

Blood parameters associated with keys spinning syndrome in mullet (*Mugil sp*)

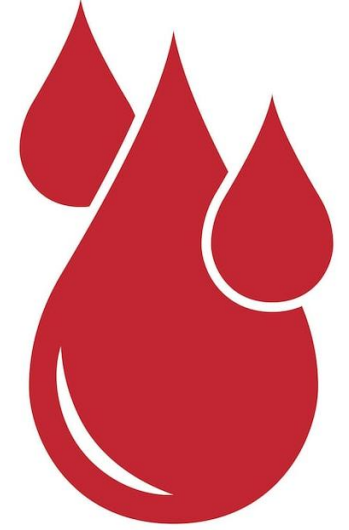
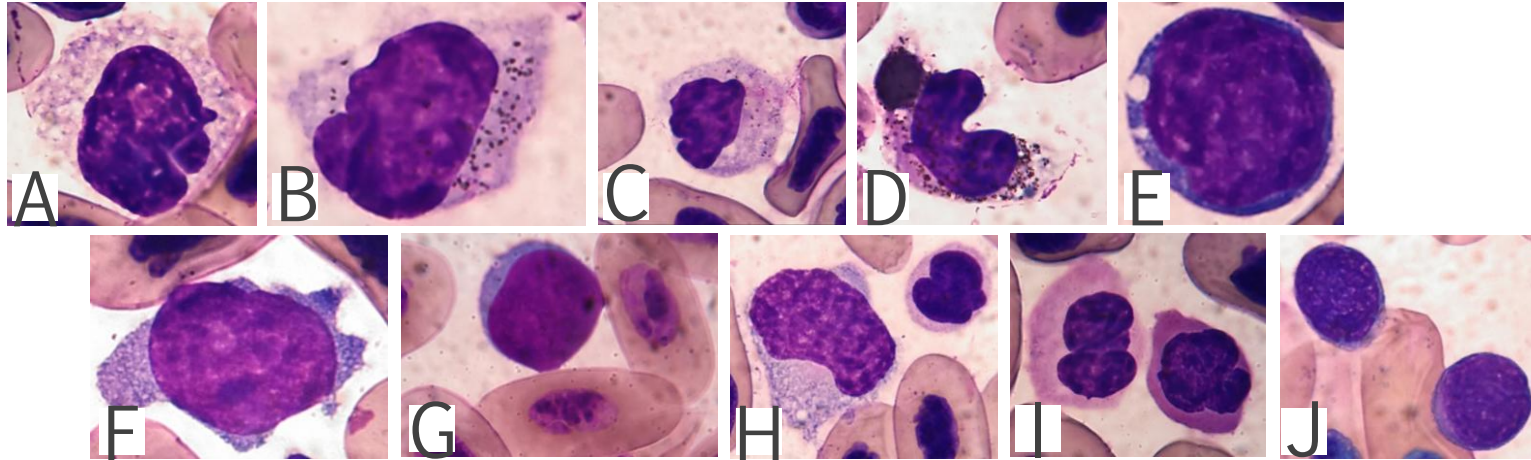
Rebecca Hardman, Lily Orton, Micah Bakenhaster, Eric Fortman, Keith Keel, Tiffany Nicholson, Josh Black, Lauren Zitzman, Lauren Lapham, Jessie Secord, Yasu Kiryu, Maki Tabuchi, Emmett Dessimov, Caroline Cray, Theresa Cody

Spinning syndrome response: FWC

- Spinning fish observed in keys winter 23-24
- FWC Fish and Wildlife Health with multiple partners began initial response
- Event continued with no clear etiology
- Multiple species affected
 - Mullet top reported species



