

Loss of Species, Loss of Ecosystem

Science Grade-Level Expectations

This instructional task addresses content related to the following science grade-level expectations:

(SE-E-A2) Predict and describe consequences of the removal of one component in a balanced ecosystem (e.g., consumer, herbivores, nonliving component) (GLE 72)

	Objective
Task	<ul style="list-style-type: none"> - Compare the consequences of the loss of an organism in two specific ecosystems
Sample Student Exemplar Response	

Implementation Tips:

- This task is intended to be integrated into a larger unit that contains hands-on science opportunities, student-led investigations, non-fiction reading, and a variety of other instructional strategies.
- Teachers may choose to use or modify the task as part of an instructional lesson or as a formative or summative assessment.
- Strategic instructional decisions will need to be determined prior to implementation such as:
 - Should the provided text be read aloud to students or read independently by students?
 - Will students work collaboratively or individually to complete the task?
 - What content knowledge and skills will students need to have prior to attempting the task?
 - Does the task need to be modified based on the needs of the students at the time of implementation?

- Read the Scholastic article [All About the Rain Forest](#)
- Look at the National Geographic [photos](#) of rainforest wildlife
- Watch the New York Times video [Cuba's Coral Garden](#)
- Read the following article from Florida International University: [Fishing Leads to Significant Shark Population Declines, Researchers Say](#)

Task: Compare the effects of losing trees in the rainforest to losing sharks in the coral reef ecosystem. Predict which would have the most devastating consequences on the local ecosystem. Explain your reasoning for your conclusion.

Sample Student Exemplar Response

The loss of trees in the rain forest would be more devastating than the loss of sharks in the coral reef ecosystem.

All organisms in rainforests depend upon the trees in some way. Tree loss in the rain forest has immediate, devastating results because animals such as the boa constrictor, sloth, and toucan lose their habitat. Understory plants such as ferns lose their shade and die from exposure to direct sunlight. Many organisms such as monkeys and insects lose their source of food so they have to travel to find a new home or risk dying. Much of the soil in tropical rain forests is held in place by the roots of trees so erosion quickly occurs when trees are cut down. Trees are the most vital organisms in the rain forest. They allow other plants and animals to survive and thrive. Rain forest ecosystems quickly crumple if the trees are removed.

Like trees to rainforests, sharks are also vital to coral reef ecosystems. According to Mike Heithus in the FIU article, "We've seen that if we don't have enough of these predators around, it causes cascading changes in the ecosystem, that trickle all the way down to marine plants." Sharks are at the top of the food chain and eat fish, crustaceans, and other animals that live in coral reefs. If sharks are not living in the area, species that eat scallops, clams, oysters, coral and sea grass will increase and consume more and more of the producers in the food chain. Once the producer sea grass and corals are gone, the ecosystem will begin to collapse.

However, there may be ways the coral reef ecosystem can become more balanced. The consequences of the loss of sharks in the coral reef ecosystem might be less devastating if another type of predator, such as grouper, controls the population of lower level consumers. This might allow the ecosystem to find a new balance and continue.

The loss of trees in a rainforest destroys the ecosystem. The loss of sharks in coral reefs may cause the ecosystem to fail but there is also a chance that the variety of animal species in the ocean will help it maintain the balance it needs to endure.