



Gulf Fiddler Crab

Kingdom- Animalia

Phylum- Arthropoda

Class- Crustacea

Order- Decapoda

Family- Ocypodoidea

Genus- Uca

Species- Longisignalis

By: Katie & Adara

Background Information

- They are found along the Gulf coast.
- Males have one large claw. They use it to attract mates, dig burrows, and to ward off other males and protect burrows.
- They live in large clusters.
- Predators can be blue crab, multiple birds, and mammals such as raccoons.

Fiddler Burrows



- Fiddlers dig burrows to escape predators, mate, and hibernate during winter months.
- They burrow in mud, sand, and the salt marsh.
- They plug up the entrances to the burrows until the high tide goes down.
- Their bioturbation (burrow and feeding) keeps the marsh clean and healthy, and it aerates the sediment.

Our Question...

- How do the fiddler crab's burrows differ from location and vegetation?
- Null hypothesis- Vegetation and location do not affect the burrows.
- Alternative hypothesis- Marsh and areas with high vegetation will show the burrows dug straight down, and areas with little to no vegetation will have an angle.

Experimental Design

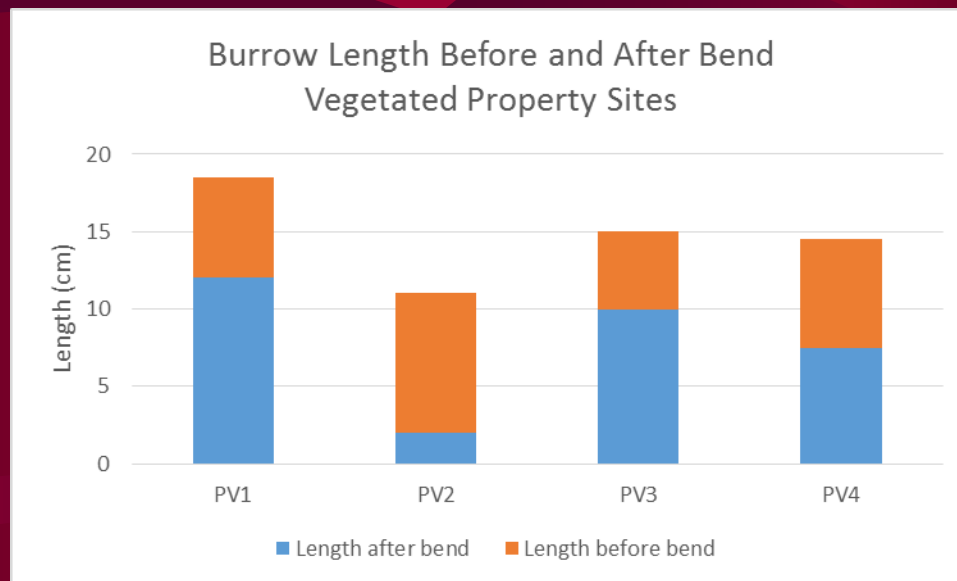
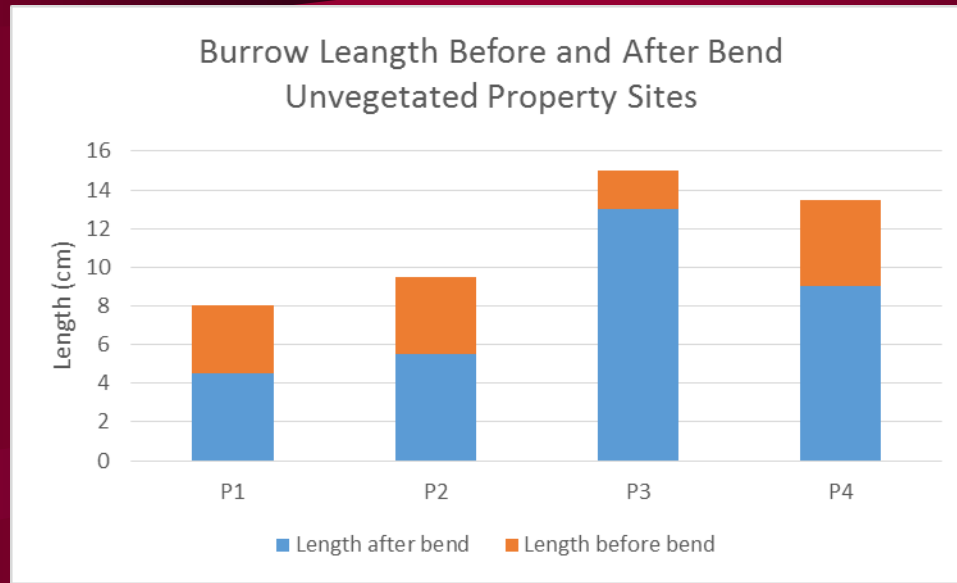
- We cast our burrows using DOW's Great Stuff™ insulating foam sealant.
- We cast burrows on the property and the marsh. At each location, we chose to set casts in high vegetation and low vegetation.



