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An Empirical Study on Hazards Faced by Marine Organisms

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Abstract: *Marine ecosystems and aquatic habitats face a number of threats from humans. Serious conservation attention and efforts should be drawn and directed towards restoration of fragmented marine habitats and estuarine ecosystems. Threats are manifold: i.e., primarily from overexploitation of marine resources, overfishing, climate warming, sewage disposal, industrial chemical discharge, oil spills, invasive species, and dredging. MPAs are areas of the ocean that are set aside for conservation and have strict regulations on human activities. MPAs can help to protect marine life from overfishing, pollution, and other threats. India has established a number of MPAs, including the Andaman and Nicobar Islands Marine National Park, which is home to a diverse range of marine life. India has also enacted a number of fishing regulations, such as the Marine Fisheries Act, which is designed to protect fish stocks. The research method followed here is empirical Research. A total of 200 samples have been taken out of which is taken through Random sampling. The sample frame taken by the research through the general public based on a questionnaire .The primary sources are taken from the general public in the form of survey method. The information was collected from secondary sources from journal articles, books and reports of presidency non governmental organisations. The independent variable taken here is age, gender, education, occupation. The dependent variables are causes of marine pollution, marine organisms cruelty, marine habitat, transport etc. The statistical tool used here in this research is graph(mean) and scaling . The main aim of this research is to study and analyze the hazards faced by marine life and resources and the steps to protect them.*

Keywords: Marine biodiversity, ecosystem services, habitat destruction, coral bleaching, coral reef

I. INTRODUCTION

The fifteenth Conference of the Parties (COP) to the United Nations Convention on Biological Diversity will conclude negotiations on a global biodiversity framework in late-2022 that will aim to slow and reverse the loss of biodiversity and establish goals for positive outcomes by 2050. Currently recognized drivers of declines in marine and coastal ecosystems include overexploitation of resources (for example, fishes, oil and gas), expansion of anthropogenic activities leading to cumulative impacts on the marine and coastal environment (for example, habitat loss, introduction of contaminants and pollution) and effects of climate change (for example, ocean warming, freshening and acidification). Within these broad categories, marine and coastal ecosystems face a wide range of emerging issues that are poorly recognized or understood, each having the potential to impact biodiversity. Researchers, conservation practitioners and marine resource managers must identify, understand and raise awareness of these relatively 'unknown' issues to catalyze further research into their underlying processes and impacts. Moreover, informing the public and policymakers of these issues can mitigate potentially negative impacts through precautionary principles before those effects become realized: horizon scans provide a platform to do this. Plastic pollution is recognized as a severe anthropogenic issue in the coastal and marine ecosystems across the world. Unprecedented and continuous accumulation of growing plastic contaminants into any respective aquatic ecosystem by the anthropogenic sources causes direct and/or indirect interruption to ecosystem structure, functions, and consequently, services and values. Land-based and sea-based sources are the primary sources of these contaminants in various modes that enter the ocean.

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Marine and coastal ecosystems provide different priceless services and values for human wellbeing and other kinds of vertebrate and invertebrate organisms. Provisioning (the domain of food, fiber, wood, water, pharmaceutical components, oil, mineral sources), regulating (carbon sequestration, maintain water quality, climate regulation), supporting (photosynthesis, nutrient cycling, nursery and breeding grounds, oxygen production), and cultural (spiritual and cultural importance, recreation and tourism) services gained from oceans and coastal ecosystems are ecologically and socio-economically imperative. Due to the massive contribution by services of the aforesaid ecosystems on the human wellbeing component, this paper will mainly focus on emerging anthropogenic threats on the marine environment as an initial step to concern conservation and sustainable management of the aquatic environment. The Wild Life Protection Act of India (1972) provides legal protection to many marine animals. There are a total of 31 major Marine Protected Areas in India covering coastal areas that have been notified under Wildlife Protection Act, 1972. Oceana, The Ocean Conservancy, Project AWARE Foundation, Monterey Bay Aquarium, Marine Megafauna Foundation are some of the international level non profitable NGOs who protect and maintain marine lifes and environment. The main aim of this research is to study and analyze the hazards faced by marine life and resources and the steps to protect them.

1.1 OBJECTIVES:

- To study the measures to protect marine organisms.
- To create awareness on conserving marine bodies.
- To analyze governmental and non governmental organizations and its works.
- To implement steps to control marine exploitation.

II. REVIEW OF LITERATURE:

("Exploring Marine Life"1996) Discussions of coastal hazard impacts commonly emphasize geomorphological, geodynamic, and meteo hydrodynamic physical events. A true census of all coastal hazards must also, however, include not-so-obvious biological and anthropogenic impacts. Biological coastal hazards are now more common.

(Long and Zhang 1999) Given the finite supply of water available for human use, continued chemical contamination of the aquatic environment may pose a significant human health hazard. Consequently, an effort must be made to develop ambient water quality criteria to protect human health and preserve the integrity

(Boyle; Inaba 2000) Beach hazards are traditionally associated with damage to structures, property and the environment. In this paper, however, they address every day beach conditions including surf zone topography, water depth, waves and rip currents that in Australia annually result in up to 50 drownings and over 10,000.

(Ormestal. 2000) Estuarine and coastal marine environments are affected by a wide range of pollutants owing to increased anthropogenic activity from a burgeoning population in the coastal zone. Estuaries in particular have served as major repositories for the disposal of industrial and municipal wastes.

