



The Issue of Habitat Degradation and the Quality of Fishing in Southern Region of India

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Abstract

The study reflects on habitat degradation and its impact on fishing and aquaculture. Habitat degradation refers to the situation when the habitat is destroyed due to different causes. In this study, habitat degradation of fishes is specifically discussed which helps to gain knowledge about the impacts of habitat degradation on fishing. Different secondary sources have been used for collecting data which includes previously published articles, journals and news articles. These sources are the easiest way to gather relevant and reliable data and search engines, Google scholar, computers, internet, mobiles and laptops are used as core instruments for finding the sources. As a result it is identified that pollution and climate change are the two major factors that are contributing to the growth of habitat degradation. Several human activities are highly contributing to the increase of habitat degradation and that is poorly effective on fishing as it reduces the quality of water and fishing.

Keywords: Habitat Degradation, Water Pollution, Fishing Quality, Human Activities, Fish Habitat

INTRODUCTION & BACKGROUND

The southern region or the Indian Ocean Region (IOR) is the most important sea area from the ancient period and it is the most vital region for maritime trade. Globalisation and huge trade practices all over the world are the major causes of environmental degradation all over the world. Ocean and marine environments are degraded hugely due to improper trading practices and other harmful activities and these regions have been ignored so far due to the absence of direct impact on humans. Due to harmful activities in the marine region of India special in the Indian Ocean region fish habitat degradation taking place and it indirectly impacts human beings. The Indian Ocean region faces different challenges in maintaining the health of the marine habitats and that affects the whole ecosystem of the aquatic region, especially its diverse fish population (Roy,

2019). Overfishing, lack of coastal development, population, uncontrolled shipping and climate change due to different harmful human activities are the main reason for habitat degradation in the southern coastal region of India. The habitat degradation in the southern region of India and understanding the key impacts of fish habitat degradation is the primary objective of the study.

AIM AND OBJECTIVES OF THE STUDY

The primary aim of the study is to identify the issues of habitat degradation and the quality of fishing in the southern region of India.

Objectives

- To understand the habitat degradation and different factors that influence habitat degradation in the southern region of India
- To evaluate the effect of habitat degradation of fish in the southern region of India

- To determine the key solutions to reduce fish habitat degradation

SIGNIFICANCE OF THE STUDY

India is the second largest fish market in the world and it influences the economic development of the country. On the other hand, due to uncontrolled human activities and unethical trading practices, the marine environment in the Indian Ocean region gets affected which influences fish habitat degradation and is harmful to the fishing industry and human health. The present study attempts to identify the key issues of fish habitat degradation which are relevant to the present scenario.

MATERIALS AND METHODS

The methodology is an important part of the research study that is important to formulate the overall research process which is essential for increasing the significance of the research. The research methodology is the crucial part of the research that helps to structure the whole data collection and analysis process. There are different types of data collection methods that are widely used by researchers during the research process. Primary data collection and secondary data collection are the two types of data collection methods which are widely used in the research study (Korstjens, and Moser, 2022). The primary data collection process includes interviews and surveys which are capable of collecting realistic and authentic data. On the other hand, in the secondary data collection method, researchers review different authentic journal article that is related to the present research. There are multiple journals and articles that provide huge information about the effect of habitat degradation in the southern region of India. Hence, using secondary data collection is more reliable and considering this different journals, articles and newspaper articles are observed for the data collection procedure.

Journals and articles which are written in English language and published after 2018 are taken here in this study for collecting the topic-related data. Besides, the research design is also an important part of the research methodology that helps to structure the whole research process in a significant and effective way. Choosing a proper research design is the initial step in a research study that formulates the overall research process and gives an advantage to the researchers (Ruggiano and Perry, 2019). The secondary method supports two types of research design which are qualitative research design and quantitative research design. The qualitative research design deals with different narratives and opinions of individuals which improves the overall understanding of the research topic. Due to simplicity and time effectiveness, the secondary qualitative research design is followed here in this study which gives an insight into the study and makes the research outcome more relevant.

