SCIENCE 3D

RIVER DRAGONS: NILE CROCODILES

In this packet, sample student answers are provided in red and notes to teachers are in blue.

This **Explore Your Backyard** activity has students explore and then compare and contrast how different communities try to solve environmental challenges.

This activity is focused on having students understand how humans can influence ecosystems and how people might be able to reduce their impact on ecosystems. This activity can be completed in the classroom or as homework with students doing online research. It would be ideal for students to get outside to explore an area where there might be environmental challenges. This could be done near the school or as a field trip. Have students notice what parts of nature are intact and what parts are harmed by people. Have them consider what might be done to improve habitats for plants and animals in the area. Another option is to go to an agricultural area. Have students think about connections between the farm and the natural environment and how to help agriculture and natural ecosystems coexist.

The Okavango Delta may seem like a very wild place. But humans can still influence what happens there. Harvesting too many crocodile eggs, clearing land near riverbanks, and killing adult crocodiles caused the crocodile population to decline.

Further north in Africa, people introduced a big predator, the Nile perch, to Lake Victoria. Lake Victoria is huge. It is the size of the country of Scotland! The Nile perch population increased. They ate too many of the native algae-eating fish. The populations of algae-eating fish decreased drastically. There weren't enough fish to eat the algae. The algae population exploded. As the algae died and decomposed, oxygen was removed from much of the lake. Now, parts of the lake don't have enough oxygen for fish to survive. The people that catch fish for a living there are in trouble.

For more information on the Nile Perch story, see:
https://www.amnh.org/learn-teach/curriculum-collections/biodiversity-crisis/lake-victoria

Too many algae growing in ecosystems is a problem in many other places around the world. Algae can clog waterways. When they die, the oxygen levels drop to near zero. This causes what are called dead zones. In some places, these dead zones occur because nutrients from lawns, cities and farms flow into the water. Algae populations are limited by the amount of nutrients in the water. The extra nutrients from people let algae populations grow too large.

For more information on Dead Zones, see:
http://mississippiriverdelta.org/learning/explaining-the-gulf-of-mexico-dead-zone/

Engineers, scientists, politicians, and the public are trying to find solutions to help people reduce their impact on the environment. In many places, they are trying to find ways to make the environment better. For example, they are trying to find ways to reduce the use of fertilizers on lawns or on crops. Others are trying to figure out how to plant native plants that don't need fertilizers or too much water. In Costa Rica, a city is planting trees throughout it to bring nature back and to give animals safe ways to cross the city. In other places, people are trying to "re-wild" the environment by planting trees and bringing back predators, like wolves, that had died out in the area.

For more information see:
https://www.theguardian.com/environment/2020/apr/29/sweet-city-the-costa-rica-suburb-that-gave-citizenship-to-bees-plants-and-trees-aoe

https://www.resilience.org/stories/2019-05-09/the-wild-way-to-rapid-transition-how-rewilding-can-slow-climate-breakdown-protect-from-its-worst-effects-and-improve-biodiversity/

Extend the Lesson: Have students make a drawing that illustrates the steps in the environmental problem with introducing the Nile perch or adding too much nutrients to waters.

Your mission is to investigate an environmental problem that influences your community or a place of interest. Use online resources or a library to investigate the problem. Research solutions that people are developing.

1. **Create** a diagram, poster, or presentation that describes the problem and the solutions that are being proposed. Then, **present** your work to the class.

   Answers will vary.

2. **Compare** and **contrast** the environmental challenge you studied with one of the examples mentioned on the previous page.

   Answers will vary.