

# StoryMap – Heartland to Estuary: Caloosahatchee

**Grade Level:** 4<sup>th</sup> Grade

**Subject:** Science, Language Arts

**Duration:** 50 Minutes

**Materials:** Computer with internet access,  
Fred the Fish activity - large jar filled with water, paper towels, sponge Fish  
and other included containers which consist of:

**Pollutant - Use this**

Eroded soil - garden soil

Fertilizer - brown sugar

Motor oil - cooking oil

Animal waste - chocolate sprinkles

Trash - small pieces of foil, paper, etc

Factory discharge - dish detergent in warm water (mix ahead of time)

Sewage - red food coloring

Hazardous waste - green food coloring



**Florida Sunshine State Standards:** LAFS.4.RI.1.3, LAFS.4.RL.3.7, LAFS.4.L.3.4, SC.4.L.17.2, SC.4.L.17.3, LAFS.4.RL.3.7, SC.4.P.9.1, SC.4.P.10.4

**Vocabulary:** Algae, Boundary, Dam, Decomposer, Extend, Fertilizer, Food chain, Lock, Nonpoint source pollution, Point source pollution, Pollution

**Objectives:** Students will be able to

- Explore the different types of wetlands and understand the importance of our wetlands
- Construct a food chain using organisms from a wetland
- Identify the trophic levels associated with the organisms in a food chain
- Identify the types of pollution and determine if they are point source or nonpoint source
- Discover why mangroves are unique and why they are important to a saltwater wetland

**Procedure:** Students read through the **StoryMap – Heartland to Estuary: Caloosahatchee**

<https://bit.ly/2DDTObl> either on their own computers, in teams or teacher-led.

**Fred the Fish-** Through a simulation activity, students will apply cause and effect relationships to water pollution in a river. They will also recognize that their actions affect the quality of water in our waterways. Activity can be accessed here: <https://bit.ly/2Pd5ilh>

Travel log can be accessed here: <https://bit.ly/2P7ekq0>

**Assessment:**

1. Which is NOT a wetland?
  - a. Ocean
  - b. Freshwater marsh
  - c. Mangrove swamp
  
2. Wetlands are important because
  - a. They help to reduce flooding
  - b. They provide food and habitats for animals
  - c. They filter out pollutants
  - d. All of the above
  
3. Food chains are the flow of energy from the producers to the consumers. What is the main source of energy for the food chains?
  - a. Producers
  - b. Consumers
  - c. Sun
  - d. Moon
  
4. You see trash floating in the river. It was carried into the river when the rain flowed over the land (watershed). What is this an example of?
  - a. Point source pollution
  - b. Nonpoint source pollution
  
5. You are walking through a mangrove forest and notice that one type of mangrove has roots that look like walking legs. They are found reaching out into the estuary. Which kind of mangrove are you looking at?
  - a. Red mangrove
  - b. Black mangrove
  - c. White mangrove



Assessment answers: 1. a, 2. d, 3. c, 4. b, 5. a

# **StoryMap – Heartland to Estuary:** **Charlotte Harbor Estuaries**

**Grade Level:** 4<sup>th</sup> Grade  
**Subject:** Language Arts, Science  
**Duration:** 35 Minutes  
**Materials:** Computer with internet access

**Florida Sunshine State Standards:** LAFS.4.RI.1.3, LAFS.4.RL.3.7,  
LAFS.4.L.3.4, , SC.4.L.16.4, SC.4.L.17.2, SC.4.L.17.3, SC.4.L.17.4

**Vocabulary:** Estuary, Lagoon, Nursery, Restoration, Seagrasses, Sound,  
Tidal Creek

**Objectives:** Students will be able to

- Distinguish between an estuary and other bodies of water
- Discover why are estuaries are so important
- Identify and describe the 3 major seagrasses found in the Charlotte Harbor Estuary

**Procedure:** Students read through the **StoryMap – Charlotte Harbor Estuary**  
<https://bit.ly/34NGAEJ> either on their own computers, in teams or teacher-led.

