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As the Seas Rise: How Coastal Plants and Animals Will Be Affected by Sea Level Rise

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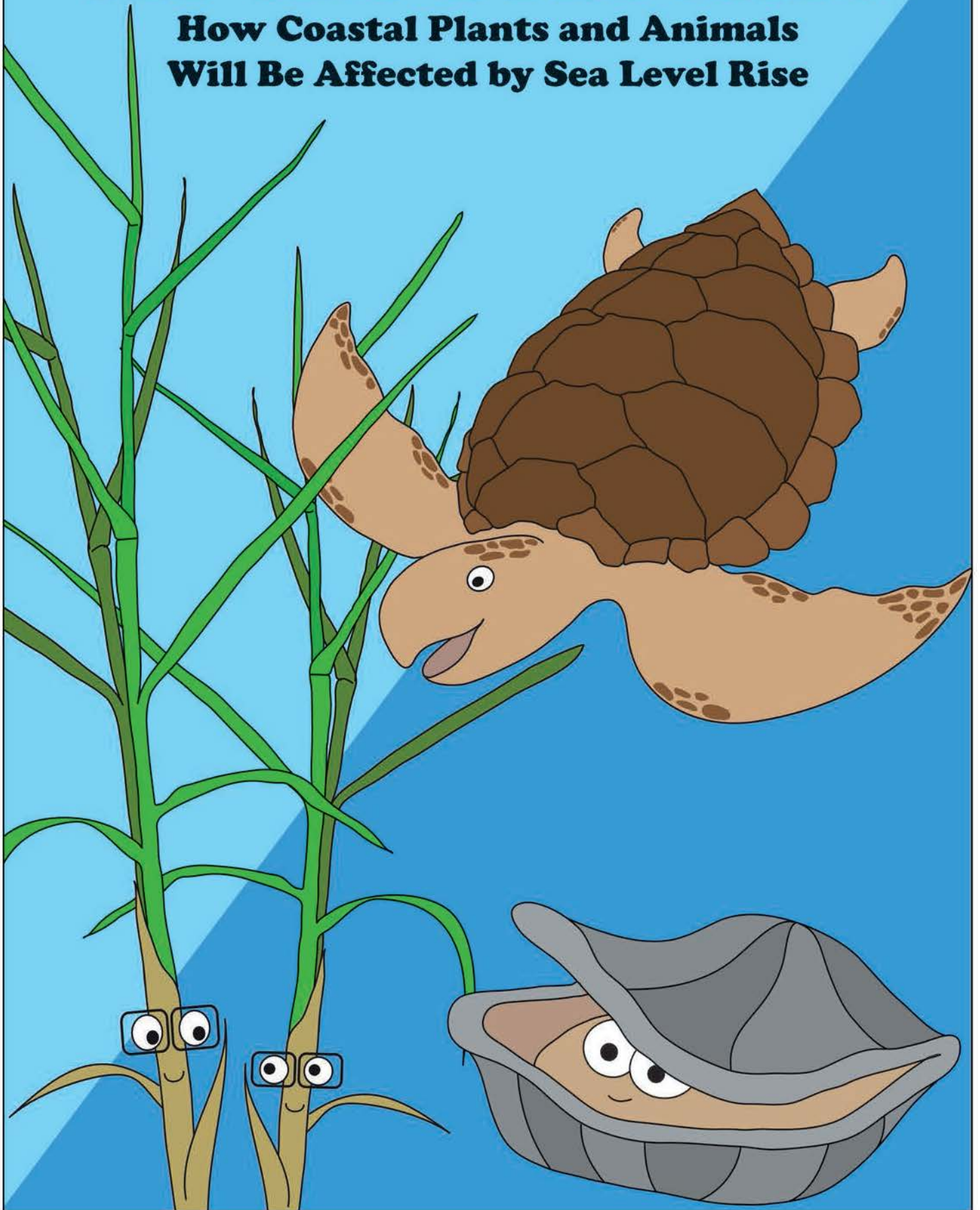
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As the Seas Rise

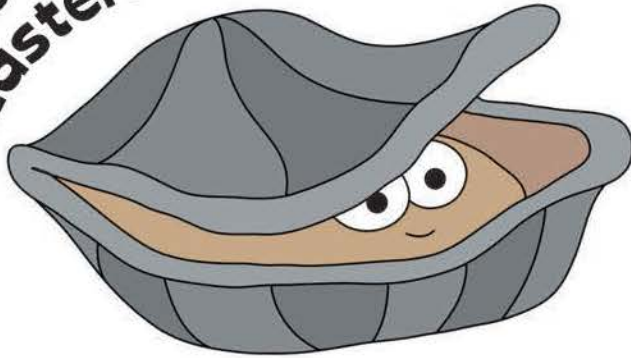
How Coastal Plants and Animals
Will Be Affected by Sea Level Rise



Throughout the history of our planet, the sea level is always changing. Now sea levels are rising very fast (a few millimeters each year). This rise will affect many of the plants and animals that live along our coasts. In this book, you will learn about three very important coastal species that are being affected.