(Lima 2001) Beaches are one of the most popular recreational settings in most parts of the world. Indeed, marine tourism has been growing consistently in the last two decades. However, beaches are hazardous environments, and thousands of people die or sustain severe injuries while bathing or engaged. **(Silvia 2002)**Coastal Hazards-the natural and man-made events that impact the coastal environment, are complex and diverse. Their study comprises basic sciences, their applications, economic, cultural and social effects, and management systems. A multitude of sources are needed to research the varied aspects.

(Cousteau "Marine Pollution Chemistry" 2004) They advance marine sociology to analyze the human dimensions of ocean systems. Human societies are fundamentally linked to marine systems and are transforming oceanic conditions in dramatic ways, resulting in socio-ecological problems. Despite the great and important possibilities in this realm.

(Cousteau 2004) The lack of integrated long-term data on health, diseases, and toxicant effects in Arctic marine mammals severely limits our ability to predict the effects of climate change on marine mammal health. The overall health of an individual animal is the result of complex interactions among immune status.

(Hester 2006)The study of habitat selection and habitat use are crucial for understanding the biological requirements of animals and the strategies they use to fulfill their needs. A variety of statistical techniques are available to quantify habitat selection, most of them based on the comparison of habitat.

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(Khan 2006) Drowning hazards result from the interaction between bathers and the morphodynamic surf processes related to the regional synoptic setup and regional offshore oceanographic conditions. We focus on the beach hazard rating (BHR) derived from meteorological parameters of synoptic scale that control.

(Xu et al 2009.)A current major environmental problem is that marine litter is being deposited in increasing amounts on the world's beaches and oceans. This is especially true for plastics, which form the bulk of the litter and which can last for an unknown number of years in the oceans. This article concerns itself with some of the solutions that can be applied to the problem.

(Karim 2009) How and why populations fluctuate and what drives the magnitude of fluctuations are questions that have long intrigued ecologists. Dispersal may dampen population fluctuations through the effect of spreading offspring over heterogeneous habitats. The planktonic period common in many marine organisms, therefore, could dampen populations fluctations through larval dispersal.

(Freire 2012) The author uses Tasmania as a case example to question the consensus that few marine species have recently become extinct or are approaching extinction. Threats to marine and estuarine species-primarily in the form of climate change, invasive species, fishing, and catchment discharges are acceleration, fully encompass species rangers, and are of sufficient magnitude to cause extinctions

(Zhou 2013) After providing an introductory overview of some of the major threats to the marine environment, including climate change and sea level rise, this paper focuses upon the specific global and regional legal efforts to address marine pollution from the perspective of three sources, namely, land based sources, vessel-based sources and ocean dumping.

(Zhang 2015) Over the past five or six decades, contamination and pollution of the world's enclosed seas, coastal waters and the wider open oceans by plastics and other synthetic, non-biodegradable materials (generally known as 'marine debris') has been an ever-increasing phenomenon.

(Procópio 2016) We need to critically assess the present quality of the marine ecosystem, especially the connection between ecosystem change and threats to human health. In this article we review the current state of indicators to link changes in marine organisms with eventual effects to human health, and discuss how to establish collaborations between national and international governmental and private sector groups.

(Wang 2017) The tsunami that hit the coast of India on 26 December 2004 reminded the country that our 7000 km long coastline is exposed to hazards and that we are not prepared to face all of them. Preparedness to guard against hazards requires that we examine scientifically all issues associated with them.

(Hajji 2018) Knowledge of vulnerability provides the foundation for developing actions that minimize impacts on people while maximizing the sustainability of ecosystem goods and services. As a result, it is becoming increasingly important to determine how resource-dependent people are vulnerable to environmental hazards. This idea is particularly true in coastal Louisiana, USA, where the current era of rapid land loss has the potential to undermine oyster fisheries. However, little is known about how such environmental change might differentially affect resource users and stakeholders.

(Zhou 2020) Growing concern about the effects of anthropogenic sound on marine life has high-lighted the need for empirical methods to study behavioral responses of marine animals to specific acoustic exposures. Some effects have been discovered by observing coincidence of effects with sound exposure.

(Al-Jandal 2022.) The evidence for anthropogenically induced climate change is overwhelming with the production of greenhouse gases from burning fossil fuels being a key driver. In response, many governments have initiated programmes of energy production from renewable sources.

III. METHODOLOGY:

The research method followed here is empirical Research. A total of 200 samples have been taken out of which is taken through Random sampling. The sample frame taken by the research through the general public based on a questionnaire .The primary sources are taken from the general public in the form of survey method. The information was collected from secondary sources from journal articles, books and reports of presidency non governmental organisations. The independent variable taken here is age, gender, education, occupation. The dependent variables are causes of marine

