

Background Information

The Charlotte Harbor Estuary



Photo by NASA

Photo reprinted from CHNEP "Committing to Our Future Vol. I"

The Charlotte Harbor Estuary is located in Southwest Florida. It is bounded on the north by Sarasota and Charlotte Counties and on the south by Lee County. Charlotte Harbor covers approximately 270 square miles although water coming to the estuary is collected from an area of 4,400 square miles.

Three major rivers contribute water to the estuary. They are the Peace and Myakka rivers on the northern end and the Caloosahatchee entering from the Southeast.

The western side is separated from the Gulf of Mexico by a string of barrier islands.

Like most estuaries, the water in Charlotte Harbor is brackish (a mixture of fresh and salt water). This provides the perfect habitat for many different species of fish

Hardee County
Fifth grade students collecting
samples for study.



1- INTRODUCTION

Hardee County Outdoor Classroom Estuary Study Curriculum Guide

Introduction :

This curriculum guide is designed to be used with fifth grade students as part of their Outdoor Classroom estuary study. It relies heavily on a document produced by the Apalachicola National Estuary Program. As we began to formulate ideas for an estuary study guide for our program, we found that the Apalachicola guide could fit our area with some modifications.

Please feel free to use these materials in any way that will enhance the knowledge and concern for estuary systems in your students.



"You can't protect what you don't know about."

The Peace River

The Peace River begins its journey to Charlotte Harbor in Polk County.

A little north of the town of Bartow the river leaves Lake Hancock as a small stream only a few feet wide. Its water has come from as far north as the Green Swamp and is soon joined by the waters of Peace Creek to the east.

The river slowly meanders through the towns of Bartow and Fort Meade to become gradually wider. The water entering it is colored brown by the tannic acid found in the leaves and roots of plants.

South of fort Meade the river bottom and sides are often exposed to show the limestone rock, which lies under the sand in this area. The limbs of Oak trees often raise high overhead, causing passage down the river to be shady and cool. As we approach the town of Wauchula the canopy of limbs begin to disappear and the water flow increases with the addition of water From Payne's Creek at Bowling Green.

On the south side of the river at Zolfo Springs you can see the remains of an old phosphate barge. This remains from the days when phosphate was mined from the bottom of the river over a hundred years ago. It was then and transported downstream on barges powered by steamboats. The river continues to meander through forests and pastures showing few signs of development until you pass the area of Gardner. Then more and more houses begin to appear on the sides of the river on the way to Arcadia.

The stretch of the Peace River south of Nocatee is still very remote and undeveloped. Next comes Ft. Ogden, you can see the water treatment plant on the west side of the river. This is the water source for people in Port Charlotte, Punta Gorda and southern Sarasota County.

After passing the entrance to Lettuce Lake the river begins to spread out into several different channels, which are joined by creeks, to make a rather vast and open waterway. Soon signs of civilization are all around as you see more houses and other buildings dotting the landscape. In the distance the Interstate 75 Bridge looms ahead, and before long you are passing under the Highway 41 Bridges at Punta Gorda and Port Charlotte. The little stream that was barely ten feet wide at Lake Hancock has now grown to a river that is about one mile wide at the entrance to Charlotte Harbor. This journey has covered over 100 miles and taken many days at the river's normal leisurely pace.

River Food Chains

Live Oak Acorn→ Squirrel→ Man
 Green Algae→ Mosquito larvae→ Mosquitofish→ Belted Kingfisher
 Sulfer butterfly→ Bull frog→ Yellow-crowned night heron→ Alligator
 Dragonfly Larvae→ Bluegill→ River Otter

Common Plants and Animals of the River

ANIMALS

Insects

Mayfly
 Dragonfly
 Mosquito

Shellfish

Grass shrimp
 Florida mussle
 Asian clam
 Crayfish

Amphibians

Bullfrog
 Green tree frog

Fish

Spotted gar
 American eel
 Bluegill
 Channel catfish
 Bass
 Armored catfish

Birds

American swallow-tailed kite
 Red-shoulder hawk
 Osprey
 Barred owl
 Belted kingfisher
 Pileated woodpecker