Addition of antemortem blood work

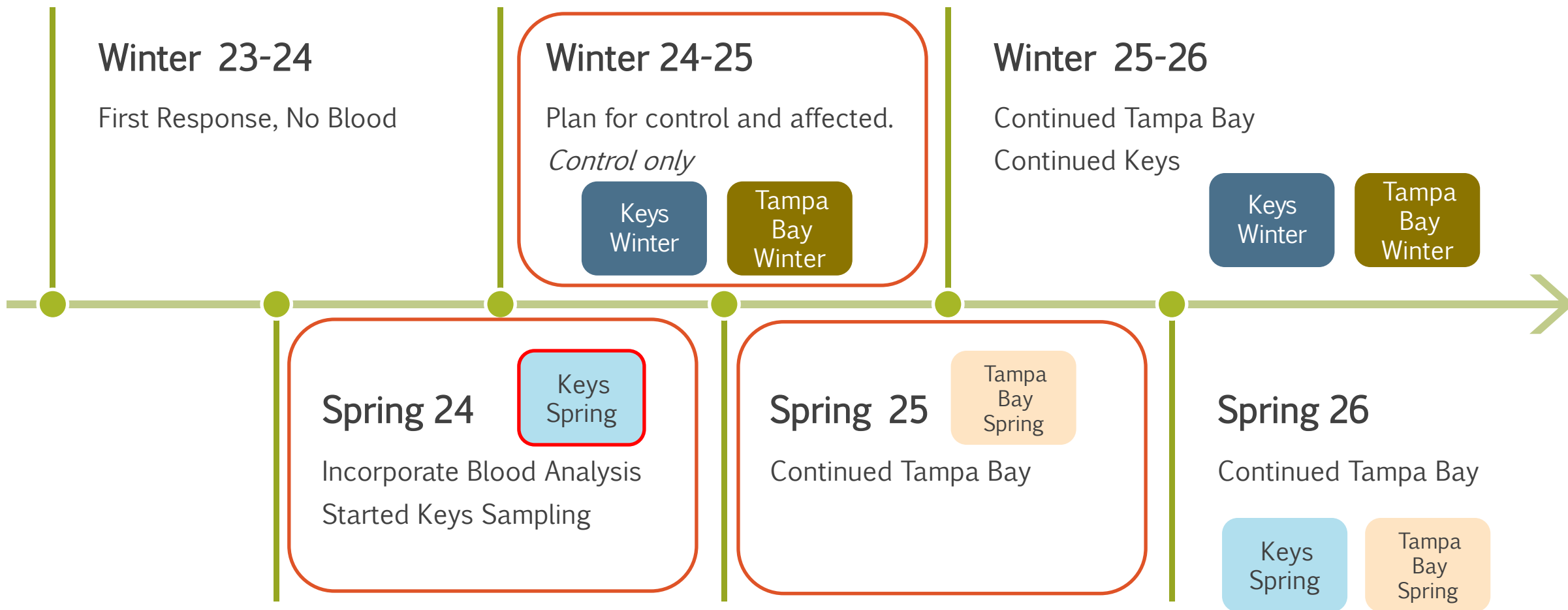


- Valuable insight into current physiological status
- Combine with clinical and post-mortem pathological data
- Banked products for future testing

Mullet as focal species



- Large range
- Abundant
- Top affected species
- “Easy” to collect in unbiased fashion







2-3 mL

2 drops

Banked

Wright-
Giemsa Stain

CBC

PCV

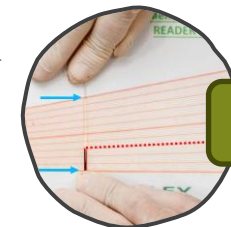
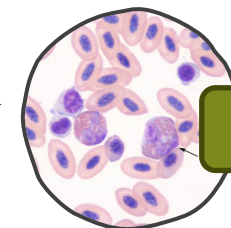
Chem/Lytes/PPE

