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 6: Monday, June 12, 2006

FREEDOM STAR back in port at Cape Canaveral Air Force Station under the dark, glowering skies of tropical storm Alberto.

Weather Data from Bridge
Visibility: Fair to Poor
Wind direction: ESE
Average wind speed: 7 knots and building during day
Wave height: 1-2' knots and building during day
Air temperature: 75 ^{o}F
Sea temperature: 79 ^{o}F
Cloud cover: 100%
Barometric pressure: 1014 mb

Personal Log
This morning I overslept and woke up about 0815. Everyone was just hanging out as we ran for port so it was not an issue. I had a light breakfast, as breakfast was officially over (Patrick "Cookie" Downey, the cook, kindly left out some food for late risers). After breakfast I went up to the bridge to work on this, my final log. The weather outside is deteriorating and the sky is dark with light rain. The bridge crew is in good cheer and we bantered a bit. The launch towers of Cape Canaveral are barely visible to the west through the overcast. On radar I can clearly see the shape of the Cape and our path around it. We are about 1-2 hours from the entrance, a bit more to docking, as we have to pass through the lock. The FREEDOM STAR should dock at Port Canaveral Air Force Station today around 1200. The operations were curtailed 48 hrs. early due to impending tropical storm Alberto. Alberto is currently just off the west coast of Florida around Steinahatchee. About 0100 we passed through the Port Canaveral inlet as a number of the crew and team stood on the bridge joking, talking, and looking through binoculars. I felt quite privileged to be part of this retinue as people on shore and in other boats observed our entrance into port. As we steamed into port, Tim Freely, Chief Engineer, gave us a tour of the one part of the ship we hadn't entered yet, the Engine Room. Due to the dangers involved we could only enter with an engineer. It was

fascinating! FREEDOM STAR has 6 diesel engines. Two for propulsion, two for thrusters, and two for generators.

Several shots from our tour of the engine room: From left, Mark and Tim pose, Tim proudly shows Nancy and Steve the major components of the engine room, one BIG Detroit diesel that turns one of the propellers. Note the ear muffs that are necessary due to the high noise level.

Andy managed to change my flight for this evening to get me out before the storm, so I did laundry, packed my things, took a few more pictures and got ready to debark. Nancy and the ROV team will be flying out this evening as well. The science team and a few of the crew got together one last time at a Port Canaveral restaurant to say goodbye. Overall, it's been a fantastic time and I'm a sad that it's over, but I have lots of great memories and learned a lot too. Everyone I got to know, the crew, and the science team, were super and made me feel like I belonged. I hope I can participate in Teacher at Sea again someday and highly recommend it to anyone out there reading this and thinking about it. Hasta luego, Mark

Question of the Day

Signal flags.

<u>Answer to yesterday's question</u>:
Yesterday's question is really just for your own personal reflection. To prepare for a career in marine biology, take lots of math and science. Practice good writing skill. Keep your GPA up and work hard in college. See my interview with Andy David on
day 3 for more information.
<u>Today's question:</u>
What do the black flags in the photo on the left mean? (See end of this log for the answer)

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Patrick “Cookie” Downey grills up some freshly caught dolphin fish.

Left to right: Mike Nicholas, Freshteh Ahmadian, and Craig Bussel goof around at the post cruise get-together.

Group shot at the post cruise get together. Front row, from left to right, Craig Bussel, Freshteh Ahmadian, Mike Nicholas, Mark Silverman, and Steve Matthews. Back row, from left to right, Kevin Joy, Andy David, Wayne Stewart, Stacy Harter, Marta Ribera, Nancy McClintock, and Cece Linder.

Addendum 1: An Interview with Marta Ribera, GIS specialist.

Marta was a little shy about giving and interview and claimed she wouldn’t have much to say. However, once she warmed up to our discussion she was vivacious and charming, punctuating her comments with laughter and smiles. She has a much different demeanor while working, although retaining her sense of humor, her seriousness and concentration

are obvious. She appears to thoroughly enjoy what she does. Much to my delight Marta was born in Gainesville and is a Gator fan.