Mammals

Raccoon
 Gray squirrel
 River otter

Reptiles

American alligator
 Florida cooter turtle
 Softshell turtle
 Water moccasin
 Banded water snake

PLANTS

Floodplain

Coastal Plain willow
 Water locust
 Bald cypress
 Water hickory
 Water oak
 String lily

Aquatic

Alligator-weed
 Cattail
 Eel grass
 Water hyacinth
 Pickeral weed



Pine Forest Food Chains

Pine Seed→	Brown Thrasher→	Red Fox
Mosquito Larvae→	Bream→	Water Moccasin→ King Snake
Woodpecker Egg→	Squirrel→	Hawk
Moth→	Tree Frog→	Pine Snake→ Barred Owl

Common Plants and Animals of the Pine Forest

ANIMALS

PLANTS

Amphibian

Tree Frog

Birds

Turkey vulture
 Red-shouldered hawk
 Barred owl
 Brown thrasher
 Pine warbler

Reptiles

King snake
 Diamondback rattlesnake

Mammals

Cotton rat
 Cotton tail rabbit
 Spotted skunk
 Red fox
 Bob cat

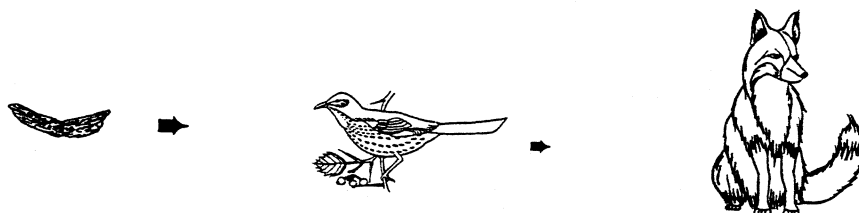
Insects

Bumble bee

Mosquito
 Tick
 Moth

Slash pine
 Begger lice
 Poke Weed
 Grape vine
 Cabbage palm
 Partridge pea
 Blackberry
 Long leaf pine

Saw palmetto
 Blueberry bush
 Gallberry bush
 Scrub oak



Hardwood Swamp Food Chains

Mosquito larvae→	Mosquitofish→	Night heron→	American alligator
Duckweed→	Wood duck→	Man	
Algae→	Minnow→	Bream→	Eagle
Grass→	Marsh rabbit		

Common Plants and Animals of the Hardwood Swamp

ANIMALS

Insects

Honey bee
Cricket
Butterfly
Yellow Jacket

Amphibians

Bullfrog
Leopard frog
Two-toed amphiuma

Reptiles

American alligator
Cottonmouth moccasin
Snapping turtle
Mud turtle

Fish

Mosquito fish
Bream
Bass

Birds

Swallow-tailed kite
Wood duck
Redwing blackbird
Night heron
Great horned owl

Mammals

Swamp rat
Otter
Opossum

Crustacean

Crayfish

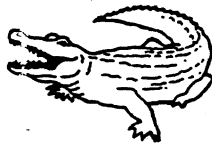
PLANTS

Aquatic

Duckweed
Sawgrass
Alligator-weed
Cattail

Terrestrial

Water oak
Poison ivy
Cypress
Hickory
Loblolly bay
String Lilly



Estuary Food Chain

Detritus→	Oysters→	Crown Conch		
Detritus→	Lugworm→	Crab→	Fish→	Man
Phytoplankton→	Shrimp→	Flounder→	Man	
Algae→	Clam→	Sea gull		

Common Plants and Animals of the Estuary

ANIMALS

Colonial

Bryozoans
Tunicates

Invertebrates

Lugworm
Spotted sea hare
Shark eye moon snail
Florida sea cucumber
Purple sea urchin

Shellfish

Hermit crab
Crown conch
Horseshoe crab
Stone crab
Oyster
Brown shrimp
Spider crab