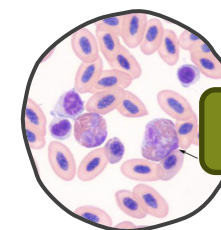
Banked

Banked

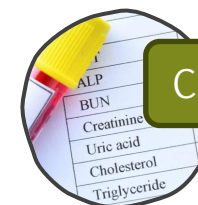
x3

x2

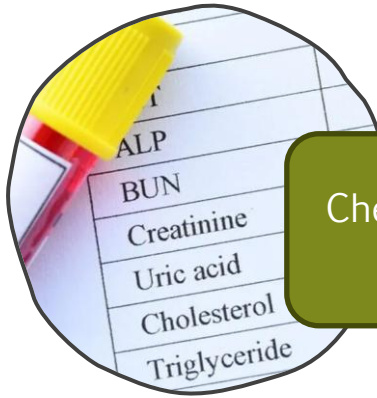




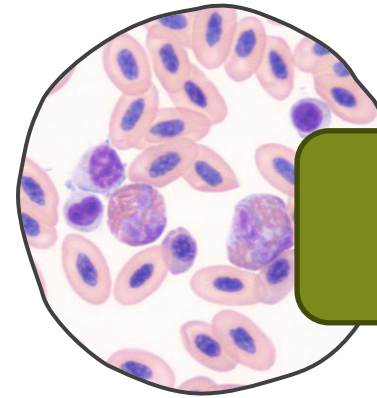
CBC



Chem/Lytes/PPE



Chem/Lytes
/PPE



CBC

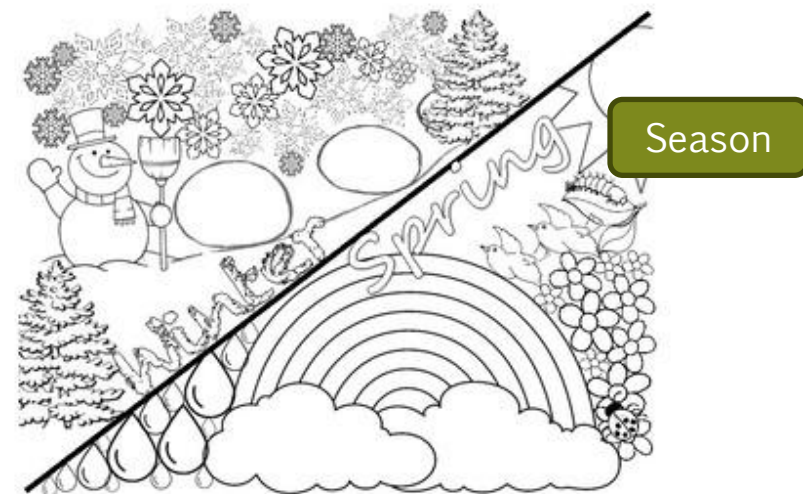
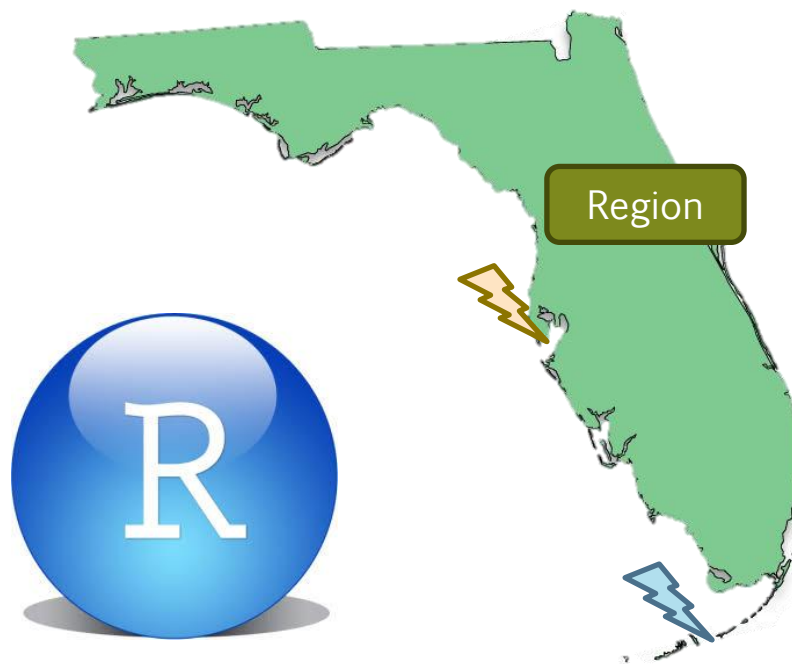
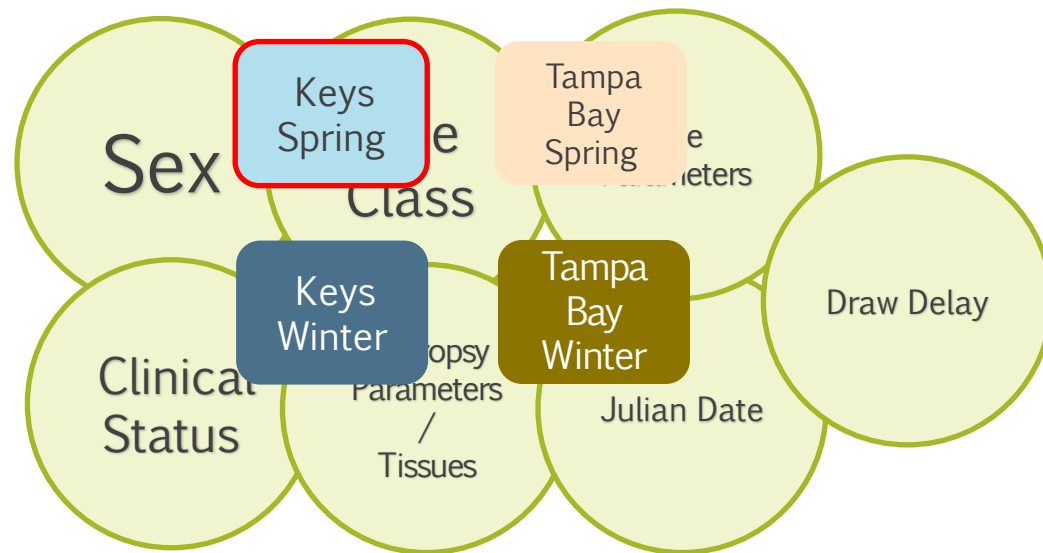
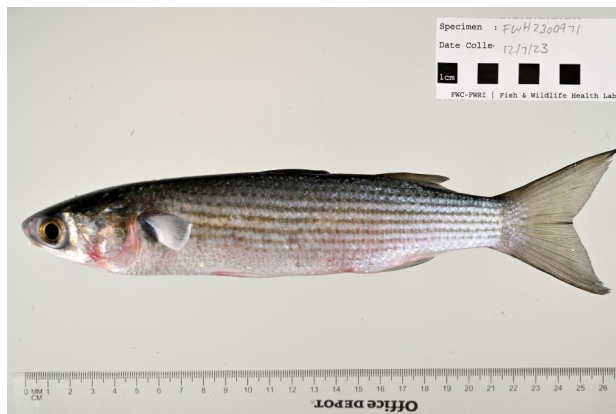