Data analysis is another important part of the research methodology that helps to make research outcomes more effective and relevant by analysing the collected data sets. A proper data analysis technique is essential for the research as it gives a clear overview of the research study. The narrative analysis is adopted in this study to improve understanding of issues of habitat degradation and quality of fishing in the southern region of India (de Sousa *et al.* 2022). The narrative analysis helps to narrate different perspectives during the study which is important for making research relevant and authentic in the present conditions. The different narrative about the research topic is derived from multiple peer-reviewed journal articles which makes the research study effective at its own objectives.

RESULTS

4.1 Habitat degradation and factors affecting habitat degradation

The concept of habitat degradation can be described as lower quality and integrity habitat which impacts the life of animals, fishes and even humans. This is a part of habitat loss which refers to the situation when the habitat is no longer capable of completing the needs of the species (Hall-Spencer, 2019). The other divisions of habitat loss are habitat destruction and habitat fragmentation. Habitat degradation of water is one of the crucial issues for fisheries nowadays which decreases the quality of fishes. There are different types of factors that contribute to the enhancement of habitat degradation of water which are presented through the figure below.

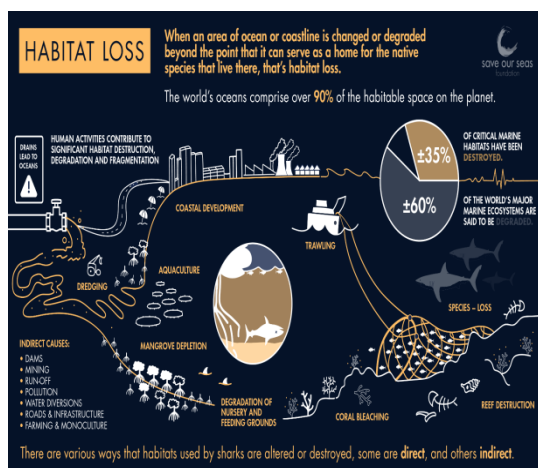


Figure 1: Habitat degradation and its

contributing factors (Source: Saveourseas, 2022)

It can be noticed in the figure above that there are some direct and some indirect factors that lead to habitat degradation of fishes. Coastal development, trawling, aquaculture, mangrove depletion, coral bleaching, dredging and reef destruction are the direct factors that influence the enhancement of fish habitat degradation (Saveourseas, 2022). Apart from that, dams, water pollution, mining, infrastructure of roads, agriculture and water diversions are the indirect factors that impact habitat degradation. Some of the core factors that influence the growth of habitat degradation of water and affect the marine

ecosystem are specifically discussed in this section of the study.

- **Pollution**

Pollution of water, soil and air has increased at its high due to some human activities which are ultimately impacting the marine ecosystem. In recent times, **about 44%** of earth's water is polluted by wastes, household sewerage and other pollutants (Filipenco, 2022). Hence, the increased pollution due to human activities reduces the quality of sea water and any other water sources which is the habitat of fishes. Therefore, pollution is one of the major causes of habitat degradation of fishes.

- **Climate change**

Climate change is one of the most crucial issues in this world in recent times which is caused by the emissions of greenhouse gases and resulting in the increase of temperature of the earth. The increasing temperature of earth melts the ice caps and glaciers which leads to the contamination of water and that negatively affects the quality of fishing (Eartheclipse, 2022). Therefore, climate change is directly and indirectly impacting the agriculture of fish and quality of fishing.

- **Coastal development**

The population of the world is rapidly increasing and along with coastal developments and infrastructure of different industries is also increasing. This leads to the production of wastes, chemicals and other pollutants which enhances water pollution and destroys coastal marine habitats. Coastal development and wastes of industries are the human activities that negatively impact the environment and results in poor quality of fishing.