Marta Ribera smiles while recording fish and bottom composition data and location during an ROV dive.

Q: Tell me about yourself, where your from etc.
A: I was born in Gainesville, Florida because my father was there to study his PhD. My father finished his PhD and moved my mother, my sister and myself to Spain where he is from.
Q: How old were you [when you moved to Spain]?
A: I was 3 and ½ and I have an older sister who was 4 and ½. I grew up in Spain until I was 24. I studied my BS in Biology, the first 2 years [of college] and 2 more years in Ecology.
Q: Where did you study?
A: Universidad Autonóma de Barcelona [Independent University of Barcelona] in Barcelona.
Q: So you studied in Spanish?
(Marta was quick to correct me and I could sense her pride)
A: In Barcelona we speak Catalan, but I was really fluent in English from when I was here [in the U.S.]!
(Continuing on about her studies)
Then I did a degree, kind of a Masters without the thesis, in GIS, Geographical Information Systems. So, I did about a year of that and then I got an internship in the lab [at NOAA, in Panama City, FL]. I came here because of the GIS, because a friend of my father knew the lab needed someone in GIS. I came here for 3 months and I've been here for 3 years! That's about it.

Marta looks on from the bridge as the FREEDOM STAR enters Port Canaveral.

Q: What do you like best about your job?
A: It's never the same and [I like] the people I'm working with. Being away from home is hard, but they make it real easy! All the GIS and multibeam mapping, I'm doing it with Andy [David]. Then I also help Stacy [Harter] with a study in the bay in Panama City on juvenile snapper. I want to finish my Masters in GIS.
Q: …and a PhD?
A: PhD? Well, we'll see about that. Now I'm gaining a lot of experience and seeing a lot of things…like 30 people work in the lab on all kinds of stuff, like sharks, measuring age and growth. I know all the areas, now I really know what I like. I'm getting a lot of experience.
Q: How old are you?
A: I'm 27 from last May…well I'm 27.
Q: Is GIS far from Biology?
A: No, it's not. I always loved math and computers. My parents thought I would go into engineering. I had a high school teacher who showed me to love Biology. Right when I finished college, I volunteered in forestry and started doing GIS. I really loved it, because it let me mix both. I love computers, but I cannot stand being in front of a

computer all week. Now, I can do both! I didn't think I would work in Marine Biology because I can't dive [Marta has an ear injury that prevents diving], but now I'm working in Marine Biology!

Addendum 2: An Interview with Steve Matthews, Fisheries Methods and Equipment Specialist

Steve Matthews, Fisheries Methods and Equipment specialist on the bridge of the FREEDOM STAR.

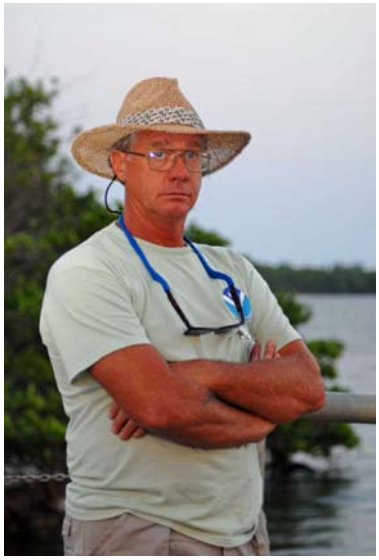
Steve is a fascinating person to get to know. He has a background in saturation diving and has dove as deep as 650 feet. His contributions to the project are diverse, from building the 4-camera array, to expertise in deploying gear off a ship (not as simple a task as it sounds in a rolling sea). Steve has a great sense of humor and enjoys telling jokes. I was privileged to bunk with him aboard the FREEDOM STAR. On his free time I frequently found him reading a Clive Cusseler novel. It must have been good, because he said he's not much of a reader, but he finished it in several days. Steve's title is Fisheries Methods and Equipment Specialist.