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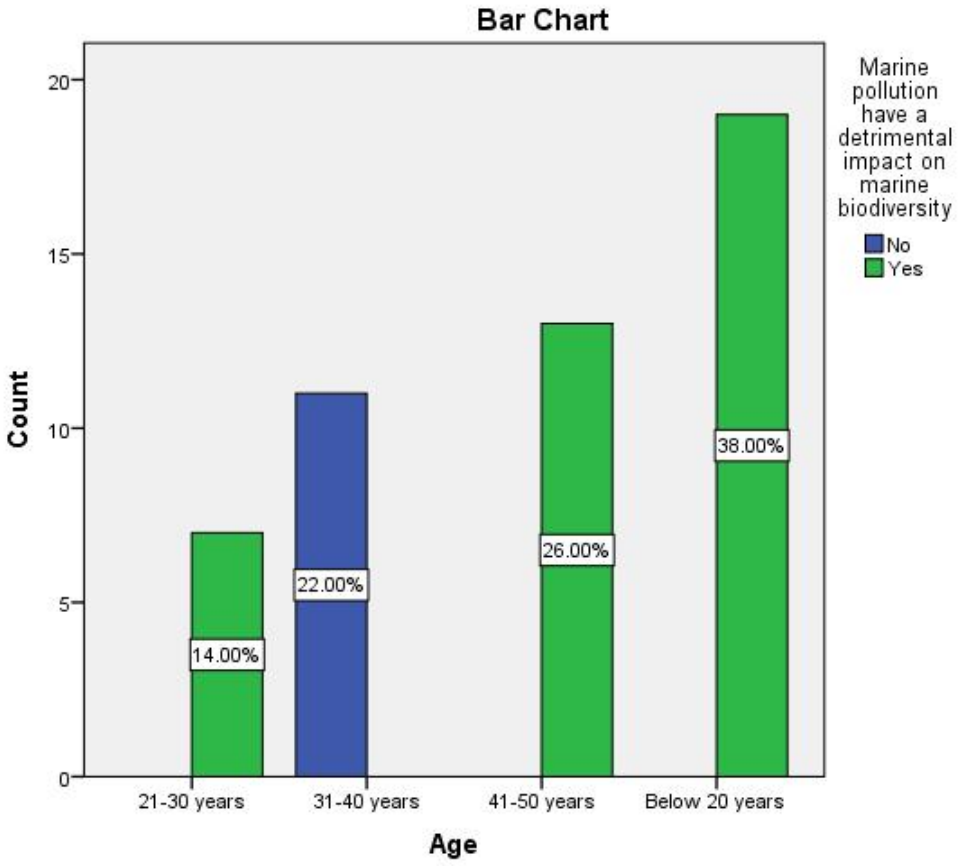
pollution, marine organisms cruelty, marine habitat, transport etc. The statistical tool used here in this research is graph(mean) and scaling .

IV. ANALYSIS

FIG:1



LEGEND:

In this **Figure 1,** it shows the age structure on marine pollution have a detrimental impact on marine biodiversity.

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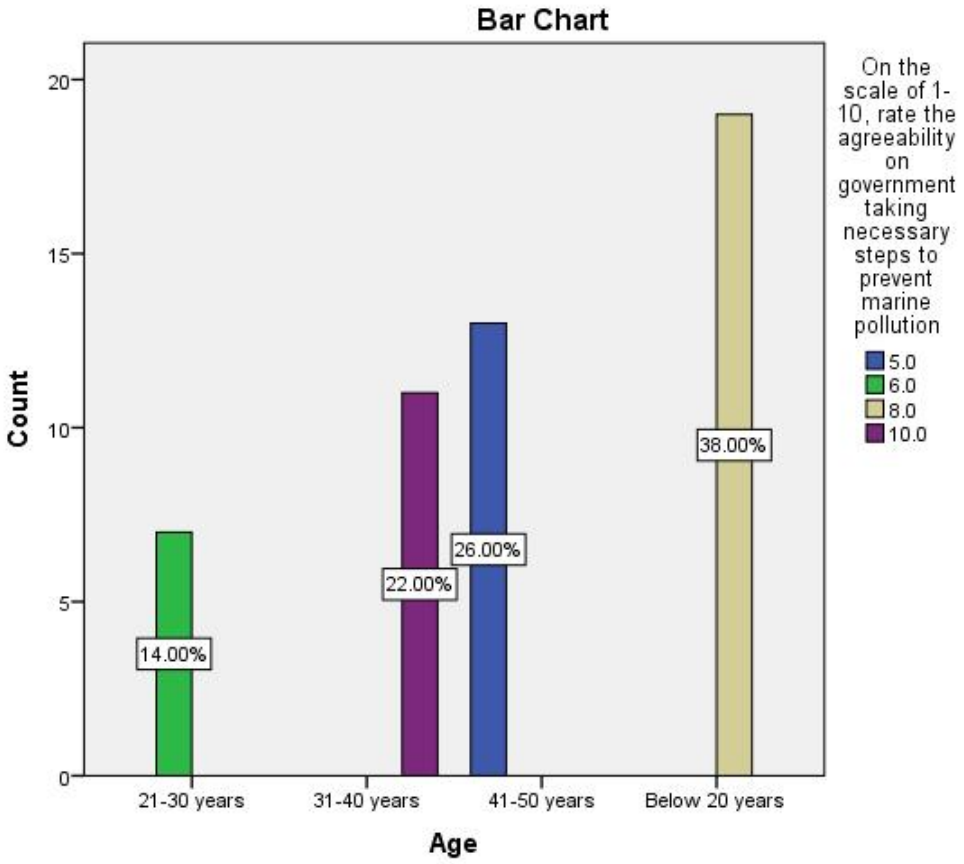
FIG:2



LEGEND:

In this **Figure 2,** it shows the age structure on the scale of 1-10, rate the agreeability on government taking necessary steps to prevent marine pollution.

