Keystone Species: Sharks

Directions: Read the article and answer in **COMPLETE SENTENCES.**

**SHARKS' ROLE IN THE OCEANS**

Sharks play a very important role in the oceans in a way that an average fish does not. Sharks are at the top of the food chain in virtually every part of every ocean. In that role, they keep populations of other fish healthy and in proper proportion for their ecosystem.  How do sharks keep the oceans healthy?

**Sharks keep food webs in balance**

Sharks have evolved in a tight inter-dependency with their ecosystem. They tend to eat very efficiently, going after the old, sick, or slower fish in a population that they prey upon, keeping that population healthier. Sharks groom many populations of marine life to the right size so that those prey species don’t cause harm to the ecosystem by becoming too populous.

The ocean ecosystem is made up of very intricate food webs.  Sharks are at the top of these webs and are considered by scientists to be “keystone” species, meaning that removing them causes the whole structure to collapse.  A number of scientific studies demonstrate that depletion of sharks results in the loss of commercially important fish and shellfish species down the food chain, including key fisheries such as tuna, that maintain the health of coral reefs.

**Sharks keep prey populations healthy**

Predatory sharks prey on the sick and the weak members of their prey populations, and some also scavenge the sea floor to feed on dead carcasses.  By removing the sick and the weak, they prevent the spread of disease and prevent outbreaks that could be devastating. Preying on the weakest individuals also strengthens the gene pools of the prey species.  Since the largest, strongest, and healthiest fish generally reproduce in greater numbers, the outcome is larger numbers of healthier fish.

**Sharks keep sea grass beds and other vital habitats healthy**

Through intimidation, sharks regulate the behavior of prey species, and prevent them from overgrazing vital habitats.  Some shark scientists believe that this intimidation factor may actually have more of an impact on the ecosystem than what sharks eat.  For example, scientists in Hawaii found that tiger sharks had a positive impact on the health of sea grass beds.  Turtles, which are the tiger sharks’ prey, graze on sea grass.  In the absence of tiger sharks, the turtles spent all of their time grazing on the best quality, most nutritious sea grass, and these habitats were soon destroyed.  When tiger sharks are in the area, however, turtles graze over a broader area and do not overgraze one region.

1) What important functions do sharks provide to the ecosystem as a keystone species?

**An important lesson: we need sharks!**

Where sharks are eliminated, the marine ecosystem loses its balance. In the parts of the ocean where sharks have been fished out of existence, we can see the dangerous result of removing the top predator from an ecosystem.

The lesson is important. Sharks are being killed for their fins for shark fin soup, a food that has assumed cultural value but is not important for human survival or health. However, removing the sharks can result in the loss of important foods that we do depend upon for survival.

Sharks have survived for 450 million years, but may be gone within the next decades. Life within the oceans, covering 2/3rds of our planet, has enjoyed a relationship with sharks for about 450 million years. Our growing demand for shark fin soup has increased the slaughter of sharks to such a great extent that many shark species are already nearing extinction.

What will the health of oceans be like when such an important group of animals have been destroyed? Do we want the destruction of sharks and the oceans to be the legacy we leave for our children?

3) How are humans impacting the shark population?

Notes on Grizzly Bear:

Notes on Sea Otter:

**Directions:** Answer the following questions in **COMPLETE** sentences.

1) Which keystone species do you think is the most important? Why?

2) Do you think humans should focus more on protecting endangered keystones species than other endangered species? Why or why not?