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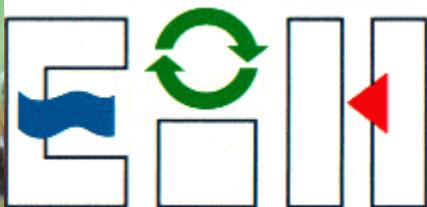
Diet of Texas diamondback terrapin (*Malaclemys terrapin littoralis*)

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Texas Academy of Science



University
of Houston
Clear Lake

Life History

Family Emydidae

Range from Cape Cod, MA to Corpus Christi, TX

Only US species adapted to live in brackish and saltwater marshes

- *Spartina alterniflora* dominant

Diets consist of: snails, clams and mussels, crabs, fish

- Keystone predator

Sexually dimorphic:

Sex	Carapace Length (mm)	Weight (kg)	Head Width (mm)
Female	> 200	> 1.5	> 50
Male	~ 140	~ 0.4	~ 25



Background

Information on dietary differences across range needed

Most dietary studies from Atlantic Coast

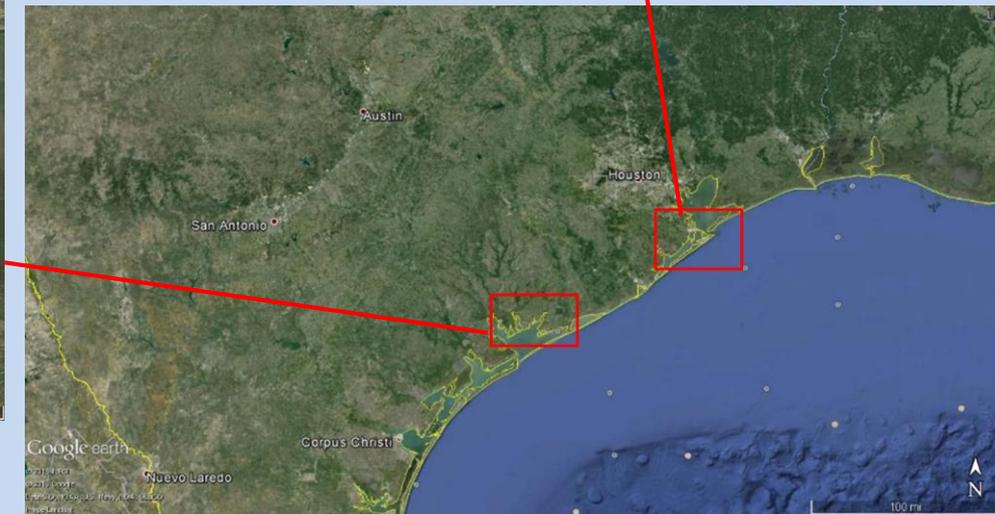
- South Carolina: Tucker et al. (1995)
 - 76-79% of dietary mass *Littorina* for all size classes (males and females)
- Northern Florida: Butler et al. (2012)
 - female diets consisted of crabs, *Littorina*, and dwarf surf clams
 - male diets consisted of dwarf surf clams and crabs
- Middle Coast Texas: Koza (2006)
 - found scorched mussel (*Brachidontes exustus*) in high frequencies especially in females
 - Decapoda and Gastropoda more frequently in males

Objective

Examine diet of terrapins in Texas, specifically the upper coast

Hypotheses

1. Are there dietary differences between sexes for Texas terrapins?
2. Are there temporal (seasonal) differences in Texas terrapin diet?



