

# New VIMS Researcher Studies Tiny Organisms that Play a Big Role

By David Malmquist

For new faculty member Dr. Deborah Steinberg, taking a position at VIMS was a homecoming of sorts.

"I first became interested in oceanography during family clamming and crabbing trips to the Eastern Shore," says Steinberg, who grew up in Maryland. That interest started a career in marine science that has taken her from California to Antarctica, Bermuda, and most recently, back to Chesapeake Bay.

Steinberg, a biological oceanographer, began at VIMS in January 2001 as a new member of the Biological Sciences Department. Her research interests focus on how zooplankton community structure affects the flux of organic material and the cycling of nutrients in the sea.

"Our lab is involved in a number of projects with this theme," says Steinberg.

Steinberg came to VIMS from the Bermuda Biological Station for Research, where she had spent the previous six years as a Research Scientist and coordinator of the Ber-

muda Atlantic Time-series Study, or BATS. BATS is part of a large interdisciplinary and international program whose purpose is to understand the role of the oceans in large-scale processes of global change.

Prior to Bermuda, Steinberg was a post-doctoral researcher at the University of California, Santa Cruz, where



Dr. Deborah Steinberg

she also earned her Ph.D. in Biology. She has a B.A. in Aquatic Sciences from the University of California, Santa Barbara.

Much of Steinberg's previous research has focused on zooplankton in the deep waters of the open ocean. "One of the reasons I came to VIMS," says Steinberg, "was because I was interested in expanding my horizons to study zooplankton in shallow coastal ecosystems as well." She completed her first research cruise on the Bay in late September aboard the *R/V Ferrel*. The goal of the cruise was to examine how current patterns in the lower Bay affect the distribution of plankton.

In Bermuda, Steinberg focused on the vertical migration of zooplankton in the Sargasso Sea. Many zooplankton and fish that live in deep waters of the ocean during the day migrate up to the food-rich surface waters at night to feed under the cloak of darkness, which helps conceal them from visual



Copepod- The most abundant type of zooplankton in the world's oceans.

predators. After feeding, they return to the deeper, dark waters. These migrating zooplankton play an important role in transporting organic matter and nutrients to the deep sea.

Another research interest is the role that "marine snow" plays as a habitat and food source for plankton. Marine snow is organic detritus that is visible to the naked eye. Because it is heavy enough to sink, marine snow serves to transport organic material from surface waters to the hungry organisms of the deep sea. Marine snow also serves as a "community center" where a diverse suite of organisms, from tiny bacteria to copepods ("insect-like" plankton the size of a rice grain), live and feed.

Steinberg ties her plankton research into carbon and nutrient cycles in the ocean. In the last decade one of the main concerns of environmental scientists has been to understand carbon cycles in the ocean and atmosphere, due to increasing levels of atmospheric carbon dioxide and concern over global warming. Vertical transport processes like zooplankton migration and sinking of marine snow are an important part of the carbon cycle.

Steinberg enjoys going to sea, and has participated on oceanographic cruises to the Antarctic Peninsula, Monterey Bay, the subtropical Pacific, the Sargasso Sea, and Chesapeake Bay. The research programs on these cruises varied widely, including studies of Antarctic krill, marine snow, and blooms of gelatinous zooplankton. She also has experience using submersibles and blue-water (open ocean) SCUBA diving in her research.

Steinberg is also actively involved in educational programs at VIMS, as an instructor for Plankton Ecology courses, graduate student advisor, and as a mentor for high school students attending the Governor's School.

## VIMS Welcomes New Students

Twenty-one new graduate students arrived at VIMS in August. The class includes members from across the United States, China, and India. Nine of the incoming class are Masters students and 12 are seeking Ph.D. degrees. Dean of Graduate Studies, Dr. Mike Newman, notes that the

average GRE and GRA scores for the class are the highest of any entering class in the history of the School of Marine Science. "This is an outstanding group of students that brings diverse interests and backgrounds to VIMS," said Newman.

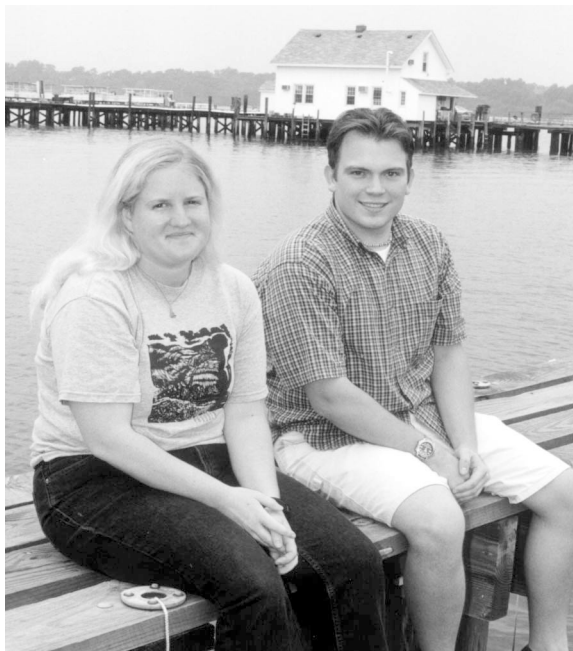
Among the entering students, Andrew Walker, from Boston University, learned about the SMS program while doing a semester at Woods Hole. "As I began looking at graduate schools, I quickly decided that VIMS offered the program that most interested me. I was also impressed by the close faculty-student interaction at VIMS. I'm really looking forward to my time here," he said.

From land-locked Kansas, Masters student Amy Shields has traveled extensively as an assistant scientist on the *SSV Westward* owned by the Woods Hole SEA Program. Faculty expertise was important to Shields as she began looking for a graduate program.

Her advisor Dr. Walker Smith says, "When I met Amy, I was very impressed by her enthusiasm and felt she would fit in great with my group. She is willing to do what is necessary to get the job done."

Prospective students are responsible for contacting faculty advisors at VIMS to match their own research interests with faculty expertise and research. "In a graduate research program, not only are students competing for slots for admission, but also for specific faculty mentors," explains Newman. VIMS accepted only 16% of applicants for fall admission.

First year students are required to take and pass five core classes. Core courses are designed to provide a broad base of knowledge as an underpinning for interdisciplinary research. The Core courses are *Fundamentals of Marine Science, Coastal and Estuarine Processes, Issues and Investigations, Fundamentals of Statistical Methods and Data Analysis, and Fundamentals of Experimental Design and Sampling.*



First year VIMS students Amy Shields and Andrew Walker.