2009

An Afternoon in Mosquito Lagoon

Suzie Caffery

Diahn Escue

Part of the Marine Biology Commons

Find similar works at: https://stars.library.ucf.edu/ceelabbooks

University of Central Florida Libraries http://library.ucf.edu

This Book is brought to you for free and open access by the Coastal and Estuary Ecology Lab (CEELAB) at STARS. It has been accepted for inclusion in CEELAB Children's Books by an authorized administrator of STARS. For more information, please contact STARS@ucf.edu.

STARS Citation

An Afternoon in Mosquito Lagoon

Written by Suzie Caffery and Diahn Escue
Illustrated by Dr. Frank Fish
Produced by Dr. Linda Walters and Anne Birch
An Afternoon in Mosquito Lagoon

Authors: Suzie Caffery & Diahn Escue
Illustrator: Dr. Frank Fish
Producers: Dr. Linda Walters, University of Central Florida & Anne Birch, The Nature Conservancy

Information about Contributors:
The producers of this book are Dr. Linda Walters and Anne Birch. Linda holds a Ph.D. from the University of South Carolina and has been on the Biology faculty at the University of Central Florida for 12 years. Her research focuses on human impacts on marine systems. Anne holds a MS in Biology/Marine Ecology and works for The Nature Conservancy in Florida where she directs the Coastal Restoration Program, including oyster reef restoration activities in Mosquito Lagoon. Linda and Anne wanted to introduce our youngest Mosquito Lagoon lovers to the amazing biodiversity of this area AND engage them as environmental stewards to help protect oyster reefs. To do this they decided to create a book for young children and then sought out two of central Florida’s most talented pre-school educators and a graphic artist familiar with the biology of the organisms that would be featured in our story. Suzie Caffery and Diahn Escue teach at the UCF Creative School for Children in Orlando and combined have over 30 years of experience with 3 – 5 year olds. From reading this story, you can tell they are gifted writers able to merge technical science with whimsical lyrics, reminiscent of Dr. Seuss. They have recently completed a second, science-based, pre-school book on the dangers of releasing aquarium organisms into the ocean and a third is underway on mangroves and climate change. Dr. Frank Fish is a Professor of Biology at West Chester University. His research is focused on marine biomechanics and his cartoon art can regularly be found on the pages of the Journal of Experimental Biology.
Mosquito Lagoon is a magical place — loved by all who come to visit. Nestled in the northern part of the world-famous Indian River Lagoon on the east coast of central Florida, Mosquito Lagoon’s shallow waters are internationally known for wildlife: migratory and wading birds, manatees, dolphins and sport fish. Less obvious but essential to the unique character of Mosquito Lagoon is the mixing of tropical mangrove trees with temperate marsh grasses all along the lagoon’s edges. The lagoon’s magic dates back 2000 years to a time when the Timucuan Indians lived off the bountiful oysters, creating massive middens (shell piles). However, it is under the ebb and flow of the blanket of fresh water to salty water that one of the lagoon’s most important species, the eastern oyster, *Crassostrea virginica* lives. This species is thought by many to be the keystone for Mosquito Lagoon’s survival, and currently, these oysters are in trouble.

Oysters occur in estuarine waters throughout the world but have declined by nearly 85 percent of their original extent. We care about conserving oysters for many reasons. They provide essential “ecosystem services” in estuaries. Oysters filter things like algae, bacteria and heavy metals from the water, create habitat for hundreds of sessile and mobile species, stabilize shorelines, and provide food for many animals, including humans. Dr. Linda Walters from the University of Central Florida, her students and colleagues have been studying declining populations of the eastern oyster *Crassostrea virginica*, in Mosquito Lagoon waters for more than 12 years. While many factors have contributed to this decline (e.g. storms, pollution, invasive species, diseases), research has shown that a new problem is rapidly reducing oyster reefs in Mosquito Lagoon. Repeated wakes from boats crash onto the intertidal oyster reefs, causing live oysters to tumble over the bottom and then pile up in mounds of broken shell that are exposed above the high water line. Over time, the reef can be lost completely and all that remains is mud and sand where previously oysters and 148 other species thrived.

To regain oyster reef habitat in areas where boating pressure is intense, Dr. Walters and her husband, Dr. Paul Sacks, have developed and tested a simple technique using “oyster restoration mats” that provide stable substrate for oyster larvae to settle. These mats are now being used to restore oyster reef habitat and diversity in Mosquito Lagoon with great success. In 2005, Drs. Walters and Sacks joined with Anne Birch from The Nature Conservancy with a simple mission: to educate and involve the community in restoring oyster reefs. As of March 2009, with help from more than 10,000 volunteers, more than 8,500 mats have been built and deployed to restore 19 reefs in Mosquito Lagoon. These restored reefs are doing great, and reef biodiversity has returned. Our goal is to restore all existing dead margins in Mosquito Lagoon. However, new dead margins continue to emerge. So, we need your help — please avoid making wakes when you motor near intertidal oyster reefs in Mosquito Lagoon, and remember:

“Save the Oysters! Save the Lagoon!”
Over in Mosquito Lagoon,
In the warm, shallow water,
Lived a bed of oysters
Who were friends with each other.
“We’re stuck!” said the one.
“We’re jammed!” said the other.
We’ll always be here
In the warm, shallow water!
Along came a blue crab, crawling like a spider. He snipped at the one. He snapped at the other. He nipped at the oysters in the warm, shallow water.
Along came a brown sea squirt, clinging to the seaweed.
She spurt at the one.
She squirted at the other.
She sprayed at the oysters in the warm, shallow water.
Along came a red fish, flashing his bright color.
He nudged at the one.
He bumped at the other.
He poked at the oysters in the warm, shallow water.
Along came a red fish, flashing his bright color.
He nudged at the one.
He bumped at the other.
He poked at the oysters in the warm, shallow water.

