

	Unsatisfactory 1	Needs Improvement 2	Satisfactory 3	Exemplary 4	Score
Map Maker	Did not make attempt to follow map directions	Filled out half of the map directions	Filled out most of the map directions- missed only 1 section	Completed the map directions	
Understanding of Material	Did not demonstrate understanding of material	Limited understanding demonstrated	Demonstrated understanding of material	Added extra evidence to show understanding of material	
Grammar/ Punctuation	More than 8 errors	4-8 errors	1-3 errors	No errors	
Final Question	Did not demonstrate understanding of material	Limited understanding demonstrated	Demonstrated understanding of material	Added extra evidence to show understanding of material	
Score					

Alternative: Students who have access to the Internet at home may be assigned this for homework. Go through the steps in class prior to making the assignment so students know what to do. You may want to make copies of the numbered instructions and the ecosystem services key for their reference. If you take this alternative, have students print their maps at home. Hold a class discussion the following day and have students share their maps and their paragraphs.



Reflection section Answer Guide

Toad-ally Awesome!

Introduction

What was the question the scientists wanted to answer? *How does flooding affect the reproduction of toads in the forests along the Rio Grande?*

How do you think flooding affects the reproduction of toads? *This is an individual question and students should back up their opinions with logic, evidence, and reason.*

Method

Why did the scientists also measure the amount of rainfall and the amount of water flow at each of the sites? *The scientists needed to measure these things because the amount of rainfall and the amount of water flow help the scientists determine whether the area flooded or not.*

Why do you think the scientists conducted their experiment from June through September of each year? *This is an individual question. Possible answers*



would be because it is reproduction season, rain season, and snow melt.

Findings

Look at figure 6. Do you think flooding affected the reproduction of toads? Why or why not? *It appears that flooding does affect the toad population because the scientists captured many more toads where there was flooding.*

What other living things do you think might be affected by flooding? Why? *This is an individual question. Possible answers include other amphibians and their reproduction cycles, insects, plants, and predator/prey relationships.*

Discussion

Do you think it would be a good idea to purposely flood the bosque periodically? Why or why not? *Yes, because small floods could be safely managed to protect both the people and the toad populations.*

Would people benefit from flooding that would enable the toads to reproduce? Why or why not? *This is an individual question and students should back up their opinions with logic, evidence, and reason.*

What Goes Around Comes Around

Introduction

What would happen to the Carolina bays if the directional model were correct? What would happen if the cyclical model were correct? *According to the directional model, the aquatic ecosystem might change into a marsh and then into a swamp (a forested wetland) because of prolonged drought that alters the vegetation to resemble more of a forested wetland than an aquatic wetland. According to the cyclical model, the bays always return to their aquatic ecosystem.*

What question did the scientists ask? *After a period of prolonged drought, do Carolina bays become more forested or do they always return to their aquatic ecosystem?*

Method

How do you think changes in rainfall affected the aquatic plants, marsh plants, and woody plants around the wetland? *Students may have different answers, which are encouraged as long as they can back up their answer with logic and evidence. Depending on which vegetation type the student focuses on, the amount of rainfall influences which plant can survive. If a lot of rain has fallen, then the bay should contain a lot of water that would encourage aquatic plants to grow, etc.*

An ecosystem is a very fragile system. When something disrupts the balance, the ecosystem may take years to recover. Do you think rainfall only affects vegetation in the current year or can rainfall affect how vegetation grows the next year? Explain. *Students may have different answers which are encouraged as long as they can back up their answer with logic and evidence. The scientists found that it can take more than a year for the bays' water levels to recover from a drought period. This means that vegetation patterns also take a while to change. The amount of water available will determine which plants grow in an area.*

Findings

How is the pattern of a person's development similar to or different from a Carolina bay? *Carolina bays are cyclical and people change in a directional pattern. Carolina bays can change back and forth from dry vegetation patterns, margin vegetation patterns, and aquatic vegetation patterns. People follow a directional model: baby, child, teenager, adult, etc.*

How do you think aquatic plants return to the bay after a drought period? *Plants put out seeds that are very strong and can survive without growing into a plant right away. Once environmental conditions are right, then the seed can begin to develop into a plant. For example, sometimes seeds have mechanisms that start germination, like a certain temperature and moisture. If it is too dry one year, the seeds might not germinate that year and wait for the right conditions in the next year.*