MILLER SCHOOL
of MEDICINE

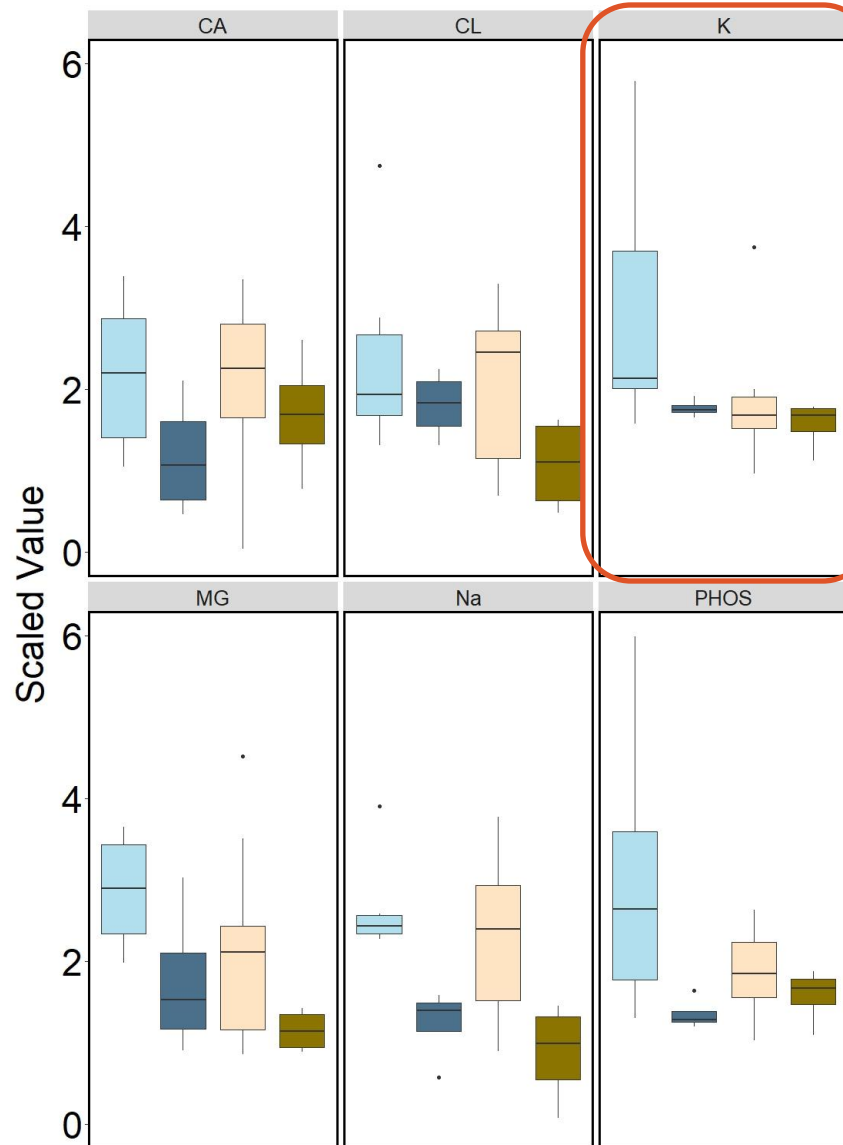
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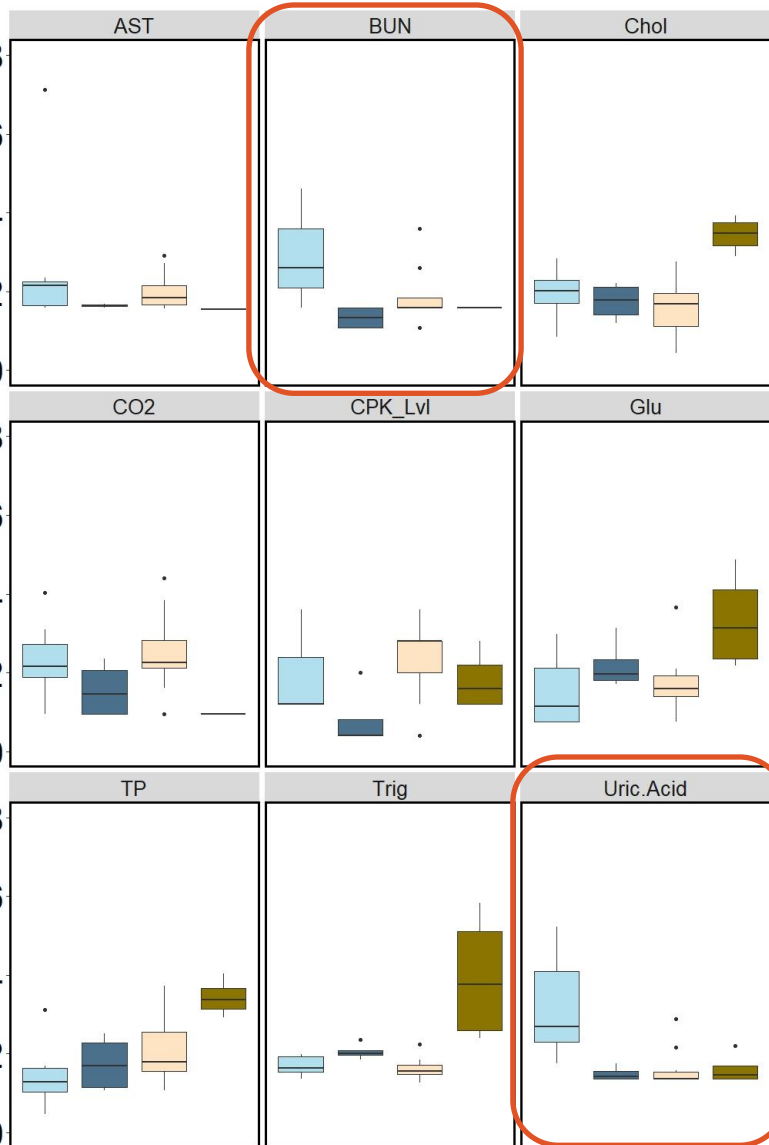
Avian & Wildlife Laboratory
Comparative Pathology



