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Marine Pollution and Its Impact on Humans and Animals

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Abstract:

The presumption that money can compensate everything is wrong because of the ever increasing pollution in the sea which destroys the marine life and also disturbing the whole ecological balance. Oceans are the main source for dumping many types of waste in present eras such as plastic, oil waste, waste water etc. For many years, these dumping of the trashes is now leading to the death of variety of aquatic flora and fauna and also causing the extinction of many species of fishes. Due to the direct consequences of pollution, millions of animals, including birds and fishes which are completely dependent on the water are being killed. Many other types of oceanic pollution such as radioactive and industrial waste, pollution due to festivals, oil spills are just as costly and can contaminate the oceans for thousands of years to come. This paper gives a brief discussion about the marine pollution and also its impact on human and the aquatic life.

Keywords: *Marine Pollution, Festivals, Humans, Oil spills, Dumping*

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Introduction

Marine pollution us caused by the number of factors caused mainly by the humans such as festivals like Narali Pournima, Ganesh Visarjan, deposition of waste water into the sea without treatment and many other reasons. The marine pollution become a major issue of present era, as being ignored for many years. Prior, people thought that the pollutants will become diluted due to the vastness of the ocean and their impacts will be eliminated but due to these pollutants, the balance of ecosystem became altered. Many variety of ways such as tourism revenue, coastal economic activities and lost resources have to pay the costs of this pollution. The pollution causes very dangerous effects on marine animals and plants which now resulting in the extinction of many species of animals and plants. Ocean is the home for variety of living being and therefore people should be responsible towards the motive to avoid pollution in the sea and to help the marine life to bloom for long. The origin of pollution came from both land (e.g., via wind and rivers) and sea (e.g., through mining, marine dredging, shipping, and dumping). The danger to aquatic life came from many practices, like as overexploitation, harvesting, pollution, dumping of waste, global climate change, land reclamation, degrading, and alien species. The natural events in future may be analyzed by the issue of pollution and for the purpose of simulation models which anticipates the results of pollution on marine population that requires the consideration of all possible reasons of pollution over the entire orbit of the species.

Figure 1: Deposition of Waste Water into the Sea

Cause of Ocean Pollution

There are number of factors which are responsible for the ocean pollution. There are some of the major components contributing towards the sea pollution. The prominent marine pollutants are discussed below along with their significance of marine disposals.

1. Oil Pollution

The pollution by crude petroleum or refined petroleum products is termed as Oil pollution in the context of environment. Oil pollution is an unavoidable concern of the dependency of a speedily increasing population on oil based technology. There is 15 tanker tragedies and 3 blow outs from 1970-1982 is the total record of accidental oil spills in Indian Ocean. The main source of the oil contamination in the Indian Ocean is the oil emerging from the ballast, bilge and cooling water of the tankers. Other causes which cannot be ignored are industrial and domestic discharges.

2. Heavy Metal Pollution

Pollution of the sea caused by the oil attracts the immediate attention because it is visible. But there are also some types of pollutants which does not visualizes and only can be understand by their damaging effects. Toxic metals are one of the most significant pollutants. Heavy metals pollution can be caused by both naturally and by human activities. A considerable amount of the metal is added by the natural processes of submarine volcanic activity, weathering etc. These considerable amount of metals are released by each of the above mentioned processes to the marine environment or rejects where there prolonged stability makes them bio available for a very long time. For the biological processes, these metals can be classified as essential and non-essential elements. Most of the metals comes under the category of essentials but some of them such as Mercury, Cadmium and Lead comes under the non-essential category for example in Japan, Minamata and Itai- Itai diseases are caused by the consumption of fish infected by Hg and Cd respectively.

3. Agricultural Wastes

It is necessary to pay a battle against natural pests like insects, weeds and molds for the human survival. In agriculture, tons of fertilizers and pesticides are being used every year for the pest control and disease vector control. On the basis of target, the chemical composition and structure, pesticides can be frequently classified. Nearly 25% out of the total quantity of pesticides can be expected to reach the marine environment through atmosphere, river runoff and direct discharges. Some of these pesticides are distributed through various segments of the marine environment and are persistent with 'half-life' of nearly a decade.

4. Domestic Wastes

A high load of organic matter including N and P is owned by the domestic waste and sewage which can enrich the coastal environment in small quantities generally create imbalances in large amounts. Undesirable species of organisms are multiplied by these organic compounds especially pathogenic bacteria. Domestic wastes also includes several other inorganic constituents which causes damage to the environment by adding in uncontrolled amount.