Q: How does somebody get into a field like that?

A: I didn't intend to get into a field like that. I just sort of fell into it [smiles]. I'm already retired. I was in the Navy 28 years as a saturation diver…

Q: Steve can you give me a short definition of saturation diving?

A: Go deep, stay long [everyone laughs].



Steve chills after loading equipment prior to departure.

(Saturation diving involves diving until the body has absorbed all the nitrogen it can. After that one can stay down indefinitely, usually in a habitat or bell. Decompression usually occurs on the surface in a decompression chamber over several hours or days, depending on the depth of the dive.) When I retired, I went to work with FSU [Florida State University], Panama City campus, Advanced Science Diving Program. There was a fledgling program at Panama City campus and we set up a dive locker at the Panama City lab at the National Marine Service site. FSU did not have its own facility at that time. That was a new program and they ran out of money and sense. When the fisheries people heard I was going to leave, they offered me to stay on with them and matched me up to the category on the books. Fisheries Methods and Equipment Specialist was the closest thing. Sometimes commercial fishermen are hired on to this field. The equipment part is where I fit in best…marine mechanic, boat maintenance, welding, and fabrication of fishing gear.

Q: How long have you been with the lab?

A: Five years.
Q: Do you always work with Andy [David]?
A: I work for the lab. Andy is one of the groups I do stuff for. There's several others.
Q: What would you tell students that want to get into this field?
A: If the students ask, tell them the joke about the commercial fisherman who won the lottery. They asked him what he was going to do with all the money? He said, Oh, I'm gonna keep commercial fishing 'till all the moneys gone! [laughs heartily].
It's a tough field!

Answer to the Question of the day, today:
The black signal flags let other boats and ships know to stay away. As Cody put it during his tour of the flying bridge (he was pointing out a red signal light that has a similar function at night), "we are pretty high on the pecking order." It is not permitted to come too close to a government vessel during official operations. The flags were not flown while underway on our cruise. Other large ships are required to be familiar with signals and usually obey them. Many small boaters often are not up to speed on the meaning of the signal flags and lights. During our cruise one 40-50' fishing boat trolled within a half mile of our port side while the ROV was deployed. Fortunately, many of the operations occur so far offshore that not many pleasure boats are in the vicinity. Our mission took place 50-100 miles offshore. The SRB recovery is about 120 miles out.

Addendum 3: FREEDOM STAR and her crew's regular assignment
As involved as we were in marine biology on this cruise, its easy to forget that FREEDOM STAR and her sister ship, LIBERTY STAR have as their principal function the recovery of the SRB's (solid rocket boosters) for the space shuttle program immediately following a launch. The crew is very proud of this role. They must go out regardless of weather. The ship is also used to tow the external fuel tanks from Louisiana, where they are manufactured, to Cape Canaveral, Florida where they are assembled to the space shuttle and prepared for launch. The following photos (on the next page of my log) are copied from a power point presentation I was able to borrow from one of the crew. Enjoy!

Addendum 3: Pictures of the SRB recovery operations.

Space Shuttle lifts off from Cape Canaveral. Note the SRB (solid rocket booster), the part where rocket blast is emerging.

FREEDOM STAR in the distance with the SRB in the foreground floating upright. Divers must install special piece of equipment in order to float the SRB horizontally for towing.

Recovery must go forward regardless of weather conditions and rough seas.

The LIBERTY STAR with SRB and Ambar crew in background and the nose cone already on deck. Winches are used to bring in the parachutes and the crane lifts the nose cone.

Divers install the equipment need to float the SRB horizontally for towing. The dives can be dangerous, in excess of 130' due to the length of the SRB and up and down wave motion. A decompression chamber is ready on deck.

NASA ships M/V LIBERTY STAR and FREEDOM STAR enter port with the SRB's in tow.