Trophic ecology and diet of Blue Catfish in the Nanticoke River

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USGS science for a changing world

Salisbury University

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Stable Isotope Analysis

- Nitrogen

  Used to infer trophic position, enrichment in 15N associated with higher Trophic Level

- Carbon

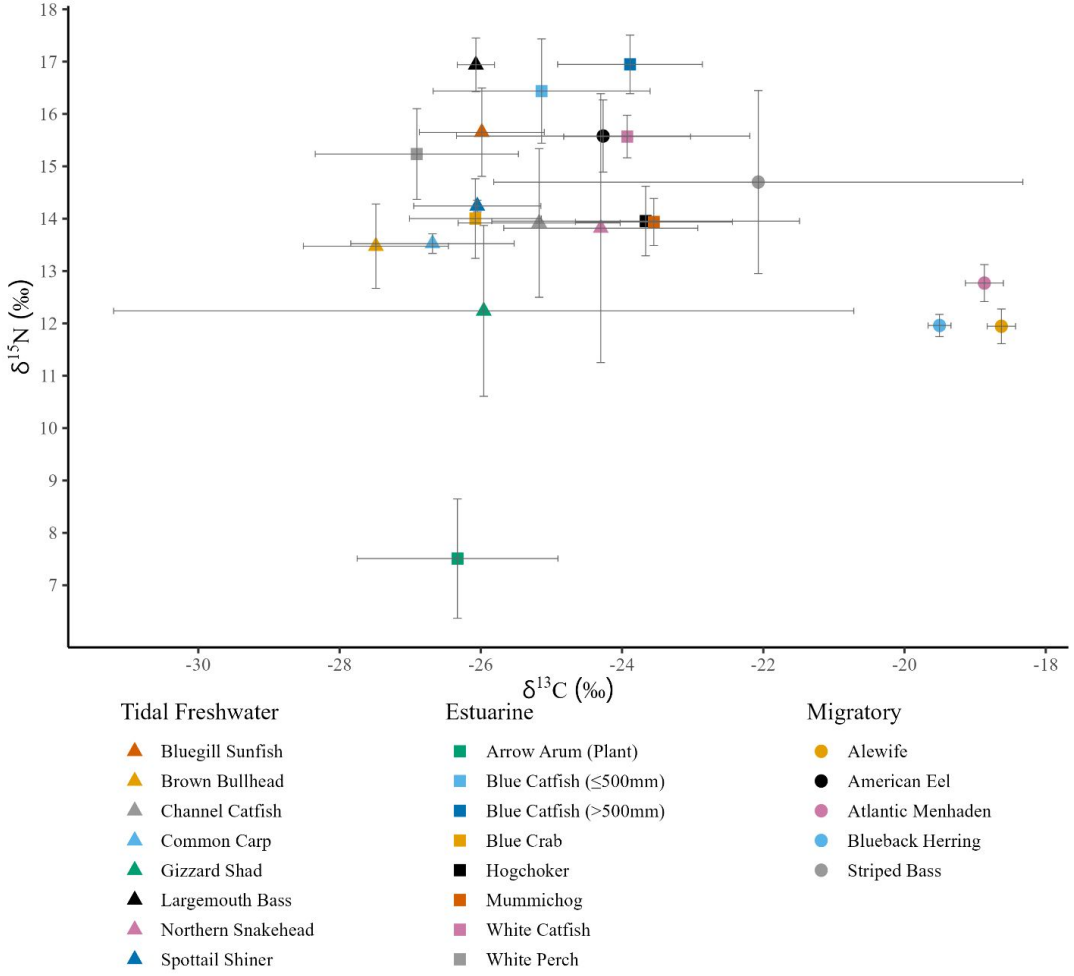
  Indicates basal source of primary productivity

$$\delta^{13}\mathrm{C} = \left(\frac{\left(\frac{^{13}\mathrm{C}}{^{12}\mathrm{C}}\right)_{\mathrm{sample}}}{\left(\frac{^{13}\mathrm{C}}{^{12}\mathrm{C}}\right)_{\mathrm{standard}}} - 1 \right) \times 1000$$