Introducing ...

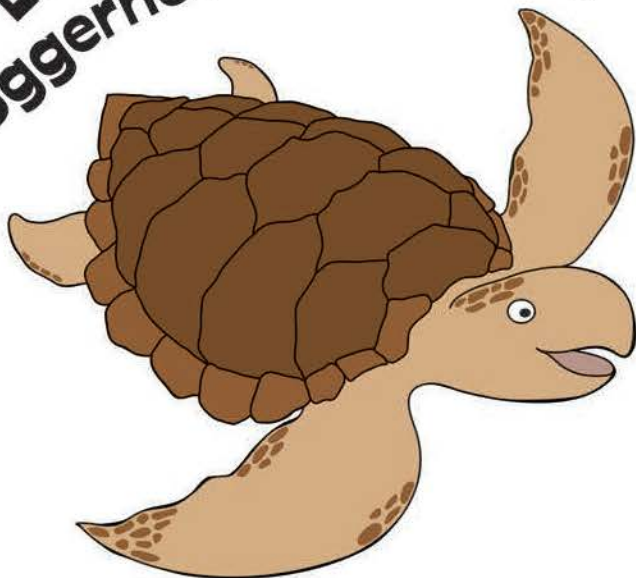
Ollie the Eastern Oyster



Marshall and Marsha Marshgrass



Lottie the Loggerhead Sea Turtle



Where Can You Find Them?

Ollie Oyster and Marshall & Marsha Marshgrass

Eastern oysters and marshgrass can be found along the Atlantic coast and the Gulf of Mexico (both in pink) in the intertidal (the area between high and low tides).



Marshgrass and oysters (the grey shells) found along the shoreline.

Lottie Loggerhead

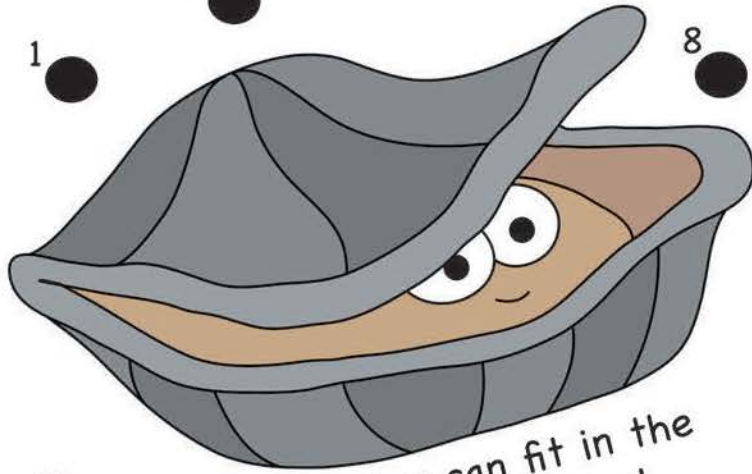
In the United States, loggerheads typically lay their eggs along the Gulf of Mexico (orange) and along the Atlantic coast from south Florida to North Carolina (yellow).



