Depletion Of Fishery Resources:

What is Overfishing?

Our world is a unique environment, in that every living being, plant, and landscape contributes to the overall wellness of the Earth. This is why the harmful effects of human waste, production, and consumption can have drastic effects on certain ecologies and biospheres.

A major concern right now is the problem of overfishing. Ocean overfishing simply means catching fish from the sea at rates too high where fish stocks become too depleted to recover. With oceans taking up over 70% of the Earth, sea creatures, and the overall health of marine life is essential for sustaining life elsewhere on the planet, but overfishing is having drastic effects on the future of both ocean and human.

"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."

Millions of people depend on fishing for their livelihood and for billions of people rely on fish as their key source of protein. With increased overfishing related practices and without sustainable management, many fish stocks are reduced to below acceptable levels. Catching too many fish seems like a profitable practice, but it endangers ecosystems and affects the balance of life in oceans.

Causes of Depletion:

Depletion occurs when more fish are caught than they are able to reproduce to repopulate. Because fishing has long been an industry used by humans, there are a number of reasons why it is a problem today. Some of the causes of depletion include:

1. Difficulties in regulating fishing areas due to lack of resources and tracking activity.

2. Most areas in the world have a total lack of oversight related to their fishing industry, which means the practices and activities of fishing fleets(group of ships) are not or barely monitored.

3. In international waters, there are little to no rules regarding fishing practices, which means fishing fleets can bypass areas that do have regulations.

4. Lack of knowledge regarding fish populations and quotas in a universal standard.

5. Problems with customs and importation where the provenance(origin) of fish is not questioned, leading to surreptitious (secret) practices such as calling one kind of fish something else.

6. Unreported fishing, which is nearly impossible to track.

7. Many countries have subsidies for fishermen which keeps their number higher than it needs to be (it is estimated that there are 2 ½ times more fleets than needed).

8. Fishing areas are largely unprotected – only a little over 1.5% of oceans have been declared protective areas, and most of these are still open to fishermen. This means that areas can be harmed or depleted.

9. A lack of property rights over the sea, as ownership is difficult, if not impossible, for individuals to establish.

10. There is also information failure because fishermen do not know the size of available fish stocks.

11. Externalities are also associated with fishing, given that fisherman fail to take into account the impact of their actions on others, including the impact of over-fishing on other fishermen in the future.

12. The high fixed cost of boats is also an incentive to fish as much as possible in order to cover the fixed costs.

13. There is also a Prisoner's Dilemma, which means there is an incentive for fishermen to catch as much as they can because that is what they expect others to do. A prisoner's dilemma is any situation where the 'pay-off' from an action depends upon decisions made by other parties. This means that an individual's behaviour is influenced by the predictions that they make about how others will react in response to their behaviour. In this case, fishermen may predict that all other fishermen will try to catch as much as they can before the stocks run out. The combined outcome is that shrinking stocks encourage more fishing and not less! Even if fishermen agree to limit their catch many will expect others to cheat, hence cheating would become the 'norm'.

14. Finally, widespread pollution of the sea has also contributed to the gradual depletion of fish stocks.

Effects of Depletion of fisheries resources :

Current estimates are that overfishing has impacted over 85% of the world's fish resources and that most fisheries are fished far beyond their sustainable capacity. While this is resulted to have long-term effects on human consumption, there are also a number of other effects, such as:

1. Removal of Essential Predators:

Sharks and tuna are particularly susceptible to overfishing, and when they are removed from the areas they live in, this means that sea creatures further down the food chain are negatively impacted. Populations can grow larger, and the role that these larger creatures play – from what they eat to how their bodies decompose – mean potentially fatal effects for ocean ecosystems.

2. Poor Coral Reef Health:

With a larger amount of smaller marine creatures comes greater damage to coral reefs and other elements of the ocean's ecosystem. Reefs are essential to ocean life, and

once they are harmed, it is hard to repair the damage, if at all.

3. Growth of Algae:

In controlled amounts, algae are essential to helping marine life thrive, but if it is allowed to grow at will, it can impact fish, reefs, and more, leading to serious destruction.

4. Unintended Catches:

Another concern of overfishing is that because the industry is so large, there are a number of sea creatures who get caught in the process, but don't get used for food. This can mean everything from dolphins to turtles can be impacted by the presence of fishing fleets.

5. The Threat to Local Food Sources:

There are a number of communities around the world that rely on fish as their primary resource for food. The growth of overfishing has caused a serious threat to these communities, which are often located in developing countries. Without the ability to catch their food, their populations are threatened.

6. Financial Losses:

A lot of communities that rely on fish for food also rely on low-level fishing industries for economic viability. These enterprises, as opposed to large-scale fishing ones, typically do far less damage to their marine life because they are on a much smaller scale. However, when these communities can't access food or their financial support, they are likely to have trouble in the future.

7. An Utter (absolute) Imbalance of the Marine Ecosystems:

Overfishing has a very detrimental effect on marine ecosystems. The situations can be so bad that the fishes might not be able to sustain themselves any longer.

Also, when a particular species of fish is caught repeatedly and in an unchecked manner, the food chain of the water body is affected too. As a result of that, many other species of fishes dependent on that one particular species suffers due to the lack of food and dies.

8. The Targeted Fish and its Harvest:

The demand for fish increases with an increase in the population. Also, as it happens, a few species of fishes

have a higher demand than the others. This makes them the targeted fish species.

While it serves the economy well, it is because of the targeted fish that the marine ecological systems suffer a lot. Unchecked and unregulated harvest of the targeted species can render the water body “fruitless” due to this lack of ecological balance.

9. Rise of the Endangered Species:

With the rise of the targeted species, another category of species grows too. These are the untargeted species that soon turn into endangered species. This happens because of the prevailing ecological imbalance and also because proper efforts are not put in place to increase their population in a water body.