Methods

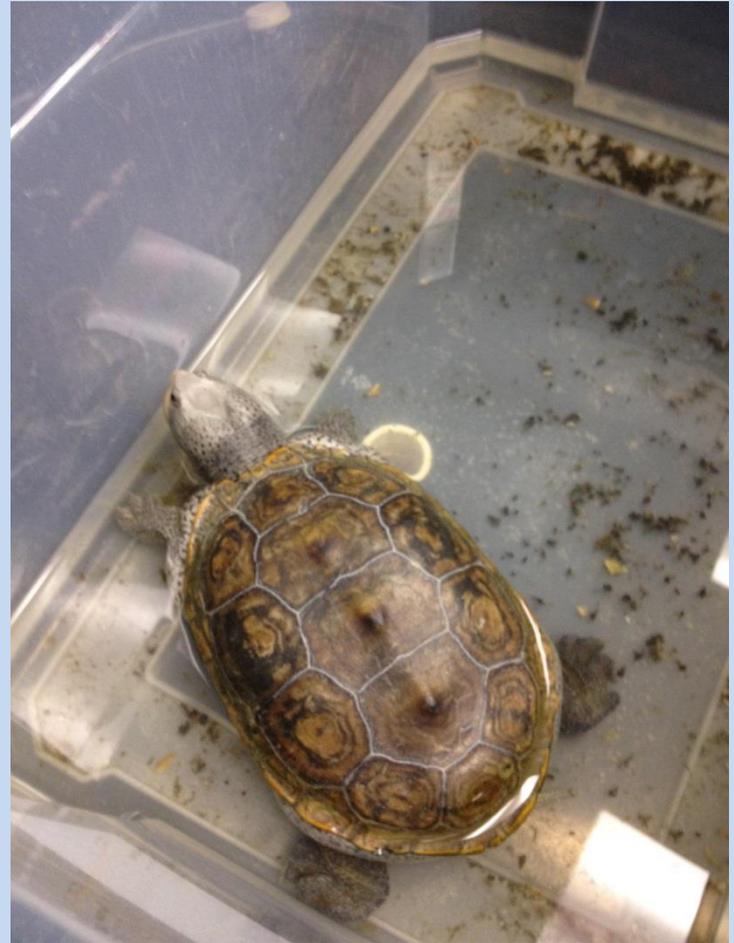
All wild terrapins

Opportunistic samples
collected in field

Housed overnight in
freshwater

- Kept for up to 48 hours
- Returned to capture
location

Samples preserved in vials



Methods

Processing:

- Samples dried in a desiccating oven and weighed
- Sorted under dissecting microscope using forceps
- Identified to lowest taxon

Fecal Analysis:

- Component parts weighed
- Calculated percent frequency of occurrence

Statistical Analysis:

- Kruskal-Wallis test employed to test for group differences
- Dunn's Method (*post hoc*)



Results

Samples Collected (n=64):

- Males (n=29)
- Females (n=35)

Season:

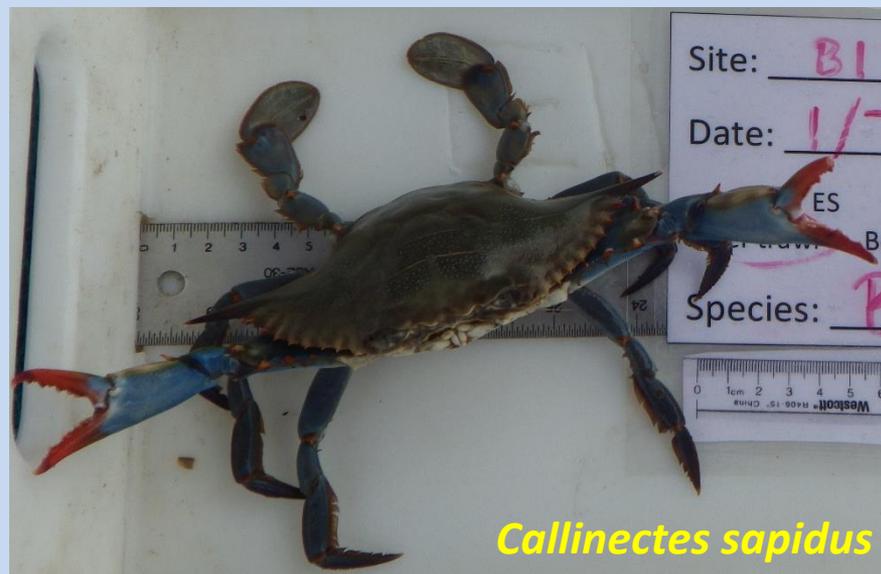
- Fall (n = 9)
- Spring (n = 25)
- Summer (n = 26)
- Winter (n = 4)