5. Sensitive/Fragile Environments

Spawning grounds and nurseries are made by some sensitive and fragile environments such as coral reefs, mangroves and sea grass beds, which deserve special mention for a number of commercially important fishes, gastropods and crustaceans. A wide variety of flora and fauna is harbored by these sensitive and fragile elements. For the purpose of domestic and industrial uses, they can be the source of drugs and raw material. They are facing a great deal of pressure as being closer to the human habitation which results in considerable environmental stress.

6. Ocean Mining

Ocean mining in the deep ocean is another major cause of ocean pollution. The inorganic elements found equal to three and a half thousand meters down under ocean, and these mining sites are drilled for these elements such as copper, gold, cobalt, silver and zinc. It results into the destruction to the lowest level of the ocean and also escalate the toxicity of that area.

Nature of the Marine Environment

The characterization and description of the marine ecosystem can be done at number of measures which ranges from the genetic level that occurs at species to the ocean level processes. The balances of significance here are marine habitats, species and landscapes, and their correlationship can be conveyed as follows:

- The universally acknowledged actual cataloguing of ecological variety is provided by the species also provide the difference between different types by establishing rules of taxonomy. Genera, families, orders, classes and phyla are the hierarchy in which their classification is arranged.
- Sets of species are included in the habitations (assemblages or communities) that regularly befall together, but which are resulting from various parts of the taxonomic pyramid (e.g. kelps, molluscs, and fish in a kelp forest habitat). Degree of similarities are reflected by their cataloguing and can also be organized in an order (biotopes, broad habitats and biotope complexes).
- The classification hierarchy of various parts of the habitation (e.g. intertidal mudflats, saltmarsh, rocky shores and sub-tidal mussel beds in an estuary) derives the Marine Landscapes which comprises sets of habitats that constantly occur together.

The methodology to cataloguing or characterization differs at each measure, each approving divergent features to match the necessities at that measure.

Sources of Marine Pollution from Ships

There are many causes of pollution occurring from shipcraft are:

- Oily-water seepage from shipcrafts
- Wastewater discharged from shipcrafts
- Tanker mishaps
- Unintentional spilling during terminal loading
- Garbage and Other Solid waste
- Marine Machinery Exhaust
- Sound pollution
- Ballast-water discharged from shipcrafts at ports
- Anti-fouling Paints

Impact of Pollution on Marine Bio-system

Fresh water and marine environment are being affected by spilled oil in the terms of surface resources and an extensive range of subsurface organisms connected with a multifarious food chain and also comprises of human food resources. The bodily damage may cause by the leaked oil and can damage the ecosystem in numerous means which directly affects the fauna and their habitations (such as covering birds or mammals with a deposit of oil) and the noxiousness of the oil itself which can be the poison exposed organisms.

The fur of seals and feathers of seabirds are contaminated by the drifting oils and destroys the waterproofing and insulating properties of the feather by clogging in it. The birds exhaust their fat reserves and become weakened when tries to maintain its body temperature. The replacements of these reserves are almost impossible because whenever the birds tries to fly in its weakened condition, bird has to carry as much as 20% additional body-weight in drenched feathers. Oil reduces the hatchability of the eggs when transferred to the surface of their eggs.

Oil pollution also affects the other marine lives such as it disrupts the succession of coral reefs, causes blockage of the gills of fishes, thus resulting into their death and hindering the procedure of photosynthesis of marine plants resulting to their end.

Figure 2: Penguins Covered in Oil

Impact of Marine Pollution on Public Health

Volatile chemicals airborne toxins causes the most immediate health concerns that lead to people complaining of indications like nausea and headaches, and distressing about chronic health issues like cancer, when oil is spilled into a residential neighborhood. The crude oil rarely evaporate into the air as they contain small amounts of heavy metals and stay with the oil as it leaks onto the water channels. These compound are lethal at higher quantities and can impair the nervous system even at lower quantities because it contain mercury, manganese, nickel, chromium, arsenic and lead.

