

Apply Teacher Instructions

Mission: The Great Turtle Rescue

Objective: Each student will be able to explain the necessary habitat needed for proper wildlife release locations using nonfiction text and maps.

- Students achieve the following ‘I can’ statement, “I can determine the best habitat to match the basic needs of a species.”
- Students embark on a task-based mission for a wildlife release in a nearby wildlife refuge using habitat maps of Brazoria National Wildlife Refuge of coastal eastern Texas.
- Academic Terms: freshwater riparian forest, riparian zone, wetland, stream, brackish marsh, ocean, saltwater, freshwater, salinity, plantation.

What Is Happening?

Digital Student Journal Slides 3-4

Description: Students observe phenomena, or observable events, and record their observations. This discrepant event incorporates 3D learning of apparent motion, scientific and engineering practices, and recurring themes and concepts including patterns. It is an attention-getter that can be used as either a cooperative learning strategy for engagement or as an individual reading opportunity to activate prior knowledge.

There is no correct or uniform answer for these connections. However, students should be able to relate information from 3rd, 4th, and possibly 5th grade to these terms using examples they have either directly observed or learned about previously. Encourage full sentences in the written descriptions. When debriefing answers with students, have students recall the relationship between biotic and abiotic factors and have them identify those factors discussed on previous slides.

Mission: The Great Turtle Rescue

Digital Student Journal Slides 5-9

Description: Students are introduced to the scenario in a brief story about Tristan and Kyle. It includes related resources and instructions to complete their mission, which is to “Find the best release site for each turtle to understand why different turtles sometimes live in different habitats.” They are provided secondary resources for Central Eastern Texas.

Scientific & Engineering Practices Spotlight

5.4B Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.

- Students are introduced to a park ranger for a national wildlife refuge in Texas.

Students will learn terms (salinity, riparian forest, estuary, brackish marsh), practice interpreting a map of habitats, and read about turtle habitats, to complete their mission.

Apply Academic Terms

Digital Student Journal Slides 10-13

Description: Students move academic terms into sentence stems for explanations on salinity of bodies of water between freshwater and marine ecosystems.

Slide 10, Answer Key

- Salinity: The level at which water is *salty*.

Slide 11, Answer Key

- Freshwater Riparian Forest: Where a *wetland* area runs along the banks of a river or *stream*.

Slide 12, Answer Key

- Estuary: Where the mouth of a *freshwater* river flows into the saltwater *ocean*.

Slide 13, Answer Key

- Brackish Marsh: A marshy area often found near an *ocean* with water that is *salty* somewhere in between freshwater and the ocean.

Relative Salinity of Texas Water

Digital Student Journal Slide 14

Description: Students use the terms from the term bank and clues from the passage to place the terms in order from least to most salty.

Answer Key

From least to highest salinity: *Freshwater Stream, Brackish Marsh, Ocean*

Skills Practice: Interpreting a Map

Digital Student Journal Slide 15

Description: Students write a description of habitats based on the map, using the knowledge they have gained about freshwater and saltwater.

Answer Key

Sample Answer: A1 and C5 are similar because they are along water. They are different because of freshwater versus saltwater. A1 is a riparian area, C5 is along ocean water.

Research Turtle Facts

Digital Student Journal Slide 16

Description: Students read two entries about different turtles and their habitats and diets.

- Students recognize a wildlife refuge, like the Brazoria National Wildlife Refuge, is land set aside for open space and wildlife feeding/breeding.
- Students synthesize data to determine the best release sites based on freshwater vs. saltwater turtle biologies.
- Texas Diamondback Terrapins are the only turtles found where the salinity comes close to that of the ocean.
- Western Chicken Turtles live well in a mix of riparian habitat and hardwood forest. This habitat gives the turtle freshwater, shelter, and types of food specific to riparian areas.

Complete Your Mission

Digital Student Journal Slide 17

Description: Students choose the best location to release the turtles, based on information from reading the map and the information they have learned about each turtle species.