Total of 22 different items found in samples

- Range: 1-8 items/terrapiin
- Mode: 3 items/terrapiin



Examples of Prey



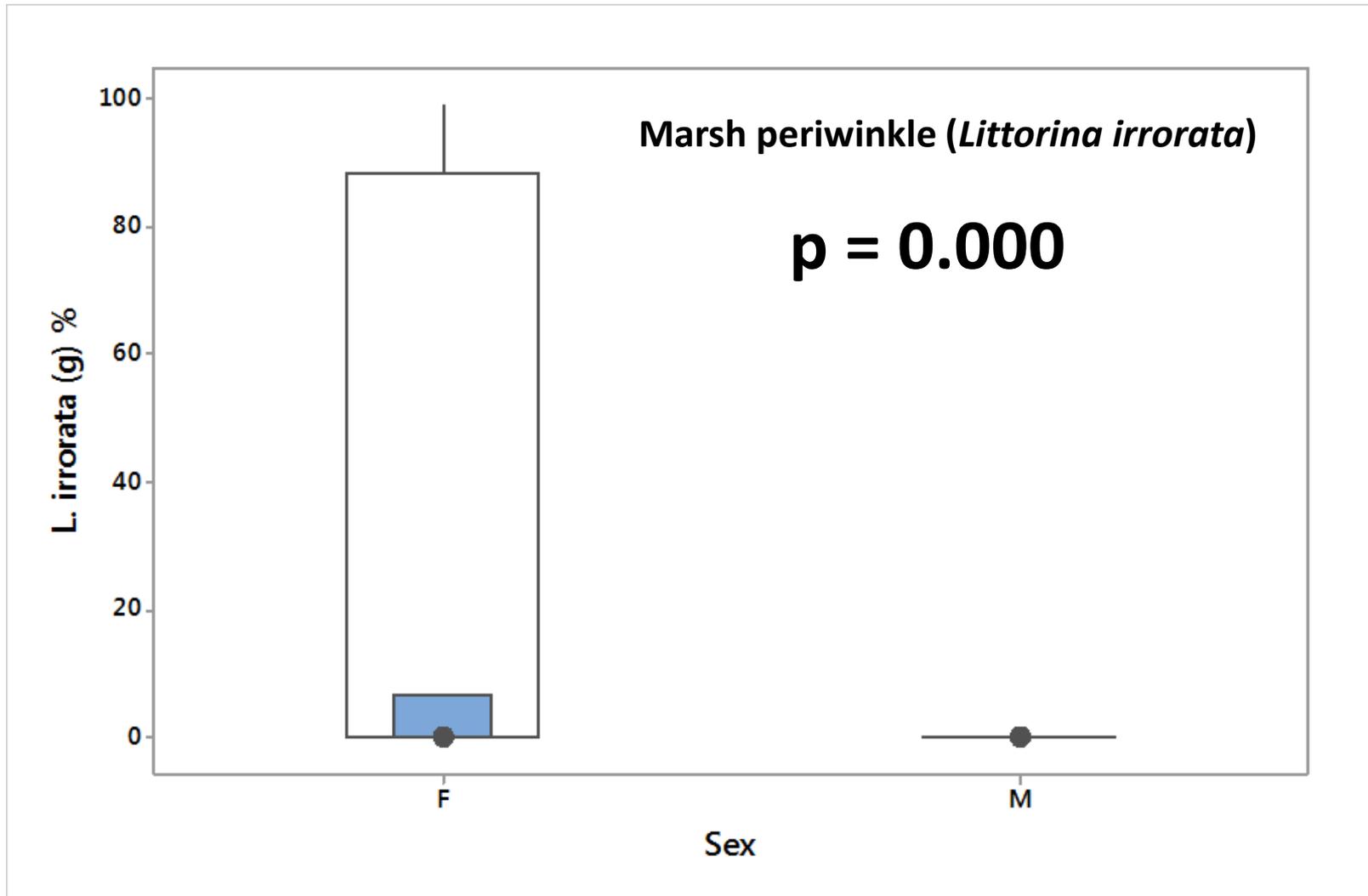
Fecal Analysis

Prey Item	% Frequency of Occurrence			% Weight (g)		
	Total (n = 64)	Male (n = 29)	Female (n = 35)	Total (n = 64)	Male (n = 29)	Female (n = 35)
Gastropoda	70.3	62.1	77.1	87.6	54.5	91.3
-Plicate Horn Snail	59.4	58.6	60.0	47.2	50.8	46.8
-Marsh Periwinkle	25.0	3.4	42.9	39.9	0.01	44.4
Decapoda	67.2	79.3	57.1	10.4	40.6	6.9
-Fiddler Crabs	40.6	41.4	40.0	6.8	16.7	5.7
-Blue Crab	21.9	31.0	14.3	2.6	17.0	1.0