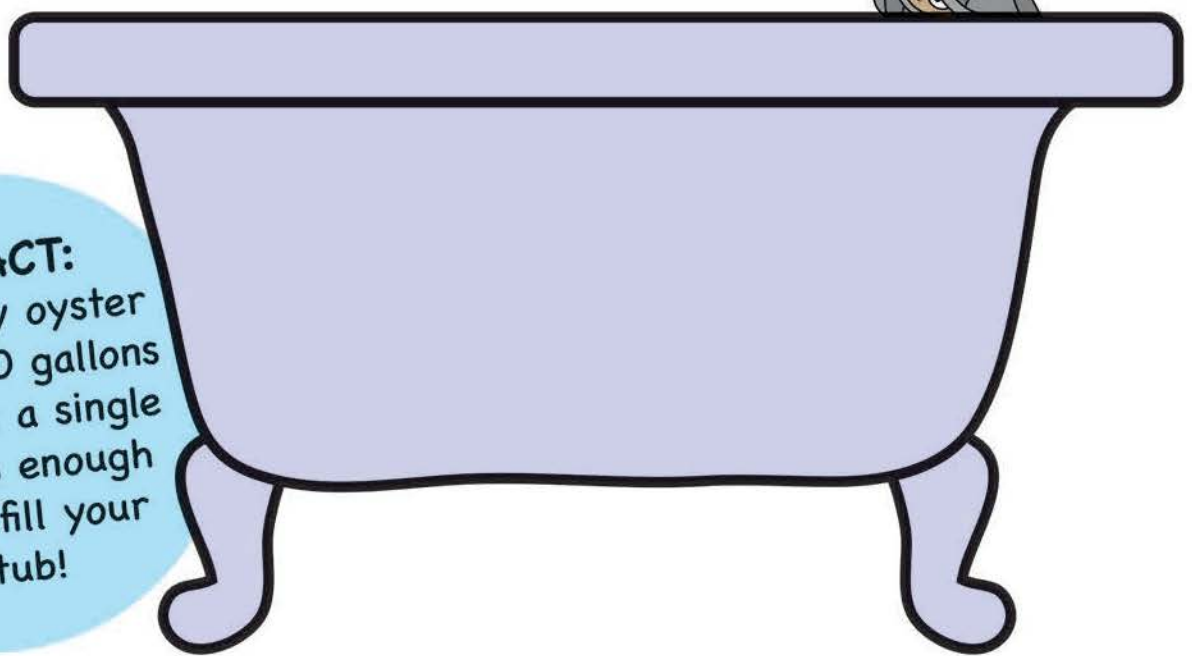
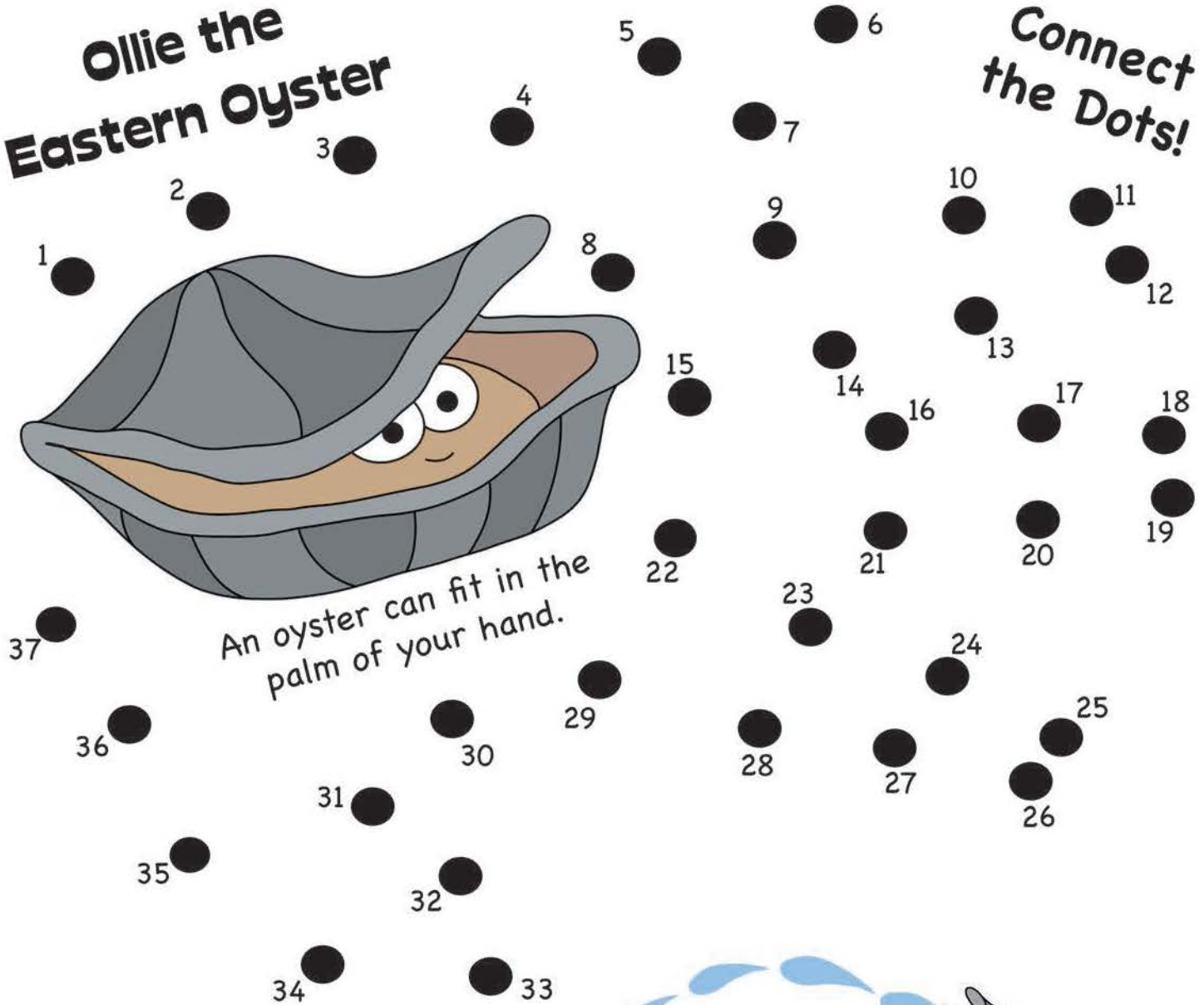
A female loggerhead makes her way back to the water after laying her eggs on the beach.