Answer Key

- **Western Chicken Turtle:** A1
Prefers riparian areas around freshwater and near forests, but not pine plantations.
- **Texas Diamondback Terrapin:** C4
Prefers living along marshes with high salinity.

Skills Practice: CER

Digital Student Journal Slide 18

Description: Using CER statements, students place the correct statement in each area.

If students struggle to distinguish between the Claim, Evidence and Reasoning, remind them that their Claim is what they know, their Evidence is how they know what they know, and their Reasoning is how what they know, supports what they know.

Answer Key

- **Claim:** B. A statement making a case or answering a question.
- **Evidence:** A. A fact or information that supports the Claim.
- **Reasoning:** C. An explanation using a scientific rule that describes why the evidence backs the Claim.

Mission: Conclusion

Digital Student Journal Slide 19

Description: Students answer the questions using the knowledge they have gained about habitats and turtles. They select a Reasoning Description to support their Claim.

Answer Key

- **Claim:** Sample Answer - Different organisms require different habitats. A freshwater turtle needs water without salt and a saltwater turtle needs water with salt.
- **Evidence:** Sample Answer - A key difference between the two turtles is the Western Chicken Turtle is not tolerant of salt & saltwater organisms so live in freshwater.
- **Reasoning:** B. Different turtle species use different kinds of living and nonliving things to satisfy their basic needs.

Pulling It Together

Digital Student Journal Slides 20-21

Description: A STAAR question type. Students use their understanding of biotic and abiotic factors to answer the questions.

Slide 20 Answer Key

1.

- **Part A:** D. The turtle eats shrimp and oysters.
- **Part B:** C. Living things are food for other living things.

Slide 21 Answer Key

2.

- Alligator in mangrove pond
- Heron approaching crabs to eat

Mission: Reflection

Digital Student Journal Slide 22

Description: Students write about what they have learned regarding habitats and the turtles' needs. Encourage students to refer to their Claim Evidence and Reasoning slide when completing the reflection.

Answer Key

Student answers will vary but should generally show understanding.

Organisms must interact with biotic and abiotic factors to survive but not all organisms need the same biotic and abiotic factors. Different turtle species rely on different kinds of water sources. The Texas Diamondback Terrapin Turtle can be found in brackish marshes where salinity is high. The Western Chicken Turtle can be found in freshwater. The abiotic needs for the two turtles are different. One needs salt water and the other needs freshwater.

ELPS Spotlight

STRATEGY: Structured Academic Talk

Q-Triple-S-A: Students will analyze the differences between turtle habitats by engaging in a Q Triple S A activity.

Instructions:

Question: Begin by posing an open-ended question or prompt related to the academic content being discussed.

- *Why do different turtles sometimes live in different habitats?*

Stem: Provide sentence stems to guide students with developing a response. Have students read each sentence stem out loud and think about how they will complete the sentence.

(Reading)

- *Different turtles sometimes live in different habitats because . . .*
- *Supporting evidence includes . . .*
- *The evidence supports my claim because . . .*

Signal: Students use gestures or hand signals to indicate when they are ready to share their ideas (i.e. “*stand up when you have an answer*”, or “*raise your hand when you have an answer*”). Observe wait time until students have all indicated that they have constructed an answer.

Share: Students take turns sharing their ideas and thoughts related to the question or prompt.
(Speaking and Listening)

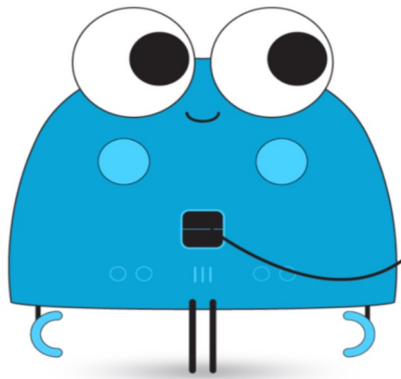
Assess: After the conversation, students reflect on their learning and assess their understanding of the content being discussed with two minutes to complete a written response to the original prompt. **(Writing)**