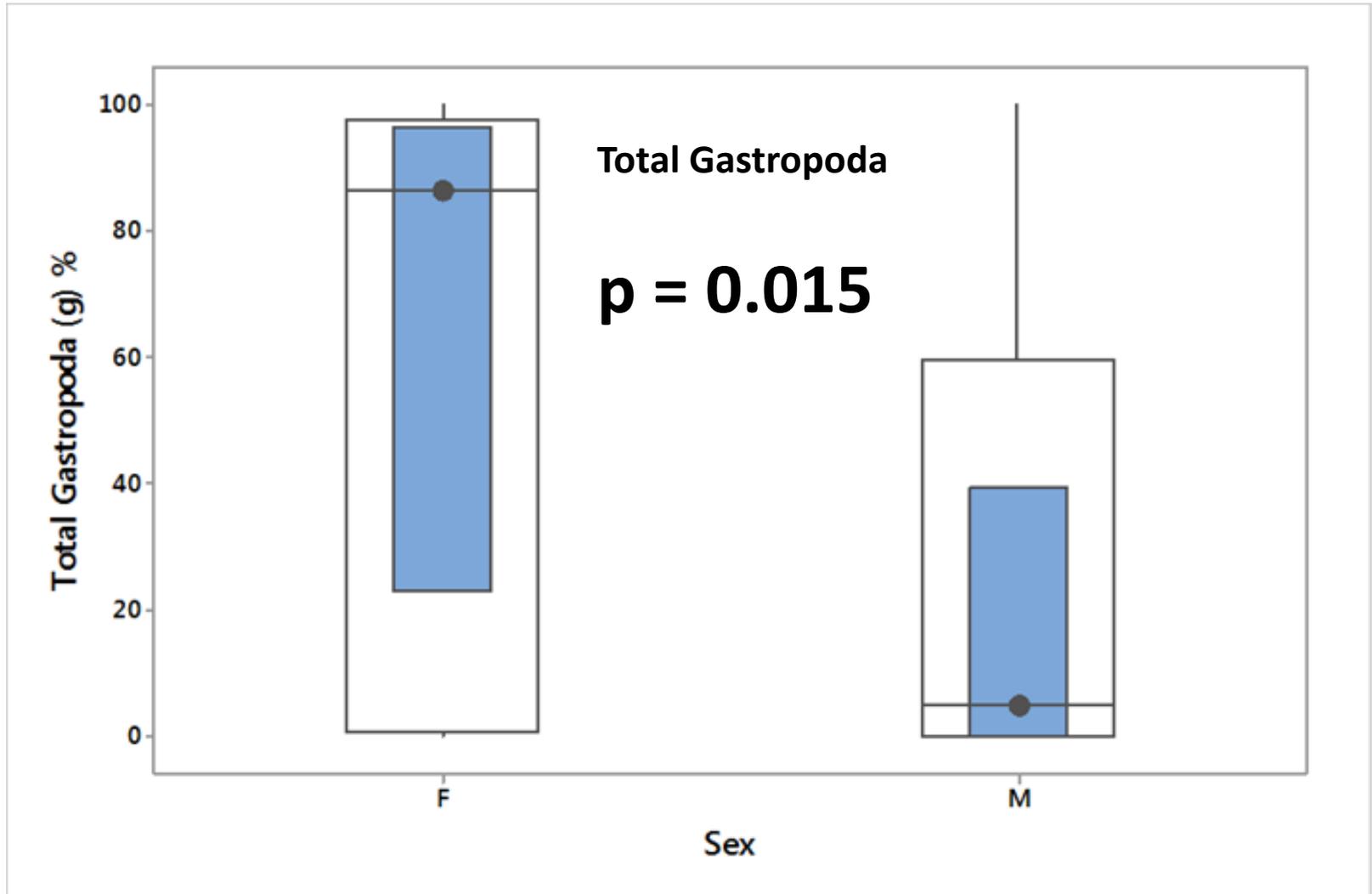
$$\% = \frac{\text{samples containing item}}{\text{total number of samples}} \times 100$$

$$\% = \frac{\text{weight of each taxon}}{\text{weights of all samples}} \times 100$$

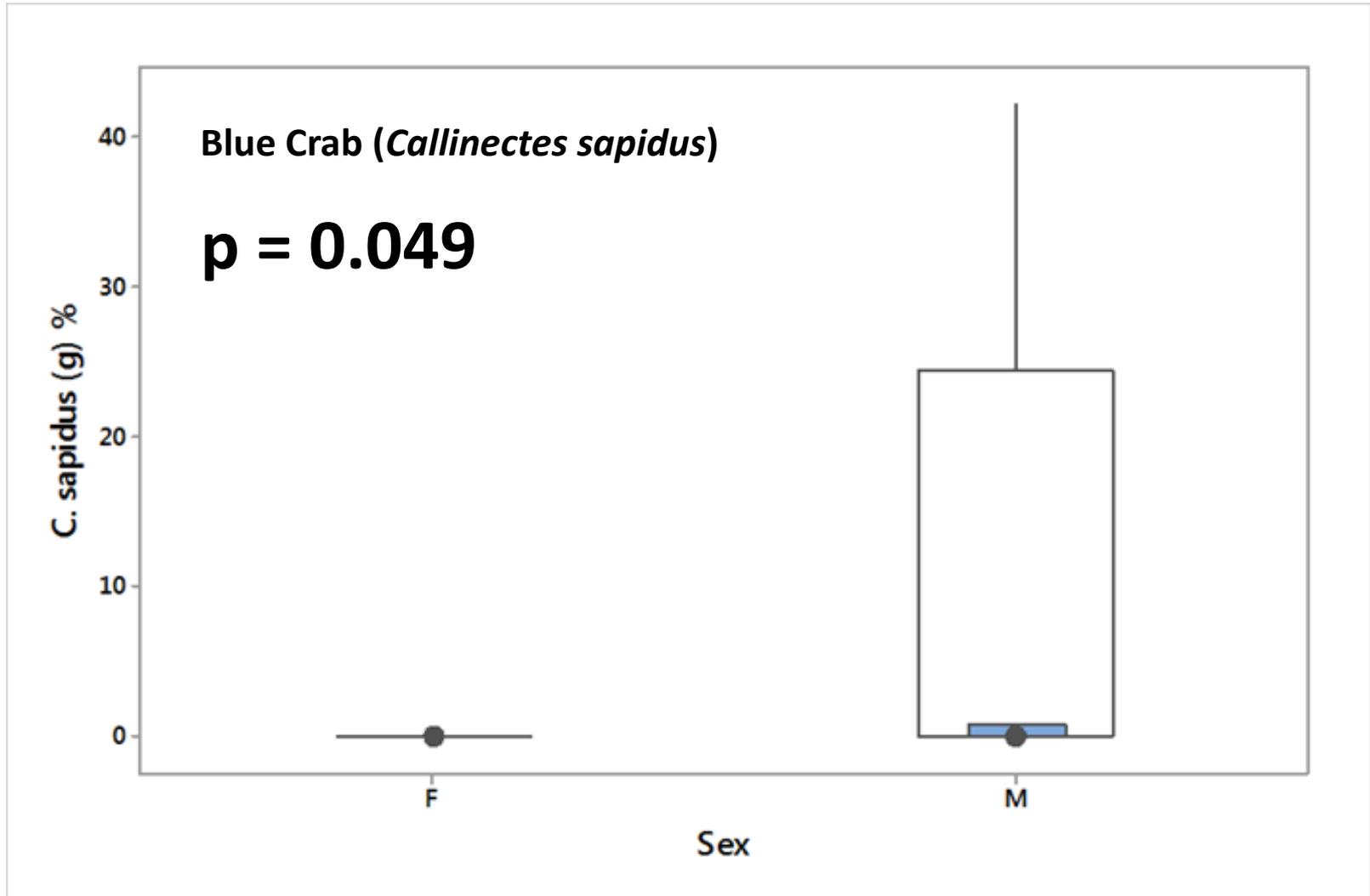
Kruskal-Wallis Results for Sex (% weight)