Fish

Flounder
Mullet
Sheephead minnow
Stingray
Skate
Shark

Birds

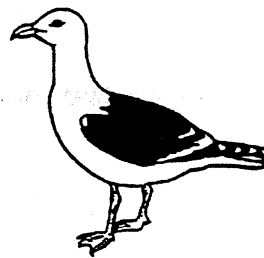
Little blue heron
Brown pelican
Royal tern
Laughing gull
Double-crested cormorant
Black Skimmer
Common loon

Mammals

Raccoon
Porpoise
Manatee

PLANTS

Shoal grass
Manatee grass
Algae: red, green, blue-green
Diatoms
Phytoplankton
Turtle grass



Activities

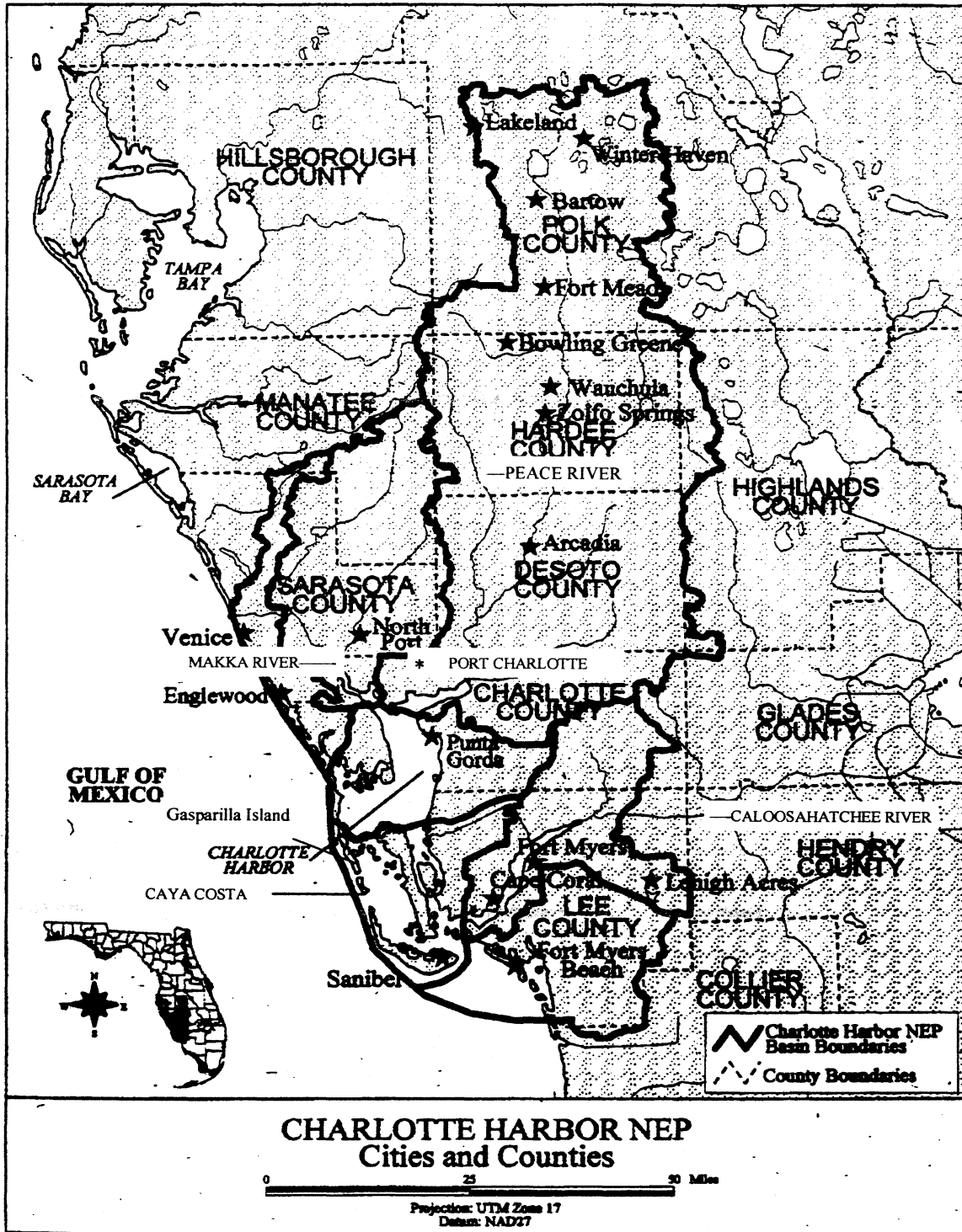
Estuary Search

Materials needed: Blue, green, red, a #2 pencil, ruler, map of the Charlotte Harbor estuarine system (see map provided on page 6), and list of 15 questions below. You may copy the estuary map on acetate to use on an overhead projector.

