

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Department of Environmental
Science and Policy

Student Seminar Series

May 6, 2022 | 10:30 AM



Distributions of tropical tuna
tags and temperature
relationships in the Atlantic
Ocean

Alex Norelli



Aerial Geophysical Remote
Sensing for Archaeology:
Utilizing Drones to Close an
Accessibility Gap

Ryan Fochs



Distributions of tropical tuna tags and temperature relationships in the Atlantic Ocean

Alex Norelli

Abstract:

Fisheries management becomes complex when multiple highly migratory species are involved, requiring innovative management techniques. In the Atlantic Tropical Tuna purse seine fishery, Bigeye (*Thunnus obesus*), Yellowfin (*Thunnus albacares*) and Skipjack (*Katsuwonus pelamis*) are caught together at different stages of maturity resulting in bigeye and yellowfin being threatened. This chapter of my dissertation examines whether the species are randomly distributed or if environmental factors affect their distribution. Using a 20x20 degree study area off the western coast of Africa, I examined tropical tuna tag distributions by species, seasonally, and their relationship with sea surface temperature in ArcGIS Pro. The tuna were not distributed randomly ($p < 0.05$) and the skipjack tended to be distributed farther northeast. There was a relationship between temperature and seasonal movements leading to clustered recaptures ($p < 0.05$). These distributions of tropical tuna tags will be used to validate an Agent-Based Model of tropical tuna movements and fisher efforts.

About Alex:

Alexandra Norelli completed her undergraduate degree in marine science at University of South Carolina in 2016. Following an internship with the South Carolina Department of Natural Resources Freshwater fisheries research team she returned to school for her Masters of Professional Science in fisheries management and conservation at University of Miami. After completing the MPS she joined the MES PhD program and is currently in her 4th year. At this presentation, she will be sharing spatial analysis from her 2nd chapter.

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Aerial Geophysical Remote Sensing for Archaeology: Utilizing Drones to Close an Accessibility Gap

Ryan Fochs

Abstract:

Magnetometry is an industry-standard for an archaeological survey, however, traditional methods are limited to terrestrial applications in which the archaeologist must be able to walk survey transects or aquatic applications where the magnetometer is towed behind a research vessel. This leaves gaps for surveys to be conducted in areas where neither handheld nor towed sensors can be implemented, such as coastal surf and foreshore zones, shallow reef systems, submerged landscapes, impenetrable vegetation, or other instances where obstacles would limit the survey area's accessibility. The use of an aerial magnetometer affixed to an unmanned aerial vehicle, or drone, closes those gaps. This seminar discusses the implementation of this technology for existing cultural resource management, highlights preliminary results from 2019-2021 case studies in these varied environments, and outlines future methods validation as well as upcoming research.

About Ryan:

Ryan Fochs is a 2nd year Ph.D. student whose focus is at the nexus of underwater archaeology, environmental remote sensing, and the policy barriers / enablers that are relevant to UAV-based scientific data collection. As a former conservation biologist turned archaeologist, Ryan puts to use his background as a remote pilot, scientific and technical diver, and passion for environmental and cultural heritage.

