

# MIMS OCEAN SCIENCE

VOLUME 5 ISSUE 1

JANUARY/FEBRUARY/MARCH 2008

THE SCIENCE & TECHNOLOGY JOURNAL OF THE MINERALS MANAGEMENT SERVICE

**Unwrapping the  
Ocean's Potential**

**Uncovering  
Possibilities  
in the Chukchi Sea**

**Shell and NOAA  
Pool Resources in  
the Gulf**

**Exploring the  
Details of  
the Detail**

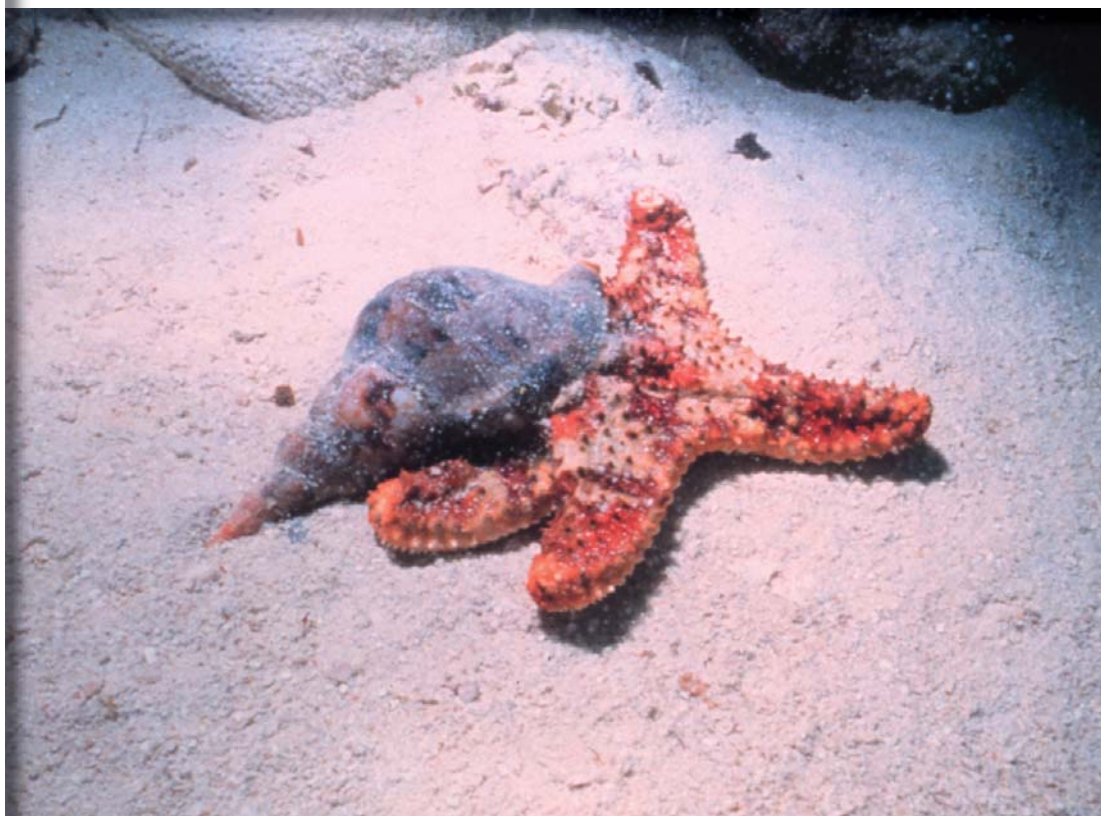
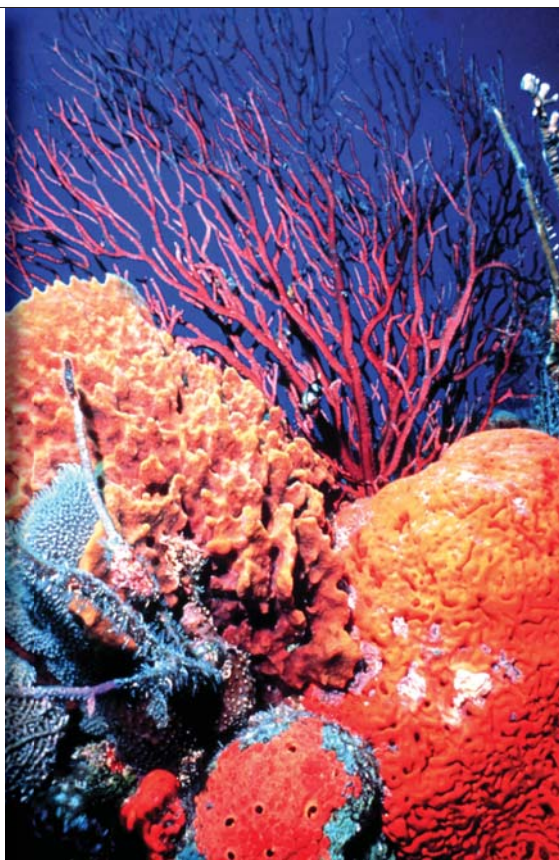
**CIAP Funds  
Protection of  
Louisiana's  
Shoreline**