Ollie the Eastern Oyster

Connect the Dots!



An oyster can fit in the palm of your hand.

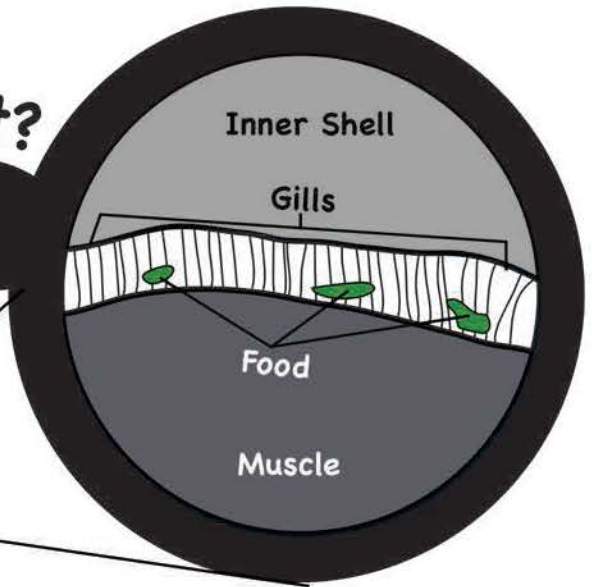
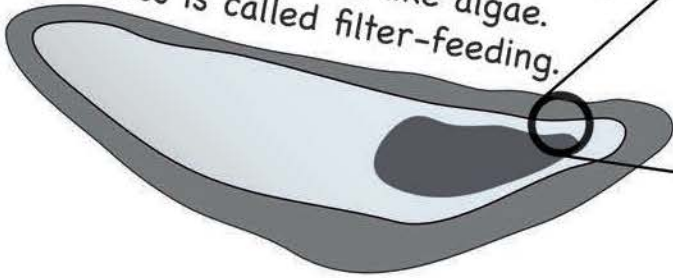


FUN FACT:

One hungry oyster can filter 50 gallons of water in a single day! That's enough water to fill your bathtub!

How Do Oysters Eat?

When oysters eat, they clean the ocean!
They filter water through their gills and
catch tiny bits of food like algae.
This process is called filter-feeding.

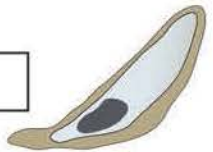


Help Ollie unscramble these words
that have to do with oysters.



OILEL

HSLEL



ELBU RACB

OTESYR



What Does the Future Hold?
In many places, oysters are intertidal. This means that they spend part of each day under water and part of each day out of the water. As the seas rise, oysters will spend more or all of their time under water. This will put oysters in great danger because they will be spending more time under water with animals that want to eat them, like fishes and blue crabs.

