Native v. Invasive: A study of the competition between Red-Eared Sliders and Painted Turtles

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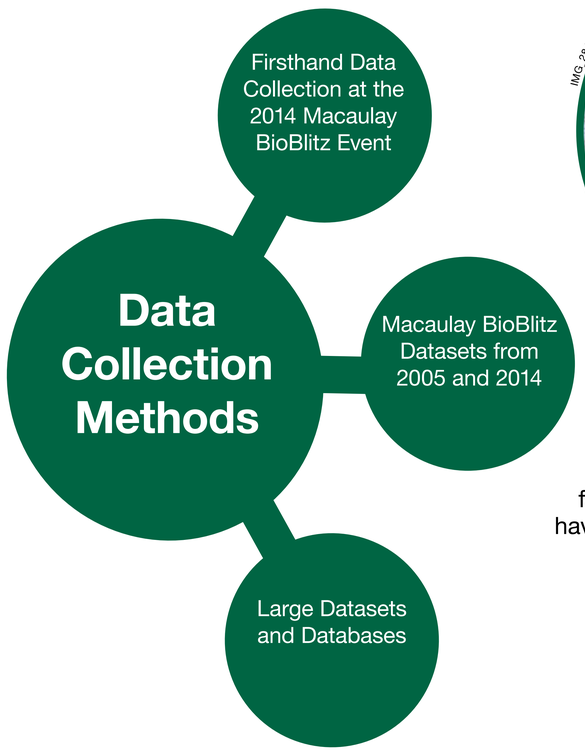
Introduction

The New York Botanical Garden, located in the Bronx, has long had an invasive species problem with Red-Eared Slider Turtles. These hardy invasive turtles were introduced into the Bronx River during the 1940s-60s when families were buying pet turtles. When kids tired of their pets, families released these non-native turtles into the river and over the years, the Red-Eared Slider population grew. With the introduction of this new species, our question is; will the invasive species out-compete the native species for resources? Is this due to environmental factors? Knowing the answers to these questions will help us conserve the painted turtle species that is decreasing in numbers.

Hypothesis: Are invasive Red-Eared Sliders out-competing native Painted Turtles in the Bronx River due to environmental factors like pollution and plant life abundance?



Conclusions

- Although pollution is prevalent in the Bronx River, we cannot confidently state that water pollution is the cause for possible decreasing aquatic plant life.

- We can conclude that human presence can affect sex ratios in Painted turtles, which can lead to fewer offspring.

- Although we have data on decreasing logged aquatic plant life, the data is insignificant because we need more data to draw proper conclusions. Also we don't know if there are actually less aquatic plants or if the observers didn't record as frequently.

- We can correlate diet to Red-Eared Slider success. Since they are able to consume foods across a large spectrum, and thrive in urban environments, such as the Bronx, they have a significant competitive advantage over the Painted turtles.

Results

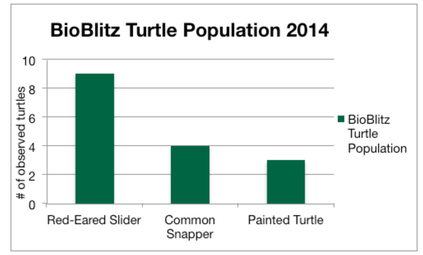
- Pollution in the Bronx River is caused by two main sources: Sewage run off from a water treatment plant nearby and human traffic.

- Human traffic in the botanical gardens has affected the sex ratio in mature Painted Turtles. In more populous areas of the Bronx River, the mature female population is about 5%, while in the South River area (less populated) the mature female population is 17%.

- BioBlitz aquatic plant data suggests a decrease in aquatic plant life: In 2005 67 aquatic plants were logged, while in 2014 only 20 aquatic plants logged.

- Although Red-Eared Sliders are similar to Painted turtles, they are heartier, slightly larger, and produce more offspring.

- Diet is a huge factor in competition. Painted turtles mainly stick to consuming insects and aquatic plants to survive. But Red-Eared Sliders can, and will eat anything. This means that Red-Eared Sliders are more likely to survive in areas where aquatic life is decreasing. Red-Eared Sliders are known for being able to thrive in urban areas as well.



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