



**NOAA Teacher at Sea
Tara Treichel
Onboard NOAA Ship NANCY FOSTER
April 15 – 27, 2008**

NOAA Teacher at Sea: Tara Treichel

NOAA Ship NANCY FOSTER

Mission: Lionfish Survey Cruise

Date: Thursday, April 24, 2008

Geographical area of cruise: Onslow Bay, Atlantic Ocean off of coast of N. Carolina

Weather Data from the Bridge

Visibility: 10 n.m.

Wind: 7 knots

Waves: 2-3 feet

Ocean swells: 3-5 feet

Sea surface temperature: 24.5

Air temperature: 23

Science and Technology Log

Today the NANCY FOSTER deployed four dive teams, two each at two survey sites.

This is a tricky maneuver, requiring the coordination of many people. Preparations included an hour-long briefing of the plan and review of safety information, in which divers were reminded, among other things, to stay close to their buddies since an “out of air” emergency could spell the end of future diving opportunities with NOAA. On the deck, the chaos was well managed. With extensive use of hand-held 2-way radios, communication was maintained between the bridge (control station of the NANCY FOSTER), the two small boats, and the deck support: the two small boats were launched with the aid of the crane, and the mother ship was jockeyed into position alongside the dive site target buoys that had been dropped earlier. When the position was just right, the call was made, “Divers to the rail,” and the four divers, weighed down by double layers of wetsuit, twin tanks, dive computers, and mesh bags holding notepads and pencils, were lead to the edge of the boat. One by one, they stepped off the boat and disappeared beneath the surface, leaving a trail of bubbles to mark their descent.



NOAA Divers at the rail of the ship just before a dive

The divers will visit sites that were selected years ago when the lionfish study first began. The sites were chosen using benthic maps of the ocean floor to help identify favorable fish habitat. Today's dives were at "WOO6" and "Big Fish", in 130 and 150 feet respectively. These depths are beyond my PADI Open Water limit of 90 feet, and require mixed Nitrox gas in order to extend the underwater dive time. Use of mixed gas at these depths qualifies this as "technical diving" and involves an increased risk to the divers, so the NOAA lab has contracted with NURF (National Underwater Research Foundation) to provide technical dive support. Divers have strict bottom time limits and must make several safety stops on their ascent; in addition, a Hyperlite recompression tank stands at ready for any nitrogen sickness emergencies ("the bends"). During the dives, the researchers do a variety of tasks. All of the researchers take general habitat notes, and record the presence of marine debris. Paula and Brian are surveying the large, "conspicuous" fish, including lionfish, by estimating the population size of each species along a given transect length. Paula also will collect a temperature logger that she placed at the site 1 year ago, which has recorded temperature data every half hour. Roldan and Christine are surveying "cryptic" fish communities (prey species that are very small or that hide within the habitat). Roldan lays out a one-meter square PVC quadrat and chemically stuns and collects the fish, which he then captures in a Ziploc bag for later study. Wilson is studying the algal



NOAA Ship NANCY FOSTER as seen from the divers' support boat

community, but finds that there is very little to collect this early in the season. He also spears a number of lionfish for later study, which he bags carefully to avoid being stung by the venomous spines. Finally, Thor and Doug alternate between video camera duties, documenting the underwater habitat.

Personal log

First impressions, and notes on the boat: The ship is due into port at 1700, and it is right on time. After the events of the past week, this is a pleasant surprise. I am struck by the size of the ship. It is massive and bulky, with a flared steel bow that towers over me as I watch from the pier. Quite unlike the

nautical parallel parking that I learned as a teenager growing up on a northern Wisconsin lake, this ship is equipped with side thrusters that allow it to maneuver its bulk with some amount of precision. Immediately, I can see that understanding momentum is a key factor in handling this boat: the ship is anything but "quick on its feet" when a change in direction is needed, and lack of planning for this fact could be disastrous. But today is not the day for a demonstration of this lesson. After 20 minutes of adjustments, the two-inch deck lines are thrown out from the ship, and it is securely tied to rest for the night.

