Ribbed Mussel (*Geukensia demissa*)

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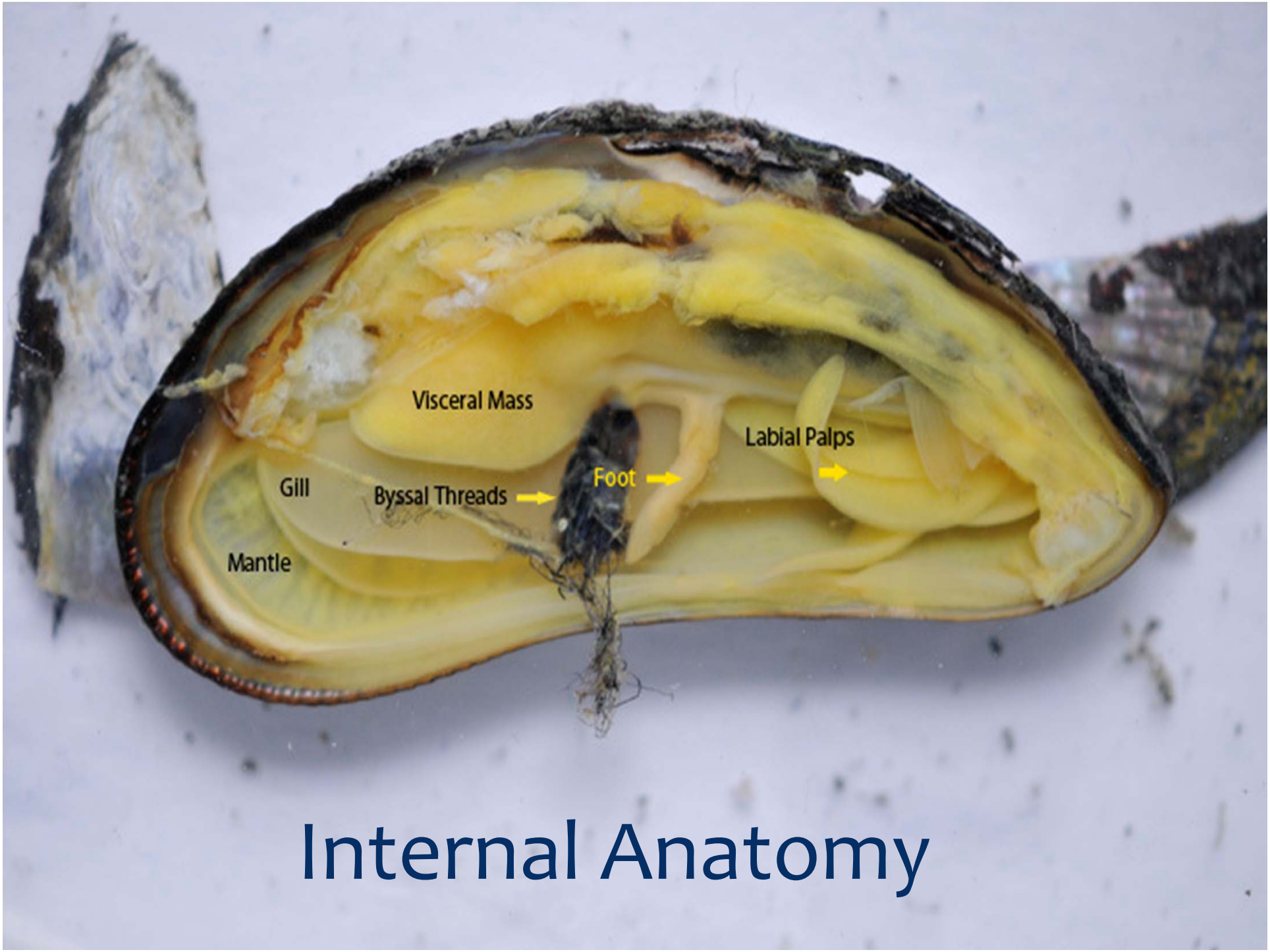
Description

* Shell is shaped like a long rounded triangle with corrugated ribs
* Yellowish-brown to brownish-black with a glossy underside
* Up to 4 inches long



Internal Anatomy

Habitat & Behavior

* Can be found all around the U.S. coast and Canadian East Coast.
* Live burrowed within stems and roots of smooth cordgrass in estuaries and salt marshes
* Burrow partially into but remain slightly exposed.
* They anchor themselves with byssal strands, which are strands of protein produced by the mussel
* Are able to withstand periods of drought and extreme fluctuations in temperature and salinity

