

PFAS in North Carolina's Cape Fear River Basin

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Lexington

PFAS Sampling in the Cape Fear Basin Region











Environmental Media Comparison

2022 Fish & Surface Water Collection Project



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Targeted for Sampling at all Locations







Freshwater Species

Largemouth Bass Blue Catfish Flathead Catfish Redear Sunfish Bluegill Sunfish

Channel Catfish American Shad Striped Bass

Opportunistically Sampled



PFAS Data – Surface Water





PFAS Data – Largemouth Bass







Preliminary Analysis

Statistical Analysis



Using a Generalized Linear Model with the Gaussian distribution which included *Site, Species, Length*, and *Weight*.

- <u>Only Species</u> was a significant predictor of PFOS concentration
 - Bluegill Sunfish p = 0.001
 - Redear Sunfish p = 0.001
 - Largemouth Bass p = 0.001
 - Flathead Catfish p = 0.05

What can we learn from this data?

- PFAS compounds are not all found in the same environmental compartments
- Some PFAS accumulate a greater rates than other PFAS in fish
- Extensive environmental sampling takes a significant amount of time and expertise, and isn't often all done at the same time
 - Makes a comprehensive understanding of the data complicated
- Comprehensive environmental sampling usually happens on a smaller scale

Thank you. Questions?

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Let's stay in touch

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Backup Slides



Saltwater Data from NC is Forthcoming



Related Saltwater Data from SC

Fishes: Fair et al. 2019 Environ Res

Invertebrates: <u>SCDES</u>

Marshwood Lake,

Fayetteville, NC

Sampled: water, inflow, sediment, fish





How can we use this data to learn more?

- Some PFAS accumulate a greater rates than other PFAS in fish
 - Very little toxicology data on what the effects of many PFAS are in fish
 - NC-specific PFAS are understudied
- Does PFAS exposure impact fish populations in the Cape Fear River?
 - Cape Fear vs Neuse Rivers
 - American Shad and Striped Bass populations

What's next for DEQ?

- Regulatory activities using the environmental data collected over the last few years.
- On going monitoring in known area of contamination and expanding monitoring across the state.
- Collaborating with academic researchers to answer questions that we can't address alone.