Watch Seagrasses video <https://www.youtube.com/watch?v=vd4ADe3kF8o>

Watch Seagrass Food webs,  
[http://www.seagrasswatch.org/Info\\_centre/education/Activity\\_Book\\_Nov08.pdf](http://www.seagrasswatch.org/Info_centre/education/Activity_Book_Nov08.pdf)

See next page for assessment tool.

Assessment Answers:  
1. b, 2. b, 3. b, 4. d



**Assessment:**

1. What is an estuary?
  - a. Saltwater lagoon
  - b. A mix of freshwater and saltwater
  - c. Freshwater swamp
  - d. Saltwater marsh
  
2. What is a tidal creek?
  - a. A waterway that is very large
  - b. A small waterway that is affected by ocean tides
  - c. A saltwater marsh
  - d. A small waterway that is completely inland
  
3. Where are seagrasses found?
  - a. Deep in the oceans
  - b. In shallow water along the coast
  - c. In freshwater marshes
  - d. Deep in warm lakes
  
4. Why are seagrasses important?
  - a. They are pretty
  - b. Seaweed lives on them
  - c. They make the water salty
  - d. They are a home for many animals



## **StoryMap – Heartland to Estuary: Myakka River**

**Grade Level:** 4<sup>th</sup> Grade

**Subject:** Language Arts, Science, Social Studies

**Duration:** 35 Minutes

**Materials:** Computer with internet access, optional scrub jay cards



**Florida Sunshine State Standards:** LAFS.4.RI.1.3, LAFS.4.RL.3.7, LAFS.4.L.3.4, LAFS.4.L.3.6, SC.4.E.6.4, SC.4.L.17.1, SC.4.L.17.4, SS.4.A.7.2, SS.4.A.8.4

**Vocabulary:** Endemic, Exotic Plant, Hydroperiod, Invasive Exotic Plant, Native Plant, Swamp, Wetland, Wildlife Corridor



**Objectives:** Students will be able to

- Explain the difference between a native species, exotic species and exotic invasive species
- Identify the problems associated with invasive species
- Differentiate between a swamp and a marsh

**Procedure:** Students read through the **StoryMap – Heartland to Estuary: Myakka River** <https://bit.ly/2rScm4K> either on their own computers, in teams or teacher-led.

**Silent Invaders** – Watch 16-minute video on Invasive plants <https://www.youtube.com/watch?v=1FqH4AU8NuY&list=PL9-thdql6qPrrORDx0ehmD7fy77OK5xk&index=7>

**Outdoor option:** Play the **Florida Scrub Jay Game** – In this role-playing game, students become scrub jays and compete with man for their living space, see the effects of habitat loss, and deal with other natural obstacles.

Teachers will need to create game cards.

Instructions for game found here: <https://bit.ly/35ZcOx0>

See next page for assessment tool.

Assessment Answers: 1. c, 2. b – summer is too hot, 3. a, 4. c, 5. b, 6. c

**Assessment:**

1. The otter is nocturnal. When would it be more likely to hunt for food?
  - a. During the day
  - b. At dawn and dusk
  - c. During the evening or at night
  
2. Seasons of the year are important to our native landscapes. When is it the best time to grow crops in Florida? And why is this? \_\_\_\_\_
  - a. Summer
  - b. Winter
  
3. Exotic species of plants and animals were brought to Florida from somewhere else. The Wild hog was brought to Florida by the explorers from Spain. Which of these statements is NOT true of the Wild hog in Myakka State Park?
  - a. They provide food for other animals
  - b. They uproot the plants to get food
  - c. They disturb the soil
  
4. The Scrub jay is endemic. This means:
  - a. It is not from Florida
  - b. It can live in other southern states
  - c. It lives only in Florida
  
5. Why is the population of the Scrub jay decreasing?
  - a. They are being hunted for their feathers
  - b. The scrub habitat has not been burned
  - c. There is a new disease affecting them
  
6. The Florida panther is endangered. What does that mean?
  - a. The population is increasing and they are doing well
  - b. The population is steady, about the same
  - c. The population is decreasing and if no action is taken, they could become extinct