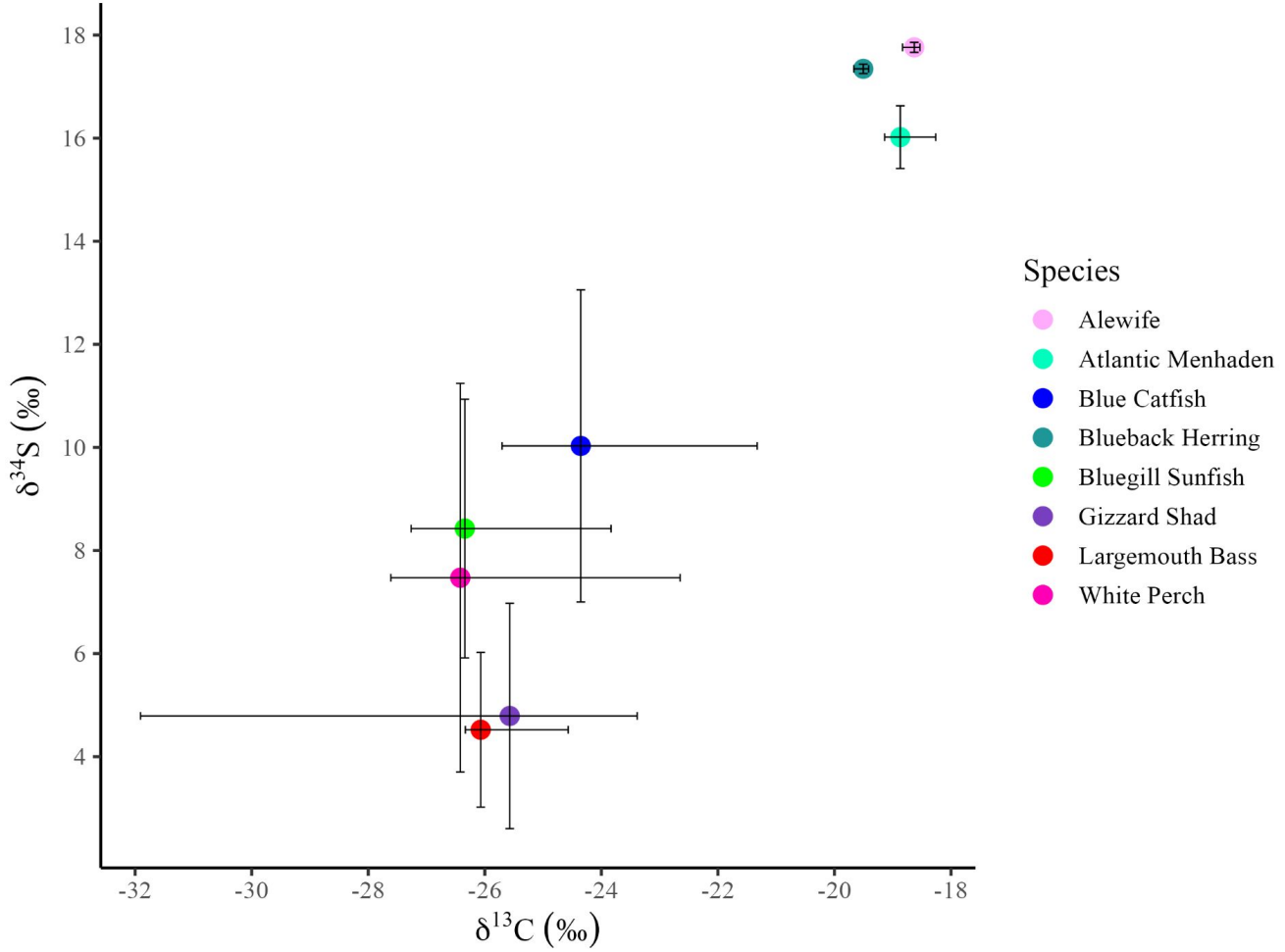
- Sulfur

  Used to infer marine resource use, marine primary producers more enriched than freshwater