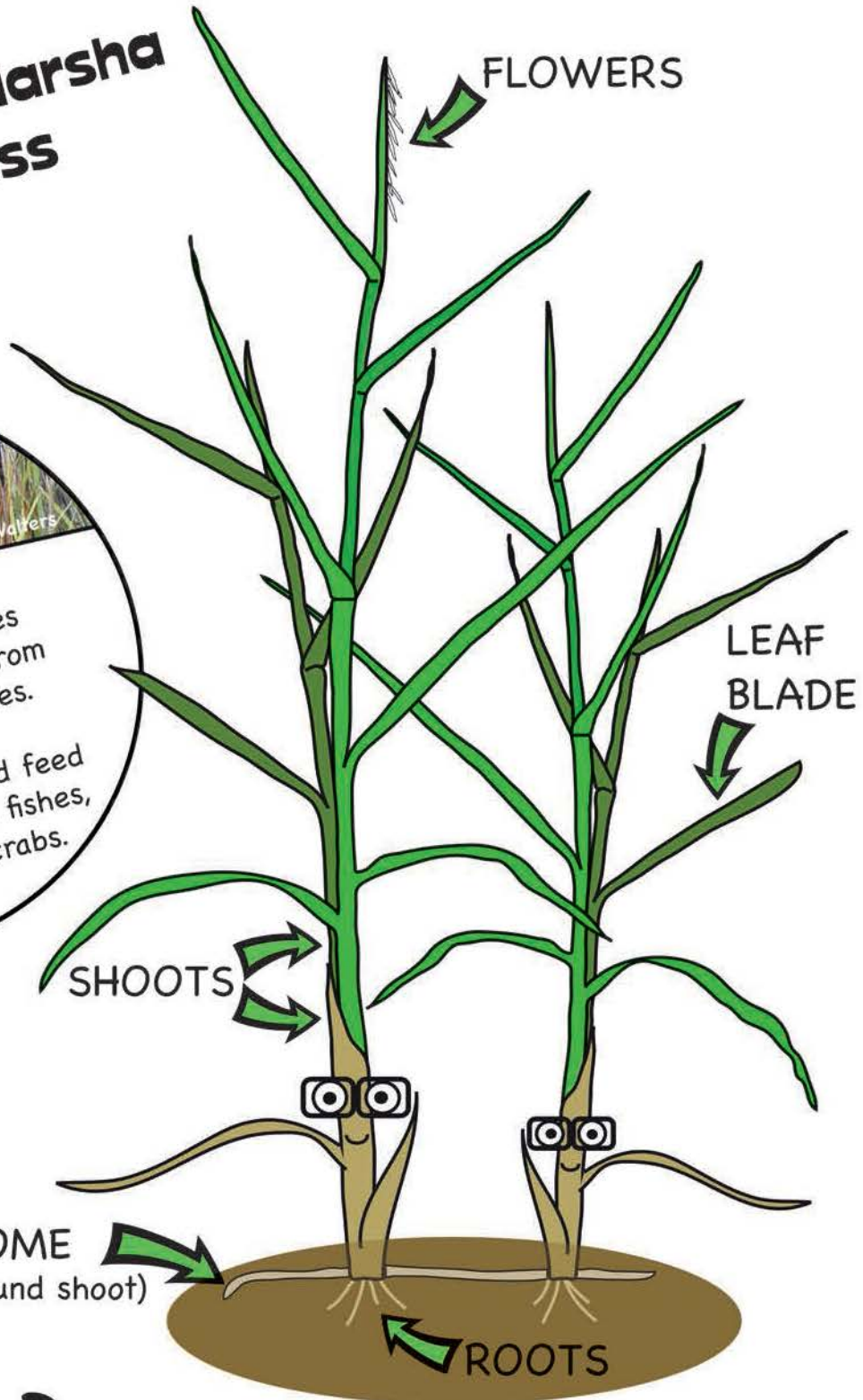
Marshall and Marsha Marshgrass



What We Do

Our roots and rhizomes protect the shoreline from storm winds and waves.

Our shoots protect and feed birds, small mammals, fishes, snails, and fiddler crabs.

