This Amazing Place Where the Sea Meets the Land

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Melinda Donnelly  
*University of Central Florida*

Linda Walters  
*University of Central Florida*

Joshua Sacks

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This Amazing Place
Where the Sea Meets the Land

Written by Melinda Donnelly, Linda Walters, Joshua Sacks
Illustrations by Susie McGuire
We dedicate this book to all the volunteers, young and old, who have assisted with protecting and conserving our shorelines. May you and your families always be able to enjoy the amazing places where the sea meets the land.
Dr. Melinda Donnelly is a researcher and instructor in the Biology Department at the University of Central Florida. Her research focuses on estuarine restoration and understanding how plants and animals interact in natural ecosystems. Through this research, she has engaged school-age children throughout central Florida in hands-on restoration and enjoys inspiring the next generation of conservationists.

Dr. Linda Walters is a Professor in the Biology Department at the University of Central Florida in Orlando, Florida, where she has been on the science faculty for 18 years. Her research has taken her around the globe to study the direct and indirect effects that humans have on marine plants and animals. This is the seventh book on marine conservation that she has helped create and produce. For more information about these books, please contact her at: linda.walters@ucf.edu.

Joshua Sacks is a high school senior in the International Baccalaureate Program at Seminole High School in Seminole County, Florida. He plans to attend college next year to study environmental science, international relations, and chemistry, with a career goal to help create global policies to protect our oceans. In addition to helping lead shoreline restoration projects, Josh enjoys SCUBA diving, lacrosse, painting, and participating in the Model United Nations Program at his school.

Susie McGuire an artist, entrepreneur and lover of all things wild is Founder and Director of Conservation Fusion, an international NGO. With a biology background, this mother of two educates and inspires communities to put their best conservation foot forward. She writes children’s books and scientific articles. Passionate about teamwork, she has launched conservation programs in rural Madagascar and more recently completed the construction of the Dream School. Connect with Susie via conservationfusion@gmail.com.

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There's a place where the sea meets the land,
There's a place where the sea meets the land.

There's a place, There's a place,
There's a place where the sea meets the land.

Let me tell you all about the importance of
this amazing place where the sea meets the land.
There's a mangrove growing in the place where the sea meets the land.

Its roots spread out to trap buckets of sand.

There's a mangrove, There's a mangrove. There's a mangrove growing in the place where the sea meets the land.
There's marshgrass swaying in the place where the sea meets the land.
It slows the waves
when it grows in a tall, thick stand.

There's marshgrass, There's marshgrass,
There's marshgrass in front of the mangroves
growing in the place where the sea meets the land.
There’s an oyster in the muddy shallows
in the place where the sea meets the land.

It cleans lots of water, giving the lagoon a needed, helping hand.

There’s an oyster, There’s an oyster,
There’s an oyster in the mud by the marshgrass
in front of the mangroves growing in the place
where the sea meets the land.
There's seagrass in the water
in the place where the sea meets the land.

It's a good hiding place for crabs, shrimp and clams.
There's seagrass, There's seagrass, There's seagrass near the oysters in the mud by the marshgrass...

in front of the mangroves growing in the place where the sea meets the land.
There's lots of fish schooling beneath the waves in the place where the sea meets the land.

The fish dart around to avoid the hungry wading birds - so still the birds stand.
There's lots of fish, there's lots of fish,
There's lots of fish schooling in the seagrass...

near the oysters in the mud by the marshgrass
in front of the mangroves growing
in the place where the sea meets the land.
There's a raccoon splashing in the place where the sea meets the land.
He likes eating fish, crabs, and clams instead of garbage from a can.

There's a raccoon. There's a raccoon. There's a raccoon hunting for fish schooling in the seagrass near the oysters in the mud by the marshgrass in front of the mangroves growing in the place where the sea meets the land.
There's a manatee swimming by the shoreline in the place where the sea meets the land.

Munching on the seagrass, she tries to eat every last strand.
There’s a manatee, There’s a manatee,
There’s a manatee swimming by the shoreline...

near a raccoon hunting for fish schooling in the seagrass
near the oysters in the mud
by the marshgrass in front of the mangroves
growing in the place where the sea meets the land.
There's a place where the sea meets the land,
There's a place where the sea meets the land.
There's a place, There's a place,
There's a place where the sea meets the land.