Electrolytes



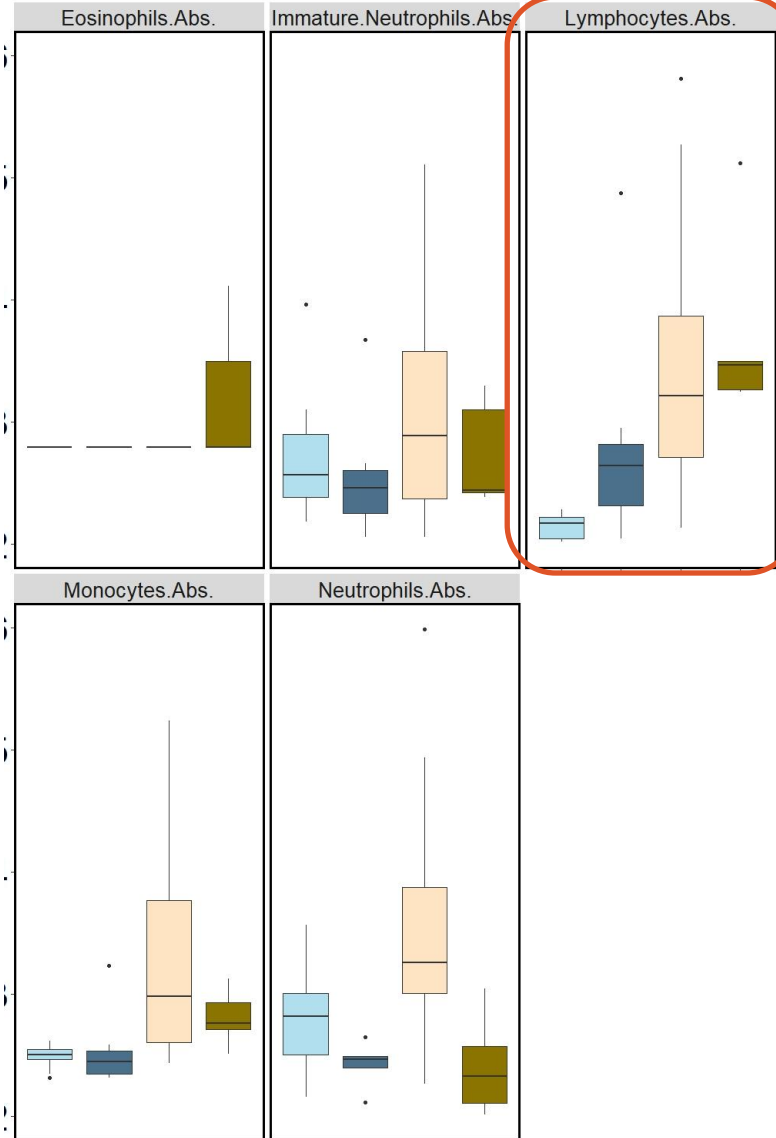
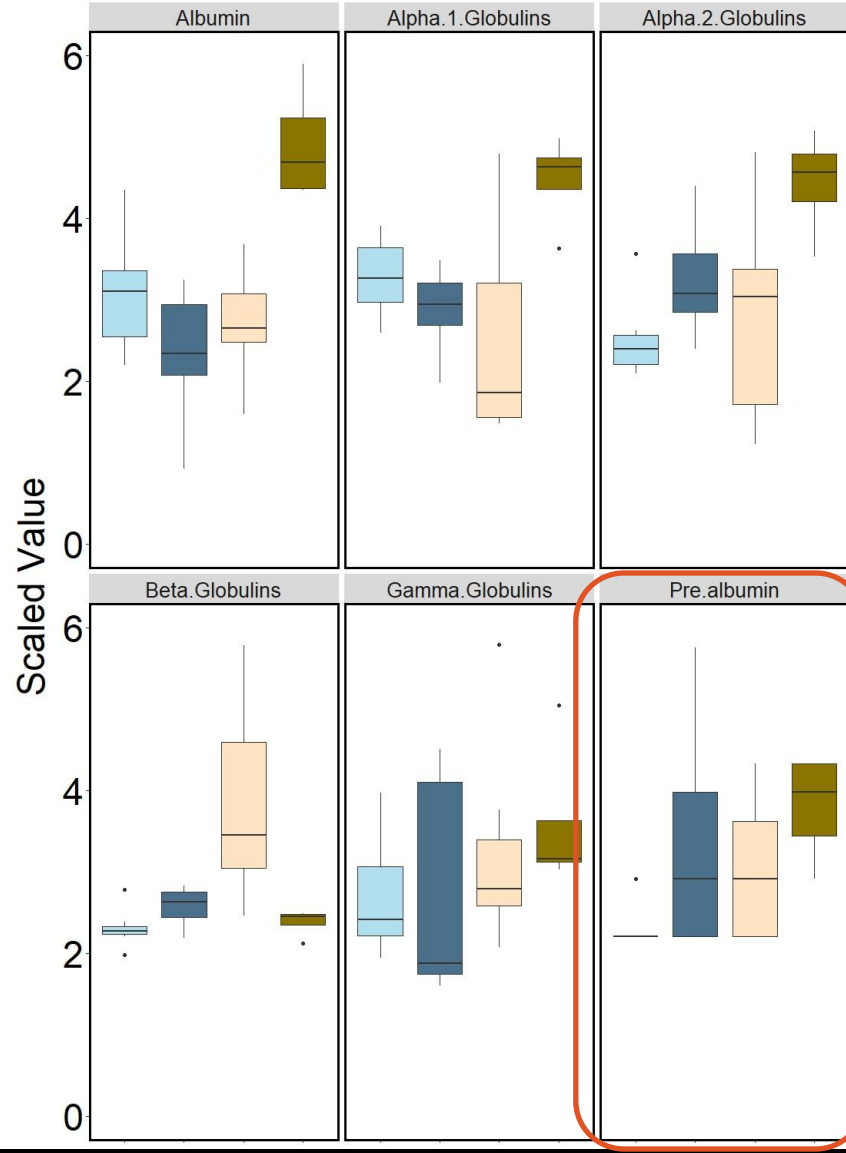
Blood Chemistry