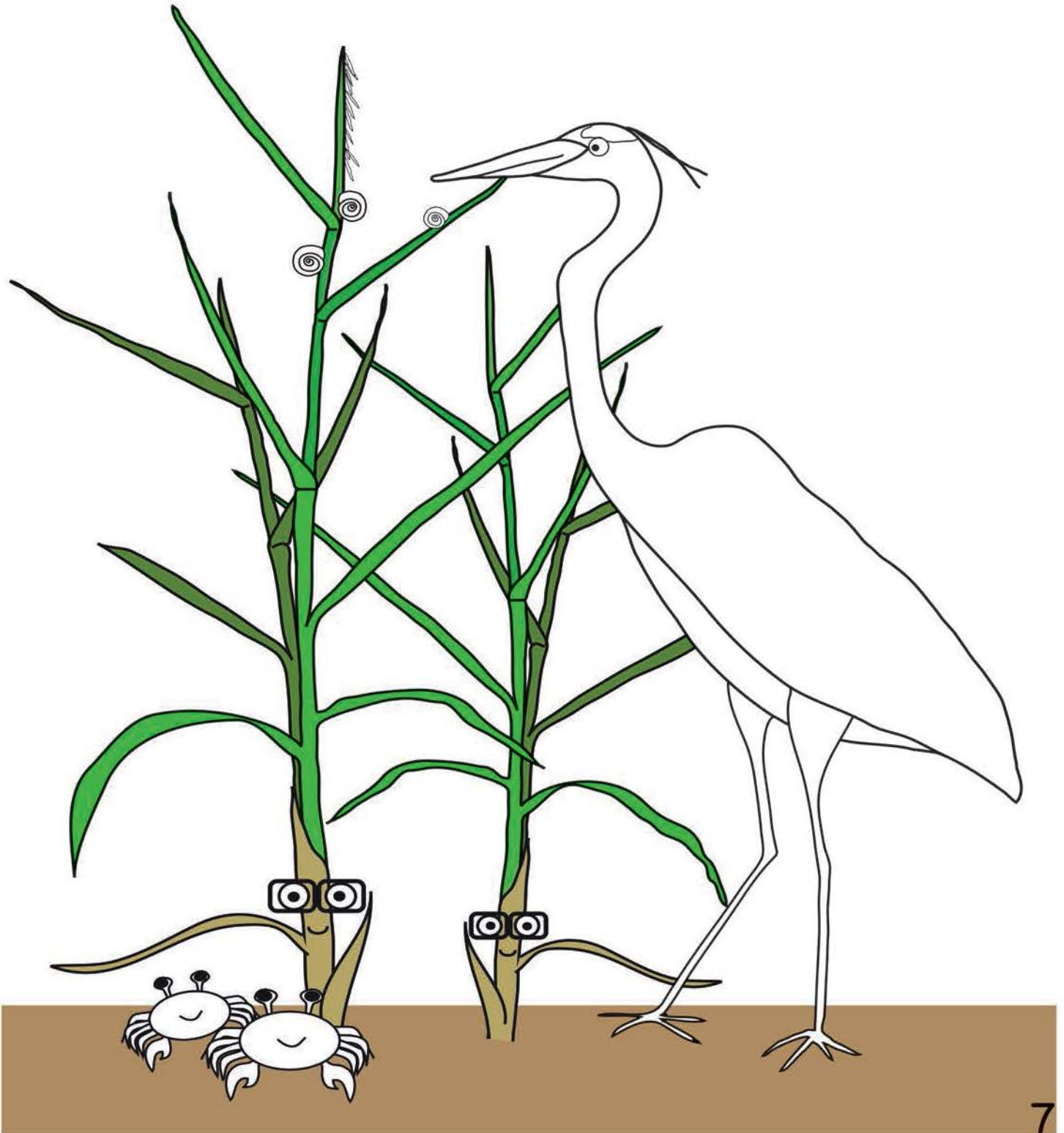


What Does the Future Hold?

Marshgrass can't grow if it is covered in water. As the seas begin to rise, marshgrass will not be able to grow where it does now. It will grow up along the new shoreline until it hits man-made structures (roads, homes, sea walls, buildings, etc.). When the marshgrass hits these structures, it will have nowhere to grow and will disappear forever.

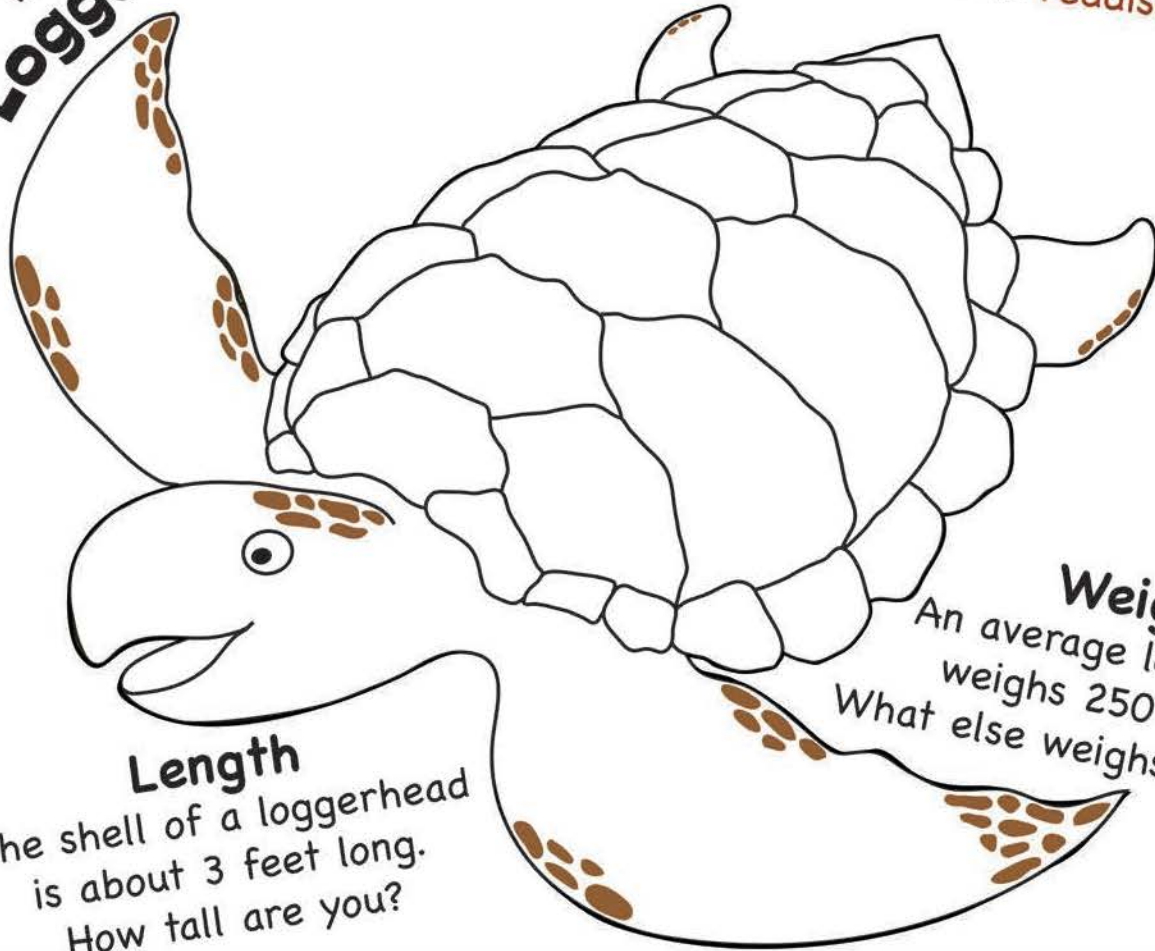
ACTIVITY

Color in the animals that benefit from marshgrass.
Add your own animals to the picture!