It is home for so many,
and now you understand,
the importance of this amazing place
- where the sea meets the land.
We work in Mosquito Lagoon, an estuary on the east coast of Florida. Estuaries are coastal waters where freshwater rivers meet oceans. The mixing of saltwater and freshwater creates brackish water with lower salt concentrations than what is in the ocean. Shorelines in estuaries are considered “intertidal” if they are covered with water at high tides and are dry during low tides. Humans use estuaries for many different things, including commercial and recreational fishing, transportation, and outdoor activities, such as boating, kayaking, and bird watching. In addition to humans, estuaries are used by hundreds of different plants and animals. See the next page for more information about the species living along our shorelines in Mosquito Lagoon. Many shorelines in estuaries are experiencing severe erosion (loss of sand or mud), causing the outer edges of the shorelines to wash into the water. This is often caused by loss of native shoreline plants and oysters or replacement of natural habitats with piles of rocks or concrete seawalls.

Living shoreline stabilization is a restoration method that uses living organisms to rebuild the shoreline. In Mosquito Lagoon, this restoration method relies on the natural stabilizing properties of the four species described here.
Mangroves are salt-tolerant trees and shrubs that live in the intertidal zone of shorelines in tropical and subtropical locations around the world. The above-ground roots of mangroves help protect the shoreline by slowing waves and keeping sand from washing away. In Mosquito Lagoon, you find three species of mangroves: red mangroves (*Rhizophora mangle*), black mangroves (*Avicennia germinans*), and white mangroves (*Laguncularia racemosa*). By growing along the shoreline, mangroves create habitat used by many other species of animals, including fish, crabs and shrimp which feed and hide among their roots, and wading birds which use their thick branches for resting and nesting.

Smooth cordgrass (*Spartina alterniflora*) is one of many species of salt-tolerant grasses found in estuaries around the world. Smooth cordgrass is found along shorelines on the eastern coast of the United States, including Mosquito Lagoon. This grass grows up to eight feet (2.5 meters) in height and forms thick stands of shoots by sending out rhizomes (underground stems). Smooth cordgrass protects the shoreline by slowing down waves as they come onto shore and helps hold the sand in place with their complicated underground system of roots and rhizomes. Thick stands of smooth cordgrass also provide safe places for fish, birds, and invertebrates to hunt for food and hide from their own predators.

An oyster is a type of animal which lives inside of a hinged pair of shells and is known as a bivalve mollusk. Oysters can be found in estuaries around the world and live either along the shoreline in the intertidal zone or completely submerged beneath the water. Oysters are filter-feeders, consuming small particles from the water; some oysters can filter 50 gallons of water each day (similar to the amount of water your bathtub holds). This provides an important service to estuaries by helping to keep the water clear. In Mosquito Lagoon, we have one species of oyster called *Crassostrea virginica* that creates large oyster reefs, with many generations of oysters glued on top of one another. Oyster reefs growing in front of mangroves and smooth cordgrass help protect the shoreline by blocking wind and boat waves. These reefs also become important habitat for estuarine animals, including fish, crabs, shrimp, raccoons, and birds.

Seagrasses are marine plants that live underwater. The seagrass *Halodule wrightii* is found in many shallow-water places around the globe in tropical and subtropical waters, including Mosquito Lagoon. *Halodule* is highly tolerant to a range of environmental conditions (i.e. high salinity, high temperature, high turbidity, high nutrients). Seagrasses require stable sediments to colonize and remain in an area – this can be provided by adjacent oyster reefs. *Halodule* is considered an “opportunistic” species with the ability to rapidly and densely colonize new areas. Most often, new patches start from small fragments followed by rhizome (underground stem) expansion. Seagrass is consumed by manatees while providing a hiding spot for many species of invertebrates and juvenile fishes.
Have you ever visited the shoreline of an estuary - a place where the sea meets the land?

In this book we tell you about the plants and animals that depend on coastal shorelines. We, as humans, need to protect this fragile habitat as we depend on many of these species for our food, our recreation, and to protect our shorelines from washing away. So read this book, and become a "coastal shoreline expert"!