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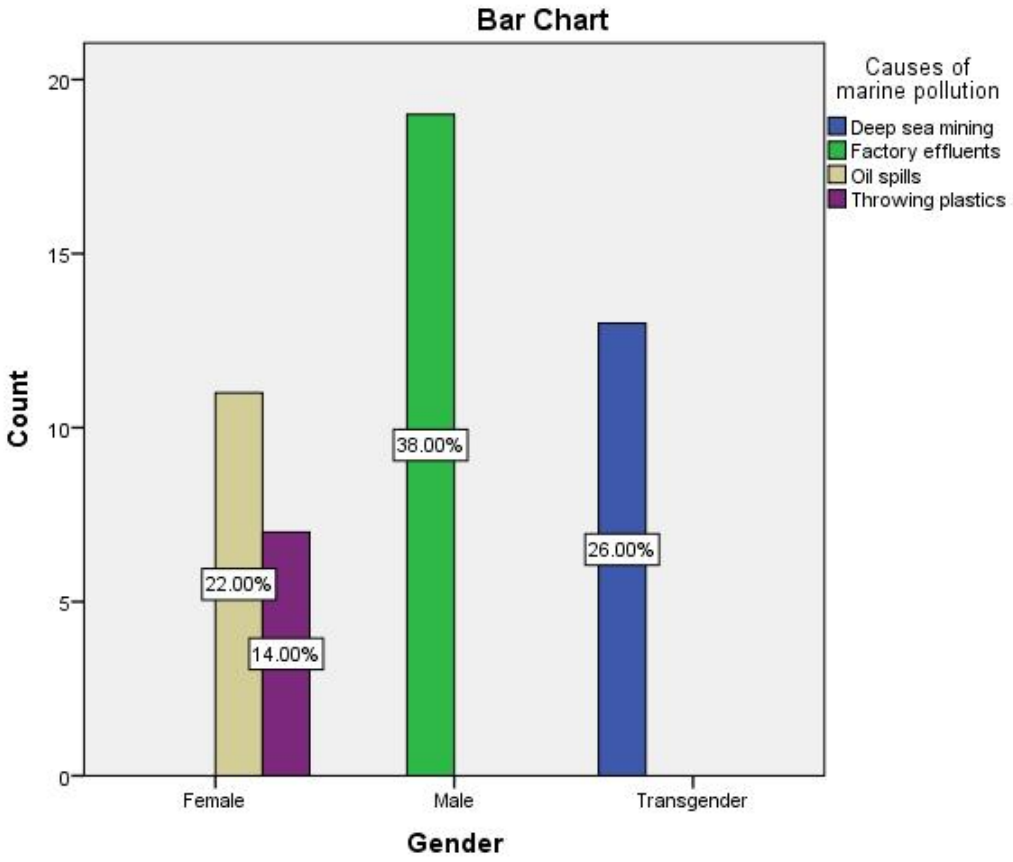
FIG:3



LEGEND:

In this **Figure 3,** it shows the gender structure on causes of marine pollution.

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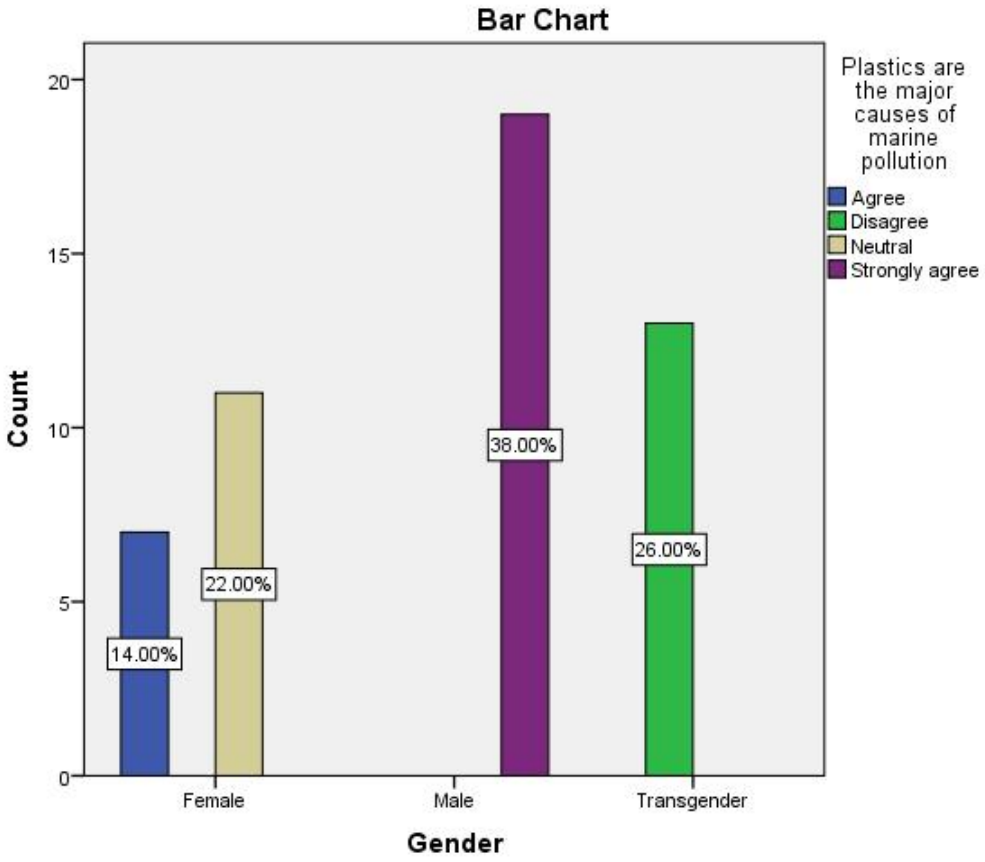
FIG:4



LEGEND:

In this **Figure 4,** it shows the gender structure on plastics are the major causes of marine pollution.

