# NOAA Teacher at Sea
# Mark Silverman
# Onboard NASA Ship LIBERTY STAR
# June 7 – 14, 2006

**NOAA Teacher at Sea:** Mark Silverman
NASA Ship: M/V FREEDOM STAR
Mission: South Atlantic MPA's: Pre-closure evaluation of habitat and fish assemblages in five proposed no fishing zones
Day 4: Saturday, June 10, 2006

The view from the bridge of the M/V FREEDOM STAR about 100 miles of the coast of North Carolina as she transits to the South Carolina Option.

**Weather Data from Bridge**
Visibility: Excellent
Wind direction: SSW
Average wind speed: 15 knots
Wave height: 4-6' with higher swells
Air temperature: 73°F
Sea temperature: 79 °F
Cloud cover: 20%
Barometric pressure: 1010 mb

**Science and Technology Log**
This morning seas were a sloppy 6-8 feet, again washing over the back deck and creating a safety hazard. Additionally, a low-pressure system forming near the Yucatan is forecast to be in this area early next week, possibly as a tropical storm. For this reason, the decision was made to scrub the North Carolina mission and proceed 48 miles to the southwest to the other South Carolina Option. This would give the seas a chance to lay down and position us better if the need to retreat to port early arose due to the weather. Science operations began at about 1100 in South Carolina Options 1 and 2. The normal routine of camera array, CTD, and fish traps was followed. We also got in 3 ROV runs. All the ROV runs were interesting. The last two runs were on new transects that were selected using Marta Ribera's maps. The transects turned out to have a significant amount of hard bottom and good populations of fish and invertebrates. The last run revealed an extensive ledge system that harbored some very large scamp and gag grouper. All three runs also came across numerous lionfish. The fish trap produced three scamp and a gray triggerfish. The scamps were dissected to collect their otoliths and gonads. The otoliths are used for age determination and the gonads for reproductive analysis. As evening approached, TD #1 was threatening in the Gulf of Mexico and is forecast to be in the South Atlantic sometime early next week. The decision was made to

Andy stands guard as Mark hurries into position in preparation to deploy the ROV in the South Carolina Option aboard the FREEDOM STAR.

run south to the Georgia Options with the hope of getting in another day or two of work while being closer to port in the event that we have to go in early, a possibility that is looking very likely at this point.

Clockwise: Steve Matthews, Mark Silverman, PJ Zackel, and Andy David use tag lines to control the ROV as it is deployed by the crane.

**Personal Log**

*Please note that the satellite system which is used for email aboard the ship went down yesterday. It is likely at this point that it will not work the rest of the cruise, so this and the remaining logs will be posted upon our return to port.*

I woke well rested after a good nights sleep, lulled by the rocking of the ship underway and the white noise of the engines. The bow thrusters woke me about 0630 as our cabin is the most forward. A quick shower brought me to life. After eggs, biscuits, sausage gravy and coffee I had some free time while the FREEDOM STAR transited to the South Carolina position. I read my Bible on the upper deck for a while with a grand view of the sunrise over the open ocean. It was inspiring and peaceful. I then worked on my logs. The morning mission began in a flurry of activity. I noticed that the crew and science team are working smoothly and efficiently now. Everyone knows his or her role and the work goes smoothly. Even I have found my niche and become more familiar with operations, so I know when and where my help is needed. This is a very satisfying feeling. Dolphin came up with the ROV again! I waited until the vehicle was secure and then told the second mate, Mike Nicholas, as I was busy with operations. He made a cast with a spinning rod and jig and caught a fine 10 pounder for the galley. Everyone was very excited in the afternoon over the ROV run and the fish we'd caught. Every time the

Wayne Stewart, crane operator, and Mike Nicholas, second mate, show off a dolphin that I spotted.

A scamp collected from the fish trap in the South Carolina Option.

ROV is diving, the video is projected into the dining hall and the everyone who is not working gathers to watch and comment. Shouts, of "follow that big blackbelly," etc. are heard. The crew also likes to gather and watch as the fish traps are brought in. All this lends a fine sense of camaraderie. With three ROV runs and fish to be cleaned we finished late. The evening was a bit somber as everyone began to worry about the weather and confer on our options. Nancy and I met with Andy to discuss a plan in case we go in early, which is looking quite likely at this point. Despite the disappointment at the thought of going in early, I went to bed enthused and satisfied that I was able to be a part of this productive team and help to gather valuable scientific data that will help in improve our understanding of fisheries and habitat issues. I will sleep soundly tonight as we transit to the Georgia site. To my family, I send my love and I miss you! Daddy is thinking of you David!

Hasta Mañana,
Mark

**Question of the Day**
Answer to yesterday's question:
Nonnative species often compete with native species for prey and habitat. Usually the introduction of nonnative species has a negative affect on the indigenous fauna. Eliminating or controlling introduced species is extremely difficult, as the predators that feed on them and even the diseases that affect them may not be found in the new area. Thus, they will often out compete native species. It is estimated that there are now 1-13 million lionfish in the South Atlantic ranging from West Palm Beach, Florida to Cape Hatteras, North Carolina. Fortunately they have not spread south yet. Ignorant or uncaring aquarists introduced many of the nonnative fish in freshwater ecosystems. It is theorized, however, that lionfish may have been introduced intentionally by a recreational dive operation in order to boost their business. If this is true it was a very poor decision.
Today's question:
One of the questions frequently debated is how to distribute a limited resource fairly. Much debate has gone on regarding recreational versus commercial harvest of marine fish. How do you feel fisheries resources should be allocated and why? What would you base your decision on?

**Addendum1: Glossary of Terms**
GIS (Geographic Information System): Maps dive sites, creates maps with layers such as depth, bottom type, and fish data. These are checked for patterns. The human mind is still the best pattern recognition software available.
Otolith: An ear bone found behind the gills of fish. Otoliths add exactly one ring a day and can be used to very accurately determine the age.
Gonads: The reproductive structure of animals. They are called testes in males and ovaries in females. Interestingly, all scamp begin life as females. Some will change to males later in life. This is known as protogyny.
Blackbelly: Nickname used by the crew for a large male gag grouper.

**Addendum 2: The Science Team**
**Marine Science Team:**
Andy David-Principle Investigator
Steve Matthews-Fisheries Methods and Equipment Specialist
Stacy Harter- Fisheries Biologist/Data Analyst

Marta Ribera-GIS Specialist
Cecelia Linder-NOAA Headquarters Habitat Conservation Officer on rotational assignment to field

**ROV Team:**

Craig Bussel-Pilot
Kevin Joy-Navigational Specialist
Freshteh Ahmadian-ROV Intern in the Hollings Scholar Program

Andy David, Principle Investigator, confers with Stacy Harter, Fisheries Bilogogist, on strategies for the day's mission.

Craig Bussel, ROV pilot, prepares for an ROV transect in a South Carolina Option.