Effects of Handling Stress and Fasting on Ammonium **Excretions by Marine Planktivores**



Maxwell Taks, William Wied, Dr. Justin Campbell Florida International University mtaks002@fiu.edu

BACKGROUND

Marine consumers play a strong role in the recycling and release of important nutrients via excretion processes. Thus, quantifying rates of fish excretion has important implications for nutrient storage and retention in marine ecosystems (Allgeier et al. 2017). In this experiment methods for estimating fish nutrient excretion were applied to planktivorous marine baitfish. We tested the effects of handling stress (incubation time) and fasting period on excretion rates of the Bay Anchovy, Anchoa mitchilli.

<u>METHODS</u>

Fish were captured with beach seine nets (a) and placed in buckets for varied fasting periods of 0, 2, and 4 hours (b).



Following fasting periods, fish were placed in incubation bags, and the water was sampled at intervals of 15, 30, 60, and 90 minutes (c).





Fish were released at site of capture, and samples were treated with reagents to determine nutrient excretion (ammonium) content using spectrophotometric techniques



No significant effect of fasting on planktivore excretion rates. Significant effect of handling stress on planktivore excretion rates.



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ANALYSIS

- A two-factorial repeated measure ANOVA was used to analyze the effects of fasting and handling stress on the total dissolved ammonium excretion rate of *A. mitchilli*
- Fasting time was found to be nonsignificant
- Incubation time was found to be significant (p<0.005)
- A TukeyHSD test found significance (p< 0.005) in all incubation periods, except 60, and 90 minutes



Bay Anchovy, Anchoa mitchilli

<u>RESULTS</u>

• Ideal incubation time is 60 minutes, as planktivore excretion rates stabilize at this period



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