charleston, SC, on April 30 to study physical and biological oceanography and maritime archaeology on the mid-Atlantic coast. The mission, divided into a 20-day leg and an 8-day leg, is the third and final field season for the project and will further update our knowledge of the Atlantic Outer Continental Shelf. The 2012 expedition reconfirmed the existence of a large, biological community associated with the methane seep in Baltimore Canyon, first reported three decades ago. Research on leg one continues until May 19, to be followed by a week searching for and surveying shipwrecks, including some from the World War I and II-eras that are thought to be in the vicinity.

This study will expand BOEM's knowledge of the distribution and sensitivity of unique biological habitats in deep water, as well as potential archaeological sites that may warrant protection. While BOEM has no oil and gas lease sales scheduled in the Atlantic for the 2012-2017 program, the research will provide updated environmental and ecological information to inform future decisions and mitigation measures.

To watch the daily blogs from federal and university scientists onboard the 2013 mission, access materials for educators, and ask an explorer questions, visit [this link to the NOAA Ocean Explorer page](#) or [the mission blog](#).

The Bureau of Ocean Energy Management (BOEM) promotes energy independence, environmental protection and economic development through responsible, science-based management of offshore conventional and renewable energy.

