

AFFECTING DAMAGEED ECOSYSTEMS OVERLOOKING NATURAL RESOURCES

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ABSTRACT: *Degradation is the process through which the ecosystems are progressively contaminated, polluted, overexploited, fragmented and sometimes even destroyed (as a result of anthropogenic intervention). Exploitation of natural resources - all operations aiming to extract from the environment some useful resources for society.*

KEY WORDS: ecosystem, natural resources, intervention

1. DAMAGE TO ECOSYSTEMS

Ecosfera is the integrative system within the ecological hierarchy, having a great structural and functional complexity. The ecosfera consists of the biosphere and the abiotic components, namely the upper lithosphere, the entire hydrosphere and the lower atmosphere.

Degradation is the process through which the ecosystems are progressively contaminated, polluted, overexploited, fragmented and sometimes even destroyed (as a result of anthropogenic intervention) (fig.1)

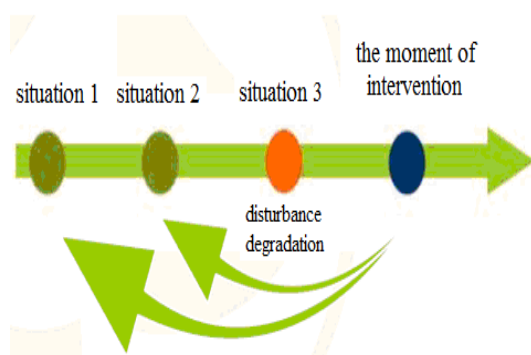


Fig.1. The dynamics of the ecosystem

It is estimated that mankind uses approximately 40% of global net primary production to meet human needs or causes it to be lost as a result of degradation of ecological systems. This share should

increase permanently to keep up with the growth of the human population and economic development, which is impossible to achieve. Our society is facing problems at an unprecedented level: poverty, the depletion of vital resources, wars, famines, destruction of large areas of natural ecosystems, the emergence of new diseases. Although they are not apparently related, they are all the result of the unreasonable use of natural resources.

All living organisms, through their activities, lead to changes in the living environment, and the human species is no exception. With the increase in human population and technological development, the type and magnitude of human-induced changes have increased. The expansion of space in the human socio-economic system has made the impact of its activities on the ecosystem.

The main ways ecosystems are degraded as a result of human activities are:

- global climate change
- pollution
- overexploitation of renewable resources
- deterioration, fragmentation and destruction of habitats
- introducing foreign species
- release of genetically modified organisms

2. OVEREXPLOITATION OF RESOURCES

Exploitation of natural resources - all operations aiming to extract from the environment some useful resources for society.

- Natural (non-renewable / hard-to-regenerate) natural resources - 80% of global energy consumption is supported by fossil natural resources (oil, coal, gas).
- Natural biological resources (renewable - forests, populations from terrestrial or aquatic ecosystems)
- Irrational exploitation - the exploitation of a population with an intensity exceeds the natural growth rate (balance mortality reproductive capacity) (the regeneration capacity of a species is affected - it can lead to extinction)

2.1. The overfishing

Although people have been using this resource since ancient times, global exploitation began only after the 1950s. Overexploitation of ocean fishery resources was not possible until recently due to technological limitations. Local, however, where the conditions allowed, fishery resources were overexploited. (Figure 2)

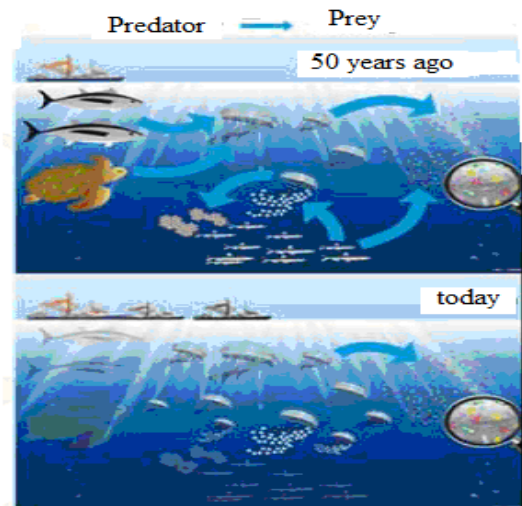


Fig.2. Modification of the trophic chain from an aquatic ecosystem due to excessive fishing (jellyfish multiplication)

On a world scale, fish and the rest of sea products provide nearly 16% of the amount of animal protein consumed, more than beef and 6% of total protein. Well managed, the ocean fish resource could be exploited indefinitely. Unfortunately, ocean fishing has become a very good example of the unreasonable management and use of an extremely valuable resource. The ocean fishery resource is unevenly distributed, with areas with extremely high yields and areas of no economic value. The way this resource is exploited varies widely: there are regions that have been so unreasonably exploited in the past that their potential fish has been destroyed. Others are still overpriced, only 25% are under exploited or moderately exploited (Figure 3).

