Notes from the Field

Young Scientist Newsletter

Marsh Periwinkles

Photo Credit: LUMCON/CWC

Why do we study periwinkles?

Fungus Farmers

Scientist Corner

Be A Field Ecologist!

Periwinkle Puzzles!

January 2016

Marsh Periwinkles (*Littoraria* irrorata) are a species of sea snail found in salt marshes on the Atlantic coast and in the Gulf of Mexico. This small invertebrate is part of the very diverse Phylum Mollusca along with clams, oysters, squid and cuttlefish.


Photo Credit: Madelyn Sorrentino

Periwinkles are usually found on the shoots of smooth cordgrass (*Spartina alterniflora*) avoiding predators. When the tide is low they move down the shoots towards the mud to find food. As the tide returns they move back up the shoots to avoid crabs and conches.


Photo Credit: Jacksonville Shell Club

As an indicator species, periwinkles can help determine, along with other factors, the health of a marsh. Periwinkles are very sensitive to chemicals, pesticides and other pollutants so they are often the first organisms to die in an unhealthy marsh system. This is significant because periwinkles have the potential to influence nutrient cycling, microbial communities, marsh productivity and even the growth of marsh vegetation.

Data collected in the years since the Deepwater Horizon oil spill shows that periwinkle populations were greatly influenced by the event. One study conducted by Scott Zengel and his colleagues concluded that periwinkle density (the number of individuals in a given space) and shell size were negatively effected by the spill - particularly in the marsh interior where snails are naturally found in higher numbers.

This study did not look specifically at how periwinkle density was reduced but they hypothesized that it is from a combination of processes: direct contact with the oil, exposure to toxins in the water and soil, loss of habitat, and loss of food sources. Based on their research and the data they collected, these scientists believe that marsh periwinkles are recovering but that it may be many years before the population is stable again.

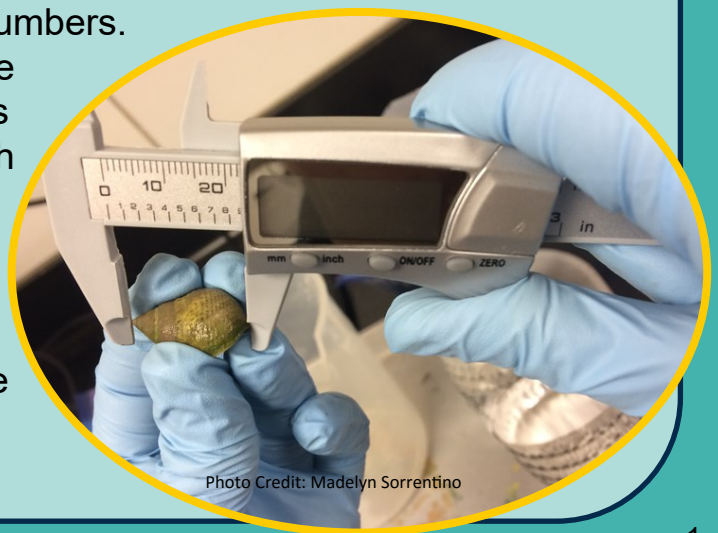


Photo Credit: Madelyn Sorrentino


Photo Credit: Mary Hollinger/NOAA

Scientist Corner


Photo Credit: Anthony Rietl

Anthony Rietl is a Postdoctoral Researcher at LUMCON. Having completed his PhD, he is gaining additional research experience by working with Dr. Brian Roberts.

What is your educational back-ground?

I received my B.S. from the University of Louisville, my M.S. from the University of Mississippi, and my PhD from Louisiana State University. Before attending the University of Louisville... before committing to college really, I attended a small community college in Louisville, KY from which I eventually transferred to UofL.

Who/What inspired you to get into science?

