

# The **Crest**

Current Issues in  
Coastal Ocean and  
Estuarine Science

## Scientists Discover New Life in Antarctic Deep Sea

An international research team including VIMS Professor Robert Diaz has found hundreds of new marine species in the vast, dark deep-sea surrounding Antarctica—the bottom of the bottom of the world. Carnivorous sponges, free-swimming worms, crustaceans, and molluscs living in the Weddell Sea provide new insights into the evolution of ocean life.

Reporting in the May 17 issue of the journal *Nature*, the scientists describe how creatures in the deeper parts of the Southern Ocean—the source for much of the deep water in the world ocean—are likely related to animals living in both the adjacent shallower waters and in other parts of the deep ocean.

A key question for scientists is whether shallow-water species colonized the deep ocean or vice versa. The research findings suggest that recurring advances of Antarctic ice may have forced shallow-water organisms into

the surrounding depths, leading to an intermingling of species that originated in shallow and deep-water habitats.

Lead author Professor Angelika Brandt from the Zoological Institute and Zoological Museum, University Hamburg, says “The Antarctic deep sea is potentially the cradle of life of global marine species. Our research results challenge suggestions that deep-sea diversity in the Southern Ocean is poor. We now have a better understanding of the evolution of marine species and how they can adapt to changes in climate and environments.”

Diaz says the team’s most significant finding is the unexpected vitality and diversity of the seafloor community in a setting that would seem to hold little promise for life—with water temperatures at 30-34°F, total darkness, and bone-crushing pressure. The expedition sampled at depths from 3,000 to more than 20,000 feet.

“We discovered hundreds and hundreds of new species,” says Diaz. He was particularly struck by the diversity of isopods, small crustaceans related to pill bugs. “Sampling at just 25 stations doubled the number of known deep-sea isopod species.”

Diaz’s role in the international expedition was to characterize and photograph the habitats of the area’s bottom-dwelling creatures. His photograph of a sea urchin, taken in the Scotia Sea at a

depth of 6,414 feet, graced the cover of *Nature* issue in which the research article appeared.

Dr Katrin Linse, a marine biologist from the British Antarctic Survey, adds, “What was once thought to be a featureless abyss is in fact a dynamic, variable, and biologically rich environment. Finding this extraordinary treasure trove of marine life is our first step to understand-

*Continued on page 10*

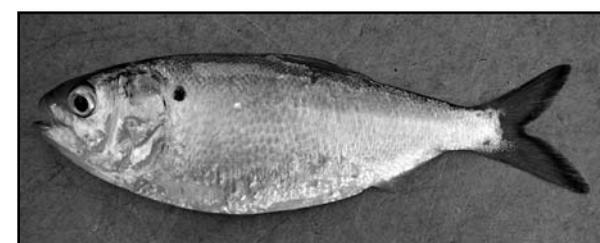
## VIMS to Assess Social and Economic Value of Menhaden

A new three-year study led by researchers at VIMS seeks input from commercial and recreational anglers and other stakeholders to help assess the social and economic value of menhaden in Chesapeake Bay.

The socioeconomic study complements several ecological studies of menhaden populations in Chesapeake Bay by fisheries researchers at VIMS.

Menhaden are small, oily fish that lie at the center of a debate concerning their relative importance to the Bay ecosystem and economy. Menhaden support one of the most commercially important fisheries along the Atlantic Coast, providing fish meal, fish oil, and bait for other fisheries. They also play an important ecological role, filtering Bay waters by consuming large quantities of plankton, and serving as a favorite food for striped bass and other popular game fish.

The study, by VIMS researchers Jim Kirkley, Tom Murray, Winnie Ryan, and Dennis Taylor, will compare menhaden’s economic contributions

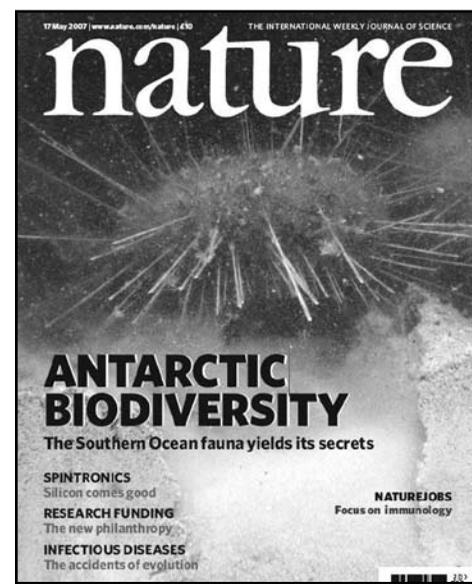


*The Atlantic menhaden* *Brevoortia tyrannus*.  
Photo by Julia Ellis.

both in terms of the commercial fishery and the “ecosystem services” that menhaden provide. Assisting in the study are researchers Rob Hicks (College of William and Mary); Doug Lipton, Ted McConnell, and Ivar Strand (University of Maryland); and John Duberg of the Nearing Group (Baltimore, MD).

The study will also assess the importance of menhaden to the viability of the communities that depend on the fish for their livelihood. Those include Reedville, Virginia, home to the Chesapeake Bay’s commercial menhaden fleet and processing facilities, and Deltaville, home to a recreational charter fleet that

*Continued on page 8*



VIMS scientists were co-authors of research articles that graced subsequent covers of *Science* and *Nature* this spring. The April 27 *Science* cover shows plankton from the VERTIGO project in the northeastern Pacific. Assoc. Prof. Deborah Steinberg co-wrote the VERTIGO paper (see [vims.edu/topstories](http://vims.edu/topstories)). The May 17 *Nature* cover was photographed by Professor Robert Diaz in the Scotia Sea, Antarctica (see story this page).