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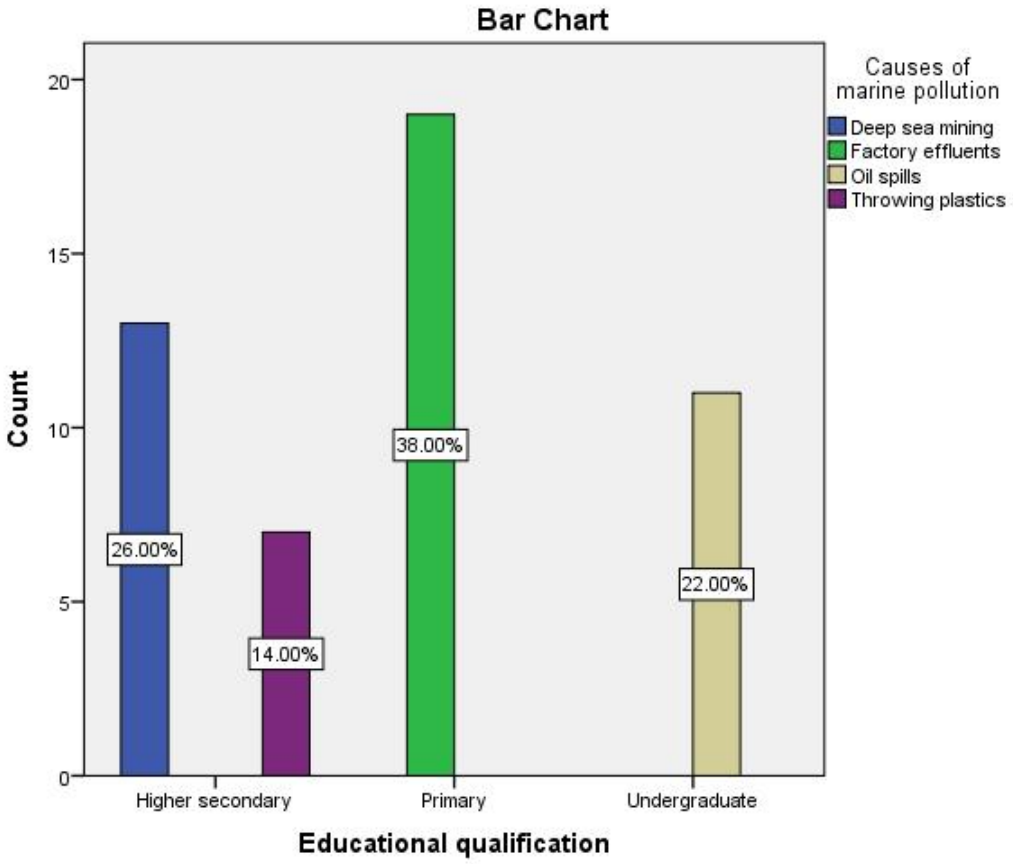
FIG:5



LEGEND:

In this **Figure 5,** it shows the educational qualification structure on causes of marine pollution.

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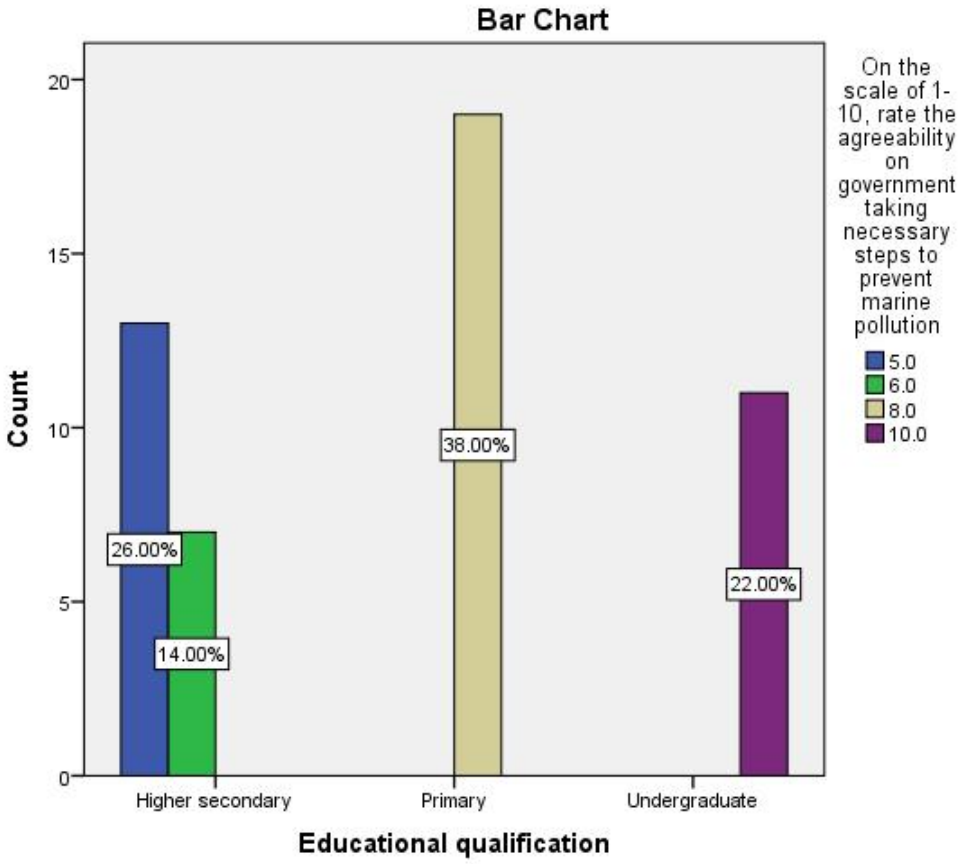
FIG:6



