

## The Truth About Sharks

### Chapter 4: Making More Sharks

#### Family Values?

Sharks are not attentive parents. In fact, they expect their pups to be totally self-sufficient from birth. Because shark mothers sometimes eat their young, pups quickly swim away as soon as they are born. Some shark wombs are battlegrounds; before they're even born, the babies developing inside resort to eating unfertilized eggs and each other for nourishment. Very few survive this sibling cannibalism. Sharks that lay eggs are no better; neither parent guards the eggs and many eggs are eaten by predators. It is no wonder that there is not an abundance of sharks! However, their life-history traits are only one explanation for the recent decline in the ocean's shark population.

#### Life vs. Death

Sharks do not reproduce quickly. This is because they grow slowly, mature late, have small litters, and take time to recover between litters. As a result, a single female shark might have only a few hundred pups in her lifetime. This might seem like a lot to a human, but it is a small number compared to the number of offspring of a sardine or a mackerel. There is also variation among shark species. For example, while whale sharks might have a hundred pups in a litter, great white sharks sometimes produce only a single pup in a reproductive cycle.

Sharks are dying faster than they can reproduce. About 100 million sharks perish each year as a result of the booming trade in their fins, recreational fishing, and the problem of bycatch, species caught that are not the target. Since their maximum reproductive rates do not keep pace with the maximum rate of fishing mortality, the balance of sharks in the ecosystem is tipped. As a result, fewer sharks in the ocean can change the nature of the ocean ecosystem. For more about the tipping point, read chapter 6.

Shark populations suffer the most near human populations. Studies around heavily populated areas like the Hawaiian Islands, the Mariana Archipelago, and American Samoa show shark numbers are down 90% around heavily visited reefs when compared to reefs untouched by human interaction. By recording shark numbers from towed diver surveys, and combining that data with information about human populations, habitat complexity, reef area, and ocean temperature and productivity, scientists can build an understanding of the damaging effect humans have on sharks.

## Further Reading

Sharks are sensitive organisms because of their low reproductive rate and their high rate of mortality. Current rates of both births and deaths, when projected into the future, predict the extinction of many of these large fish. Intelligent management of fisheries and affected ecosystems can potentially reverse the decline of sharks. You can learn more about the studies and measurements that management strategies are based on by reading some primary-source articles by scientists. These scholarly papers offer a technical explanation of the threat of human interaction to shark populations without the embellishment and exaggerated headlines that sometimes accompany reports in popular media. Here are a few to get you started:

- [The importance of habitat and life history to extinction risk to sharks, skates, rays and chimaeras](#)
- [Estimating the rate of quasi-extinction of the Australian grey nurse shark \(\*Carcharius Taurus\*\) population using deterministic age- and stage-classified models](#)
- [Extinction, survival or recovery of large predatory fishes](#)
- [Shark and ray life history](#)

## Questions for Discussion

1. What are some shark populations that have been studied? Where in the world have they been studied? Can these studies be applied to all shark populations? Why or why not?
2. What are some tools that scientists use to study fast-moving and elusive sharks?
3. Studies suggest that one way to reverse the decline of sensitive species like sharks in the northwest Atlantic is to reduce fishing mortality by 40% to 80% (Myers and Worm, 2005). What would this mean for fisheries, fishermen, and other people who use the ocean for work and sport? Do you think this is possible?
4. Sharks have been on Earth for over 400 million years. Why have they been so successful? Why did they survive extinction events in the past? What is different about their situation today?