A flurry of activity ensues. There is excitement in the air, like the charge before an electrical storm. The outgoing crew is anxious to be on home turf again, after weeks away at sea and in foreign ports, and the new team of scientists is equally anxious to get underway and begin their mission. The wind adds to the fervor, whipping my hair across my face and sending the Stars-n-Stripes cracking over the stern of the ship. The gang plank is lowered into position by the lower deck crane and a cargo net is secured below. For the next 10 minutes, there is a steady flow of bodies and boxes, as mail is shipped onboard and supplies from the previous mission are offloaded. A deck crane is used to hoist crates of heavy equipment on board, including dozens of SCUBA tanks.

The NANCY FOSTER is an oceanographic research vessel of the NOAA fleet. One hundred eighty feet on deck and built of steel, she is made for ocean navigation and equipped for scientific research. She was built in 1986 by the Navy as a torpedo tester, and is considered very seaworthy. Throughout the year, she is used for a variety of scientific research missions, each research team outfitting the boat with its own specific technical equipment. Two onboard labs are designated for this purpose: a dry lab, housing numerous computer stations and data processing equipment kept dry (and frigid) with continuous air conditioning. All told, including mine, there are 16 computers in this room. One wall holds 7 flat-screen monitors, one of which displays a live video stream of the stern decks of the ship, where at the present moment a hopeful engineer is dragging a fishing line through the rolling blue waves. Adjacent to the dry lab is the wet lab, mostly an empty room that quickly fills with scientists' tools of the trade: bins, underwater cameras, measuring devices, dissecting equipment and specimen preservation chemicals, and bags upon bags of SCUBA gear. In the wet lab, I get my first glimpse of our quarry, and the purpose of the mission: numerous copies of fish identification books adorn the tables, and the walls are full of color posters depicting creatures of the deep—echinoderms, manatees, Caribbean reef fishes.

Looking around the ship, one can't help but notice the references to danger. All around are reminders of things that could go wrong (and undoubtedly have). Most noticeable is the large red motorized rescue craft hanging from the mid deck crane. Next to it is a green painted stamp indicating an emergency meeting or "muster" area. To the left of this is a coiled canvas fire hose, with the stamp "No Smoking" printed above (elsewhere, crew are instructed to smoke aft of the rear crane, preferably "away from the gasoline cans" and where the SCUBA oxygen bottles are being filled). Across the deck from the fire hose is a closet holding 10 Immersion Suits, 5 medium and 5 large, as well as 15 life jackets. Around the corner are three oversized barrels containing full immersion survival gear, including 25 person life rafts. Down the railing from the barrels and placed all throughout the



Loading the scientists' equipment onto the FOSTER using the ship's deck crane

ship in various conspicuous places are the timeless classic orange life-rings printed with the ship's name in black blocky script. Inside the boat, there are more reminders: emergency procedures, the ship's interior plan depicting the location of every rescue device and exit onboard, and numerous posters outlining CPR in simple steps and photographs. I would not want to have an emergency on board this ship, but if the unthinkable happened, I am confident that this ship and crew are well prepared.

I am led through watertight doors and down a narrow flight of stairs into the belly of the beast, on the first floor of the ship. My berth is in Stateroom 17, which sleeps four, in bunks containing mattresses that give a whole new definition to the size "single". I choose a top bunk, which gives me a little more head room amidst the crisscross of pipes overhead. I am instructed to unload everything into the closets and cabinets that line the walls, since everything that's not strapped down or contained in a box will be subject to repositioning by the motion of the ship.

And motion there is! As soon as we get out of the harbor and away from shore, the 4-5 foot waves set the boat into an irregular pattern of constant swaying from side to side as well as front to back, like a rocking horse on a swivel. I won't elaborate on the effects of this motion on my body and mental state, since seasickness has been well described elsewhere. Suffice to say that the benefit of the tiny pink pills can't be overstated, and I am now feeling fine. A few more notes on ship travel: Why was I surprised to see the stream of water from the faucet sway back and forth? (okay, if you want to be technical, this is a matter of perspective: in actuality, the water stayed straight and it was the sink/boat that moved relative to the vertical line of water, but the effect was still startling). Another amusing note: the dry lab was full of wheeled cushy office chairs, on a painted steel floor. Remedy? Each chair's legs were bungeed to the nearest bench support. Depending on the bungee, this left a range of motion of each weighted chair of a foot or two. Picture it: a room full of scientists at work on their computers, all sliding in unison into their neighbor's workspace for a moment, only to be yanked back to center, and then rolling away to the other side...