I've always been into nature and being outdoors. Realizing that studying nature could be my job helped push me into ecology. Two books that I read early in college really sparked my interests - Silent Spring by Rachel Carson was a very motivating and inspiring book that shows what a difference ecological research can make in the world, and Microcosmos by Lynn Margulis was a book that opened my eyes to an in-visible microbial world that plays a big role in the way ecosystems function. As an undergraduate I had a really good mentor at UofL, Dr. Margaret Carreiro. I worked in her lab and she was a great teacher who helped me a lot. She has been a big factor in shaping my scientific interests, then and now.

What do you enjoy most about your position?

Finding answers to interesting questions about nature and being outdoors! I really enjoy coming up with my own research questions and having the freedom to follow those interests.

Have you experienced any challenges along your way? How did you overcome them?

Committing myself to school for long enough to obtain a PhD was challenging for me, especially since I started college a little later than the average student. But, I had a goal and persistently worked toward obtaining the career I wanted. Being hard headed and stubborn can pay off if channeled appropriately!

Be a Field Ecologist!


Photo Credit: CWC

An ecologist is a scientist that studies how animals and plants interact with each other and their environment. CWC ecologists are focused on the organisms that live in the salt marsh and how they have been effected by the Deepwater Horizon oil spill.

One group of ecologists wanted to know where the largest density of periwinkles is in the marsh. They counted individual snails and measured shell size at sites 1, 5,10, 20, 30 and 50 meters back from the water's edge. They repeated this procedure at different marshes in the Barataria-Terrebonne Estuary and found that the highest density of periwinkles is at the 10m mark.

These scientists have their theories as to why this pattern occurs but what do you think? Why did the scientists find the most snails at 10m and not closer to the water or on drier ground?

One way you could answer these questions is to go out into the marsh yourself and take a look around! Ask your parents if they will visit one of our many Louisiana salt marshes with you so you can observe Marsh Periwinkles in their natural habitat. While you're out there, look for reasons why periwinkles might be hanging out away from the water's edge. Do you see any signs of predators? How high does the water come up during the high tide? How dry does the area get when the tide is low? What other animals do you see that might influence periwinkle behavior? Describe the types of plants you see and make observations about the weather and surrounding environment.

Keep a record of what you observe so that you can go back out another time and compare your findings. And then use your local library and the internet to learn more about periwinkles, salt marshes and the research being done in your area.


Photo Credit: LUMCON/CWC

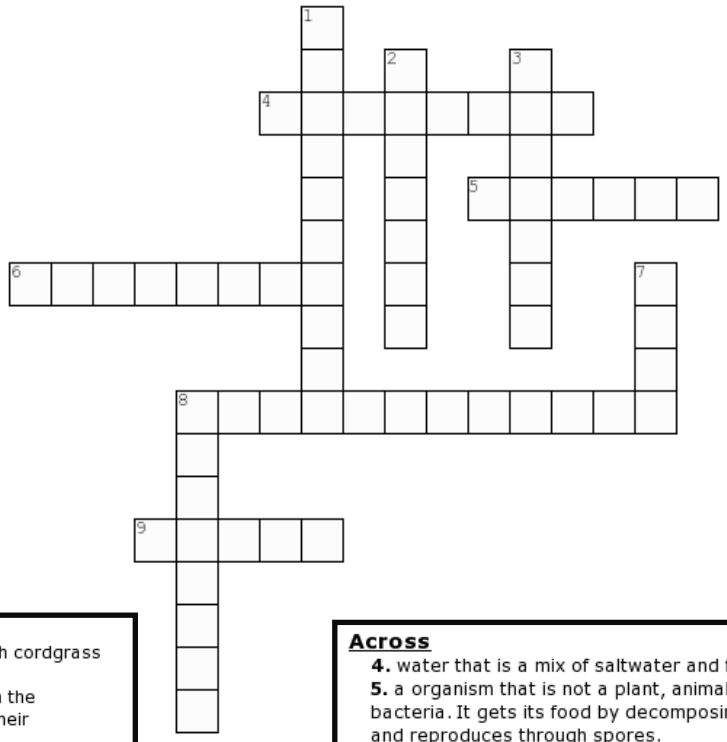
Fungus Farmers

Marsh Periwinkles are one of a handful of organisms that practice *fungiculture*! The periwinkles chew holes in the shoots of cordgrass and eat the fungus that begins to grow. They even go so far as to deposit their own feces in the wounds to provide a nutrient rich fertilizer for the growing fungus. Studies have shown that young periwinkles raised without the fungus don't survive as well as their fungus eating friends—so it's a really important part of their diet!