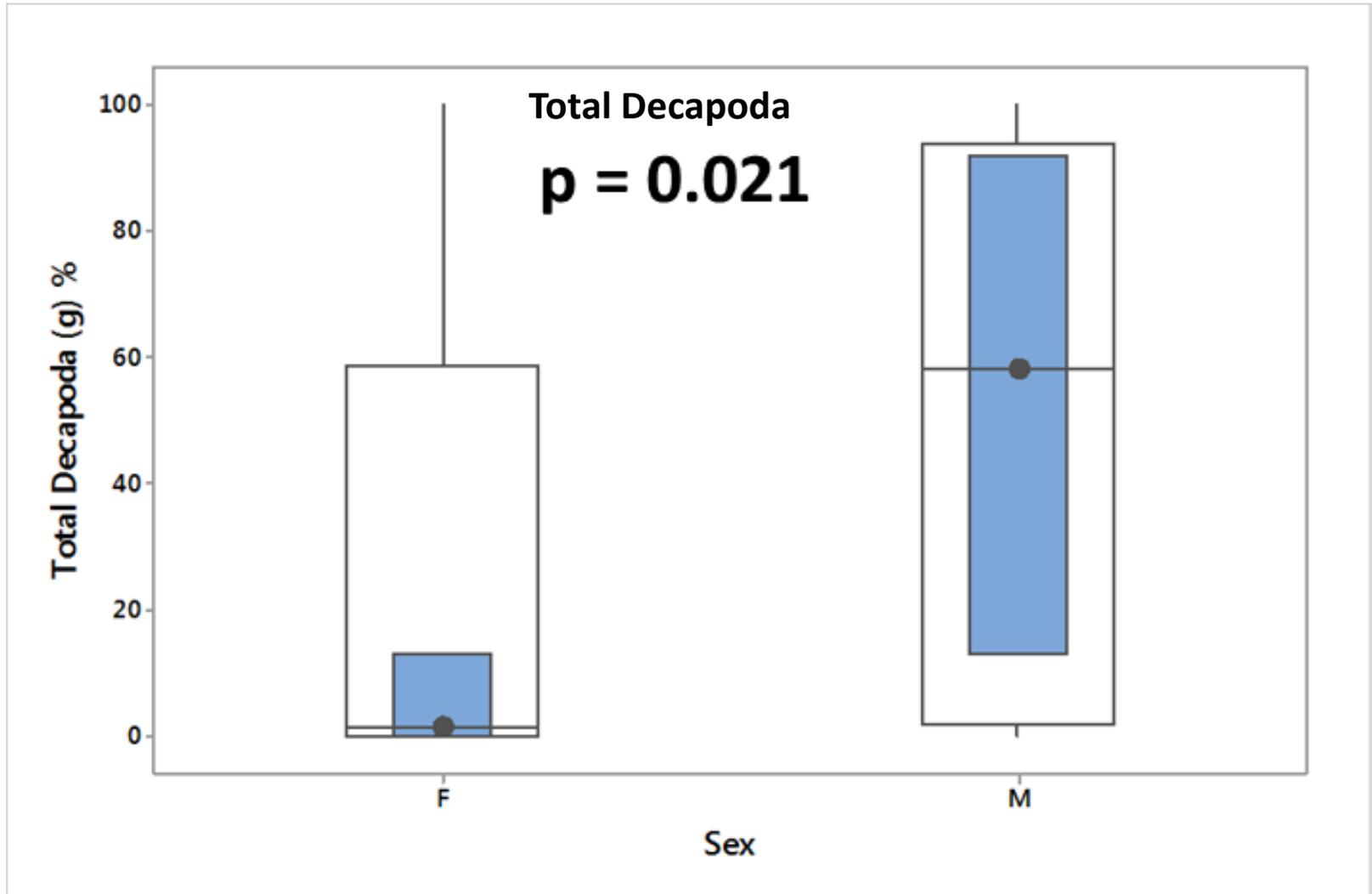
Kruskal-Wallis Results for Sex (% weight)