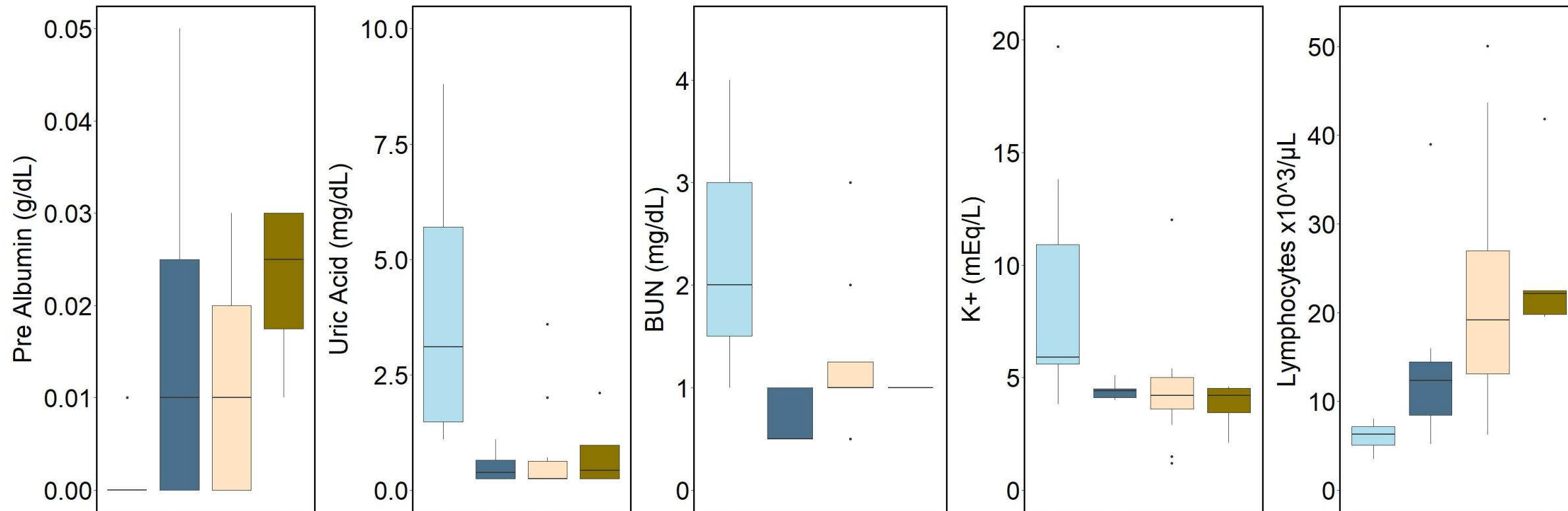
Keys_Spring
Keys_Winter
Tampa Bay_Spring
Tampa Bay_Winter