ELPS Tips for Beginning EB Students:

- Provide visual aids that include labeled diagrams and images
- Simplify sentence stems and using shorter sentence structures
- Offer translation or clarification in the students' primary language as needed
- Using hands-on manipulatives or props to demonstrate the relationship between mass and force

ELPS Tips for Intermediate and Advanced EB Students:

- Encourage collaborative group work to build language and social skills
- Provide sentence frames or scaffolds to support more complex sentence structures
- Use real-world examples that relate to the students' experiences and cultures



TREKs™

5.12A Interdependence

Apply

Slide 1

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TREK Goals

5.12A: Interdependence

Observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem.

Apply

**Mission:
The Great Turtle
Rescue**

I can determine the best habitat to match the basic needs of a species.



Slide 2

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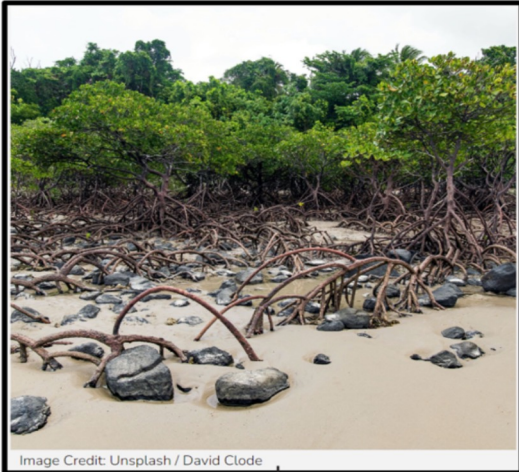


Image Credit: Unsplash / David Clode

What Is Happening?

Instructions: Describe what you think is happening in this picture. What do you see? What does it make you think of? What does this make you wonder?

WRITE HERE

Submit

Slide 3

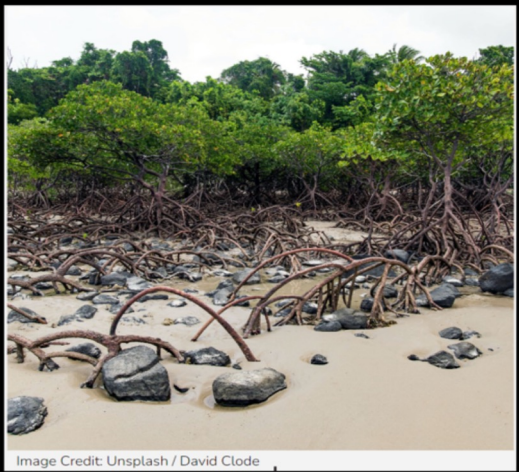


Image Credit: Unsplash / David Clode

What Is Happening?

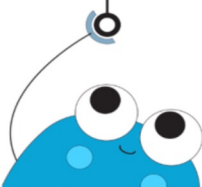
Tree roots that thrive in saltwater!

Mangrove trees live along some of the world's marine coastlines. This includes the southeastern edge of Texas along the Gulf of Mexico.

These roots go through cycles of being underwater and being exposed to the air. This photo was taken at low tide, showing what mangrove tree roots look like. During average ocean levels and at high tide, the roots are underwater.

Mangrove trees are a key element for supporting these healthy ecosystems where saltwater ebbs and flows. These habitats provide some basic needs of many animal species here.

Slide 4



Mission: The Great Turtle Rescue



Image Credit: Unsplash / Lia Trevarthen

You walk with your buddy, Tristan, into his house. In the kitchen is his teenage brother, Kyle. He is looking at something in a large cardboard box with no lid.

“What’s in the box?” Tristan asks.

“Two turtles,” replies his brother. “I’m going to throw them in the pot I’ve got boiling water on the stove. I hear turtle soup is really good, tastes like chicken...”