Along came a grey manatee, gliding through the water.
She swam by the one.
She snorted at the other.
She grazed on the seagrass in the warm, shallow water.
Along came a silver mullet, playing in the water.
He jumped at the one.
He leapt at the other.
He hopped over the oysters in the warm, shallow water.
Along came purple striped barnacles, settling in the water.
We’re glued to the one.
We’re attached to the other.
We’re stuck to the oysters in the warm, shallow water.
Along came a pink shrimp, moving shyly through the water.
She peeked at the one.
She winked at the other.
She glanced at the oysters in the warm, shallow water.
Along came an orange sea horse, riding through the water.
He grabbed at the one.
He pulled on the other.
He clung to the oysters in the warm, shallow water.
Along came a yellow speed boat, flying through the water. Its wake splashed the one. Its wake crashed the other. “Help! Help!” cried the oysters in the warm, shallow water.
There were the oysters, holding on to each other.
“I’m flipping!” said the one.
“I’m rolling!” said the other.
We’re all out of place in the warm, shallow water.
Along came a “green” lady, posting signs in the water. “Protect!” read one. “Caution!” read the other. Slow down and be safe in the warm, shallow water.
Please obey the signs,
And do what you ought-a!
And we’ll all be happy living in the warm, shallow water.
Oysters are critical to Mosquito Lagoon for many reasons. First, they clean the water. Oysters actually filter at a rate of 1,500 times their body size per hour. Second, oysters glue themselves together in clusters that form reefs. Oyster reefs provide hiding and attachment spots for many plants and animals. Scientists have counted 148 species of aquatic plants and animals that use oyster reefs in Mosquito Lagoon. Third, lots of animals, including people, like to eat oysters.

Baby oysters are called larvae and these microscopic animals move with the water currents. When they have developed to a certain point, they find a spot to attach for the rest of their lives. Scientists have discovered that oyster larvae like to settle on live oysters due to certain chemical smells coming from the oysters. Once attached, oysters are called spat. Oysters grow rapidly in Mosquito Lagoon. As adults, oysters change gender — they start off as males and change to females. If an estuary becomes bad for the oyster, it might change back to a male again.

Many people feel that oysters are the most important animal in Mosquito Lagoon so please help protect them by not making boat wakes in areas where oysters are present.

Blue crabs really are blue in color, mostly on their claws and legs. The rest of their body is olive-brown. Blue crabs love to eat oysters and are very good at crushing small oysters with their powerful claws. People love to eat blue crabs, and lots of crab pot floats can be found in Mosquito Lagoon waters. Blue crabs are fun to watch — they walk and swim sideways.

Brown Sea Squirts permanently attach to all sorts of hard surfaces in Mosquito Lagoon — docks, boats, and even oysters. They are called sea squirts because they suck in large amounts of seawater, remove any food from it, and then squirt out the water.

Redfish (red drum) are a favorite catch for fishermen in Mosquito Lagoon. The local record for redfish is 52 pounds. Redfish can live more than 35 years, but when small, they need to hide among oysters to escape from predators. Redfish are also really interesting in that they make a noise that sounds like a drum when they are looking for a mate.
Gray Manatees (West Indian manatees) are mammals (not fish) and are related to elephants. They eat seagrass and other vegetation that thrives near oyster reefs in Mosquito Lagoon. In fact, manatees consume 10 percent to 20 percent of their body weight in plants each day. Manatees can frequently be found in Mosquito Lagoon in summer months.

Silver Mullet use oyster reefs as hiding places, especially when they are young. This commercially and recreationally important fish species is a vegetarian. No one knows why mullet love to jump into the air and then fall back into the water.

Purple Striped Barnacles arrived in Mosquito Lagoon about 100 years ago, probably on the bottom of a boat. Now they can be found permanently attached on all submerged hard surfaces, including oyster shells. If these barnacles get to a surface before a settling oyster, then the oysters have nowhere to attach and grow. Barnacles feed by using their legs to filter food out of the water. If the water is moving too fast, they simply feed backwards.

Pink Shrimp are commonly found hiding on oyster reefs in Mosquito Lagoon. They use their many legs to paddle and their tail when they need to make a fast getaway. Shrimp have amazingly complicated eyes, are prey to many species of fishes and birds, and a favorite dinner of many humans.

Orange Sea Horses use their tails to cling to plants and animals in Mosquito Lagoon. They cling to seaweed or seagrass next to oysters. Sea horses are amazing — they swim vertically, they mate for life and the fathers carry the babies until they are ready to swim away on their own.
Oysters in Mosquito Lagoon serve many important functions. They filter the water, are consumed by a variety of predators (including humans) and create habitat for over 100 species. Sadly, Mosquito Lagoon’s oysters are in trouble. This story describes some of the amazing animals that live in or around Mosquito Lagoon’s oyster reefs. Information on how everyone can help protect Mosquito Lagoon’s oysters is also explained.

**Current Funders of the Mosquito Lagoon Oyster Restoration and Research**

Funding for this book was provided by LIFE at University of Central Florida and the National Partnership between the NOAA Community-Based Restoration Program and The Nature Conservancy.