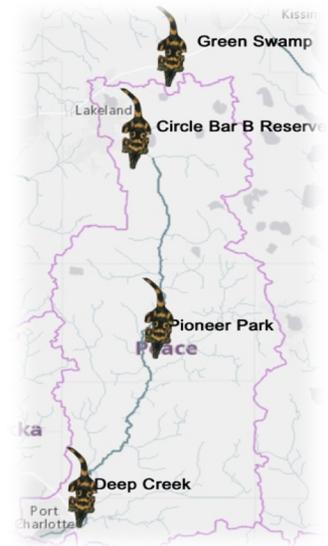
# StoryMap - Heartland to Estuary: Peace River

**Grade Level:** 4<sup>th</sup> Grade

**Subject:** Language Arts, Science, Social Studies

**Duration:** 30 Minutes

**Materials:** Computer with internet access, laminated animal cards (you must print from link found in activity)



**Florida Sunshine State Standards:** LAFS.4.RI.1.3, LAFS.4.RL.3.7,  
LAFS.4.L.3.4, SC.4.E.6.3, SC.4.E.6.6, SC.4.E.6.4, SC.4.L.17.3, SS.4.A.2.1

**Vocabulary:** Ecosystem, Microbial uptake, Nonrenewable resource, Nutrient, Particles, Phosphorus, Predator-prey, Renewable resource, Sedimentation

**Objectives:** Students will be able to

- Identify the interacting parts of an ecosystem and understand organisms only survive in an ecosystem when their specific needs are met
- Distinguish between renewable and nonrenewable resources
- Understand that nonrenewable energy sources will eventually run out
- Discover why Florida is rich in phosphorus

**Procedure:** Students read through the **StoryMap - Heartland to Estuary: Peace River**

<https://bit.ly/2RfCsJR> either on their own computers, in teams or teacher-led.

**Outdoor Option - Play the Predator- prey game -** This is a role-playing game that can be played outdoors in a field. Teachers will need to print and distribute game tags.

Instructions for game found here: <https://bit.ly/2rNps3w>

This game was developed by NatureShare.org

See next page for assessment tool.

Assessment Answers:

1. a,
2. b, c,
3. e,
4. a, c, d,
5. Baby alligator eats the fish, racoon eats the fish or snake, snake eats the baby alligator or fish ...

### Assessment

1. While hiking you see a large reptile swimming in the Peace River. You keep your distance. You notice that it has a rounded snout and you cannot see any teeth on his lower jaw. What reptile are you looking at?
  - a. An alligator
  - b. A crocodile
2. Renewable energy comes from sources that can be easily replenished. Which of the following are renewable?
  - a. Natural gas
  - b. Solar energy
  - c. Wind energy
3. Plants are important in keeping the water in a wetland clean. What parts of the plant do you think helps in filtering out pollutants?
  - a. Leaf
  - b. Stem
  - c. Root
  - d. All of the above

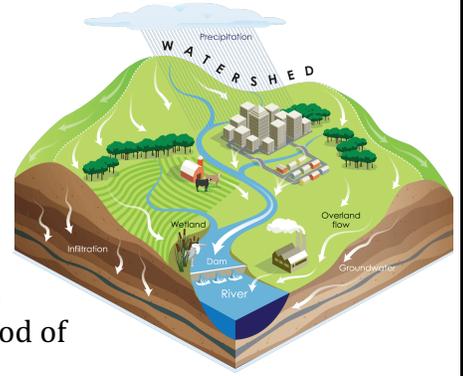
4. Look the picture of the Green Swamp. Identify the nonliving parts of this ecosystem.
  - a. Water
  - b. Trees
  - c. Rocks
  - d. Air



5. You already know that an alligator can be a predator (hunter) and also the prey(hunted). Look at the picture and identify other predator – prey relationships.