“WHAT?!” both you and your friend seem to yell at the same time. You peer into the box.

Kyle explains how he found these two turtles in the box, dumped off on the side of the road. Just looking at them, it is obvious that they are two different species.

Mission: The Great Turtle Rescue



Image Credit: Wikimedia Commons

Western Chicken Turtle

“I can’t release them back into the wild just anywhere,” Kyle explains. “I’ve never seen these kind around here, so something else would probably just eat them anyway.”

You and Tristan tell Kyle that you are pretty sure it’s illegal to eat some turtle species in Texas. You and Tristan decide to track down what species they are and the best place to let them go. Kyle agrees.

Texas Diamondback Terrapin



Image Credit: Wikimedia Commons

You jump online and discover their identities. You also discover where they live and what they eat.

It’s clear they came from two very different habitats. However, both habitats lie within coastal East Texas.

Mission: The Great Turtle Rescue



YOUR MISSION:

Find the best release site for each turtle to understand why different turtles sometimes live in different habitats.

You and Tristan find a map online showing the major habitats in a large wildlife refuge nearby. You call the refuge office. Ranger Dawn answers the phone, and you tell her about your turtle rescue mission. She explains that when an animal is misplaced from its natural habitat, it may not survive. She says she can help release the turtles into new homes; the refuge manages a variety of healthy ecosystems and includes the right habitat for each species.

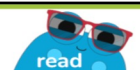
Ranger Dawn asks you to do the research yourself. She provides you with a few resources and suggests some questions to answer:

- What do the terms on the wildlife refuge map legend mean?
- How do those terms relate to how some habitats are saltier than others in this area?
- How does the map legend show these different habitats across the wildlife refuge?

To complete your mission, you will need to describe and justify your choices for her, explaining why you think each location makes a good new home for them.

Slide 7

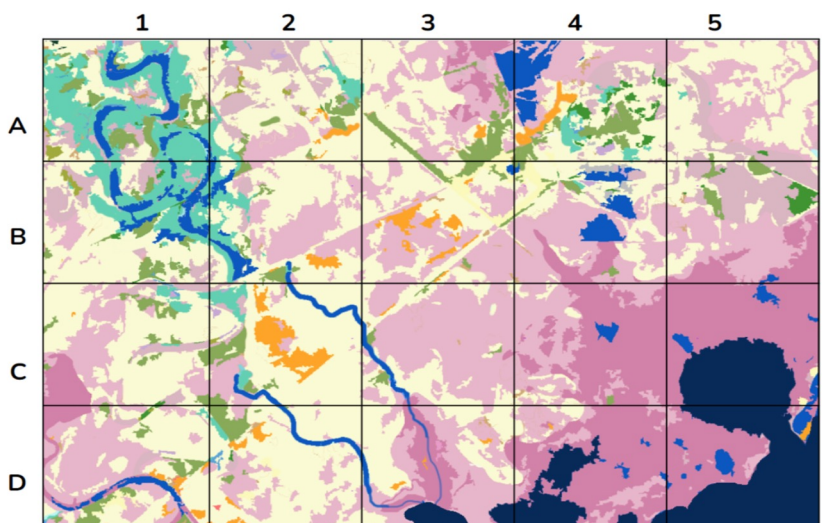
Resource: Wildlife Refuge Map



Ranger Dawn gave Tristan and Kyle this color-coded map of the wildlife refuge in Coastal Eastern Texas. You will be examining the habitats and think about where you might release each turtle.

- Human Development
- Fresh Water
- Ocean Water
- Freshwater Riparian Forest
- Pine Plantation
- Coastal Prairie
- Brackish marsh, high salinity
- Brackish marsh, low salinity

1 km



Slide 8



The next series of slides of your research process will help you answer Ranger Dawn's questions:

- 1. Learn Academic Terms**
What do some of the key terms on the wildlife refuge map legend mean?
- 2. Understand Relative Salinity of Texas Waters**
How do those terms relate to how some habitats are saltier than others in this area?
- 3. Practice interpreting the Wildlife Refuge Map**
How does the map legend show these different habitats across the wildlife refuge?