Photo Credit: Jacksonville Shell Club

Salt Marsh Crossword

Complete the crossword using the clues below!



Down

1. a small sea snail that climbs smooth cordgrass to avoid predators
2. a branch of science that focuses on the relationship between organisms and their environment
3. a partially enclosed area where seawater mixes with freshwater
7. a popular species of crab found along the Atlantic and Gulf shores . It is one of the periwinkle's predators.
8. a species that is non-native to its current environment

Across

4. water that is a mix of saltwater and freshwater
5. a organism that is not a plant, animal or bacteria. It gets its food by decomposing matter and reproduces through spores.
6. organisms that are unable to swim against the current. They can be animals or plants and are primarily microscopic.
8. a group of animals that do not have a backbone
9. a type of wetland known for its rich soil, grass-like vegetation, and adaptable inhabitants.

All answers on page 4

Periwinkle Word Search

I	I	Z	T	D	X	A	Z	O	H	I	U	D	M	U	E	J	I	H	E
E	B	P	M	A	R	S	H	P	E	R	I	W	I	N	K	L	E	Q	Q
C	L	Y	P	Y	B	A	R	A	T	A	R	I	A	S	S	Q	F	O	F
F	U	N	G	U	S	P	Q	H	K	C	X	H	C	M	A	M	K	Y	I
R	E	U	N	M	O	L	L	U	S	C	A	I	C	S	L	W	U	U	N
G	C	X	C	Z	S	H	E	F	T	B	J	U	X	W	T	Q	N	E	D
M	R	M	L	B	M	S	O	X	U	V	A	A	I	V	M	F	T	O	I
A	A	I	X	J	O	P	Y	E	W	F	W	Q	U	J	A	A	V	I	C
I	B	R	H	U	H	C	T	T	I	C	I	S	C	W	R	Y	B	L	T
P	I	Q	K	S	Q	F	O	E	C	O	Y	L	D	B	S	Z	C	S	A
O	C	G	O	M	E	H	L	R	H	V	D	Q	E	J	H	U	I	P	T
L	X	L	A	Y	H	O	T	R	D	F	L	T	L	U	H	G	X	I	O
L	V	R	P	O	L	C	Z	E	G	G	R	N	H	J	L	W	D	L	R
U	M	K	I	X	A	E	M	B	N	E	R	L	K	J	E	W	O	L	S
T	H	Z	T	V	X	C	S	O	V	S	B	A	J	U	Y	W	F	H	P
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N	P	P	B	Y	S	L	I	N	H	Q	C	A	D	S	O	O	R	K	C
T	P	L	Q	Z	W	O	Q	E	F	S	T	X	I	Q	K	O	G	K	I
D	I	P	A	H	U	G	E	S	T	U	A	R	Y	L	P	Z	R	N	E
D	A	T	N	P	G	Y	E	Y	E	L	T	E	P	A	N	F	Z	P	S

MARSHPERIWINKLE
SALTMARSH
INVERTEBRATE
CORDGRASS
BLUECRAB
INDICTATORSPECIES
FUNGUS
ECOLOGY
SNAIL
MOLLUSC
ESTUARY
BARATARIA
TERREBONNE
POLLUTANT
OILSPILL