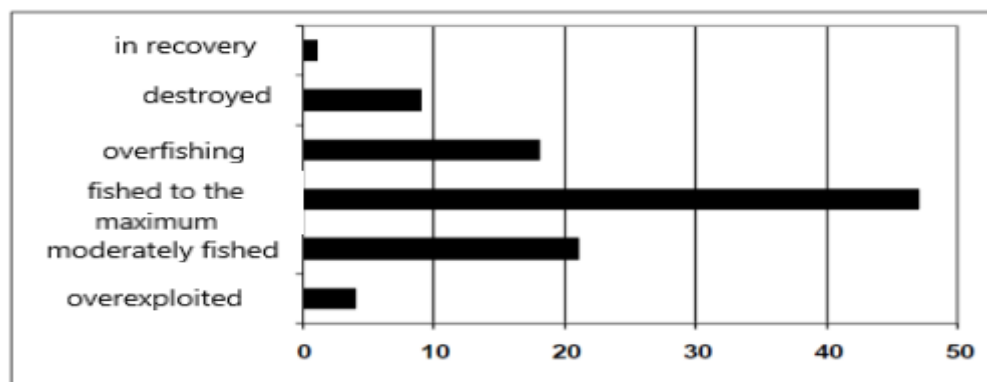


Fig. 3. Global status of ocean fish stocks at 2016 (percent)

In addition to overfishing, the planetary ocean also suffers from pollution and habitat degradation, limiting the ability to restore populations of economically important fish affected by irrational fishing. (Figure 4).



North Atlantic Tuna



Big White Shark

Fig. 4. Fish species endangered by overfishing

The Black Sea is an example of destroying a rich resource through overexploitation and environmental degradation. Traditionally, the Black Sea was a rich fishing area. For each km² of the sea surface there are 6 km² of dry land in its collector basin. The Danube River Basin has an area almost double that of the sea. The abundance of sediments and dissolved substances transported to the sea by the rivers has contributed to its fertilization and high yields. More than two million people, fishermen and their families, worked in the Black Sea fishing industry. The annual catch has increased from about 86,000 tons in the 1930s to a maximum of nearly one million tons in the mid-1980s, but dropped to only

100,000 tons a few years later. Of the 26 fish species of commercial value, only five are now intensively fished.

This collapse of the fishery was due, among other things, to the over-dimensioning of the fishing fleets of the riparian countries and to the improvement of fishing techniques. The fish species that currently dominate are small species of lower economic value. A number of species of high economic value, such as sturgeons, are currently caught accidentally only. In the end, not only the quantity of fish caught decreased, but also its value.

2.2. Poaching and hunting

Endangered species still hunted:



Fig. 5 The cheetah and African lion



Fig. 6. Hippopotamus, black rhino and African elephant



Fig. 7 The grizzly bear and the polar bear



Fig.8 Western-African black rhinoceros

3. OVEREXPLOITATION OF THE WATER RESOURCES

Currently, more than half of the fresh and relatively accessible freshwater is used by human society as domestic, industrial and irrigation in agriculture (about 70% of total consumption).

To respond to increased water demand, entire river basins have been modified by regularization, embankment, diversion and dams construction. The water of many rivers is so greatly diverted that the amount that reaches seas and oceans is significantly

reduced. In many situations it causes serious disturbances by altering salinity, nutrient load and sediment in coastal areas. Alteration of the hydrological circuit leads to climate change. For example, irrigations lead to increased atmospheric humidity resulting in increased precipitation and more frequent storms.

By comparing the current world consumption to the available 40,000 km³, it would appear that there are still high availability that could provide the requirements for a long time. However, the situation is completely different for the following reasons:

- Water is not evenly distributed, so many areas are severely deficient.
- Precipitation is not evenly distributed over time, making watercourse flows high in both year and year.
- Water requirements are different from available. Thus, domestic and industrial water consumption requires a steady flow throughout the year, while irrigation use is concentrated only during the drought, where rainfall and river flows are low. Therefore, in order to match the water availability with the requirements, it is necessary to build dams that allow water to accumulate in excess periods for use in degraded periods.

Making dams changes the natural hydrological regime, water chemistry, reduces solid downstream transport and is a barrier for migratory animals. The water of the lakes is enriched with nutrients brought by precipitation waters, atmospheric deposits and upstream terrestrial ecosystems, resulting in increased primary production and accelerated eutrophication. Changing water quality results in reduced biological diversity. Thus, although there are large water mirrors, fish farming in dam lakes is limited. In smaller lakes, where better water oxygenation is ensured, fish development is limited by daily variations in lakes that prevent hatched eggs from hatching.

Population growth increases the consumption of drinking water and that used in agriculture. The biggest consumption is represented by the countries of North America, followed by the European ones. In recent years, in these countries, drinking water and industrial water consumption have risen slightly while consumption for agriculture continues to require increased quantities.

The reduction of industrial water use is of major importance for its use in closed circuit (water recycling), which is increasingly used in economically developed countries. Urbanization and industrialization

have led to an exponential increase in water consumption, in many cases increasing to 10 times. Many cities have major problems in providing drinking water, applying severe restrictions and hourly operating times during the day. The priority given to the provision of drinking water, in many areas, reduces the water allocated to irrigation, which has a negative impact on agricultural production. On the other hand, the excessive use of groundwater has lowered their level.

4. CONCLUSION

- Local, however, where the conditions allowed, fishery resources were overexploited.
- Exploitation of natural resources - all operations aiming to extract from the environment some useful resources for society.
- In addition to overfishing, the planetary ocean also suffers from pollution and habitat degradation, limiting the ability to restore populations of economically important fish affected by irrational fishing

REFERENCES

- [1] BARNEA, M., PAPANOPOL., C ., Pollution and Environmental Protection, Scientific and Encyclopedic Publishing House, Bucharest, 1975
- [2] BOTNARIUC, N., VADINEANU, A., Ecology, Didactic and Pedagogical Publishing House Bucharest, 1982
- [3] BOTNARIUC., N., Evolution of supra-individual biological systems, Edit. University of Bucharest, 1999
- [3] STUGREN, B., General Ecology, Didactic and Pedological Publishing House Bucharest, 1965