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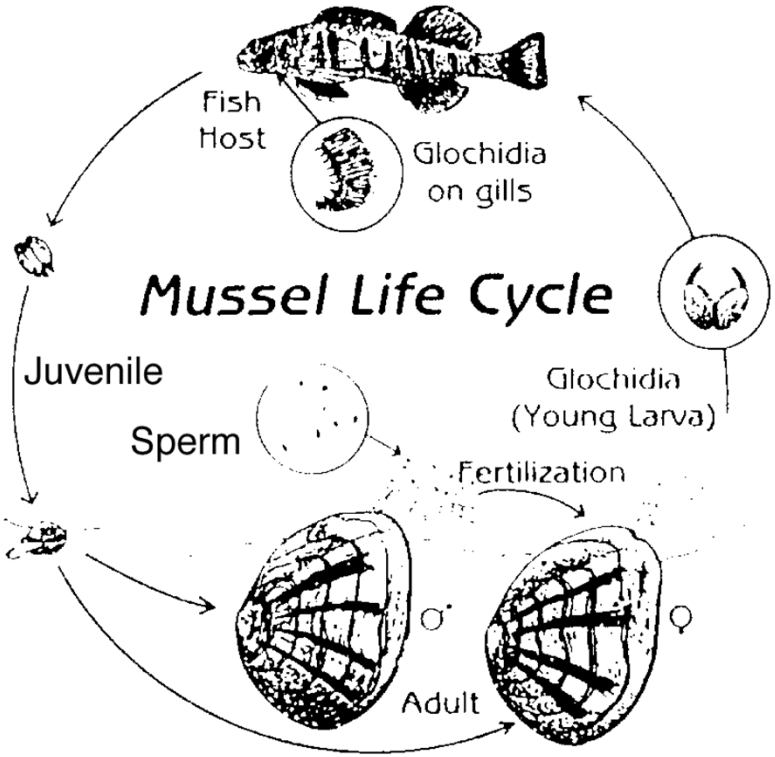
Life Cycle & Reproduction

* Spawning occurs once every summer
* During spawning season mantles on the males turn cream color and on females yellowish
* Ribbed mussels can live over 15 years



Feeding

* Ribbed mussels are filter feeders
* During high tide, they open their shells slightly to draw in water, filtering out algae and other particles
* Ribbed mussels can filter 6.8 liters of sea water an hour

Predation

- Ribbed Mussels have many predators including blue crabs, mud crabs, and shore birds
- Their primary defense against predation is their shell
- Higher survival rates in mussels high in the intertidal zone suggest that marine predators are more important than terrestrial ones.

Project Info.

* **Question:** Do mussels have a reaction to predators?

* **Hypothesis:** In the presence of a predator, mussels will burrow deeper then those not in the presence of a predator.
* **Hypothesis:** In the presence of a predator, mussels will produce more byssal threads and the length of the byssal threads will vary.

Project Info.

Reaction to predators

- What to measure: burrowing depth and byssal thread length or production
- Design: 16 beakers, 600 ml full of mud (4 with oil) cut byssal threads, ran for two hours
- The length of the mussels are below. Where we started in centimeters(cm).

D	6.5	7.5	7	7
C	6.75	9.5	6.6	9
B	5.75	8	9	7.5
A	7	7	8	6.5
	control	presence	essence	oil

Project Results

How much they went into mud in cm.

D	2	3	2	1
C	1.45	2	-1	1.5
B	1.85	1.1	3	5
A	2.9	1.4	0	5
Time 3:30	Control	Presence	Essence	Oil

D	.5	1.5	1	1.5
C	.25	1.5	3.6(on side)	1.7
B	2.75(on side)	2	-.5	2
A	1.5	0	2.5(on side)	5
Time 4:00	Control	Presence	Essence	Oil

Project Results

D	2	3	-1	1
C	1.5	2.4	4.6(on side)	1.5
B	2.05(on side)	1.7	2	1
A	2.6	.8	1(on side)	0
Time 4:30	Control	Presence	Essence	Oil

D	1.4	2.5	0	2.5
C	1.35	2.5	4.6(on side)	2.5
B	3.25(on side)	3	2	3
A	2.5(on side)	1	3.5(on side)	4.5(on side)
Time 5:00	Control	Presence	Essence	Oil

Projects Results

D	5	2	2	4
C	1.25	2.5	4.6(on side)	5.5
B	2.75(on side)	2	1.5	6
A	2(on side)	5	3(on side)	4.5(on side)
Time 6:37	Control	Presence	Essence	Oil

D	1.5	4.5(dead)	5.5	4
C	1.25(dead)	2.5	4.1(on side)	5.5
B	2.75(on side)	3.5	2.5	6(dead)
A	3(on side)	1	3.5(on side)	4.5(on side)
Time 2:39	Control	Presence	Essence	Oil

Projects Results

* There was an abundance of small byssal threads all measured in cm.

D	4 threads 1cm	0 threads 0cm	2 threads 1cm	0 threads 0cm
C	3 threads 3cm	0 threads 0cm	0 threads 0cm	1 thread 1cm
B	10 threads 1.2cm	1 thread .65cm	0 threads 0cm	0 threads 0cm
A	4 threads 3cm	0 threads 0cm	5 threads 1.5cm	0threads 0cm
	Control	Presence	Essence	Oil

Conclusion

The data did not support our hypothesis.

Challenges to the design:

* maybe we scared them
* there was a lot of human error in these many trails

Further studies could be improved by…

finding a more accurate way to measure the mussels' burrowing habits but you will never have the mussels' act the same in a beaker.

Works Cited

* "Ribbed Mussel." *Ribbed Mussel.* N.p., N.d. Web. 23 July 2015.
* "Chesapeake Bay Program." *Bay Blog Rss.* N.p., N.d. Web. 23 July 2015.
* "Geukensia Demissa." *Geukensia* Demissia. N.p., N.d. Web. 2 July 2015.