

The Over Fishing of Sharks and Its Adverse Effects on Marine Ecology



Sharks, just the mere mention of them are enough to conjure fear and images of sanguine stained water in the minds of most people.

But now many of the worlds most feared predators are on the verge of extinction, for example the infamous great white shark, the one that was made out as the ultimate villain in the movie Jaws(which was probably one of the worst things to happen to sharks), is close to extinction, with an estimated number less than 3500 individuals worldwide which makes this large predator even scarcer then Tigers (Morgan, 2010).

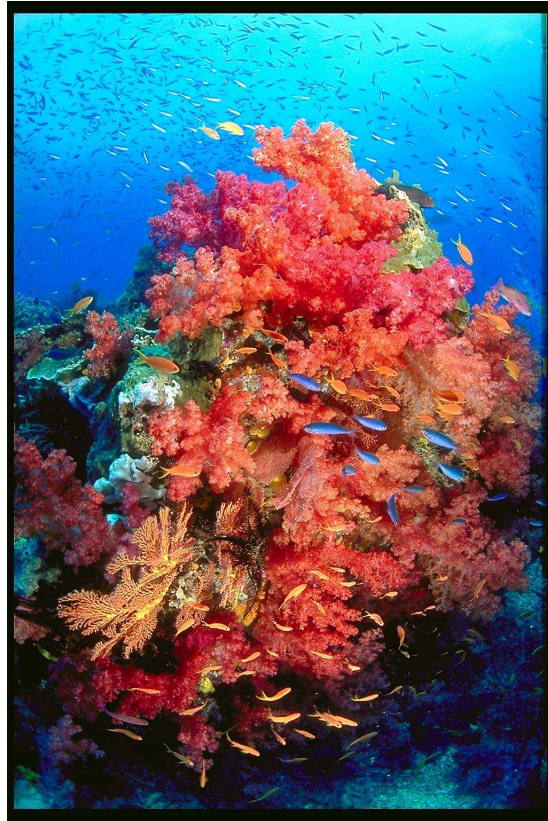
The magnificent whale shark the largest fish in the sea is numbering less than 4500 worldwide. Many more shark populations have declined by as much as 70-90 % over the past 30 years the Hammer-Head sharks population has declined by 97% making it the 3'd most endangered species. While and ocean without sharks might sound like a promising prospect for some, a world were one never has to worry about being one of the about 60 shark attack victims annually (out of those only 3-4 are lethal, just for comparison 57 people die annually in the US due to being struck by lightning), so a world without sharks might have been promising indeed had we only been seals. But in reality a world without sharks is a potentially disastrous prospect for many marine ecosystems (Morgan, 2010).

Coral reefs are colonies of tiny living animals found mostly in tropical marine waters containing very few nutrients (tropical oceans are known as the deserts of the seas), and yet these

fertile reefs form some of the most diverse ecosystems on earth, they occupy less than 0.01% of the world's surface but provide food and a home for about 25% of all marine species. If current trends don't change the world's coral reefs could be wiped out as soon as 2050 as 75% of the world's coral reefs are threatened by pollution, agricultural runoff, climate change, and the overfishing of apex predators. One of the striking findings of the study "Interaction strength combinations and overfishing of the marine food web" is the impact on marine ecosystems due to overfishing. The overfishing of sharks triggers a domino effect which trickles down to effect the abundance of fish species as well as vegetation, and contributes to the overall degradation of the coral reef ecosystem (Robbins, 2006).

When sharks are overfished it leads on one hand to the depletion of important algae eating grazer fish (indirectly) for example the parrot fish, and on the other hand it leads to a rise in the populations of the larger grazers (directly) for example manatees and sea turtles. Shark populations have been decimated over the past years causing a steep rise in mesopredators, just like on land the apex predators keep the population of mesopredators in check. A surge in mesopredator populations has a huge documented negative ecological and economical cost. Human intervention cannot easily replace the role of apex predators and reversing the trend is becoming increasingly hard and expensive as the world's top predators both on land and on sea continue to edge towards obliteration (Robbins, 2006).

The increased predation of plant eating fish from coral reefs means an algae infestation which chokes and kills the corals which in turn lowers the whole reefs resistance to change and the ability to sustain itself.



As for the larger marine grazers the turtles the manatees, the shark plays pretty much the same role in controlling their populations as the wolfs do with the red deer in Yellowstone park. Researchers have found that when sharks are abundant the grazers don't enter as shallow water where they are more vulnerable to attacks, this allows sea grass meadows to thrive along with a huge range of other plant and animal species that depend on them, and as a result of shark overfishing these are also now facing greater risks. The dramatic decline of sharks populations in recent years means that sharks are approaching ecological extinction (the reduction of a species to such low abundance that, although it is still present in the community, it no longer interacts significantly with other species), and without them the future of coral reefs and other marine eco systems is questionable (Ransom, 2007).

The biological characteristics of sharks make them very vulnerable to overfishing. They grow very slowly, they become sexually mature relatively late, and most shark species produce very few offspring, all this is reflected in the large number of shark species that are now considered endangered. About 100 million sharks are killed every year most of those 76 million in 2009 were killed just for the shark fin industry, they get their dorsal fin cut off and are thrown back into the water to drown. Conservation efforts are inadequate and difficult. Some sharks transverse the globe so while maybe being protected in South Africa the same shark could be killed in Hawaii. The only places where shark populations have stabilized are strictly controlled "no take zones" which shows that even moderate levels of poaching at this time can seriously derail attempts to protect shark populations (Bascompte, 2005).

Unfortunately for sharks they are not cute, cuddly or fluffy and getting people involved in their conservation and protection is so much harder than say getting people to help the giant panda. If nothing is done we could forever lose an amazing species, and that would be a very unfortunate and unfitting end to an animal that has outlived the dinosaurs and pilled the world's oceans for more than 400 million years surviving global extinction events and playing a pivotal role in our planets ecosystems.



References

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Some of the observations were my own as I have worked for some years in various reef conservation projects around the world.