# StoryMap - Watershed Adventures in SW Florida



**Grade Level:** 4<sup>th</sup> & 5<sup>th</sup> Grade

**Subject:** Science, Language Arts

**Duration:** 35 Minutes

**Materials:** Computer with internet access, 8 ½ x 11 Foil lasagna pan, Paper towels, aluminum foil, food coloring, small blocks of wood of different sizes, spray water bottle, toothpicks

**Florida Sunshine State Standards:** LAFS.4.RI.1.3, LAFS.4.RL.3.7, LAFS.4.L.3.4, SC.4.L.17.2, SC.4.L.17.3, LAFS.4.RL.3.7, SC.4.P.9.1, SC.4.P.10.4, SC.5.E.7.1, SC.5.E.7.2

**Vocabulary:** Boundary, Drainage Basin, Watershed

**Objectives:** Students will be able to

- describe what happens to water when it hits the ground.
- recognize that bodies of water are the end product of drainage from watersheds.

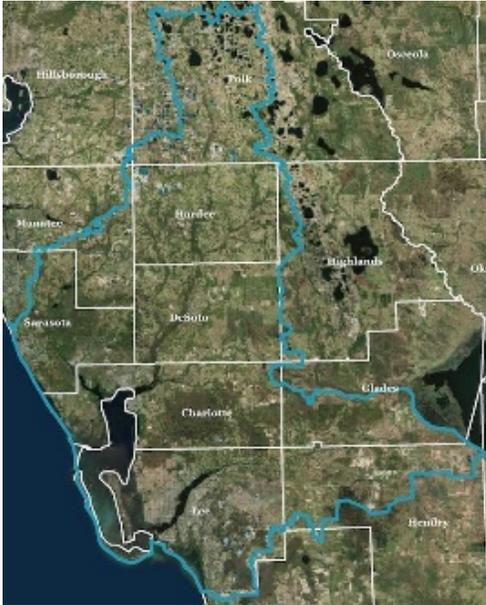
**Procedure:** Students read through the **StoryMap – Watershed Adventures in SW Florida** <http://bit.ly/2TvKZaF> either on their own computers, in teams or teacher-led class activity.

**Watershed Model** – Can be done in teams or as teacher-led class activity.

1. Place a piece of paper towel on the bottom of the lasagna pan. The paper towel represents the ground water.
2. Using the different blocks, arrange them so there are areas of higher elevations. The blocks represent the land. The lower area represents the body of water.
3. Carefully mold the foil over the blocks making sure you still have the differences in elevations.
4. Use the toothpick to put small holes around your model, representing groundwater.
5. Holding the spray bottle over the model, make it rain. Where does the water flow? (Answer: downhill into the body of water, or into groundwater)
6. Using the different colors of food coloring to represent different types of pollution, put a few drops on the elevated areas. Examples of pollutants could be trash, oil, fertilizer, animal waste etc.
7. Use the spray bottle to make it rain again. What happened to the pollutants? Did they get into the body of water? How might this affect the aquatic plants and animals in the water?
8. Carefully over a sink, remove the foil from the model. Did any of the pollutants get into the ground water?
9. Think back to the StoryMap, what are some of the ways we can help protect our watershed. Remember we ALL live in a watershed!

Assessment:

1. A watershed is
  - a. Bay, lake or river
  - b. An area of land over which rainwater flows into a body of water.
  - c. A shed that holds water
  - d. Man-made structure that hold water
2. Do you live in a watershed? Yes or No
3. This is a picture of a watershed. What do the blue lines represent?



- a. The cities in the watershed
- b. Boundary of the Charlotte Harbor watershed
- c. The Manatee River
- d. An estuary

4. Circle the 3 river basins that flow into the Charlotte Harbor Estuary
  - a. Manatee River
  - b. Peace River
  - c. Hillsborough River
  - d. Myakka River
  - e. Caloosahatchee River
5. Which of the following is true about watersheds?
  - a. Watersheds cannot be polluted
  - b. Small watersheds can be part of larger watersheds
  - c. Watersheds provide water for only plants and animals.
  - d. Watersheds are only found in Florida

**Answers:** 1. b, 2. Yes, 3. b, 4. b,d,3, 5. b