Directions: Answer the following questions by using the estuary map provided.

Questions:

1. What is the name of your state? Using a regular pencil, write it on the map.
2. What is the name of your city? Locate it on the map or write it on with your pencil.
3. Find the river nearest to where you live. What is the name of that river? Write it in with a pencil.
4. In blue, trace the path of this river from its source to where it meets the estuary.
5. With a green pencil, color in the salt water in the Gulf of Mexico.
6. In red, circle the area where the fresh water from the river meets and mixes with the salt water from the ocean. This place is called an estuary.
7. Find these rivers and trace their paths using blue. Peace River, Myakka River and the Caloosahatchee River.
8. In red, circle the estuary where these rivers meet the salt water. Do all of these rivers meet the same source of salt water? What is the name of this body of salt water?
9. Label the cities along the river that closest to you.
10. How many of these cities are near an estuary?
11. Color the barrier islands along your coastal area yellow.
12. Name the bay, or estuary, that your river flows into.
13. How many miles is it from Wauchula to Charlotte Harbor?
14. What is an estuary?
15. Name the barrier islands around Charlotte Harbor.



Map 1: Cities and counties in the Greater Charlotte Harbor Watershed.

Salt Marsh Food Chains

Algae→	Fiddler Crab→	Croaker→	Diamondback Terrapin
Algae→	Silverside→	Hooded merganser→	American alligator
Detritus→	Shrimp→	Sea trout→	Man
Detritus→	Blue crab→	Man	

Common Plants and Animals of the Salt Marsh

ANIMALS

Insects

Marsh fly
Dragon fly
Mosquito

Shellfish

Fiddler crab
Crabs
Pink shrimp
Salt marsh periwinkle snail
Clams

Fish

Anchovy
Croaker
Silverside
Gulf menhaden
Sea trout

Reptiles

American Alligator
Diamondback terrapin

Birds

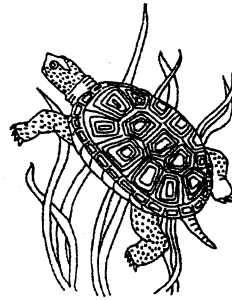
Redwing black bird
King fisher
Hooded merganser
Great blue heron
White ibis
Red head duck
Osprey
Sand piper

Mammals

Raccoon
Otter

PLANTS

Black needlerush
Sawgrass
Cattail
Salt meadow cordgrass
Smooth grass



Beach Food Chains

Algae→	Mud snail→	Blue crab→	Man
Detritus→	Worm→	Killifish→	Flounder→ Man
Detritus→	Sand shrimp→	Sea catfish→	Man
Morning glory→	Ghost crab→	Gull	

Common Plants and Animals of the Beach

ANIMALS

Shellfish

Calico crab
Blue crab
Fiddler crab
Ghost crab
Razor clams
Quahog clams
Stone crab
Sand shrimp
Mud snail

Fish

Flounder
Killifish
Sand sea trout
Catfish

Shorebirds

Gulls
Willet
Sandpiper
Tern
American oystercatcher
Black skimmer
Brown pelican

Worms

Ribbon worm
Lug worm
Nereid worm

Mammals

Dolphin

Reptiles

Loggerhead sea turtle

Fish

Shark
Stingray

Invertebrates

Jellyfish
Sponge
Sand dollar
Sea urchin

PLANTS

Aquatic

Turtle grass
Algae
Purslane
Sea lettuce

Terrestrial

Railroad vine
Sea oats
Beach morning glory