To complete the mission, you will apply what you learned about the best habitat for each turtle to choose a map quadrant where each should be released.

Slide 9

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Instructions: Using the Term Bank as a reference, write in the correct term in the sentence.


TERM BANK

salty

sandy

silty

rocky



Salinity

The level at which water is .

Slide 10

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APPLY

Academic Terms



Instructions: Using the Term Bank as a reference, write in the **TWO** correct terms in the sentence.

TERM BANK

tree

wetland

sunlight

living thing

stream

soil



Freshwater Riparian Forest

Image Credit: Wikimedia Commons

Where a area runs along the banks of a river or .

Submit

Slide 11

Slide 11

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APPLY

Academic Terms



Instructions: Using the Term Bank as a reference, write in the **TWO** correct terms in the sentence.

TERM BANK

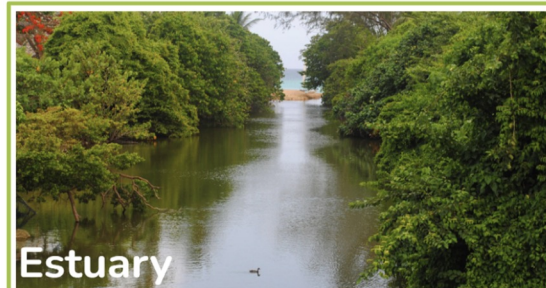
fish

sunlight

freshwater

ocean

soil



Estuary

Image Credit: Wikimedia Commons

Where the mouth of a river flows into the saltwater .

Submit

Slide 12

Slide 12

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APPLY

Academic Terms



Instructions: Using the Term Bank as a reference, write in the **TWO** correct terms in the sentence.

TERM BANK

- ocean
- plants
- shelter
- mountain
- food
- salty
- estuary
- soil



Brackish Marsh

Image Credit: Wikimedia Commons

A marshy area often found near an with water that is somewhere in between freshwater and the ocean.

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Slide 13

Slide 13

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APPLY

Relative Salinity of Texas Waters



Instructions: Read the paragraph. Then using the Term Bank as a reference, write in the **THREE** correct terms to show their relative salinity on the scale.

Estuaries, Freshwater Riparian Forests, and Brackish Marsh habitats include water features with different salinity levels. Such waterways of Texas are part of the state's range of water salinity - from freshwater streams to the very salty ocean.