Lottie the Loggerhead Sea Turtle

Color Me!
The loggerhead's body is **tan**,
and its shell is **reddish-brown**.



Length
The shell of a loggerhead
is about 3 feet long.
How tall are you?

Weight
An average loggerhead
weighs 250 pounds.
What else weighs that much?

Jellyfish

Shark

Fishes

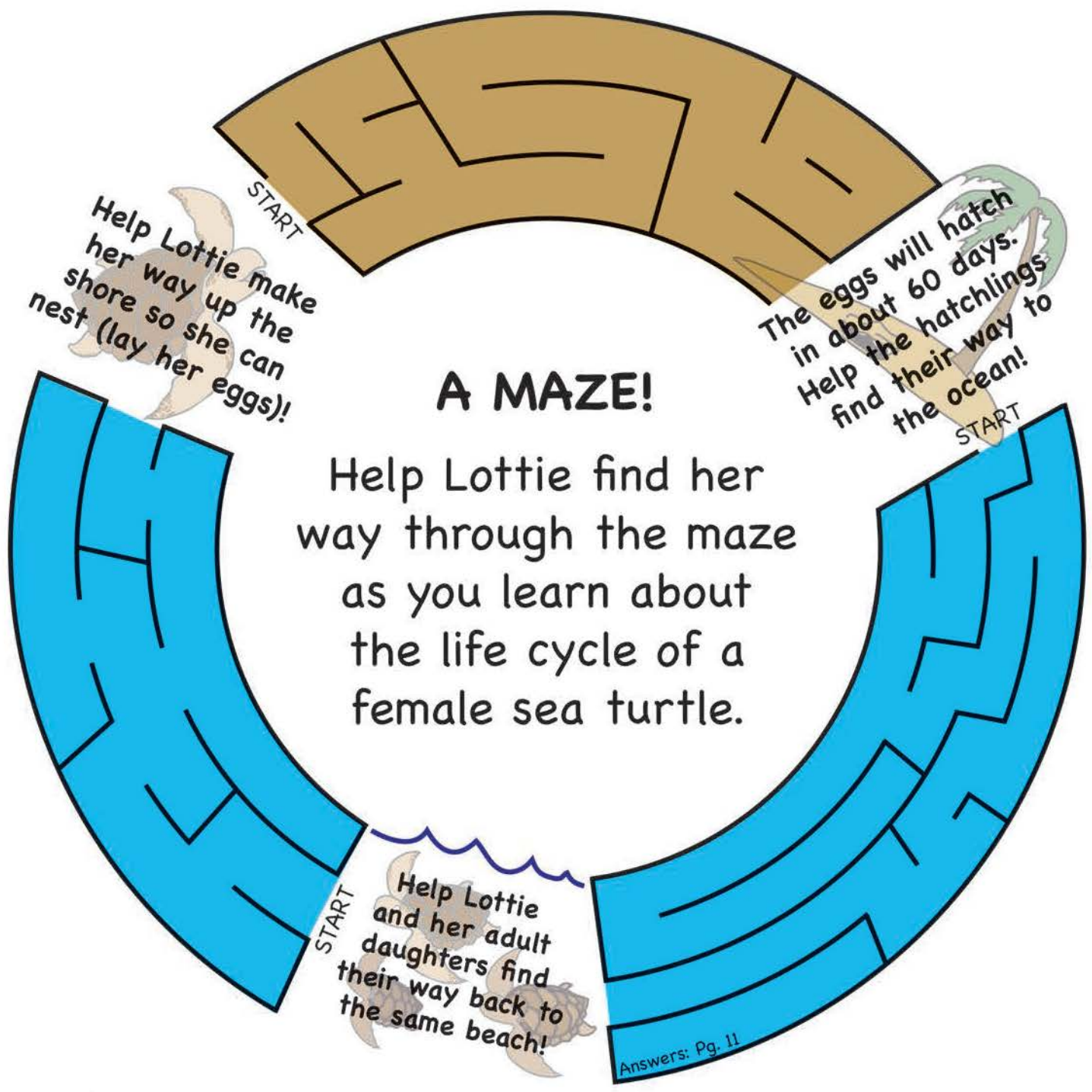
Crab

Starfish

Circle everything you think Lottie would eat.