# Duffy Helps Open Earth Portal

VIMS Professor Emmett Duffy is helping to reshape the way science is presented on the web, all the way from A to Z.

Duffy, Chair of the Biology Department at VIMS, serves on the Stewardship Committee for the Encyclopedia of Earth (EoE, [www.eoearth.org](http://www.eoearth.org)), an on-line compendium of knowledge about environmental science and policy that has grown to more than 2,700 articles since its launch in April 2007. EoE topics range from Agricultural Economics to Zoology.

The EoE is the centerpiece of the Earth Portal, a web-based resource that strives to provide ready access to objective, science-based environmental information.

Duffy is excited about the prospects for the EoE, which he calls “a sort of Wikipedia with expert quality control.” “Wiki” (from the quick-jump “Wiki-Wiki” shuttle buses at the Honolulu airport) refers to a collaborative website that can be quickly edited by anyone with access to it. One of the best-known wikis is Wikipedia, the largest free-content encyclopedia on the Internet.

*Science* magazine announced the launch of the Earth Portal by noting “One knock against Wikipedia and other user-written resources is that you don’t know whether an article was penned by an authority or some high-school dropout living in his parents’ basement. By

handing the writing and editing over to experts, the Encyclopedia of Earth aims to provide that accountability.”

Duffy notes “there has also recently been a lot of publicity about a more pernicious problem, that wikipedia entries have been strongly influenced by corporate interests, who can remain largely invisible because of the un-attributed nature of authorship.”

Peter Saundry, Executive Director of the National Council for Science and the Environment (NCSE), the Earth Portal’s parent organization, explains that EoE differs from Wikipedia in that EoE authors are restricted to content-area experts who have been approved by the Earth Portal’s Stewardship Committee. Authors are also required to use their real names, as opposed to an anonymous user name or IP address.

Groups of these approved authors use wiki technology to write the EoE articles, with each article potentially having many more authors and editors than when it began. According to EoE designers, this process of collective wisdom produces articles that are superior to what any single individual could create.

Duffy, an ecologist and conservation biologist with expertise in marine biodiversity, serves as both an author and topic editor for the EoE. To date, he has written EoE articles on marine biodiversity and food security, marine



VIMS welcomed the Governor’s School Class of 2007 to campus in late June. The VIMS Governor’s School is a four-week summer residential program that provides high-achieving high school students from throughout Virginia with authentic experiences in marine research as they work with a graduate student or faculty sponsor on a VIMS research project. The program is in its 17th year. From L: Brooke Lowman (Deep Creek High School), Elliot Lassiter (Orange County HS), Mara Kish (Hampton Roads Academy), Kaitlynn Cook (Pulaski County HS), Elena Tenore (Hayfield Secondary HS), and Karen Dodson (First Colonial HS).

The Encyclopedia of Earth is available at [www.eoearth.org](http://www.eoearth.org).

ecosystem services, and marine invasive species.

As a topic editor, Duffy is responsible for making sure that articles within his purview are accurate, unbiased, and clearly written. Only then are they posted to the EoE website. To date, Duffy has vetted 56 articles, on everything from atolls to Zambesian coastal savannahs.

All told, the EoE currently incorporates content from 830 leading scientists in more than 60 countries.

In addition to the EoE, the Earth Portal also includes the “EarthForum,” a venue for interactive discussions between scholars and the public, and “Earth-News,” which offers news stories on

environmental issues drawn from many sources. Both areas build on and are linked to EoE content.

Future plans for the Earth Portal include extending the wiki model of collaborative authorship into the realm of textbooks. Duffy is currently working with NCSE staff and other scientists to seek funding for development of an on-line textbook for Advanced Placement courses in Environmental Science.

“That’s really exciting,” says Duffy. “An on-line textbook would allow students and teachers to interact with each other, with other schools, and with scientists using the latest in multimedia tools.”

## Menhaden

continued from page 1

frequently targets the game fish that depend on menhaden as prey. In addition, the researchers will examine the potential social and economic importance of menhaden to other communities and stakeholder groups in both Virginia and Maryland.

Results of the study will help the Virginia Marine Resource Commission (VMRC) and the Atlantic States Marine Fisheries Commission decide among alternative regulatory and conservation options for menhaden. It also will provide detailed information about how alternative options might impact affected communities.

Members of the research team are currently seeking input to assist in their project assessments. Interested

stakeholders can participate by way of an interactive web site at [http://wiki.wm.edu/openwiki/index.php/Atlantic\\_Menhaden\\_Study](http://wiki.wm.edu/openwiki/index.php/Atlantic_Menhaden_Study). Registered members of this web site will be able to post comments, receive notice of additions and changes, and participate in on-line discussions of project progress.

Individuals interested in knowing more about the study, providing input, or obtaining a copy of the research proposal may also telephone or e-mail Jim Kirkley (804-684-7160, [jkirkley@vims.edu](mailto:jkirkley@vims.edu)) or Winnie Ryan (804-684-7938, [winnie@vims.edu](mailto:winnie@vims.edu)), or contact them via land mail at the College of William and Mary, VIMS/SMS, PO Box 1346, Gloucester Point, VA 23062-1346.

Funding for the project is from VMRC’s Recreational and Commercial Fisheries Boards.