Plasma Protein Fractions

CBC Absolute



Keys_Spring
 Keys_Winter
 Tampa Bay_Spring
 Tampa Bay_Winter



Keys_Spring
Keys_Winter
Tampa Bay_Spring
Tampa Bay_Winter

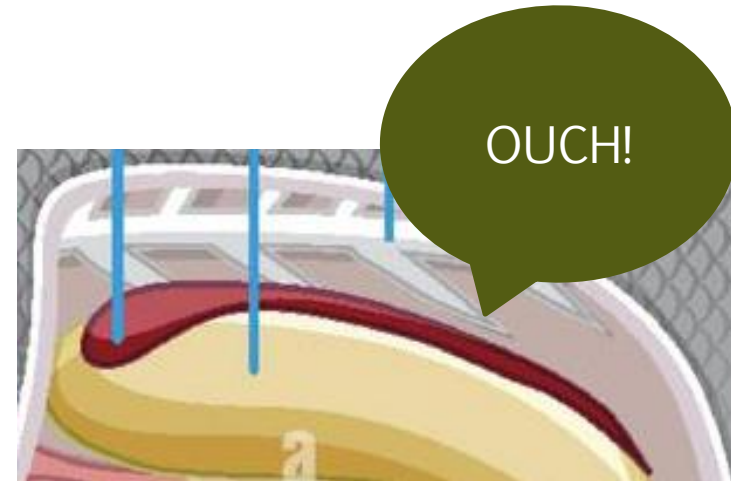
Summary of Current Findings

Changes point towards acute kidney injury and stress

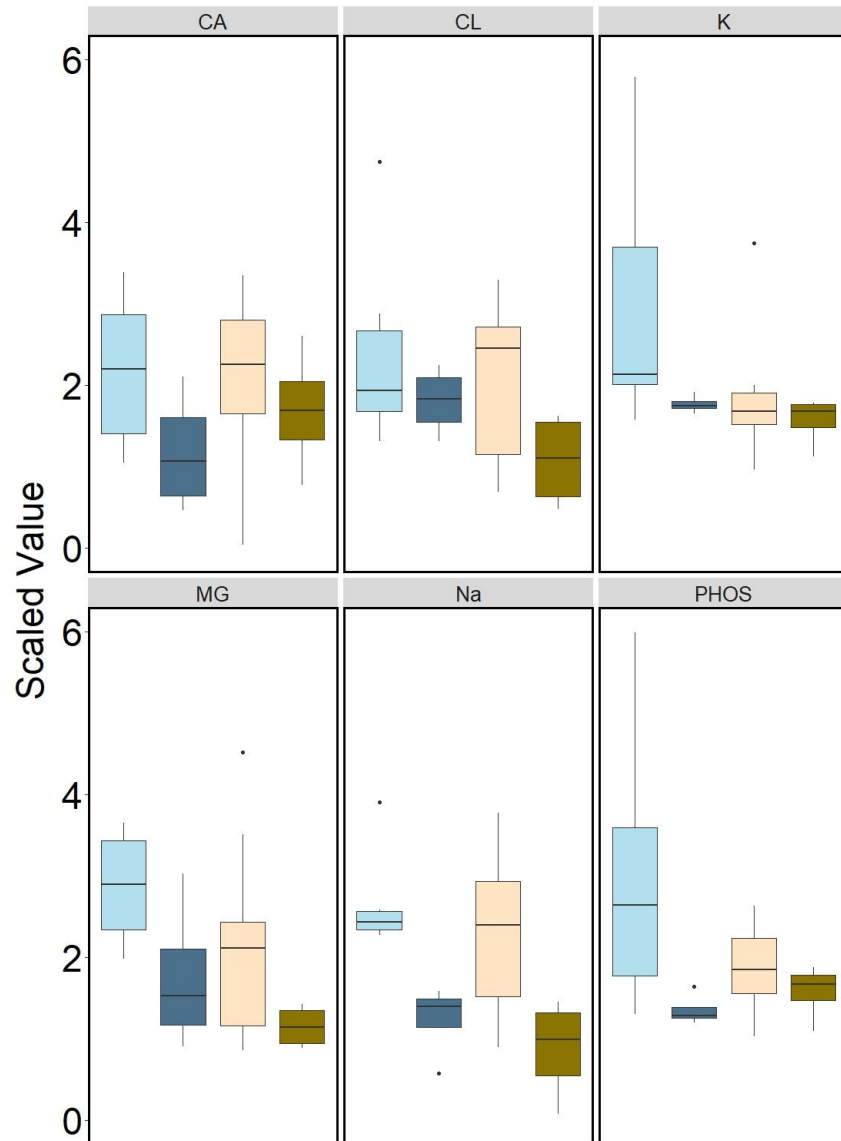
- Primary neurotoxic event?
- Hypoperfusion secondary to physiological response?

Revealed opportunity to learn about baseline mullet health

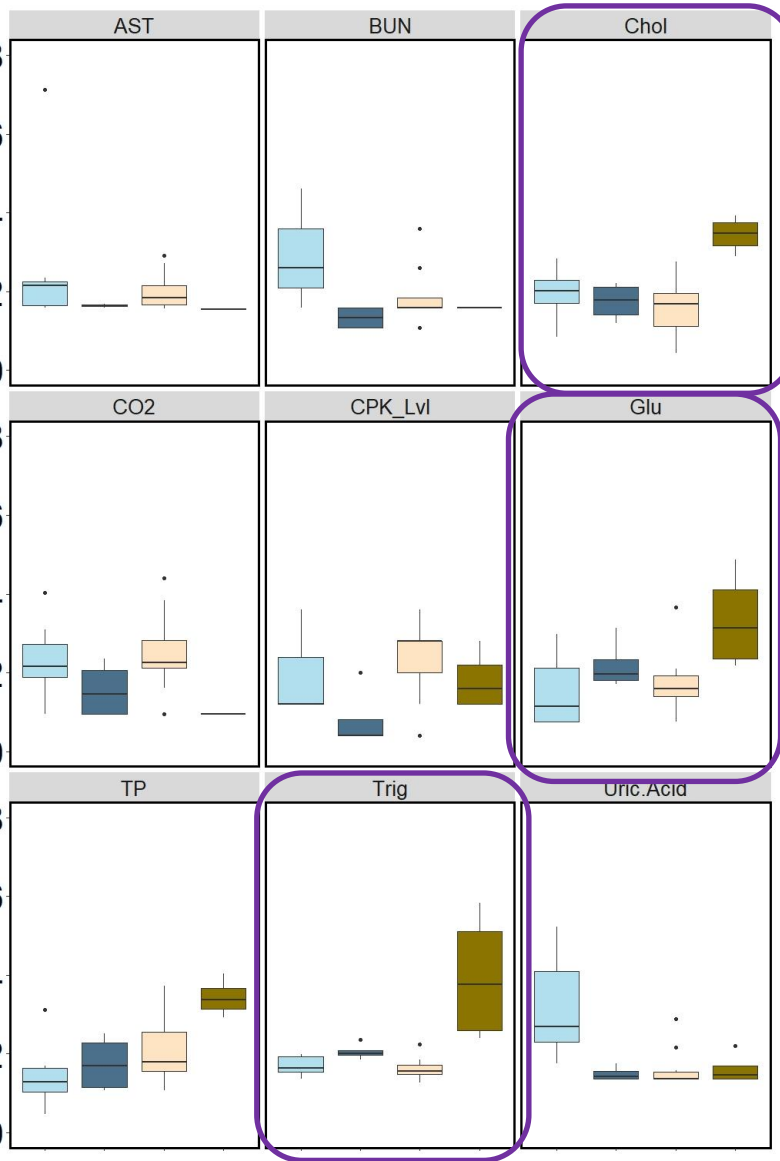
- Strong regional and seasonal patterns
- Lipemia in TB winter?



