

5E Lesson Plan

Center: Loxahatchee River District's River Center

Title: Reptiles of the Loxahatchee

Subject / grade level: Science / 1-4

NGSSS Benchmarks:

1st Grade Standards

SC.1.L.14.1, SC.1.L.17.1, SC.1.P.12.1, SC.1.N.1.1, SC.1.N.1.2, SC.1.N.1.4, LAFS.1.SL.1.1, MAFS.1.MD.1.a

2nd Grade Standards

SC.2.L.16.1, SC.2.L.17.1, SC.2.L.17.2, SC.2.N.1.1, SC.2.N.1.3, SC.2.N.1.5, LAFS.2.SL.1.1, LAFS.2.SL.1.3, LAFS.2.SL.2.4, LAFS.2.RI.1.1, MAFS.2.MD.1.1

3rd Grade Standards

SC.3.L.15.1, SC.3.N.1.1, SC.3.N.1.4, SC.3.N.1.6, LAFS.3.SL.1.1, LAFA.3.SL.1.3, LAFA.3.SL.2.4, MAFS.3.MD.2.3

4th Grade Standards

SC.4.L.17.1, SC.4.L.17.2, SC.4.L.17.3, SC.4.L.17.4, LAFS.4.RI.1.3, LAFS.4.RI.2.6, LAFS.4.SL.1.1, LAFS.4.SL.1.3, LAFS.4.SL.2.4, LAFS.4.W.3.8,

Vocabulary:

Reptile, cold blooded, warm blooded, Integumentary sensory organs (ISOs), nictitating membrane, diurnal, nocturnal, Jacobson organ, shedding skin, scoots, carapace, plastron, turtle, tortoise, alligator, crocodile, lizard, senses, eco-enrichers, Loxahatchee River, habitat, ecosystem, adaptations, freshwater, saltwater, brackish water

Lesson Targets:

- I can understand the difference between Florida reptiles.
- I can explain the difference between warm-blooded and cold-blooded animals.
- I can explain how reptile adaptations help them to survive.
- I can investigate and measure different reptile bio-facts.
- I can express how I feel about different reptiles.

Differentiation strategies to meet diverse learner needs:

- Hands-on instruction
- Tutor/Peer Buddy activities
- Use of visuals
- Questioning techniques
- Modification of text or curriculum

ENGAGE: (To be completed prior to the River Center field trip)

Reptiles are considered eco-enrichers and play a significant role in the Loxahatchee River ecosystem. Reptiles such as alligators, turtles, lizards, and snakes have unique adaptations that allow them to thrive in our swamps, estuaries, and oceans.

Ecosystem Architects: pre-visit lesson

1. Students can research different species of reptiles and specific habitats in Florida where reptiles reside.
2. Once they have completed their research have them choose a habitat or reptile species and create a piece of art, paper slide show, puppet show, movie, poem, or other art of their choice to represent their selected habitat or reptile. Once the habitat or creatures are completed, have the students explain why they chose that particular animal and/or location.

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EXPLORE: (Completed during visit with River Center staff)

1. Welcome, introduction to the River Center, overview of today's field trip, and safety/rules talk
2. Divide the students into 2 groups to rotate through 3 different activities.
 - a. Lovin' the Loxahatchee River Tour - focusing on reptile species, adaptations, and habitats
 - b. Reptiles of the Loxahatchee hands-on activity (See below)
 - c. Water resources discussion – Where our water comes from, how we use water, where it goes once it is down the drain, water conservation
3. Touch tank demonstration

EXPLAIN: Reptiles of the Loxahatchee Main Lesson (Completed during visit with River Center staff)

1. Students will participate in a first impressions game to better understand their opinions, feelings, and what they already know about animals that are classified as reptiles (sea turtle, gecko, alligator, corn snake, rattlesnake, etc.).
2. Educators will review and explain the characteristics of reptiles and some common species found on the Loxahatchee River including both native and non-native examples.
3. Students will participate in an animal encounter with some of the resident reptiles getting the opportunity to touch the following animals:
 - Yellow-Bellied Slider
 - Florida Snapping Turtle
 - Corn Snake
 - American Alligator
4. Educators will explain why reptiles are important to the Loxahatchee River as eco-enrichers and apex predators as well as what they do for wetlands and food webs.
5. Students will get the opportunity to discover different bio-facts, replicas, and hands-on tools to learn about their unique characteristics and discover what makes these reptiles unique.

ELABORATE: (completed in classroom after visiting)

Option 1: Back from the Brink

Students should conduct research in the American Alligator

1. Why did the population decline?
2. What were the methods that were used for species recovery?
3. Used the Issue Analysis Sheet to help you understand the American Alligator success story (see attached).

Option 2: Wetlands Restoration

Working as a group or individually, you are a land manager or management team of a wetland restoration project.

1. Write about how you would respond to and manage the ecosystem you are responsible for in several different scenarios.
 - a. Overpopulation of a predator
 - b. Loss of a critical plant species
 - c. Wildfire from a campfire left unattended nearby
 - d. Pollution entering the surface water by a factory a few miles away
2. Research a local community restoration project.
 - a. Why was the site chosen for restoration?
 - b. What individuals or group led the efforts?
 - c. What obstacles or successes have they encountered?
3. Afterwards, have the students write a news article or make a short video about the project.

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EVALUATE:

- a. Participation in the activity.
- b. Students should be able to answer the following:
 - a. What are the characteristics of a reptile?
 - b. What are some common reptiles found on the Loxahatchee and in South Florida?
 - c. Why are reptiles important to the Loxahatchee River?
- c. Grade assessment on the student's engaged and elaborate activity.
- d. Write about their experience at the River Center.

Creating STEM Connections

Science

- See standards above.

Technology

- Research reptile eyes to understand the difference between nocturnal and diurnal adaptations.
- Research reptile movement and the differences and similarities that these animals have. How does their movement allow them to hide and catch their prey?
- Find resources online about sea turtle nesting research, satellite tagging, and tracking projects.
<https://marinelife.org/seaturtles/research/>
- River Center's Virtual Education Videos--Animal Encounters: Reptiles of the Loxahatchee
https://www.youtube.com/playlist?list=PLA39R2PcEo33eoYyDQo2LzVRx72P_42Cy

Engineering

- Use Legos to design a type of reptile that you saw at the River Center.
- Use modeling clay or Playdough to design a reptile habitat along the Loxahatchee River.
- Use paper towel rolls, blue and green plastic wrap, and different reptile eye shapes and cutouts to understand how these animals see.

Mathematics

- See standards above.

Loxahatchee River District Connections:

- Stormwater
 - Alligators affect wetland landscapes especially during drought conditions with gator holes in swamps and marshes.
 - Runoff of fertilizers and pesticides from human habitats into the freshwater supply can affect growth and development of reptile eggshells.
- Water Supply
 - Good water quality: Clear water is needed for seagrass growth which is the diet of Green Sea Turtles.
 - Saltwater intrusion: Affects upstream freshwater habitats of the Loxahatchee where many species of reptiles live.

River Center Exhibit Connections:

- Wild and Scenic freshwater aquarium – sliders and soft-shell snapping turtle
 - Live examples of reptile species
 - Example of reptile habitats
 - Connection to the bio-facts used in the classroom activity
- Floodplains exhibit – sliders, Florida snapping turtle, American Alligator
 - Live examples of reptile species
 - Example of reptile habitats
 - Connection to the bio-facts used in the classroom activity
- Coral Reef/Deep Marine aquarium – sea turtles
 - Example of reptile habitats
 - Connection to the bio-facts used in the classroom activity