Answers: Pg. 11

The loggerhead's favorite food is jellyfish.
What's yours? _____



START
Help Lottie make her way up the shore so she can nest (lay her eggs)!

START
The eggs will hatch in about 60 days. Help the hatchlings find their way to the ocean!

START
Help Lottie and her adult daughters find their way back to the same beach!

Answers: Pg. 11

A MAZE!
Help Lottie find her way through the maze as you learn about the life cycle of a female sea turtle.

What Does the Future Hold?
Adult female sea turtles return to the same beach every few years to nest. As the seas rise, it will be harder and harder for them to return to certain places to nest since their favorite beaches will now be under water.

Do Your Part as a Friend of the Earth!

Check the box when you have completed a task.
Have your parent/guardian help and sign when you are done!



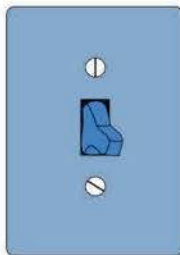
Reduce, Reuse, Recycle



Share what you learned from this book with your friends and family



Turn off the faucet while brushing your teeth



Turn off the lights when you leave a room

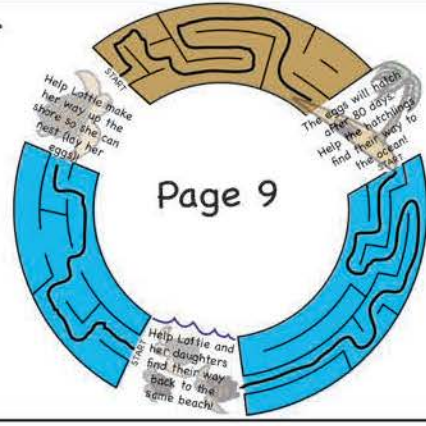
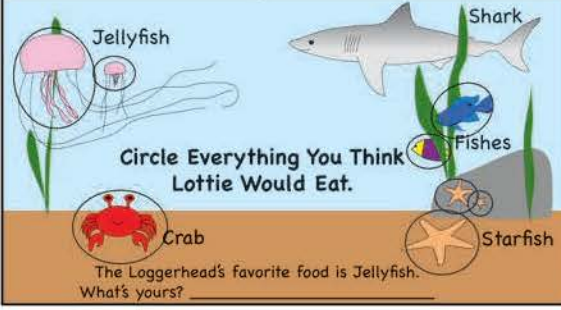


Volunteer! For example, help plant a native tree

Answers

Page 5: ollie, shell, blue crab, oyster

Page 8



Volunteers prepare oyster shells to use in oyster reef restoration.



Volunteers of all ages help plant marshgrass along the shoreline.



A Helping Hand!

About the Book

Lottie the Loggerhead Sea Turtle, Marshall and Marsha Marshgrass, and Ollie the Eastern Oyster are here to tell their stories. You'll learn about each of them and how their futures are threatened by sea level rise.

So read this book, and get to know your coastline!

About the Authors



Sydney Katz is the graphic designer and primary author of this book. She currently works for the UCF Biology Department creating educational outreach materials to promote environmental awareness. When not working, she volunteers with The Literacy Alliance, a non-profit organization that promotes reading in the community. This is Katz's second published work. Her first is the companion book for fifth - eighth graders and is titled "*Rising Tides*."

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Dr. Linda Walters is a Professor of Biology at the University of Central Florida, where she has been on the science faculty for 16 years. Her research focuses on protecting marine organisms – both plants and animals. She has lived underwater in NOAA's Aquarius Underwater Habitat studying coral reefs and also conducts research along Florida's coastlines to protect oyster reefs, marshgrasses and mangroves. To date, Dr. Walters and her collaborators have produced four books for children on marine conservation.

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Thank You!

This book was published as part of a grant entitled "EESLR: Integrated Modeling for the Assessment of Ecological Impacts of Sea Level Rise" (NOAA Award # NA10NOS4780146). The purpose of this book is to engage the public in the impact of sea level rise on coastal species. We'd like to thank the National Estuarine Research Reserve (NERR) program and University of Central Florida (UCF) for their resources and support. We'd also like to thank N. Adimey, A. Alden, J. Babcock, A. Bard, A. Birch, S. Caffery, K. Cope, L. Dalessio, D. DeLorme, S. Hagen, M. Hall, B. Hinkley, J. King, G. Kruckemyer, R. Moore, L. Morris, L. Nalbome, M. Palfrey, C. Parkinson, C. Piper, K. Poole, T. Riedel, N. Rebeli-Szabo, J. Sacks, P. Sacks, B. Sackuma, J. Solomon, C. Sookdeo, C. Toline, R. Virnstein, B. VonHolle, P. Yespelkis, and Students in Dr. E. Olan's spring 2013 Language Arts in the Elementary School class (LAE 4314) for reviewing this book for content and readability.

And finally, thank you for taking an interest in sea level rise issues!