- **Unsustainable fishing process**

The process of fishing is not sustainable in most of the places which is another reason that water pollution enhances and results in habitat degradation of fishes. It is identified that fishes are cultivated unsustainably in many places such as providing food

to fishes inappropriately and others (Gordon *et al.* 2018). This enhances the chances of water pollution and habitat degradation of fishes.

- **Poor governmental participation**

The governmental authorities should provide training sessions to the fish cultivators for enhancing their knowledge about the sustainable fishing process. In many countries, governmental authorities are not concerned about habitat degradation and its negative impacts on the fishing process. Hence, lack of government participation and lack of knowledge among the fishermen are the other factors contributing to the growth of habitat degradation.

4.2 Effects of habitat degradation on the quality of fishing

It is identified that there are factors that are influencing the growth of habitat degradation which are previously discussed in this study. Thereafter, the degradation of habitat of fishes which is water is highly and negatively effective on fishing quality. Degradation of fish habitats leads to a decrease of fish population which is a challenge for the cultivators. Decline in fish population makes it harder for fishermen to catch fish and improve their businesses which are one of the core negative effects of habitat degradation (Arlinghaus *et al.* 2019). In addition to that, degradation of fish habitat can change the species composition which refers to the changes in types of fishes present in the water. This also negatively impacts the fishing quality as the degradation enhances less valuable species.

On the other hand, decrease in fish size is another effect of fish habitat degradation which reduces the quality of fish production as well as the quality of fishing. It is identified that water pollution enhances habitat degradation which leads to slow growth of fish and reduction in the fish size which makes it less valuable for fishermen. Apart from that, changes in migration patterns are another effect of habitat

degradation (Tamario *et al.* 2019). It frequently changes the pattern of migration of fishes which makes it difficult for fishermen to predict which type of fish is present. Along with that, reduction of biodiversity is another big effect of fish habitat degradation which reduces the varieties of fish species.

4.3 Solutions to habitat degradation in fishing

Habitat degradation is a process among the native habitats or species which makes them incapable of supporting their native species. Marine habitats are degraded due to different harmful human activities, pollution and climate change. In the southern coastal region of India where huge unlawful trade practices occur daily and that negatively impacts the fish habitats in that region which is not a good sign for the fishery industry of India (Riskas *et al.* 2018). There are different solutions and measures to reduce habitat degradation among the fishes. The first measure that can be useful for combating habitat degradation among marine species is reducing the environmental pollution. Water, soil and air pollution are the most destructive in marine habitat degradation. Therefore, government and public authorities have to implement different regulations to reduce environmental pollution from the coastal region.

Controlled fishing is another way of combating marine habitat degradation. Overfishing negatively affects the aquatic ecology and food chain and it is the major cause of habitat degradation in marine ecosystems. Using controlled fishing techniques the problems related to overfishing can be mitigated and this technique also can conserve the existing food chain which is essential for the habitats of that region. Civic education can also be the solution to reducing the rate of habitat degradation from the southern coast of India (Bennett *et al.* 2021). Educating fishermen and other traders are essential to fight the habitat degradation process. Public

authorities and coastal unions on the southern coast are required to organise different educational programs about fish habitats and their implications which helps them to understand multiple factors that affect habitat degradation and improved the fishing quality in that region.

Restricting over aggressive development of the coastal region is another factor that negatively impacts the native species of that region. Therefore, government and local bodies such as municipal corporations need to immediately stop developmental programmes which affect the habitats negatively. The central government of India have to make laws on developmental work in the coastal region to restrict aggressive development works. Controlling shipping routes or formulating trading practices can be an important solution for combating fish habitat degradation in the southern coastal region of India (Barbesgaard, 2018). Shipping and trading practices in waterways are the main cause of habitat degradation in the present scenario. In order to combat this issue, the government need to demarked designated routes for shipping and trading practices to reduce habitat degradation and improves the quality of fishing in the southern region of India.