LEGEND:

In this **Figure 6,** it shows the educational qualification structure on the scale of 1-10, rate the agreeability on government taking necessary steps to prevent marine pollution.

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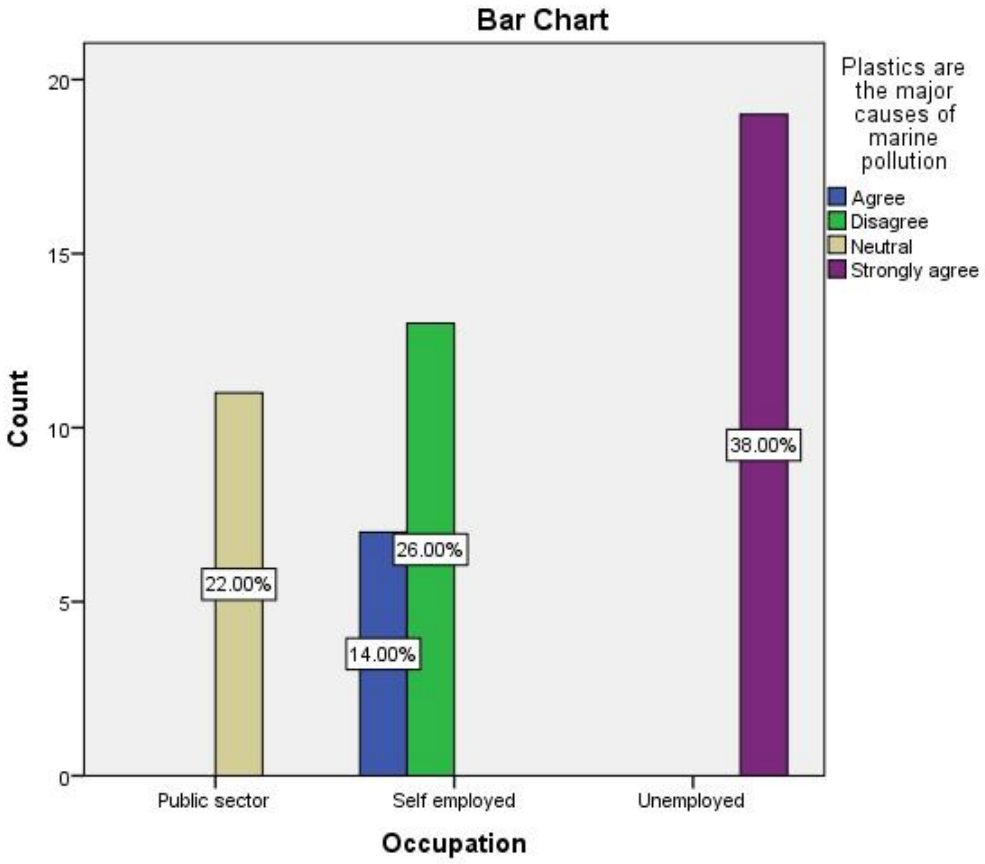
FIG:7



LEGEND:

In this **Figure 7,** it shows the occupational structure on plastics are the major causes of marine pollution.

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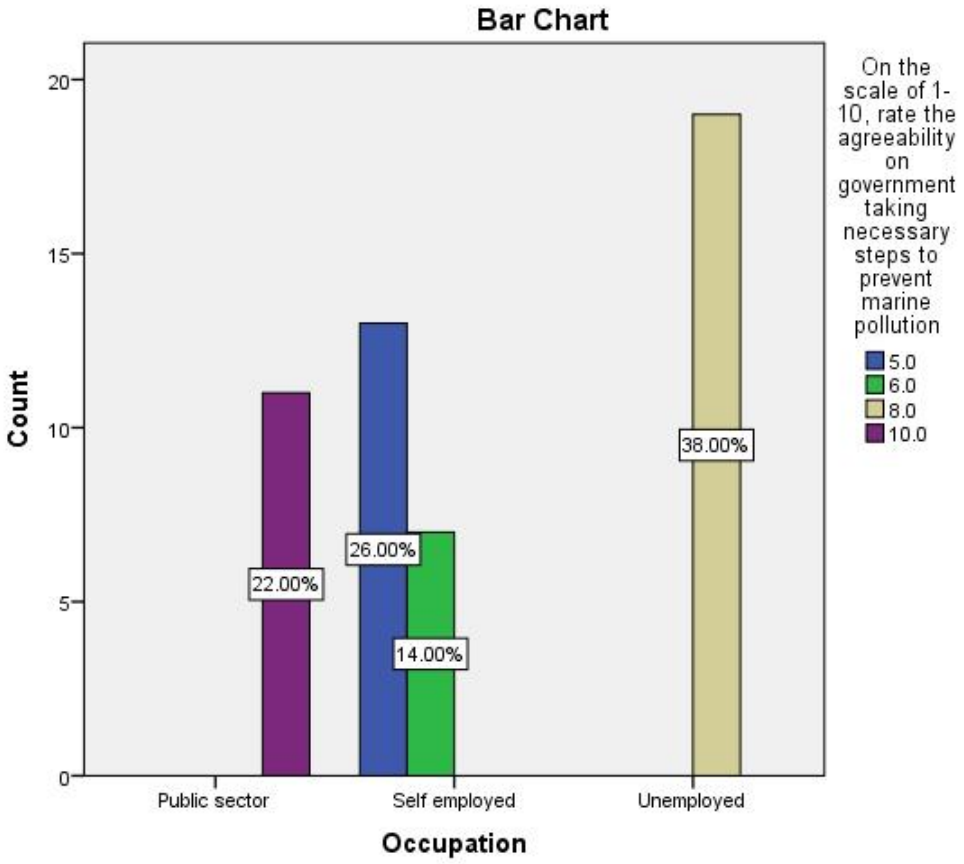
FIG:8