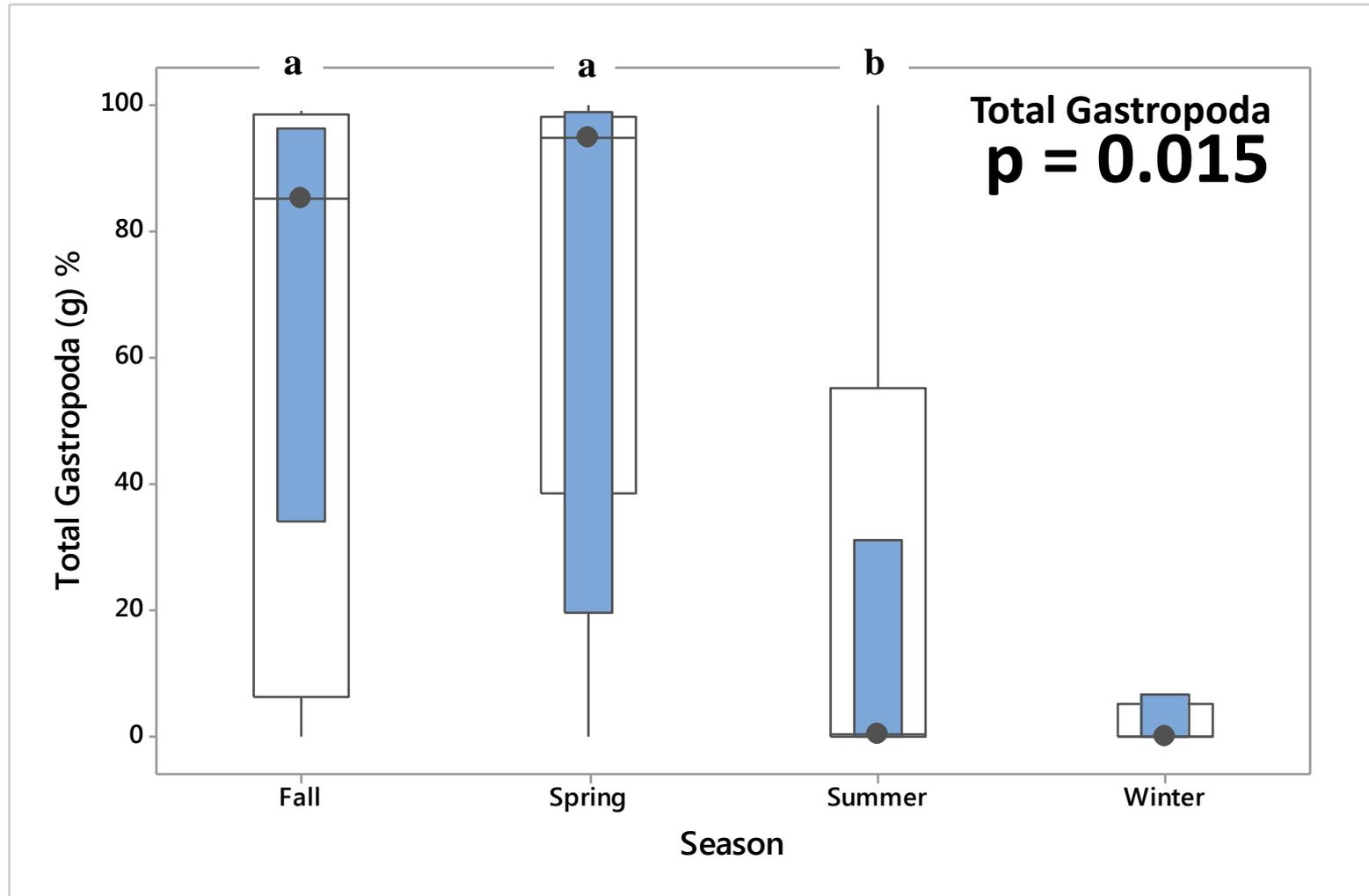
Kruskal-Wallis Results for Sex (% weight)



Kruskal-Wallis Results for Sex (% weight)

