BATHYMETRIC ANALYSIS OF PTERIOS VOLITANS SHELF-EDGE HABITATS, ONSLOW BAY N.C.
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Abstract
In 1982 Hurricane Andrew destroyed South Florida, killing many as many as 15 people and causing billions in structural damage. A lesser known result of this event was that several aquaria and pet shops were destroyed, releasing many non-native species into the wild, including Pterois volitans, more commonly known as the Lionfish. Though lionfish have been present since the 1980’s The Lionfish inhabits warm tropical waters of the South Pacific and Indian Oceans. They can be found in waters up to 300 m deep (985 ft.), but prefer shallower water environments consisting of hard bottom, mangroves, sea grass, corals, and artificial reefs. Since their introduction into the warm waters off Florida they have made their way into the Gulf Stream which has carried them as far north as Long Island, NY (Ontario Bay, NC) has seen a dramatic increase in Lionfish populations over the last decade. The concern is the ability to prey on ecologically and economically important native species and have quickly become one of the dominant predators in many of the fisheries habitats throughout the southeastern Atlantic coast. NOAA National Marine Fisheries has deemed their spread worrisome enough to gather benthic data to locate and densely current and potential Lionfish habitats. Analysis will be done using bathymetric data collected on board the NOAA Ship Nancy Foster from 2008 to 2009 by the NOAA Center for Coastal Fisheries and Habitat Research, Beaufort, NC. NOAA National Marine Fisheries has deemed their spread worrisome enough to gather benthic data to locate and densely current and potential Lionfish habitats. Analysis will be done using bathymetric data collected on board the NOAA Ship Nancy Foster from 2008 to 2009 by the NOAA Center for Coastal Fisheries and Habitat Research, Beaufort, NC. Research will determine the bathymetry of each site and any similarities between them that may help us determine future Lionfish habitats.

Discussion
As Lionfish continue to invade the Southeastern Atlantic coastal waters the importance of understanding their preferred habitats has never been greater. In just under a decade we have seen unprecedented range increase of Pterois volitans. Though Lionfish have been sighted as far north as Long Island, NY. Lionfish can travel farther than most reef fish due to an expanding stomach. They are mainly piscivores and can feed on more than 40 species of prey fish. They represent an important level in the food chain and it is logical that the expansion of P. Volitans will continue to cause damage to reef ecosystems.

Lionfish have displayed a unique talent for survival in water foreign to them. Even so, they would not be spreading northwards at this rate without the input of warm water and nutrients from the western Gulf Stream system. As shown in Figure 7, the Gulf Stream funnels warm, nutrient rich water up along the eastern seaboard greatly dissipating just North of Onslow Bay. This combined with the provided sea floor relief makes an ideal habitat for lionfish. Soon the continuation of our recent global sea surface temperature warming trend will allow lionfish to travel far north ever before. History tells us that invasive species are impossible to intentionally remove so in all likelihood Lionfish are here to stay. A potential silver lining is the possibility for a Lionfish seafood market. This would be ideal as both a check on the lionfish population and a boon to our economy.

Methods
All of our data was acquired with a Kongsberg EM 1012 Multibeam Sound System aboard the NOAA Ship Nancy Foster over the course of multiple cruises since 2008. The data was analyzed and visualized using CARIS HIPS (v. 7.1) and BASE Editor software. Five hard bottom sites were analyzed within the mid to outer shelf of Onslow Bay.

Acknowledgments

References