**Harvesting the  
Deep: Marine  
Biotechnology  
Research and  
Potential**

**Rigs-to-Reefs  
Program Creates  
New Habitats  
for Underwater  
Species**

**Offshore Operations  
Inspection**

**MMS Receives  
Award for Study  
of Shipwrecks as  
Artificial Reefs**





MMS *OCEAN SCIENCE* is published quarterly by the Minerals Management Service to communicate recent ocean science and technological information and issues of interest related to offshore mineral recovery, ocean stewardship, and mineral revenues.



Please address all questions, comments, suggestions, and changes of address to:

Dr. Deborah Epperson  
MMS *OCEAN SCIENCE* Editor  
Minerals Management Service  
1201 Elmwood Park Boulevard  
New Orleans, LA 70123

[deborah.epperson@mms.gov](mailto:deborah.epperson@mms.gov)

(504) 736-3257

#### ABOUT THE COVER

Left and Top Right: Corals from NOAA's Coral Kingdom Collection. Credit: Florida Keys National Marine Sanctuary.

Middle Right: Platform inspection.

Main Photo: Atlantic trumpet triton and cushion sea star. NOAA's Coral Kingdom Collection. Credit: Florida Keys National Marine Sanctuary.

Back Page: Background platform image by Gregory S. Boland

*All photos courtesy of Minerals Management Service unless otherwise noted.*

Publication services provided by Schatz Publishing Group

# MMS *OCEAN SCIENCE*

THE SCIENCE & TECHNOLOGY JOURNAL OF THE MINERALS MANAGEMENT SERVICE

JANUARY/FEBRUARY/MARCH 2008 Volume 5 Issue 1

- 3 Deep-sea Cornucopia:**  
Unwrapping the Ocean's Potential
- 4 Uncovering Possibilities in the Chukchi Sea**
- 6 Shell and NOAA Pool Resources in the Gulf**
- 7 Exploring the Details of the Detail**
- 8 Working in the Ice:**  
TAR Evaluates Arctic Offshore Technology
- 10 Shelling Out for the Shore**  
Coastal Impact Assistance Program Funds Protection of Louisiana's Shoreline
- 11 Harvesting the Deep:**  
Marine Biotechnology Research and Potential
- 12 Rigging Up Residence:**  
Rigs-to-Reefs Program Creates New Habitats for Underwater Species
- 14 Offshore Operations Inspection**  
Safe Resource Development Has Its Rewards
- 15 MMS Receives Award for Study of Shipwrecks as Artificial Reefs**
- 15 The MMS Portfolio**  
Published Professionals
- 16 New Waves**  
Late-Breaking News & Information

For more information about the Minerals Management Service, check out our site on the World Wide Web:

[www.mms.gov](http://www.mms.gov)

## Subscribe

To receive MMS *OCEAN SCIENCE*, sign up on the website [www.gomr.mms.gov](http://www.gomr.mms.gov), click on e-mail subscriptions on the left-hand column, check the box marked Environmental Studies or e-mail [deborah.epperson@mms.gov](mailto:deborah.epperson@mms.gov) or call (504) 736-3257



# HARVESTING THE DEEP

## Marine Biotechnology Research and Potential

**A**pproximately 71 percent of the Earth's surface is covered by oceans. The Minerals Management Service (MMS) manages over 1.76 billion acres of these offshore lands and has an enormous responsibility to protect the ocean environment while also exploring the valuable resources held within. These ocean resources provide new and exciting possibilities, from recovery of domestic oil and gas supplies to scientific discoveries in marine biology. Marine organisms have the potential for a wide range of uses, and of these, biotechnology research is a growing field of study.