DISCUSSION

Habitat degradation refers to the underlying condition in which the native fishes change their natural characteristic due to different harmful human activities, industrial production and environmental pollution. Marine habitat degradation becomes a serious threat in today's globalised scenario. Marine Habitat degradation is harmful to aquatic ecology and it affects the stability of the aquatic environment. There are multiple factors that can influence aquatic degradation along with the fishing industry in a wider aspect. In the southern part of India fishing and fishery industry is an important industry and habitat degradation among the fish is a

major threat to that region. Overfishing, pollution, climate change, dams, development work, unlawful shipping activities and Invasive species are the major factors that influence fish habitat degradation (Yin *et al.* 2022). Overfishing is the major cause of fish habitat degradation which affects the whole fishing industry and obstructs economic development; pollution has a huge negative impact on fish.

Due to huge amounts of soil and water pollution, the quality of water decreases which results in fish habitat degradation Human activities such as Dam construction, uncontrolled shipping and development work near the water land are the most impactful factor that influences habitat degradation among the fishes. Fish habitat degradation reduces the quality of fish and also reduces the nutritious elements in the fishes. Poor quality of fish and harmful chemicals in the fish negatively impacts human health (Javed and Usmani, 2019). Poor governmental participation in the fishing industry is also an impactful factor that influences fish habitat degradation which is a vital factor that negatively affects the fishing industry. Habitat degradation among fish has a significant impact on the quality of fishing. Habitat degradation can reduce the fish population and decrease the fish size which is harmful to the fishing industry and also impacts the economy in a negative way.

Habitat degradation among fishes changes the fish species composition which can shift towards the less desirable and less valuable species. Changes in fish characteristics due to habitat degradation or changes disrupt the migration pattern and that creates difficulties for the fishermen to predict where and when fish will be present (Mendenhall, 2020). Due to altered migration among the fish, the fishing procedure is disrupted and that results in the poor performance of the fishing industry. Habitat degradation and altered migration among the fishes

reduce biodiversity which is not a good sign for the environment. Reduced biodiversity decreases environmental stability which results in food chain disruption and affects aquatic habitats in negative ways. Due to reduce biodiversity in water lands the fishing procedure is disrupted and that affects the fishing industry negatively.

Overall, it can be stated that habitat degradation can have a profound impact on the quality of fishing and it also impacts the sustainability of fishing (Kuriqi *et al.* 2021). There are different solutions and measures to reduce habitat degradation among the fishes. Different solutions include controlled fishing techniques, improving civic education, restricting over-aggressive development works and controlling shipping routes which are important to reduce habitat degradation from aquatic species. Therefore, government and local bodies such as municipal corporations and panchayats have to regulate different activities that can reduce the rate of pollution and climate change. In order to control shipping activities and control trading practices in a coastal area, the government need to make laws which can reduce water pollution and improves the quality of fishes in that region. Besides, the government can demark designated routes for shipping and trading for reducing aquatic habitat degradation which is essential for the fishing industry.

CONCLUSION

Habitat degradation and declining fishing quality in the southern region of India are significant environmental and socio-economic challenges that require urgent attention. It can be concluded that habitat degradation is one of the major issues for not only wide animals but also fishing industry. Human activities such as waste production, coastal development, industrial wastes and others are the main factors or causes of habitat degradation. The destruction of mangroves and other coastal

ecosystems, as well as pollution and overfishing, have had detrimental impacts on fish populations and the livelihoods of coastal communities. The level of pollution and climate change is increasing day by day and along with that the percentage of habitat degradation is also increasing. Habitat degradation is poorly impacting the fishing quality and that needs to be cured. Therefore, the fishery industry needs to be aware about these factors and awareness for taking action to reduce climate change and pollution. The governmental authorities need to be highly concerned about this issue and provide laws to mitigate the issues of habitat degradation and they also need to increase awareness and education among local communities to enhance sustainable fishing practices. Education regarding sustainable fishing can reduce habitat degradation which is essential for the fishery industry and for the environment.

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