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Overfishing: Its Impact and Threat to Marine Biodiversity

Zoology

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ABSTRACT

Many decades ago, our oceans were full of fishes but unfortunately, this is not now. Our world today faces many complex issues ranging from pollution, climate change, wars, food crises, waste, over-population and over-fishing. These are all problems we have created for ourselves, often as a result of our selfish activities. Overfishing particularly is one issue that is often underrated. This is because we do not hear about it often, and we also do not live in water so we do not care what happens there. The dramatic increase of destructive fishing techniques worldwide destroys marine mammals and entire ecosystems.

Introduction

Overfishing occurs when more fish are caught than the population can replace through natural reproduction. Gathering as many fish as possible may seem like a profitable practice, but overfishing has serious consequences. The results not only affect the balance of life in the oceans, but also the social and economic well-being of the coastal communities who depend on fish for their way of life. Many people rely on fish for protein, and fishing is the principal livelihood for millions of people around the world. For centuries, our seas and oceans have been considered a limitless bounty of food. However, increasing fishing efforts over the last 50 years as well as unsustainable fishing practices are pushing many fish stocks to the point of collapse.

What is overfishing?

Overfishing is a form of overexploitation where fish stocks are reduced to below acceptable levels. Overfishing can be defined as Catching too much fish for the system to support leads to an overall degradation to the system. Overfishing is a non-sustainable use of the oceans.

The practice of commercial and non-commercial fishing which depletes a fishery by catching so many adult fish that not enough remain to breed and replenish the population. Overfishing exceeds the carrying capacity of a fishery. Overfishing is simply a situation where humans catch too much fish from the oceans (and also water bodies) in such massive quantities and fast pace than nature can naturally replenish. In other words, it is when we take out more fish than the fish can naturally replace. This leads to a degradation of our oceans, making it a non-sustainable use of the world's oceans.

In recent time, technology, better equipment and humans need for more money have made it easier for fishes to be caught with less effort. Scientists and researchers report that fish populations have fallen to a level that can be called a crisis. What makes matters worse is that, other marine animals are destroyed in the process. How does overfishing happen? The causes of overfishing can be placed into these three categories:

Overcapacity:

All over the world, many fishing industries have huge vessels, equipment and technology that they can deploy deep into the oceans. They can stay on the oceans for weeks and months and even process the fish before they come back ashore. Experts believe that all the world's equipment combined is enough to fish on 4 earth-like planets.

Unsustainable Fishing:

This involves using nets, fishing methods and other equipment that catch too much fish to a degree that they are endangered. It also involves catching other sea animals other than fish in the process. These are called By-catch. In many cases by-catch is destroyed and thrown back into the sea. This is called Discards, and may include cetaceans, turtles, sharks, seabirds, young fish, corals and invertebrates like starfish, crabs, sea urchins, brittle stars, mollusks, sponges and worms. They also catch very little fishes and prevent them from growing to reproduce.

Economic and Food Needs:

The amount of fishes that fishing industries bring ashore depends on the market and needs of consumers. In the past century, humans have multiplied in many folds and the need for food and fish has also multiplied. This, together with economic ambitions of fisheries have forced them to catch more fish that the oceans can replace.

Impact of overfishing

It is very easy to predict the most obvious impact of overfishing — no more fish for humans! And this is only a few decades from now, if we do not act quickly and decisively. But there is far more to this than lack of fish. Overfishing, typically, leads to a decline in the population of productive fish, which results in lesser stocking of the fish. Overfishing impacts not just the particular species that is exploited, but also damages other species of fish and disrupts local ecosystems. A recent study found that overfishing is also decreasing the genetic diversity of fish worldwide. Diversity is projected to be reduced further if overfishing continues at the same rate. This has serious effects on nutrient recycling in marine ecosystems because fish species vary widely in their rates of nitrogen and phosphorus excretion. As such, altering fish communities creates divergent nutrient recycling patterns and disrupts the functioning of the ecosystem. Recently conducted studies in lakes affected by overfishing show that loss of species contributes to a decline in nutrient recycling and destabilizes the ecosystem.

The stability of ecological communities depends largely on the interactions between predators and prey. Thereby, the balance of the food chain is disturbed when certain species are removed. As a result, many ocean species are disappearing and losing their habitats. The evolutionary process of marine species is also being altered, causing cycles of premature reproduction and relative decreases in the size of fish across generations. As predators diminish, the populations of smaller fish escalate because they were previously the food source of the bigger fish. In addition, the disappearance of these species affects many other species, like seabirds and sea mammals, which are vulnerable to the lack of food.

Oil and liquid spills, chemical and solid elements discharged into the water by fishing boats, vessels and trawlers often hurt marine life. It is very easy to think that the oceans are so big and these are not real threats, but a bit of pollution by thousands of trawlers everyday contribute to something very big and disturbing.

(i) Ecosystems Destruction

According to marine ecologists, unsustainable fishing is the greatest threat to ocean ecosystems. The practice destroys the physical environments of marine life, and distorts the entire food chain in the oceans. If the food chain breaks, the consequences will ripple up and down to all the living organisms that are in the chain. Overfishing can wreak havoc and destroy the environment and marine ecology and completely disrupt the food chain. If the food chain breaks at any level, it will have a domino effect on all living organisms in the chain.

(ii) Socio-economic Effect

Millions of people rely on fishing for their livelihood and nutritional needs. For decades, oceans have provided us with a bounty of seafood for these needs, but there is a limit to everything. Unsustainable fishing practices and overfishing over the last few decades have pushed our oceans to the limit and they may now be on the verge of a collapse, thereby affecting the everyday way of life and source of income of those who depend on them. With no productive fish left in the sea to fish, fishermen and fisheries are bound to go out of business in no time. There have been many closures to fisheries in many parts of the world including the Atlantic Canadian Cod Fishery in the 1990s. Sustainable fishing ensures that people's livelihoods are protected and the fishing business is sustained. Overfishing does not guarantee that, and soon, big investments will go waste and people will be out of work.

(iii) Biodiversity

Overfishing can have an adverse effect on marine biodiversity. Every single aquatic plant and animal has a role to play when it comes to balancing the ecology. In order to thrive, marine creatures require a certain kind of environment and nutrients, for which they may be dependent on other organisms. Despite its crucial importance for the survival of humanity, marine biodiversity is in ever-greater danger, with the depletion of fisheries among biggest concerns. Marine life is amazing and balanced with millions of fish species and other marine animals. Constantly fishing for particular specie like the blue-fine tuna, means soon that kind of fish will be extinct. This is why measures put in place to allow fishes to re-populate are very important and must be enforced.

(iv) Ghost Fishing

Many large fisheries stay for weeks and months in deep seas and sometime loose their nets. These nets continue to trap and catch fishes under the water and end up killing them. These discarded nets stay there for many decades and the destruction they cause is fairly significant.

Conclusion

Many species of fish are now endangered and face the risk of extinction due to overfishing. What our marine systems need are environmental laws, policies and safeguards that point out how much fishing is legal and required. Few fisheries have started to realize the need to protect our oceans from overfishing, but our aquatic species continue to grapple with regulatory problems and pirate fishing. Solving this problem isn't going to be easy and will require collective effort to be successful in replenishing our waters with an abundant supply of sea creatures and restore its ecological balance.

Many people have no idea of overfishing. This means we all have a responsibility to educate others of this issue. When people demand more fish, fisheries will also go for more. This means if we lower our demand for fish, and supplement with other protein sources, there will be a lower demand for the fisheries. Think about eating fish from proper sources and supplement your protein with other plant sources. Illegal and unreported fishing contributes to about 30% of global annual catches in recent years.

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