LEGEND:

In this **Figure 8,** it shows the occupational structure on the scale of 1-10, rate the agreeability on government taking necessary steps to prevent marine pollution.

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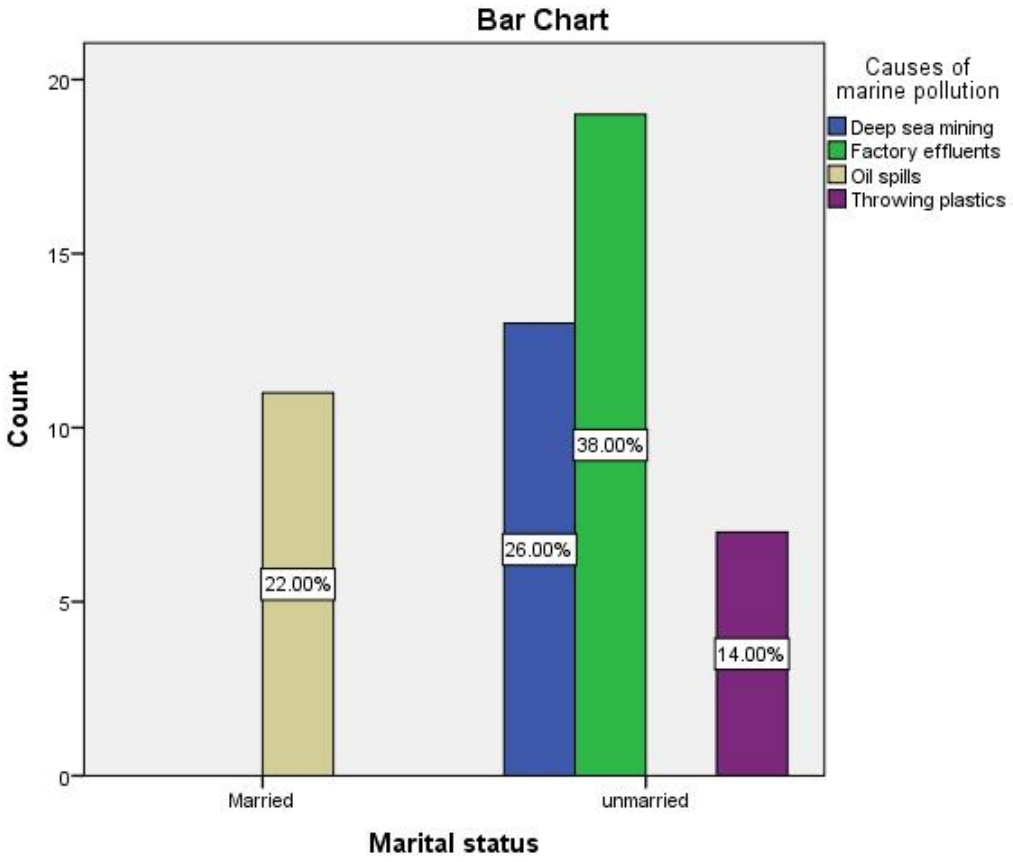
FIG:9



LEGEND:

In this **Figure 9,** it shows the marital status structure on causes of marine pollution.