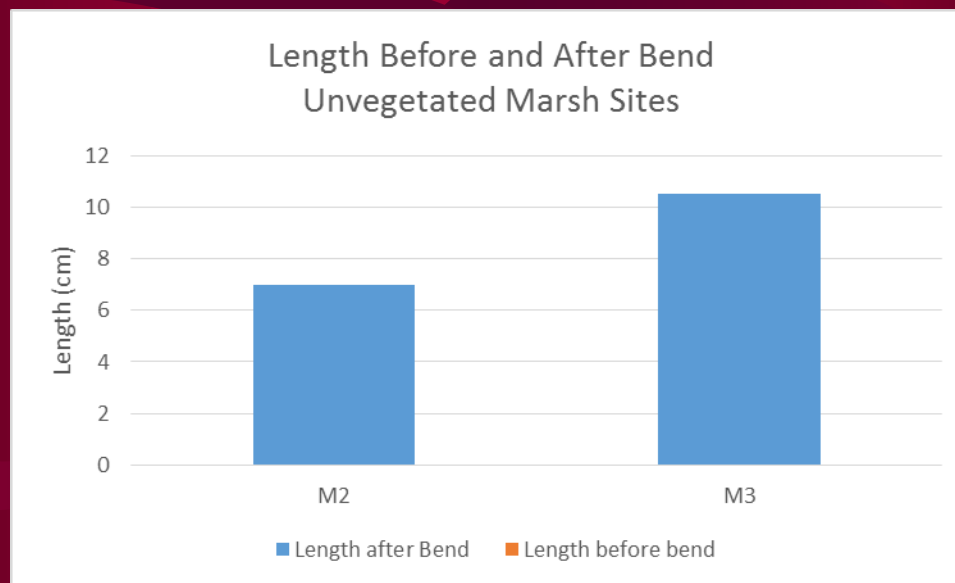
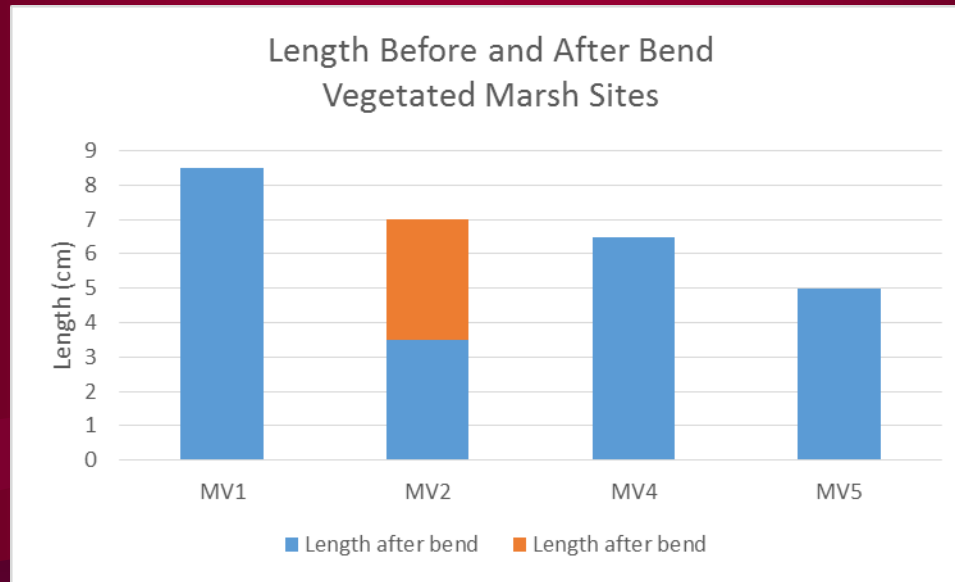
Data

