



CALIFORNIA STATE SCIENCE FAIR 2009 PROJECT SUMMARY

Name(s) Olivia A. Lafferty	Project Number J2416
Project Title Mapping Blue Shark Populations to Evaluate NMFS Preservation Efforts	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals A week-long snorkeling field-trip to Catalina began my keen interest in Marine Biology. A family friend is working on a study regarding tagged Blue Sharks (<i>Prionace glauca</i>). According to research, for five decades, Blue Sharks have suffered bycatch fishing mortality in North Atlantic waters. Their stock status remains under debate, and their migratory behaviors are complicated and unclear. In addition, they are finned and discarded in large quantities because of the low value of their flesh. The purpose of this project is to investigate the extent of movement patterns of juvenile Blue Sharks around the waters of the Azores Archipelago by developing a migratory map based on unused Blue Shark tag evidence. This study asks: What is the Blue Shark migratory behavior around the Azores? and, Given Blue Shark migratory behavior, would the species benefit by a Marine Protected Area?</p> <p>Methods/Materials A sample of juvenile Blue Sharks (n=400) was tagged and released in the Azores waters in 2003 by the Cooperative Shark Tagging Program of the U.S. National Marine Fisheries Service (NMFS) and the University of the Azores in Portugal. Between 2003 and 2006, Blue Sharks were caught by fishermen; their tags, date of capture, location, sex, and size reported. I wanted to contribute to research, and asked to use this raw data so I could analyze Blue Shark migratory patterns. I used Microsoft Excel to analyze the data, and a Geographical Information System Tool to map the migration patterns.</p> <p>Results The results showed highly migratory Blue Shark behavior. My data on the migratory behavior suggests that Blue Sharks may benefit from a restrictive Marine Protected Area around Azores Archipelago waters, but other measures (e.g. size-based throw-back policies) need to take place in order for juvenile Blue Sharks to reproduce and thrive.</p> <p>Conclusions/Discussion According to my results, it seems the Blue Shark's unpredictable and highly migratory behavior may have previously helped the species thrive worldwide, but perhaps it is not enough now in the face of unrestricted hunting from diverse locations. It is estimated 10-20 million Blue Sharks each year are killed by fishermen. My maps revealed unpredictable and complicated geographic migration habits for both male and female sharks. Further studies are needed to evaluate migration and help protect this species.</p>	
Summary Statement The purpose of this project was to investigate movement patterns of juvenile Blue Sharks by developing maps based on raw data Blue Shark tag evidence.	
Help Received Thanks to my parents who support my interest in Marine Biology. Thanks to Dr. Alexandre Aires-da-Silva who allowed my use of the Blue Shark raw data. Thanks to my science teacher who helped edit my report.	