TERM BANK

- Ocean
- Freshwater Stream
- Brackish Marsh

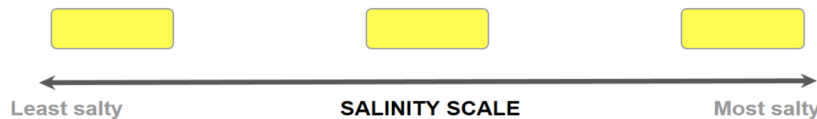


Image Credit: Wikimedia Commons / Bryan Rutherford

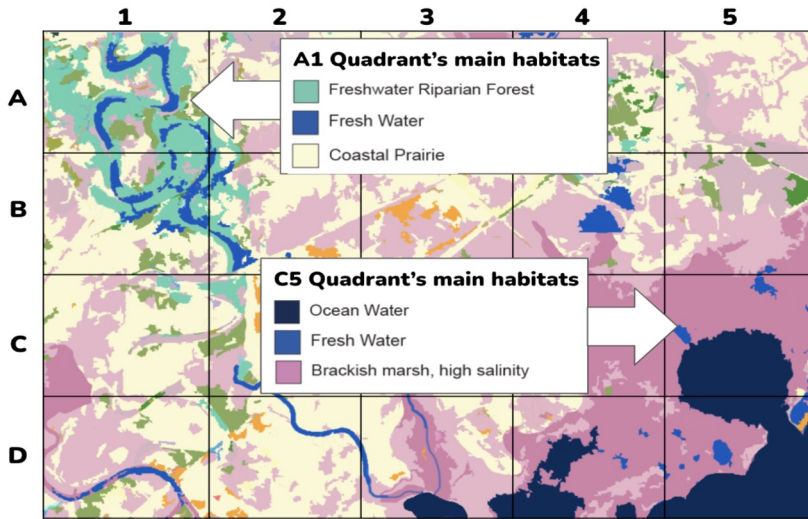
Slide 14

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APPLY

Skills Practice: Interpreting a Map



Instructions: Look at quadrants A1 and C5 on this map.

Write a description of similarities and differences between the habitats in these quadrants.

WRITE HERE

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APPLY

Research Turtle Facts



Instructions: Read the passages below. Each passage describes where each turtle lives and what it eats.



Texas Diamondback Terrapin
(Malaclemys terrapin)

HABITAT Brackish marshes and tidal creeks, where water salinity is high. These are the only turtles found where the water salinity comes close to that of the ocean. They balance their water needs by secreting salt from their tear glands.

Like other reptiles, these turtles regulate their body temperature using their environment. During the day, these terrapins spend their time in the water or basking in the sun. At night, they bury themselves in the mud, for both temperature balance and shelter from predators.

DIET Salt-loving crabs, shrimp, clams, oysters, fish, and aquatic insects.



Western Chicken Turtle
(Deirochelys reticularia)

HABITAT Riparian areas around freshwater within or near forests. The forests they prefer tend to have mixed species of hardwood trees, rather than pine forests or plantations.

The forest areas are important, because they provide cover for the turtles to move between wetland areas. They also rely on the forest, especially the leaf litter, for cover during the winter.

DIET Crayfish, fish, fruits, aquatic insects, frogs, tadpoles, and plants that need freshwater.

Slide 16

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APPLY

Complete Your Mission

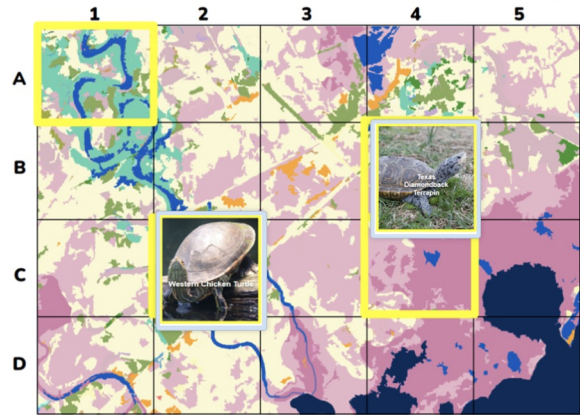


Tristan and Kyle have narrowed down options to four possible sites. They are highlighted on the map.

Instructions: Move each turtle image below to one of the four quadrants outlined in yellow that includes the best habitat to release it.

- Human Development
- Fresh Water
- Ocean Water
- Freshwater Riparian Forest
- Pine Plantation
- Coastal Prairie
- Brackish marsh, high salinity
- Brackish marsh, low salinity

1 km



Submit

Slide 17

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Skills Practice: CER



Instructions: Identify the Claim, Evidence, and Reasoning (CER) statements for a scientific explanation. From the *Parts of a CER* area below, move each definition below its matching term.

Claim	Evidence	Reasoning

PARTS OF A CER

A. A fact or information that supports the Claim.

B. A statement or conclusion to answer a problem or question.

C. An explanation using a scientific rule that describes why the Evidence supports the Claim.

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Slide 18

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Mission: Conclusion



Instructions: Based on your chosen release sites, write in your Claim and the Evidence. Then, move the best Reasoning Description into the Reasoning box.

Claim
Why do different turtles sometimes live in different habitats?

Submit

Evidence
What evidence from the Turtle Facts supports your Claim?