Electrolytes



Blood Chemistry



Keys_Spring
Keys_Winter
Tampa Bay_Spring
Tampa Bay_Winter

Moving Forward

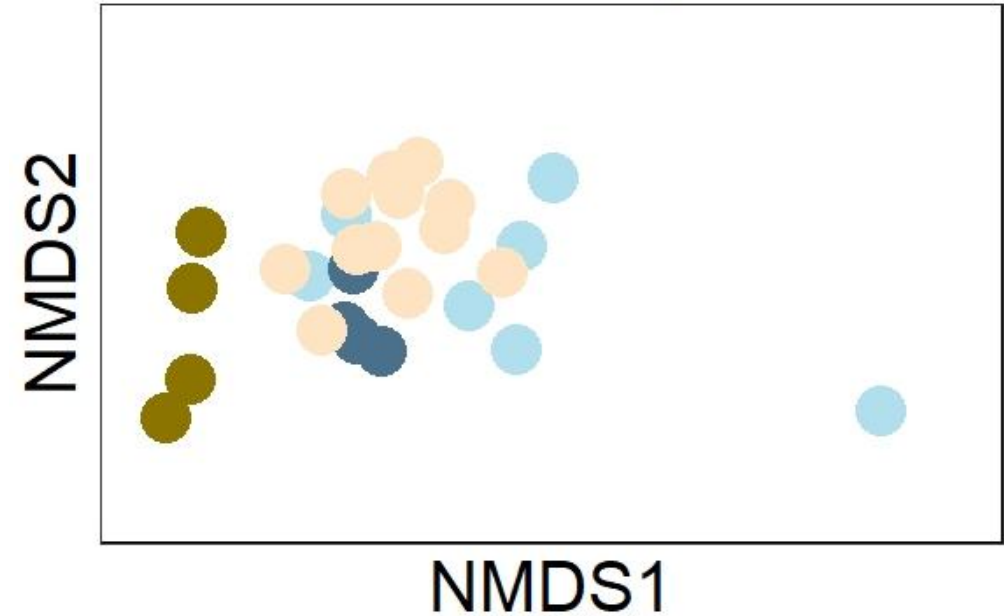
Continued Sampling

- Capture seasonal and yearly trends
- Increased sample size and power
- Create long-term baseline data for use in future health events
- Prepare for future spinning events

Further Analysis

- Link changes with individual gross and histological findings
- Create global models in multivariate space
- Incorporate individual and site effects
- Add in toxin data from banked samples

Blood Chemistry Profiles



Thank You Symposium Sponsors!

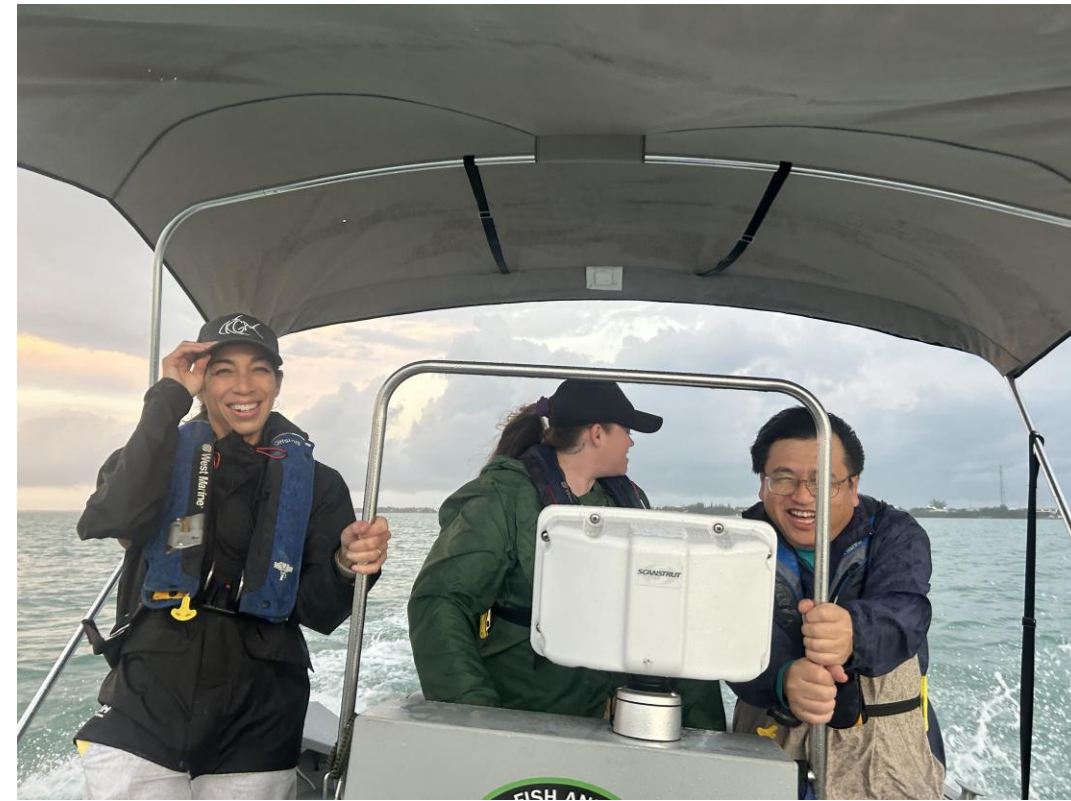


save our seas
foundation



Thanks!

- All coauthors
- FWC South Florida Research Lab
- FWC Fish and Wildlife Health Team
- University of Miami Avian and Wildlife Laboratory
- Dom and Butch, expert mullet fishermen



Design By: Deer Mullett Shop