Flag #	Length (cm)	Length before bend	Flag #	Length (cm)	Length before bend
P1	8	3.5	M2	7	0
P2	9 ½	4	M3	10 ½	0
P3	15	2	MV1	8 ½	0
P4	13 ½	4 ½	MV2	6 ½	3 ½
PV1	18 ½	6 ½	MV4	6 ½	0
PV2	11	9	MV5	5	0
PV3	15	5			
PV4	14 ½	7			
PV5	9	Left- 3 ½ , right 2 ½			

Property Sites



Marsh Sites



- Based on data:
 - Burrows in highly saturated soil go straight down while burrows in less saturated soils have a bend.
 - Total burrow length may be different between individual burrows but the ratio of burrow length **before** the bend to burrow length **after** the bend remain the same for the property sites (regardless of total length).

Future study questions

- Does the bend remain consistent for all burrows on LUMCON property?
- Is it based on hydrology, environmental cues, soil texture and properties, or behavioral patterns?

Conclusion

- Using the given information, the burrows in the marsh were shorter and without an angle, however a conclusion as to how the vegetation affects the angle of a fiddler crab's burrow can not be made. We predict this because there may have not been enough vegetation difference, not enough information, less predators, water, and root systems in the mud.

Continued Studies

- Question- What is the fiddler crab's burrow distribution among high and low vegetation?
- Null Hypothesis- High and low vegetation do not affect the distribution of the fiddler crab's burrows.
- Alternative Hypothesis- There is a higher distribution of burrows in the high vegetation than the low vegetation.

Data

Low Vegetation	Height (cm)	Number of burrows	High vegetation	Height (cm)	Number of burrows
Site 1	0	0	Site 1	18	4
Site 2	14 ½	3	Site 2	20	3
Site 3 (scarce vegetation)	18	1	Site 3	21 ½	6

Conclusion

- Our data supports the hypothesis that there is a higher count of burrows in the higher vegetation. We predict that the higher vegetation adds a better camouflage from the predators than the lower vegetation. However, in the low vegetation, the water level was higher therefore the crabs may have plugged up their burrows.

Support

- Both of our conclusions are supported by the research article “Burrow Distributions and Population Estimates for the fiddler crabs *Uca spinicarpa* and *Uca longisignalis* in a Gulf of Mexico salt marsh” by Edmond C. Monton and Darryl L. Felder.
- They found that the burrow densities were higher in the vegetated areas than the less vegetated areas. They also saw that the depths of the burrows increased the farther away from the waters edge.

Sources

- fiddlercrab.info.com
- Edc.uri.edu
- VIMS.edu
- Mouton, Edmond C., and Darryl L. Felder.
“Burrow Distributions and Populations Estimates
for the fiddler crab *Uca spinicarpa* and *Uca
longisignalis* in a Gulf of Mexico salt marsh.”
Estuaries 19.1 (1996): 51-61. Web. 25 July 2014.