

River Kidz Workbook TEACHER EDITION

A Welcome from Marty



1. What type of animal is Marty? Why do you think this?

Marty is a mammal. Mammals have hair, give birth to live babies and also feed their babies milk.

2. What bodies of water does Marty live in? What type of water is in these water bodies when the canals are not discharging?

Marty lives in the Indian River Lagoon. The IRL is brackish naturally when the discharges are not happening.

3. What type of water is coming into the SLR/IRL from the canals and Lake Okeechobee when it rains or the government is releasing water?

The water coming into the SLR/IRL is freshwater when the releases are happening.

4. What do you think some of the pollutants coming into the SLR/IRL are? How are they getting into our waterways?

Some of the pollutants coming into the SLR/IRL are nitrogen, phosphorus and freshwater algae that cause harmful algal blooms. They are getting into our waterways from Lake Okeechobee, runoff from farms, cattle fields and development along the lake and canals.

5. Marty talked about how the incoming freshwater is hurting his friends, why do you think the freshwater is bad for them?

The animals and things living in the IRL/SLR are all used to living in brackish water. When the freshwater comes in it drops the salinity and the animals can not survive for long. The incoming freshwater makes them sick and can cause them to die.

6. What could you do to help Marty and his friends?

Answers will vary and really anything that is self reflective and thought out is a great option!

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Florida's Past (Pages 13,14,15,16)

1. Why did people move to Florida?

People moved to Florida for the warm weather and year round sunshine.

2. Why would Lake Okeechobee overflow?

Lake Okeechobee would overflow when the rain would be heavy; this is common during the spring and summer when Florida gets lots of rain. The lake would overflow it's banks and give the surrounding areas lots of water.

3. How long was the Kissimmee River before it was straightened?

The Kissimmee River was 134 miles long

4. Why did the people move to the Kissimmee area?

People moved to the Kissimmee area because the soil was fertile and Florida was a great place to live and farm

5. Describe how oxbows help the Kissimmee River? What do they look like?

Oxbows help the Kissimmee River by slowing down the flow of water. They look like the letter "S" and

6. List in order what events happened in the history of Florida using the options below:

 4 *The State and residents ask Congress to help build a dike.*

 3 *Flooding becomes a problem for people living in the watershed.*

 2 *People move to Florida.*

 5 *A dike is built around Lake Okeechobee.*

 1 *The St. Lucie River/Indian River Lagoon is not connected to Lake Okeechobee.*

7. Why do you think the Kissimmee River was straightened?

The Kissimmee was straightened to speed up the drainage of water for the communities being built in Central Florida. Water once took over 6 months to go from the headwaters (top) of the Kissimmee River to the Everglades and this caused flooding issues for these communities. By making the river straight this process was sped up and flooding was reduced.

8. Why was the dike built around Lake Okeechobee?

A dyke was built around Lake Okeechobee to help protect the communities and agriculture that was around the lake. Before the dyke the communities and farm fields were often flooded, causing crop loss and death for people.

9. What do you think causes harmful algal blooms? Why do you think these blooms are harmful to the environment?

The harmful algal blooms are caused by freshwater algae that are found in Lake Okeechobee and the canals, when they enter the SLR and IRL they are in a new environment, have less predators and have lots of nutrients that are needed for them to grow and flourish. The algae reproduce rapidly and their population explodes. These algae become a problem for the animals and plants (people too!) and can cause sickness or even death!

10. Why would the land near the lake be more fertile than land farther from the lake?

The land near the lake was historically swamp and that means that for thousands and thousands of years it was covered and uncovered with water, plants and animals. This swampy area had lots of organic material that lived, died and then decomposed. This decomposing material is and was full of nutrients that help make it some of the richest and best soil to farm in the entire country. The soil also disappears when it is exposed to the air for long periods of time since aerobic (air breathing) bacteria “eat it” and break it down. Now that the swamp is gone the soil is exposed and has actually dropped in height just in the last 100 years!

11. What was the Great Custard Apple Swamp that was found south of Lake Okeechobee?

The Great Custard Apple Swamp was a real life place that has mythical status! It was an area just south of the lake that had huge custard apple trees, thousands of birds and likely millions of fish, alligators and other plants and animals that called it home. It was where the richest soil was found and also the area where the farmers wanted their fields the most. It was cleared and is now the area that we know as the EAA or Everglades Agricultural Area.

12. How are nitrogen and phosphorus negatively affecting Lake Okeechobee?

Nitrogen and Phosphorus are impacting the lake negatively because the water is too full of these nutrients to be sent southward and they also promote algae growth. When the water is released to the east and west through canals the nitrogen especially causes issues like algae growth for the SLR/IRL and the Caloosahatchee.

The Lost Summer (Pages 19,20)

1. Who are some of Marty’s friends?

Marty is friends with oysters, dolphins, other manatees, stingrays, sea turtles and fish.

2. What caused Lake Okeechobee’s level to rise?

The Lake level started to rise because Florida experienced a heavy rainy season, that year. This is not abnormal since Florida has two hydrological seasons, we have a dry season and a wet season.

3. Which species were impacted by the freshwater?

All the oysters living in the lagoon died; seagrass died. Birds had to find a new place to hunt for fish. People were not able to go swimming in the water because the bacteria levels were high and there was toxic algae in the water.

4. Why was 2013 called the Lost Summer?

People were not able to go into the SLR/IRL and enjoy the waterways that we love and care about because of the toxic algae and high bacterial levels. Everyone had to avoid the water.

5. What was blocking the sunlight from the seagrass?

The algae had bloomed so dense that the water was green and the sunlight could not reach the seagrass and they were unable to do photosynthesis and died.

6. Why is freshwater so harmful to the lagoon?

The lagoon is not normally totally freshwater and when the salinity drops low the animals cannot cope with the drop and often get sick and can even die. The lagoon is naturally brackish and does not have large swings in the amount of salt in the water.

7. What does the lake level have to reach to prompt discharges in the Indian River Lagoon?

The lake level can reach a dangerous height where there is a possibility of the dyke breaking. If this height is reached then the Army Corp has to release water to ensure the safety of the people and property to the south of the lake.

Send It South (Page 25)

1. Who has been working on plans to move the water south?

Scientists and engineers have been working on ways to clean the water and send it south to the Everglades.

2. What two elements are heavily polluting the water?

Local basin runoff, which is runoff from our own streets and neighborhoods, has been one element causing pollution in the water. Another is agriculture that surrounds the lake.

3. What are some of the ways that you can help the Indian River Lagoon?

This is another question where as long as the answer is self reflective and local then it is correct! Encourage them to think about ways they can help big and small. Writing a letter to an elected official, attending a beach cleanup or even cleaning up the dog poop that they might normally leave in the yard! All of these are ways that we can help the lagoon and SLR.

