Miselis Chosen as Foster Scholar

VIMS graduate student Jennifer Miselis has been awarded a prestigious Dr. Nancy Foster Scholarship from the National Oceanic and Atmospheric Administration (NOAA) for her work to better understand the interaction between coastal geology and beach erosion.

Miselis is pursuing a Ph.D. degree at VIMS under the guidance of faculty advisor Dr. Jesse McNinch. Their field studies of the barrier islands of Virginia and North Carolina are helping to explain how the depth, extent, and configuration of near-shore sand bars affect beach erosion and build-up, particularly during and after major storms.

Miselis’s most recent findings, soon to appear in the Journal of Geophysical Research, indicate that the volume of sediment in the surf zone is a better predictor of long-term shoreline changes than conventional parameters such as shoreface slope or grain size.

“A volume metric that accounts for both seafloor geology and morphology better represents the geologic character of the shoreface and may help to improve existing predictive models of shoreline change,” says Miselis.

“That’s a very important finding,” says McNinch. “Particularly in light of continued coastal development along the nation’s vulnerable barrier-island shorelines.”

Miselis is one of only five graduate students from the around the nation chosen for the 2005-2006 Foster award. The other four recipients hail from the University of California San Diego, the University of Rhode Island, Oregon State University, and the University of Georgia.

The goal of Latour’s two-year study is to determine whether use of an airplane-mounted LIDAR unit, a boat-mounted sonar unit, or some combination of these two technologies can detect and quantify menhaden schools, thereby providing a rapid, reliable, and relatively inexpensive means for estimating menhaden populations in the Chesapeake.

Traditional fishery surveys (in which scientists tow a net behind a research vessel for a standardized time period along numerous randomly chosen transects) are prohibitively expensive for this purpose, and are also poorly suited for counting menhaden and other fish that travel in discrete schools and instinctively flee oncoming sampling nets.

“Because both LIDAR and sonar techniques can survey a large area quickly, we expect a significant cost savings as compared to a large-scale survey using traditional fishing gear,” writes Latour. “Calibration of both techniques during the first year and comparisons between both techniques and the fishery during the second year will facilitate full-scale implementation of future menhaden surveys.”

VIMS researcher Dr. Mark Brush is leading a related three-year project that will use a state-of-the-art computer model to quantify the role of menhaden as prey items and filter feeders in the Bay.

The survey shows that the abundance of juvenile Atlantic menhaden has declined since the early years of the survey. An index of abundance value for 2006 was 0.79, compared with the survey’s greatest index value, 9.01, which occurred in 1982.

For more details on menhaden research at VIMS, visit www.vims.edu/menhaden