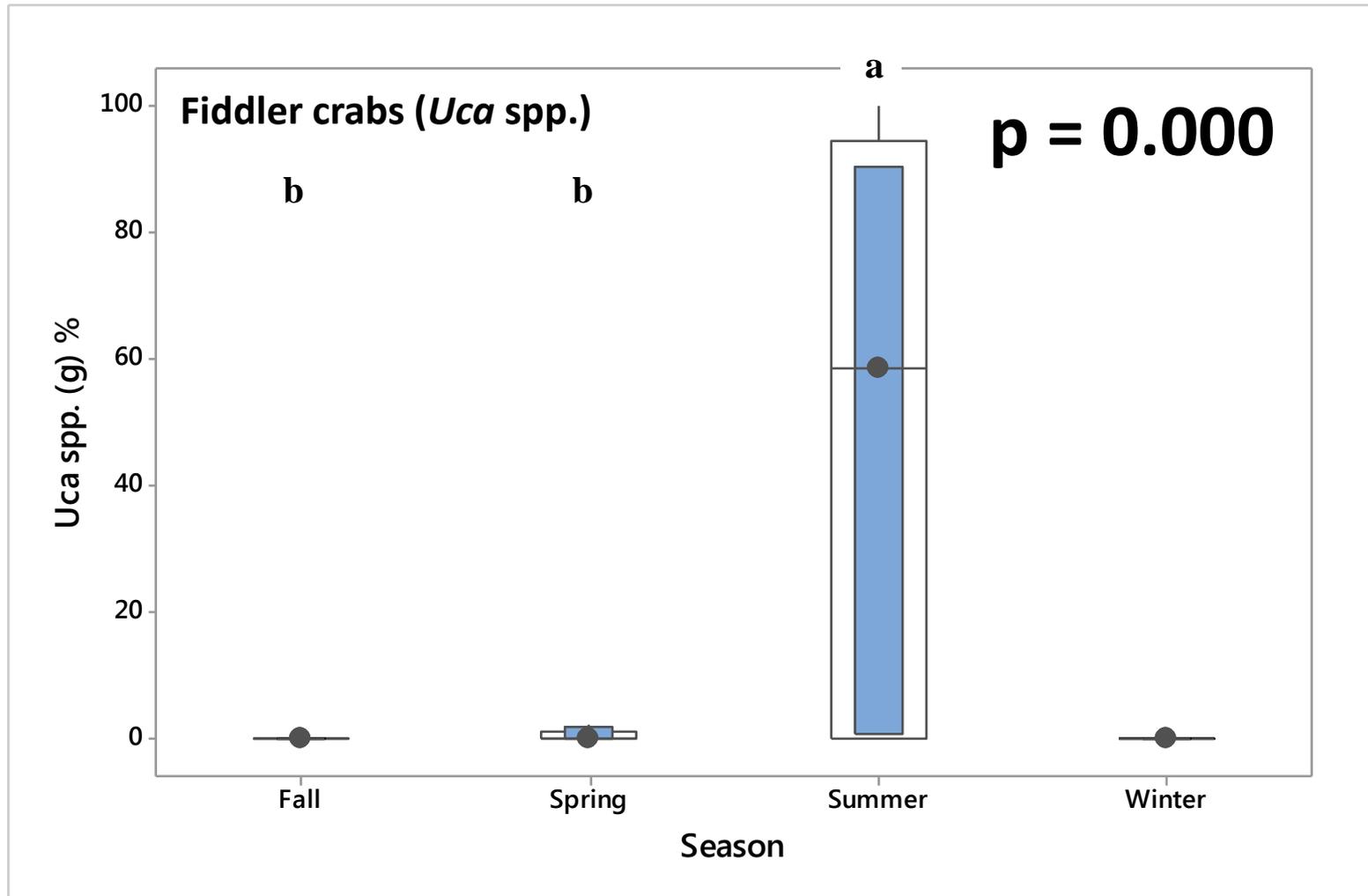


Kruskal-Wallis Results for Season (% weight)