Submit

Reasoning
How does the evidence support your Claim?

REASONING DESCRIPTIONS

A. Different turtle species decide they like how a place smells.

B. Different turtle species use different kinds of living and nonliving things to satisfy their basic needs.

C. Different turtle species rely on different kinds of water sources in the same habitat.

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Slide 19

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APPLY

Pulling It Together

This question has two parts.
Think about what you have learned about the Texas Diamondback Terrapin.

Part A

Which of the statements below is an example of this turtle interacting with biotic factors in its environment?

- A. The turtle secretes salt from its tear glands.
- B. The turtle buries itself in mud at night.
- C. The turtle lies in the sun to get warm.
- D. The turtle eats shrimp and oysters.

Submit

Part B

Which statement supports the answer to Part A?

- A. Shelter is always provided by living things.
- B. All living things need water.
- C. Living things are food for other living things.
- D. Sunlight helps all living things to grow.

Slide 20

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APPLY

Pulling It Together



2. Which examples in the image demonstrate organisms surviving by interacting with biotic factors in this mangrove wetland ecosystem?

Select **TWO** correct answers.

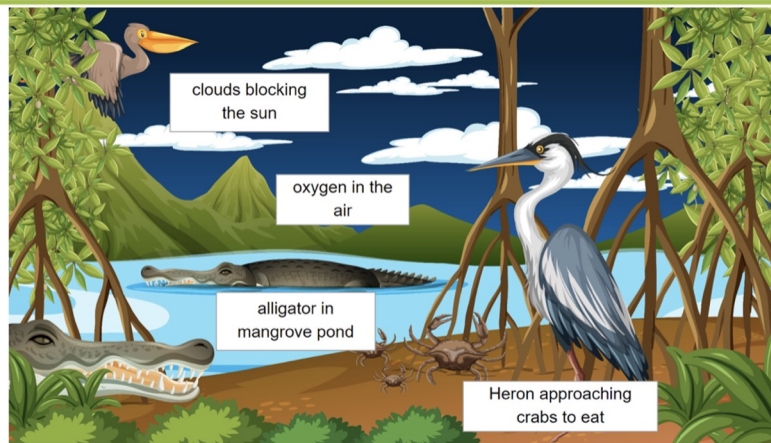


Image Credit: Freepix.org

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APPLY

Mission: Reflection



Instructions: Write your answer to the question below using complete sentences.

Why would you not release both turtle species in the same habitat?

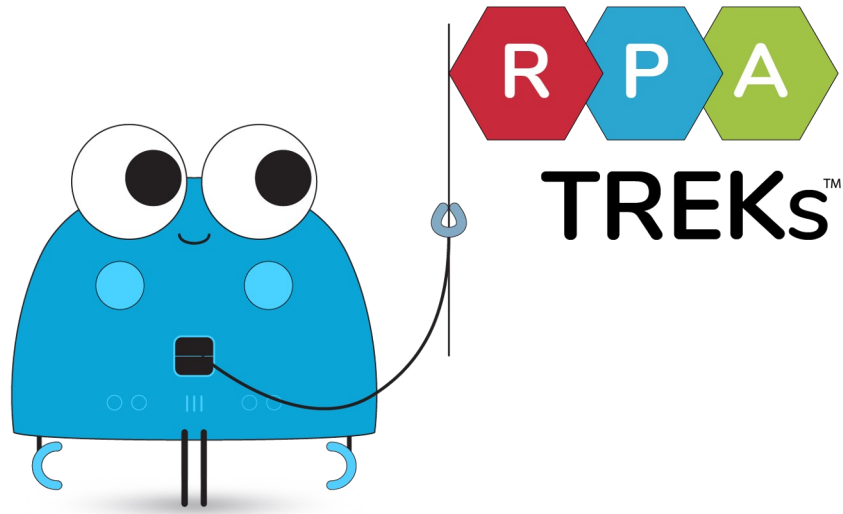
WRITE HERE

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