



**NOAA Teacher at Sea  
Thomas Nassif  
Onboard NOAA Ship NANCY FOSTER  
July 15 – 30, 2005**

**Log 2**

**DAILY LOG – JULY 16**

Day 2: Saturday, July 16, 2005  
Latitude: 34°15'N  
Longitude: 76°36'W  
Visibility: 10 nautical miles  
(nm)  
Wind direction: 205°  
Wind speed: 11 kts  
Sea wave height: 2-3'  
Swell wave height: 3-4'  
Sea water temperature: 27°C  
Sea level pressure: 1019.7 mb  
Cloud cover: 2/8,  
Stratocumulus, Cirrostratus



After the final computer tests, our ship finally left for sea today at 1310 hours. The NANCY FOSTER steamed ahead through choppy waters to the first dive site of the Lionfish study, “210 Rock.” The dive site is located 27 nautical miles off the coast of Cape Lookout, North Carolina. At 1800 hours four SCUBA divers leaped off of the starboard side of the ship in search of Lionfish. They were equipped with two underwater video cameras and two waterproof clipboards to record their observations. The divers leaped off the boat and dove to the ocean floor (to a depth of 108 feet) to tally the number of Lionfish compared to other native species of fish within a given distance (this is called a visual transect survey).

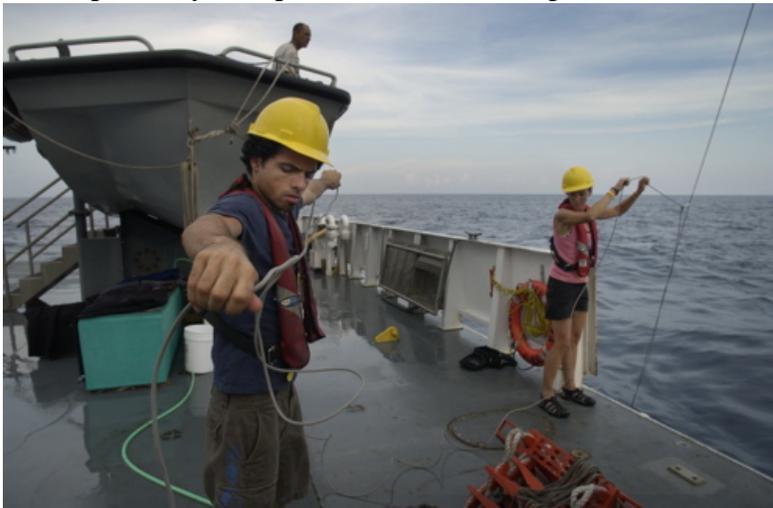
Now for a brief interlude...

What are Lionfish and why are we taking the time to study them? Lionfish are members of the scorpion fish family that are not native to the Atlantic Ocean. Organisms like the Lionfish that arrive, survive, and successfully reproduce in an ecosystem where they did not previously exist are called an invasive species. Lionfish are a very colorful fish with venomous spines originally from the Indo-Pacific coral reefs of southeastern Asia. Ever since their accidental release into the Atlantic Ocean in 1992, Lionfish have reproduced quickly and established themselves in increasing numbers along the Atlantic Coast from Florida to North Carolina. Lionfish are ambush predators that use their venomous spines to paralyze and swallow whole fish (baby shrimp, snapper, and grouper). For this reason, their presence in the Atlantic may negatively impact the local ecosystem and pose a vital threat to the commercial fisheries industry.

Back to the divers...

Upon their return to the ship from 210 Rock, the divers discovered 10 Lionfish, all of them juveniles, approximately 20 cm. in length. Lionfish have been reported in the vicinity before, but not until recently. This suggests a possible Lionfish migration into the area from the warmer waters of the Gulf Stream several miles away in the Atlantic (Lionfish can only survive in warmer, more tropical water temperatures). Now for some good news: The divers saw an impressive variety of native fish including Adult Gag, Scamp, Red Grouper, Blue Angel Fish, Soap fish, Spotfin Hogfish, Spanish Hogfish, White Grunt, Bank Sea Bass, Black Sea Bass, Almaco Jack, and Spade Fish. All of this suggests that the ecosystem near 210 Rock is biologically diverse, vibrant, and healthy. Hopefully it will remain that way, despite the looming threat of the Lionfish in the horizon...

Personal Log: I was relieved that we were able to get at least one dive off today, despite our ship's delayed departure. Most amazing was the video footage that the divers brought



back onboard the ship – they captured several Lionfish on video, hidden beneath rocks and carefully camouflaged in their background environment. Watching the video makes me realize that the ocean floor is a dramatically different landscape than what we are accustomed to on land!

Question of the Day:

Should we worry about Lionfish closer to shore along the beaches of the Atlantic Coast? Is their sting venomous enough to kill a person?

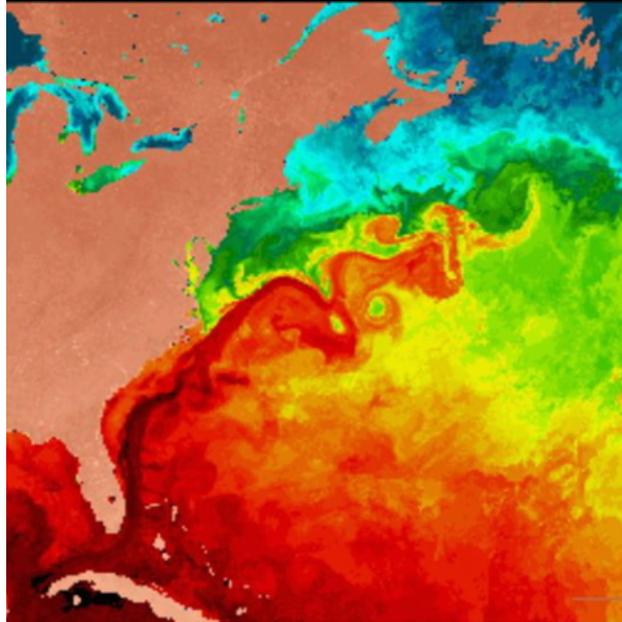
Luckily for us, a venomous spine from a Lionfish is not enough to kill a person, but they can cause a painful sting. You will also appreciate the fact that Lionfish will probably never invade beaches along the Atlantic coastline. This is because temperature limits their distribution in the Atlantic. The Gulf Stream is a warm current of the Atlantic Ocean that originates in the Gulf of Mexico and runs northeastward along North America. Because the Gulf Stream remains several miles offshore from the Atlantic coastline, these waters can remain somewhat warm during the winter, despite frigid inshore water temperatures. This is why Lionfish can survive in the Gulf Stream (where it is warmer in the wintertime) but not closer to the coast (where winter water temperatures are far colder). Additionally, Lionfish cannot survive north of Cape Hatteras, North Carolina due

to the colder water temperatures along the northeastern Atlantic coastline. For this reason, scientists consider Cape Hatteras a “Zoo-geographical boundary” beyond which Lionfish cannot stay alive.

PICTURE CAPTIONS:

LIONFISH: Underwater photograph of a lion fish taken by Doug Kesling, deep-sea diver on the NANCY FOSTER.

ON DECK: Thomas Nassif helping on deck to deploy a drop camera that sends real-time video footage of the deep sea to the ship’s television monitors.



PICTURE CAPTION (Gulf Stream): This map clearly shows the Gulf Stream in the Southeastern Atlantic (look for a dark red streak off the coast of Florida). Darker reds are the warmest ocean temperatures, blues are the coldest. Image courtesy of Paula Whitfield.