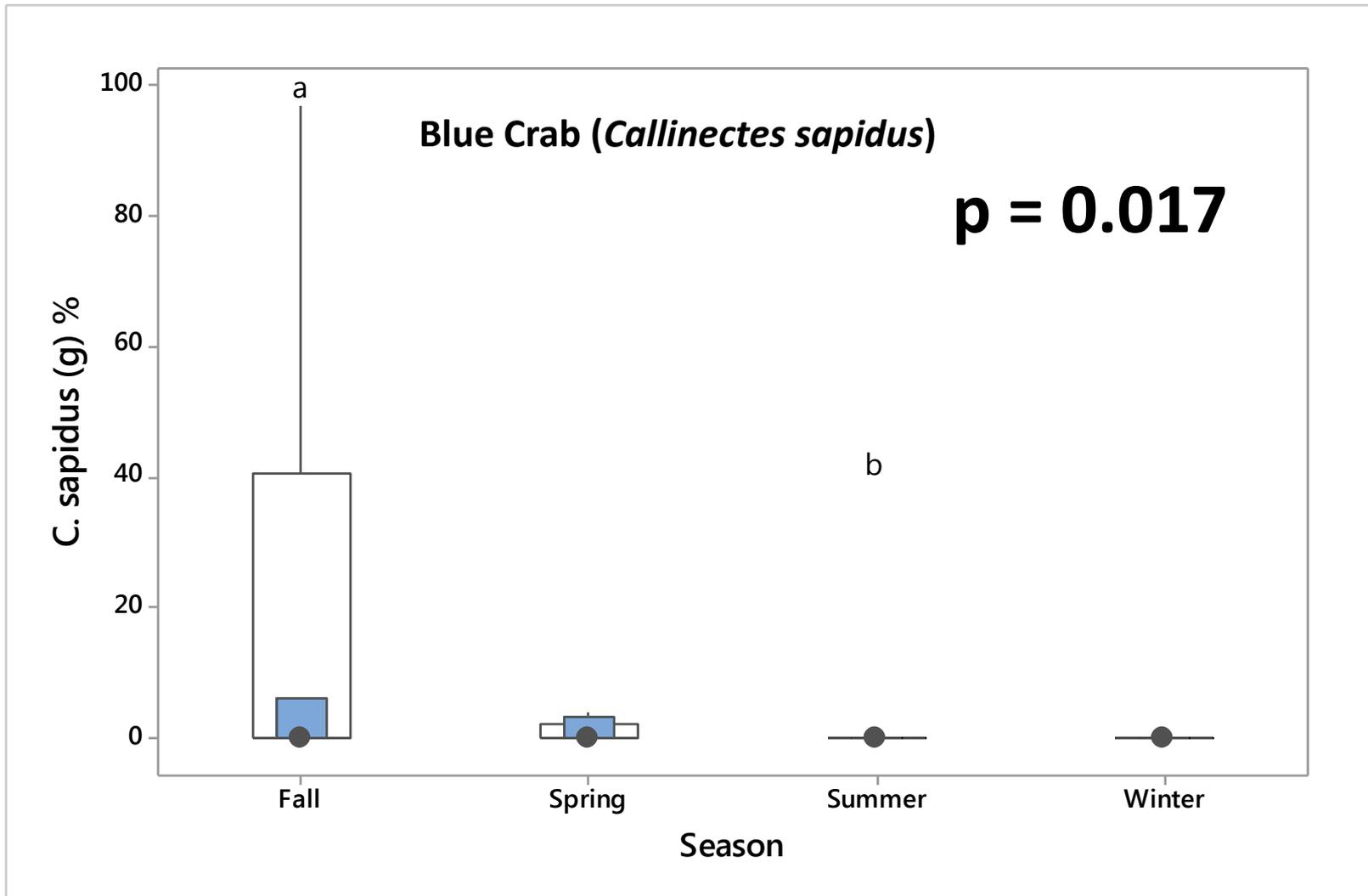
* Winter not included (n = 4)

Kruskal-Wallis Results for Season (% weight)



* Winter not included (n = 4)

Kruskal-Wallis Results for Season (% weight)



* Winter not included (n = 4)

Conclusions

Horn snails and fiddler crabs frequently found in fecal samples

- Important dietary components in West Bay

Diets in Texas differ between sexes and by season

Sex:

- Females: *Littorina* & Gastropods
- Males: *C. sapidus* & Decapods

Seasonal:

- Gastropods
- *Uca* spp.
- Decapods



Conclusions (cont.)

Appears diets are different over range

- South Carolina (Tucker 1995): mainly *Littorina*
- Florida (Butler 2012): *Littorina*, crabs, and dwarf surf clams
- Mid-Coast Texas (Koza 2006): scorched mussel, crabs, and snails
- Upper Coast Texas (This Study): Horn snails, *Littorina* (females), and decapods (*Uca* spp.)

Implications for terrapin conservation and management

References

- Butler, J. A., G. L. Heinrich, and M. L. Mitchell. 2012. Diet of Carolina Diamondback Terrapin (*Malaclemys terrapin centrata*) in Northeastern Florida. *Chelonian Conservation and Biology* 11: 124-128.
- Koza, B. 2006. Distribution, habitat selection, and resource partitioning of Texas Diamondback Terrapin (*Malaclemys terrapin littoralis*) in the Aransas National Wildlife Refuge area, Texas. M.S. Thesis. Texas A&M Corpus Christi, TX. pp. 185.
- Tucker, Anton D., Nancy N. Fitzsimmons, and J. Whitfield Gibbons. 1995. Resource Partitioning by the Estuarine Turtle *Malaclemys terrapin*: Trophic, Spatial, and Temporal Foraging Constraints. *Herpetologica* 51: 167-181.

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