10. Improper Aquaculture:

In order to be able to reinforce proper ecological balance in the water bodies, it is essential that the fisheries are equipped with not just the proper instruments but also the proper scientific knowledge to be able to practice proper aquaculture. Due to this lack of proper scientific knowledge, the aquaculture practices are vastly improper.

Obviously, another huge concern with overfishing is the damage it does to parts of the Earth that rely on healthy marine life. The problem is, unfortunately, so widespread that effects can be felt in every part of the world.

Some of the areas that are greatly impacted by overfishing include:

1.The Arctic

2.Coastal East Africa

3.The Coral Triangle (comprised of waters off of Indonesia, the Philippines, Malaysia, Papua New Guinea, the Solomon Islands, and Timor Leste)

4.Gulf of California

5.Mesoamerican Reef (off the coasts of Belize, Mexico, Honduras, and Guatemala)

6.Southern Chile

7.The Galapagos

Another major effect of overfishing is the long-term survival of some of the world's fish species, including:

1.Bigeye tuna

2.Bluefin tuna

3.Skipjack tuna

4.Yellowfin tuna

5.Albacore tuna

6.Abelone (from Japan and China)

7.Atlantic and Pacific cod

8.Atlantic Halibut

9.Spiny lobster (from the Caribbean area)

10.Mahi Mahi (from central to south America)

11.Orange roughy

12.Atlantic sardines

13Nearly 70 species of shark

14.Rockfish

15.Atlantic sardines

16.Squid (from Asia)

Solutions to Overfishing:

The effects of overfishing are vast, and many of them won't be known until they are actually negatively impacting human life on the planet. There are a number of

conservation groups around the world focusing on ways to make the fishing industry more sustainable in the long run. Some of the solutions being used include:

1. Working With Governments:

The lack of regulations and specific policy, and the fact that fishing has been an industry tied to the history of humans and civilization, many groups, like the World Wildlife Fund (WWF), are helping countries learn to prepare adequate and effective management protocols.

2. Helping Developing Countries:

Because fishing is a crucial industry in many poor and developing nations, conservation efforts are focusing on helping these areas set-up procedures to ensure sustainability in the long run.

3. The Marine Stewardship Council (MSC):

A WWF initiative, the MSC is an effort to create a standard that can be implemented to help commercial fisheries maintain production without harming the environment. They now have a certification that fisheries can gain by bringing their practices up to date, labeling seafood for sale, so consumers know it came from a reputable place.

4. Educating Retailers:

Another way that conservationists are trying to change the problem of overfishing is by working with retailers to educate them on ways to purchase their seafood from sustainable fisheries. The hope is that by building support for the cause on this level, more pressure will be put on fisheries to comply with the standards.

5. Reducing Subsidies:

Many governments subsidize the fishing industry with subsidies, in an effort to keep the industry thriving. The problem with this is that it incentivizes fishermen to continue to expand, which means that subsidies only end up contributing to the problem of overfishing.

6. More Protected Marine Areas:

Setting up more protected areas in the ocean is an effort to help reduce the effects of overfishing on some of the world's most incredible reefs and marine structures.

7. Labels For Consumers:

Groups are also trying to target consumers to be more aware of the seafood they buy and eat. There are pamphlets and handy guides that help educate consumers

about which fish are endangered due to overfishing, and which areas of the world the fish come from. Many of these, such as the one from the Monterey Bay Aquarium, offer choices of fish that aren't as in danger.

8. Responsible Farming:

When done correctly, farming fish can lead to a sustainable way of providing food and resources to the global population. So far, this practice has seen success with species of fish that are prone to overfishing, such as arctic char and bass.

9. Stop Trawling:

In order to solve the problem of overfishing, it is essential that the practice of trawling must be stopped at the earliest. Scraping the floor of the water body to catch fish is certainly a very bad practice.

10. Creation of More Protected Areas:

It is yet another helpful solution to overfishing. If the so created protected areas could be regulated with strict rules and proper aquaculture practices, it could stop overfishing once and for all.

11. Reducing the amount of fishing:

The quantity of fish caught could be reduced by:

- Establishing or extending property rights over the sea, although this would be difficult to implement and police.
- Imposing a special conservation tax on fishing. However, the effectiveness of such a tax would depend upon the elasticity of demand for fish.
- Introducing a complete or partial ban on fishing. In 2005 the UK government, implementing EU Common Fisheries Policy, imposed a limit of 178 days on fishing days for British boats operating in the North Sea. However, there would be a welfare loss if 'too little' fish are caught, including the loss jobs. An alternative approach might be get fishermen to sign up to a voluntary ban, though there may be an incentive to cheat.
- Authorities can also reduce the size of fish quotas, especially for cod, which are at levels close to extinction. In 2005, the EU reduced quotas for cod, herring, and whiting by 15%.
- Authorities can also legislate to limit the size of nets, or to increase the size of the mesh – to enable the smaller fish to escape being caught.

- Authorities can also issue special permits to fish, as a way of controlling the number of fishermen, or fishing days.
- Better information for fishermen on the current size of fish stocks, and estimates for the future.
- Reduce or abolish subsidies – in 2002, through its Common Fisheries Policy, the EU agreed to stop subsidising boat building – the Common Fisheries Policy of the EU covers:

1. Conservation of fish stocks.
2. Creation of a single and organised market for fish, and an external fisheries policy regarding other countries.

12. Increasing the supply of fish:

Reducing demand will lead to a replenishing of fish stocks, but supply can also be targeted directly, such as by giving subsidies to fish farmers.

Remark: A mixture of the above is likely to be the most effective in the long run, with the emphasis on a reduction in the amount of fishing undertaken.