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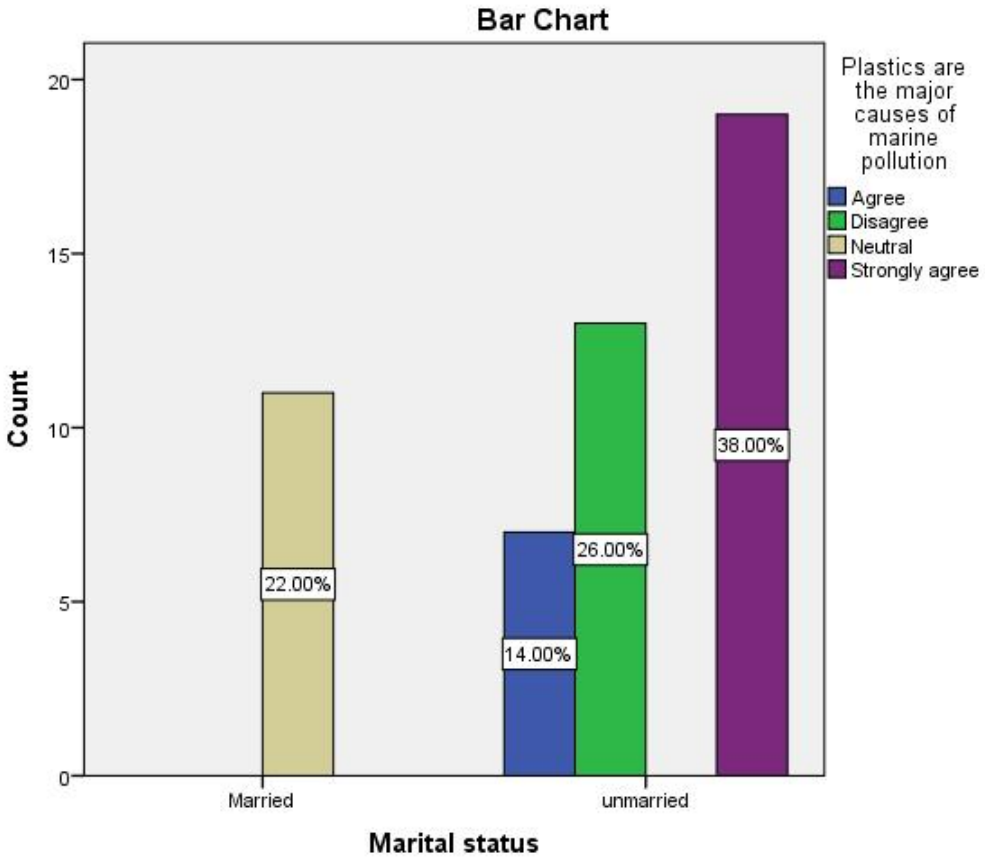
FIG:10



LEGEND:

In this **Figure 10,** it shows the marital status structure on plastics are the major causes of marine pollution.

V. RESULT

While noticing the **figure 1** we can come to know about the percentage of people's age group who were participated in the survey people whose age group lying below 20 years has given large number of responses that amounts to 38% and least responses where given by people of age on 21-30 years and their percentage to that is 14%.While noticing the **figure 2** we can come to know about the percentage of people's age group who were participated in the survey people whose age group lying below 20 years has given large number of responses that amounts to 38% and least responses where given by people of age on 21-30 years and their percentage to that is 14%.While noticing the **figure 3** we can come to know about the percentage of people's gender group who were participated in the survey people whose gender group lying male has given large number of responses that amounts to 38% and least responses where given by people of gender of female and their percentage to that is 14%.While noticing the **figure 4** we can come to know about the percentage of people's gender group who were participated in the survey people whose gender group lying male has given large number of responses that amounts to 38% and least responses where given by people of gender of female and their percentage to that is 14%. While noticing the **figure 5** we can come to know about the percentage of people's educational qualification group who participated in the survey, people whose educational qualification group lying primary has given a large number of responses that amounts to 38% and least responses where given by people of undergraduate and their percentage to that is 22%.

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VI. DISCUSSION

While noticing the **figure 6** we can come to know about the percentage of people's educational qualification group who participated in the survey, people whose educational qualification group lying primary has given a large number of responses that amounts to 38% and least responses where given by people of undergraduate and their percentage to that is 22%.While noticing the **figure 7** we can come to know about the percentage of people's occupation group who were participated in the survey people whose occupation group lying unemployed has given large number of responses that amounts to 38% and least responses were given by people of occupation of self employed and their percentage to that is 14%.While noticing the **figure 8** we can come to know about the percentage of people's occupation group who were participated in the survey people whose occupation group lying unemployed has given large number of responses that amounts to 38% and least responses were given by people of occupation of self employed and their percentage to that is 14%. While noticing the **figure 9** we can come to know about the percentage of people's marital status group who were participated in the survey people whose marital status group lying unmarried has given large number of responses that amounts to 38% and least responses were given by people of marital status married and their percentage to that is 22%While noticing the **figure 10** we can come to know about the percentage of people's marital status group who were participated in the survey people whose marital status group lying unmarried has given large number of responses that amounts to 38% and least responses were given by people of marital status married and their percentage to that is 22%

VII. CONCLUSION

Through rigorous data collection and analysis, we have identified various factors, including pollution, climate change, overfishing, and habitat destruction, that pose significant threats to marine life. Our findings underscore the urgency of conservation efforts to mitigate these hazards and protect the delicate balance of marine ecosystems. Moreover, this study highlights the interconnectedness of all life forms on Earth and emphasizes the need for global cooperation to ensure the sustainability and well-being of marine organisms for future generations. The ocean is one of our greatest sources of life on earth. It provides us with more than half of the world's oxygen and is home to millions of species that play critical roles in marine ecosystems. Now more than ever, the ocean needs our help. Human-caused threats like ocean noise pollution, ship strikes, and entanglement in fishing gear are threatening the lives of marine animals. Our actions have impact, and together, we can build a healthier future for the ocean. At present, the pollution of marine microplastics has become more and more serious and has become a global pollution incident, but there is a lack of effective treatment methods. We must start to eliminate more pollution with various methods. In future work, the size, shape, and related contaminants should be considered to better evaluate the microplastics.

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