Marine biotechnology is the harvesting of living marine

organisms for research and industrial use. Many of these species contain compounds with the potential for pharmaceutical applications, such as new medicines for antibiotics or the treatment of cancer. With increased interest in the uses of marine bioproducts, MMS has conducted studies to assess the potential ecological impacts on the harvesting of the desired organisms and their habitats. The MMS scientists have also explored the use of oil and gas production platform habitats as an alternative to disturbing the natural reefs. If these platforms can function as a harvestable source for the bioproducts, then fewer organisms will need to be obtained from their natural environment.

The MMS has conducted these studies through its Coastal Marine Institute (CMI) initiative, part of the Environmental Studies Program, where MMS and coastal universities jointly carry out research projects related to the marine environment. The biotechnology studies were accomplished with cooperative agreements with Louisiana State University (LSU) and the University of California at Santa Barbara (UCSB). The project at UCSB ended in 2004 (final report in



The stunning leafy green algae (*Anadyomene lacerata*). From *Voyage To Inner Space—Exploring the Seas With NOAA*, located in the Gulf of Mexico, West Bank, Flower Garden Banks NMS. Photo courtesy NURC/UNCW and NOAA/FGBNMS.



Typical encrusting bryozoan and anemones on platform leg. Photo by Gregory S. Boland.

2008), contributing information to MMS from the Pacific waters where platform habitats contain a marine community of over 50 species of algae and invertebrates. At LSU, the field sampling is also complete, having collected biofouling community (a layer of attached organisms) samples from platform legs at various depths. The data collected from these two projects will greatly assist MMS in determining if the platform communities can be shown to be a ready source for bioproducts.

There are many possible exciting pharmaceutical uses for marine-derived compounds. Bryozoans (small moss-like organisms) have compounds found to fight the growth of cultured cancer cells, and it also has potential for battling non-Hodgkin's lymphoma and lymphocytic leukemia. In addition, compounds from mollusks include hypotensive agents, cardioactive substances, muscle relaxants, antibiotics, antiviral agents, and antitumor agents. Many other organisms like these exist with the vast potential for highly beneficial medical and industrial products. It is of great importance to MMS to balance the collection of these valuable resources with protection of the ocean environment from which they come, and through data from these studies, MMS and its partners are equipped to make the best decisions possible.

### FOR MORE INFORMATION:

#### MMS Resources

Website: [www.gomr.mms.gov/homepg/regulate/environmental\\_studies/turning\\_to\\_the\\_sea.html](http://www.gomr.mms.gov/homepg/regulate/environmental_studies/turning_to_the_sea.html)

Website: [www.gomr.mms.gov/homepg/whatsnew/newsreal/2000/000927.html](http://www.gomr.mms.gov/homepg/whatsnew/newsreal/2000/000927.html)

Website: <http://www.mms.gov/mmab/Archives/policy-committee-archives/Meetings/Fall00/turgeon.PPT>

#### CMI Studies

Website: [www.coastalresearchcenter.ucsb.edu/cmi/biotech.htm](http://www.coastalresearchcenter.ucsb.edu/cmi/biotech.htm)

Website: [www.gomr.mms.gov/homepg/regulate/environmental\\_studies/gm/GM-92-42-84.html](http://www.gomr.mms.gov/homepg/regulate/environmental_studies/gm/GM-92-42-84.html)

Website: [www.mms.gov/eppd/sciences/esp/profiles/pc/PC-00-02-10.htm](http://www.mms.gov/eppd/sciences/esp/profiles/pc/PC-00-02-10.htm)

#### NOAA

Website: [www.nurp.noaa.gov/Biotech.htm](http://www.nurp.noaa.gov/Biotech.htm)

Website: [www.oar.noaa.gov/oceans/t\\_biotech.html](http://www.oar.noaa.gov/oceans/t_biotech.html)