Seasonality and relative abundance of elasmobranchs near the northern boundary of a biogeographic break

Grace Roskar¹, James W. Morley², Jeffrey A. Buckel³

¹Institute of Marine Sciences, University of North Carolina at Chapel Hill
²Current NOAA NMFS Office of Science and Technology, Silver Spring, MD
³Department of Biology, East Carolina University, Coastal Studies Institute

Background

- Elasmobranchs use nearshore waters for foraging, reproduction, migration
- Community structure of elasmobranchs in coastal waters poorly understood

Objectives

1. Identify spatial and seasonal patterns in elasmobranch species assemblage
2. Determine environmental factors driving community composition

Methods

Survey Design and Gear:

- Monthly bottom trawling: Nov. 2004 – April 2008
- 2 transects:
  - Cape Lookout
  - Masonboro Inlet
- 0.5 to 8 km from shore
- Otter trawl: 30 m wide headrope

Data analysis:

- 2-factor nested PERMANOVA
- SIMPER analysis identified influential species
- NMS ordinations – seasonal & spatial differences
- BIOENV: determine environmental drivers

Onslow Bay is SW of Cape Hatteras, a major biogeographic break

20 species of elasmobranchs (N = 21,149) caught between Nov. 2004 - April 2008

Elasmobranchs represent an important component of coastal assemblage

Water temperature drives seasonality in elasmobranch community composition

NMDS ordination shows distinct seasonal assemblages, with spring/fall representing transitional communities

NMDS ordinations show differences in elasmobranch communities between N vs. S Onslow Bay, NC during each season

Significant difference in species composition among seasons nested w/in transect

PERMANOVA

Several species contributed to seasonal differences

Limited data on ecological role of small sharks, skates & rays in the SE U.S.

These data will contribute to ecosystem-based management efforts