Photo Credit: Getty Imag-

Puzzle Answers

Periwinkle Word Search

I	I	Z	T	D	X	A	Z	O	H	I	U	D	M	U	E	J	I	H	E
E	B	P	M	A	R	S	H	P	E	R	I	W	I	N	K	L	E	Q	Q
C	L	Y	P	Y	B	A	R	A	T	A	R	I	A	S	S	Q	F	O	F
F	U	N	G	U	S	P	Q	H	K	C	X	H	C	M	A	M	K	Y	I
R	E	U	N	M	O	L	L	U	S	C	A	I	C	S	L	W	U	U	N
G	C	X	C	Z	S	H	E	F	T	B	J	U	X	W	T	Q	N	E	D
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I	B	R	H	U	H	C	T	T	I	C	I	S	C	W	R	Y	B	L	T
P	I	Q	K	S	Q	F	O	E	C	O	Y	L	D	B	S	Z	C	S	A
O	C	G	O	M	E	H	L	R	H	V	D	Q	E	J	H	U	I	P	T
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L	V	R	P	O	L	C	Z	E	G	G	R	N	H	J	L	W	D	L	R
U	M	K	I	X	A	E	M	B	N	E	R	L	K	J	E	W	O	L	S
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D	I	P	A	H	U	G	E	S	T	U	A	R	Y	L	P	Z	R	N	E
D	A	T	N	P	G	Y	E	Y	E	L	T	E	P	A	N	F	Z	P	S

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Photo Credit: Brown University

Photo Credit: LUMCON/

Salt Marsh Crossword

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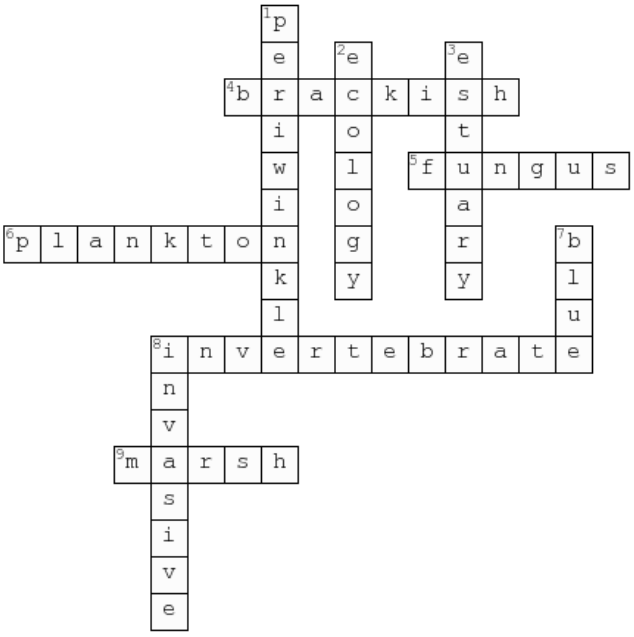

Created with TheTeachersCorner.net Crossword Puzzle Generator


Photo Credit: Duke Marine Lab

For More Information:

- Marsh Periwinkle Snail Poster—Coastal Waters Consortium
  http://cwc.lumcon.edu/wp-content/uploads/2016/04/poster_snail.pdf
- Marsh Periwinkle—Chesapeake Bay Program
  http://www.chesapeakebay.net/fieldguide/critter/marsh_periwinkle
- *Littorina* irrorata—Smithsonian Marine Center at Fort Pierce
  http://www.sms.si.edu/irlspec/Littor_irrora.htm
- Animal Diversity Web: *Littorina irrorata*—University of Michigan Museum of Zoology
  http://animaldiversity.org/accounts/Littorina_irrorata/
- Marsh Periwinkle—Wilderness Classroom
  http://www.wildernessclassroom.com/wilderness-library/marsh-periwinkle/
- Marsh Periwinkle (Littoraria irrorata): The Fungi-Farming Sea Snail—EpochCatcher
  http://www.epochcatcher.com/blog/2012/4/creature-of-the-week-marsh-periwinkle-littorina-irrorata
- Distribution and Morphology of the Marsh Periwinkle, *Littoraria irrorata,* across Louisiana Salt Marshes—Madelyn Sorrentino (Presentation)

Stay up to date with CWC events through social media!

Website: cwc.lumcon.edu
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Photo Credit: LUMCON/CWC