Environmental Case Study
Should we save the sharks?

Every year, humans kill about 100 million sharks, skates, and rays. About half are caught as unwanted “by-catch” while fishing for other species, such as swordfish and tuna. Many of the rest are caught just for their fins. Shark populations are thought to be plummeting around the world because of fishing pressure. In the North Atlantic, researchers estimate that all coastal shark species plunged an average of 61 percent between 1986 and 2000. Some of the largest species had the biggest declines. Hammerhead sharks (opening photo) dropped by 89 percent, while great white and thresher sharks fell 80 percent. In 2003, the UN Convention on International Trade in Endangered Species, or CITES, restricted commercial trade in whale sharks and basking sharks, the largest fish in the world, because these species may be threatened with extinction.

Key factors in the recent increase in shark deaths are a growing middle class in China and the traditional Asian taste for shark fin soup. At $100 (U.S.) per bowl in Hong Kong, shark fin soup is a conspicuous way to display affluence. With rising demand, a single fin from a whale shark can now sell for more than $10,000 in Asian markets. In the 1990s, rapidly increasing prices boosted the shark fin traffic in Hawaii more than 20-fold, from an estimated 90,000 kg to more than 2 million kg per year.

Because the fins are much more valuable than the rest of the shark, many fishing crews cut off the fins of any shark they catch, often while the animal is still alive, and simply throw the body overboard. The finless shark bleeds to death, drowns, or is eaten by other sharks. This practice wastes 95% or more of the shark, which could otherwise be a valuable protein source.

Scientific research and new data collection techniques have helped us understand that shark finning is a problem. Observing and counting sharks is difficult because populations are far out at sea, they migrate long distances, and they are hard to detect underwater. One way to observe populations is to keep fishing records. These records allow scientists to track how many sharks were caught, where, and when.

Another method of observing populations is to mark and recapture individuals. Biologists capture individual sharks, mark them by attaching a tag to their fins, and release them unharmed. If enough individuals are marked, there’s a good chance that some will be recaptured somewhere else. If the record is reported, then biologists can glean information on how long individuals live, and how far and where they travel. These studies require a lot of work, but they provide essential information. Mark and recapture studies have helped biologists track shark movements, including long migration routes, estimate population sizes, and to understand the ecology and biology of these animals.
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Sharks are particularly sensitive to overfishing because they grow slowly, mature late, and have few young in each generation. As you will read in the chapters that follow, top predators like sharks play a crucial role in the health of ocean ecosystems by consuming midlevel predator fish. Ecologists who examine the ocean as a system—a complex structure of interacting parts—predict that the loss of these top predators can have widespread consequences, including overpopulations of some species and depletion of others.

For many people, shark finning is also an ethical concern. As scientists have publicized the plight of sharks, citizens in many countries have protested loudly, arguing that the practice is cruel and unethical, as well as wasteful. Public outcry has led the United States and a few other countries to ban shark finning within their territorial waters.

Fishery trade groups and citizens of other countries criticize these rules, arguing that ethical considerations don’t apply to sharks, because they are “just fish.” They believe fish are a resource to be harvested, like potatoes, to support both fishing economies and cultural traditions that prize shark fin soup. From this perspective, it is imperialistic and unjust for Americans to impose their ethical values on Chinese traditions.

Many Americans agree that sharks lack ethical value because we think of them as hostile and dangerous. Other animals, such as dogs, might have more value because they are familiar and friendly—even though dog bites actually cause hundreds of human deaths each year, compared with just a few caused by sharks. Other people argue that sharks are magnificent, highly adapted animals, as beautiful as a work of art. Others say we should protect them simply because they are our fellow creatures on earth.
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*Should we save the sharks?*

Are sharks magnificent creations, key components of a biological system, or a crop to be harvested? Your answer to this question depends on a combination of scientific understanding and ethical positions. Both science and ethics shape our responses to issues such as shark fishing and finning. In this chapter, we'll examine the ways science helps us investigate the world. We'll also consider the nature of ethical decision making, and the interaction of science and ethics in the ways we interact with the world around us.