Keystone Species - Otters, Alligators and Elephants

In the 1700-1800s, on the coast of California, the **sea otter** was hunted for its sleek, beautiful fur. It was also killed by fishermen who thought they were eating too many of the fish they wanted to catch. The sea otter were hunted almost to extinction. Then people discovered something. Without the sea otter, fishermen began to see changes in the ecosystem. Sea otters are one of the few animals that can eat sea urchins. When the otters disappeared, the sea urchin population grew very quickly. Soon there were more sea urchins on the California coast than ever before. Sea urchins eat kelp. Now that there were so many more sea urchins, they ate up all the kelp beds. The kelp beds are very important to many fish as a place to have their young. This set off a chain reaction. With the otters gone and the sea urchins numbers growing quickly, the kelp beds began to disappear. Then the fish, with no safe place to spawn, began to disappear. In just a few years, the fishermen noticed that along with the sea otters, the fish were suddenly gone as well. Killing off the sea otter had the opposite effect they had hoped. They didn't know the sea otter actually helped protect the fish populations by eating sea urchins. The sea otter is a ***keystone species*** for its ecosystem. In 1911, a treaty was passed to protected the sea otters from hunting. This was called the ***International Fur Seal Treaty***. In some areas the sea otters came back. The sea urchins in those areas were brought back into control. Their kelp beds recovered and the fish population came back too. This is an example of how a keystone species is interconnected with a whole ecosystem.

A similar story happened with the **American alligator** was once thought to be an annoying pest. They showed up in people's pools and golf courses and ate game fish that people liked to catch. So the American alligator was hunted without limit until it became an endangered species on the verge of extinction. Then people discovered something. As the alligators disappeared, so did all those game fish that people liked to catch. That was when they realized that the alligators' favorite food, a large fish called a gar, were having a population explosion. Gar like to eat many kinds of game fish. So, with no alligators to keep their numbers down, there were too many gar gobbling up all the fish. Then the alligator was put on the endangered species list in 1967 and protected from hunting. Over time, their numbers began to recover and the gar populations came under control. That's when the fish population came back too. The ecological balance returned to the ecosystem.

The **African elephant** lives on the savannah and has a huge influence on its ecosystem. As their herds move across the savannah, they feed on trees, breaking them up, often by pulling them up by the roots and crushing them. Without this tree clearing, the savannah would quickly grow from grassland to woodland. The grassland habitat is home to hundreds of species – like gazelles, zebras, ostrich, hippopotamus, rhinoceros, wildebeest, meerkat, baboon, termites and dung beetles. They are not adapted for woodland life. All theses species depend on the African elephants to keep their habitat cleared as grassland. Then there are species that feed on these grassland species like cheetahs, lions, hyenas, crocodiles, jackals, wild dogs, and vultures. These animals also depend on the African elephant to keep the grasslands open for their prey and their own survival. The African elephant is another important keystone species.

Keystone Species - Otters, Alligators and Elephants - Read and React

1. What happened to the other species in the coastal waters when the sea otter was hunted almost to extinction:

2. What was the balance between the American alligator, the gar and the game fish?

2. How does the elephant keep the African savannah habitat right for the other animals living there?