Correlation Between Mercury and Body Condition of Juvenile **Bull Sharks Across Nursery** Areas in the Gulf of Mexico



BACKGROUND

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Mercury is a natural and anthropogenic contaminant that has been linked to neurotoxicity in freshwater fish and adverse health effects in humans. Large amounts of mercury are being released into the environment due to climate change as well as pollution. My goal is to understand how juvenile bull sharks are affected by this pollution. I chose to study bull sharks due to their unique ability to live in freshwater and their importance to the everglades.

METHODS

Sharks were caught in Tarpon Bay using longlines. Muscle samples were collected as well as weight and length measurements.





Muscle samples were weighed and then freeze dried and weighed again in preparation for total mercury analysis.

The amount of total mercury was measured using an atomic fluorescence spectroscopy mercury analyses.



RESULTS

- Tarpon Bay juveniles have significantly higher levels of mercury than those caught in Sabine Lake & San Antonio Bay (Figure 2).
- San Antonio Bay juveniles weigh more than those caught in Sabine Lake and Tarpon Bay (Figure 3).
- Tarpon Bay juveniles have higher levels of mercury than expected for their fork length (Figure 1).
- Tarpon Bay juveniles weigh less than expected for their fork length (Figure 1).
- San Antonio Bay juveniles weigh more than expected for their fork length (Figure 1).

Juvenile Bull Sharks from the **Everglades Weigh Less and Have** More Mercury Than Sharks from Texas



Figure 1: The difference between real weight from expected over the difference between real mercury from expected



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DISCUSSION

While there is a correlation between higher mercury and lower weight, we cannot directly attribute the lower weight to higher mercury levels. Also, sharks from San Antonio Bay have been shown to feed primarily on fish from marine habitats and actively avoid the mouth of the river. Fish from marine habitats are generally larger in size with more nutritional value. Feeding habits give a possible explanation as to why San Antonio Bay's juveniles weigh more. I will be conducting a further study to check for toxic stress markers in the blood of juvenile bull sharks to gather more evidence on the harmful effects of mercury.







Figure 3: weight (kg) across testing sites

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