

# Climate Change and Responses in a Coupled Marine System

*NSF Project, June 2009*



The National Science Foundation awarded Sylvia Brandt and an interdisciplinary team of researchers \$1.19 million to study the effects of climate change on Mid-Atlantic fisheries. Oceans cover over 72% of the world's surface and are affected by and modify climate change. From the tiniest krill to the largest whales, a multitude of marine species are responding to ocean warming.

Brandt will join researchers from Rutgers University, Old Dominion University, and William and Mary on this three-year project. The team will study the surf clam (*Spisula solidissima*) fishery of the Mid-Atlantic Bight. The surf clam is a key species for biological stability and long-term resource availability in that area. Starting in 1999, researchers and fishermen observed a decline in the surf clam population and shift to deeper water. By integrating state-of-the-art oceanographic and ecological modeling with economic models of commercial fisheries, the team will advise regulators on adapting management approaches to respond to climate change.

The proposed work presents a unique opportunity for undergraduate and graduate students and postdoctoral investigators to be trained in the variety of approaches that are needed to solve the important problems affecting marine systems. The educational component is integrated with the research and builds on an existing K-12 educational program and outreach with specialized communities such as the commercial fishery.

## **Brandt's research on fisheries include:**

McEvoy, D., Brandt, S., Lavoie, N., Anders, S. 2009. Effects of ITQ management on fishermen's welfare in the presence of an imperfectly competitive processing sector. *Land Economics*. 85(3).

Brandt, S., Ding, N. 2008. Share contracts in fisheries with transferable quotas. *Ocean and Coastal Management*. 51(11): 740-748.

Brandt, S. 2007. Evaluating tradable property rights for natural resources: The role of strategic Entry and exit. *Journal of Economic Behavior & Organization*. 63(1): 158-176.

Brandt, S., McEvoy, D. 2006. Distributional effects of property rights: Transitions in the Atlantic herring fishery. *Marine Policy*. 30(6): 659-670.

Brandt, S. 2005. The equity debate: distributional impacts of individual transferable quotas. *Ocean and Coastal Management*. 48(1): 15-30.

Brandt, S. 2005. A Tale of two clams: Policy anticipation and industry productivity. *Regulation*. 28(1):18-21.

McCay, B., Brandt, S. 2001. Changes in fleet capacity and ownership of harvesting rights in the United States surf clam and ocean quahog fishery. In Shotton, R. (ed.) *Case Studies on the Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership*. Rome, Italy: Food and Agricultural Organization of the United Nations. 44-60.

**For more on fisheries and climate change see:**

<http://www.prlog.org/10246453-climate-change-talks-mustnt-forget-fisheries.html>

<http://www.un.org/apps/news/story.asp?NewsID=25716&Cr=fish&Cr1>