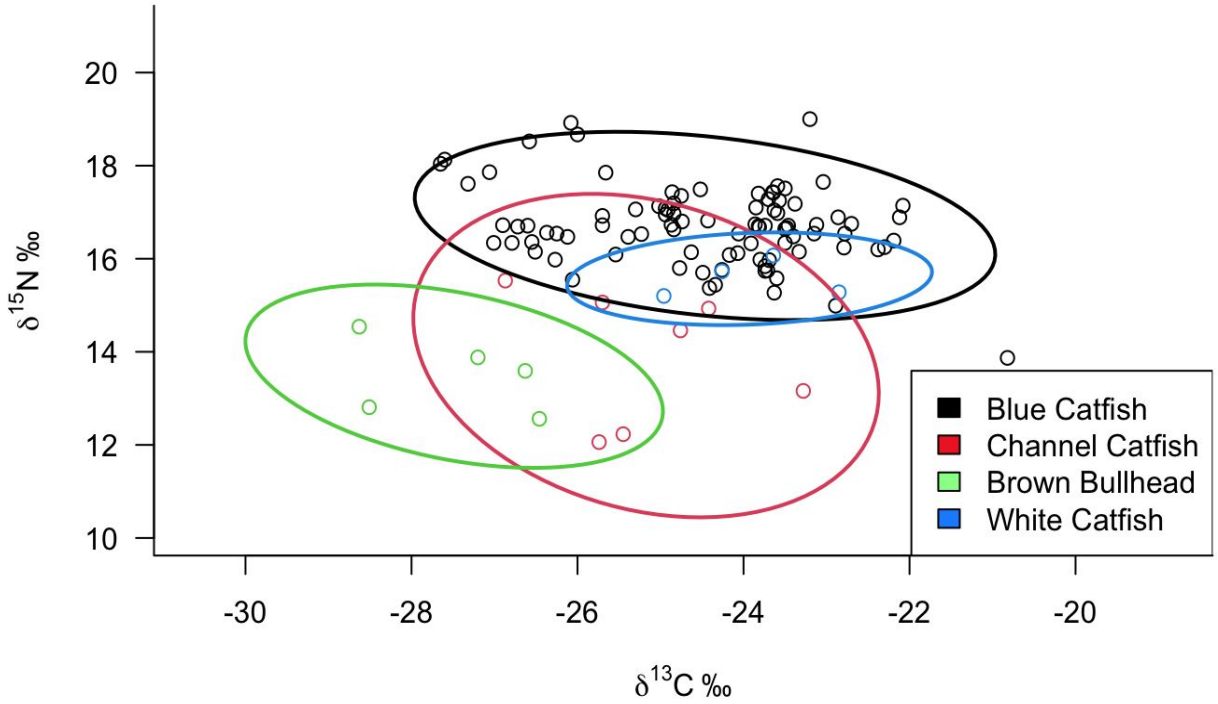
Blue cats are apex predators



Blue cats consume marine resources, like crabs and herring



Isotopic Niche of Catfishes



- Potential overlap in isotopic niche of Blue and White Catfish

Stomach Contents

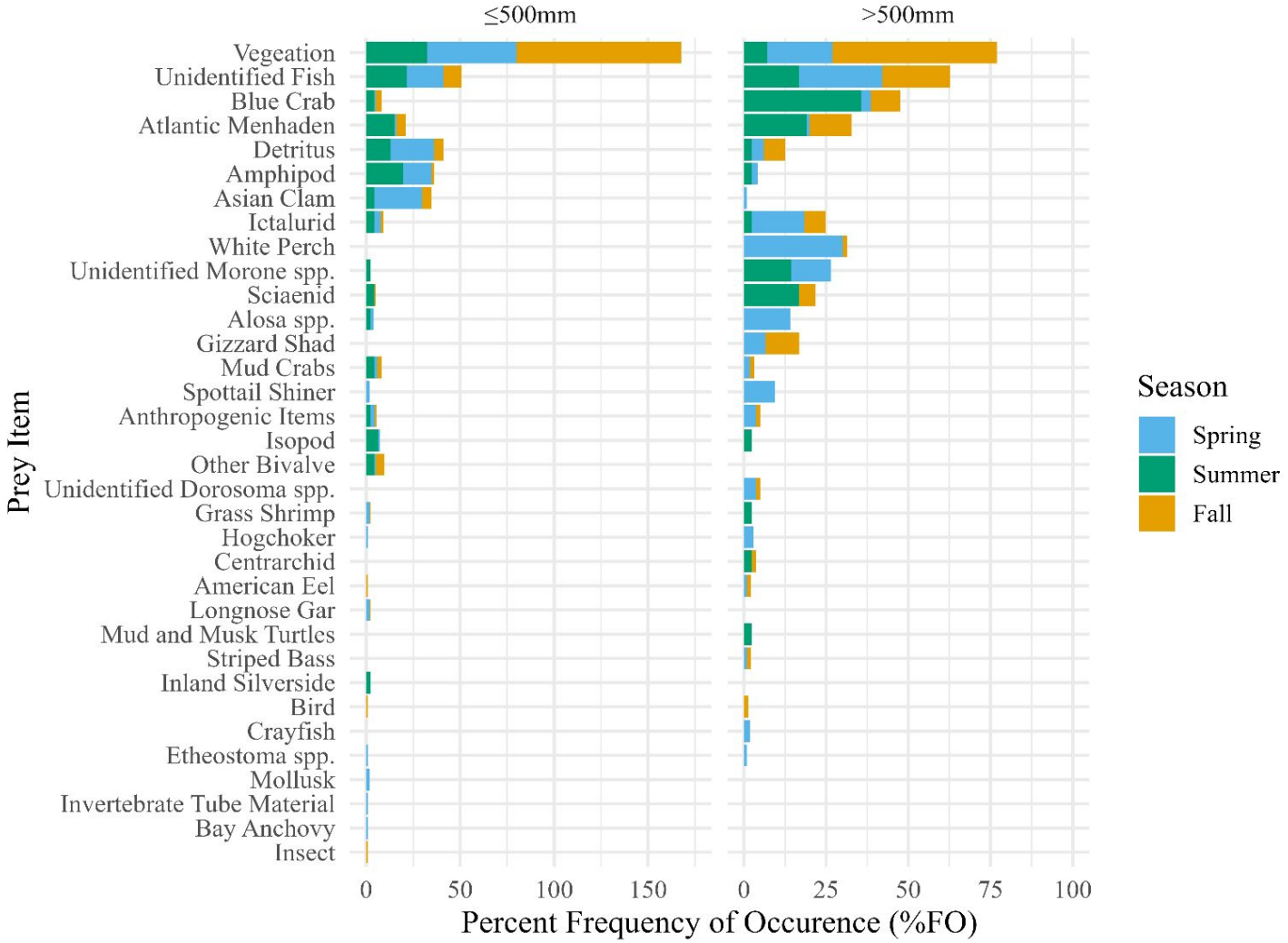
White Perch

Blueback Herring

Blue Crab

Striped Bass

One of the most surprising items, a Wood Duck…


≤500mm
>500mm
Vegeation
Unidentified Fish
Blue Crab
Atlantic Menhaden
Detritus
Amphipod
Asian Clam
Ictalurid
White Perch
Unidentified Morone spp.
Sciaenid
Alosa spp.
Gizzard Shad
Mud Crabs
Spottail Shiner
Anthropogenic Items
Isopod
Other Bivalve
Unidentified Dorosoma spp.
Grass Shrimp
Hogchoker
Centrarchid
American Eel
Longnose Gar
Mud and Musk Turtles
Striped Bass
Inland Silverside
Bird
Crayfish
Etheostoma spp.
Mollusk
Invertebrate Tube Material
Bay Anchovy
Insect
Prey Item
0
50
100
150
0
25
50
75
100
Percent Frequency of Occurence (%FO)
Season
Spring
Summer
Fall

Future Directions

- Finish determine growth rates and developing new aging method
- Finish reproduction rate study
- Investigate methods for reducing Blue Catfish impacts
- Investigate direct impacts of Blue Catfish on Striped Bass recruitment and threatened mussels in the upper Chesapeake Bay