World Health Organization (WHO) acclaims a specific acceptable intake of mercury in food of 0.3 mg, as Mercury is now identified as a probable danger on a provincial measure. Mercury gets accumulated in the meat of the fish which cannot be evaded by removing the skin or other body parts and they cannot be easily detected as it is odorless, invisible and. It acts as a neurotoxins in the human body and as per its mechanism it starts troubling the normal functioning of the brain and the central nervous system. Exposure to mercury can be principally hazardous for prenatal ladies, newborns and toddlers. In lesser quantities, mercury may disturb the development of an infant, may cause delay in walking and talking of the child, lessening concentration duration and leading to learning incapacities. Less frequent, high dosage of mercury and its exposure to prenatal and infants can lead to blindness, cerebral palsy, deafness, and mental retardation because, during the initial stages of life, brain of a child is still developing and absorbs nutrients. Fertility and blood pressure regulation can adversely affected by the mercury poisoning in adults and can lead to tremors, memory loss, numbness of the fingers and toes, and vision loss. Heart diseases may also be the main damage because of the exposure to the mercury.

The Dangers from Plastics Pollution to Marine Biota

The information related to the effect of plastics pollution on the ocean's ecological health is still very less. Nevertheless, the awareness related to their harmful effects on marine habitat is increasing. Primary dangers for the marine life is physical because of the entanglement of the wrapping ribbons, synthetic ropes and lines, or drift nets and eating of plastic remains. The amount of plastic pollutants in the marine ecosystem is increasing as the use of plastics continues to increase. Plastic particles in the stomachs of 8 of the 11 seabird species caught as bycatch, according to the study done in North pacific. Marine leftovers are distressing a momentous amount of species is indicated by the list of affected species. Almost 267 species are affected by this worldwide, which comprises of 44% of all seabird species, 44% of all seabird species, 43% of all marine mammal species and 86% of all sea turtle species. Since most of the victims are probable to go missing over vast ocean areas, as they either sink or are eaten by predators, therefore the problem remain highly underestimated.

Review of Literature

Derraik, (2002) reviewed the previous study about the harmful impacts of plastic leftovers on the marine

ecosystem by compiling together most of the literature published so far on the topic. Overpowering proof that plastic pollution is a menace to marine biodiversity, already at threat from overfishing, climate change and other kinds of anthropogenic disruption have been shown by this study. They suggested that there is a need for more research (particularly long term checking) to evaluate the genuine danger posed by plastic remains to marine species. This research delivers knowledge about contribution for preservation management and strengthen the origin for educational promotions. This would also offer marine scientists with better evidence that could be used to demand from the consultants more struggle to reduce the problem.

Habib, (2014) examined the role of oil pollution accountability agreements in the safeguarding of marine ecosystem through reparation and encounters facing the agreements in the course of implementation in appropriate oil pollution happenings. He also discussed and analyzed the relevant issues. His study focused on universal lawful background for deterrence of vessel-source oil pollution. He concluded that for the promotion of the universal understanding between developed and developing nations, there is a need of more efforts by the international maritime community exclusively in mechanical and economical backing for the developing nations, to attain global achievement in the deterrence and governance on vessel source pollution. He also suggested the establishment of a centralized authority whose responsibilities are clearly defined.

Sarić and Radonja, (2014) examined and analyze the reasons of marine pollution by noise in order to achieve better understanding, consciousness of the general public by recognizing its effects. They also create safeguarding preferences to avert more pollution of the Adriati Sea. Increase effort to investigate new feeds are caused by the escalated consumption of fossil fuels which are the basis of modern technological development and its inability of sustainability on known sources and resources. The spreading pressure waves from a particular source that flickers within different types of substances, produces sound. Sound waves moving through different media with different speed and the density and plays an important role because in dense media sound has a lower consumption, decrease its density slowly sound spreads faster.

Vikas and Dwarakish, (2015) discussed a review on description of coastal pollution, cause of coastal pollution, its impact and precautionary actions. They also reviewed, the damaging impacts of various constituents on the marine environment by gathering and reviewing applicable researches. There are some constituents which are degradable biologically and some are not. Several laws and policies are taken for averting marine pollution at the national and international levels. They concluded that, consciousness must be generated among the people about the effect of pollution.

Wilcox *et al*., (2015) worked to point out towards a number of prospects both for policy-based and consumer-driven variations in plastics use that could have perceptible influences for a range of environmentally essential arrangement that aid as indicators of marine ecosystem health. Their results represented establish the worth of expert elicitation techniques in offering insights where field experiments are problematic to carry out. Recognized variable effects of common remains objects on the health of marine wildlife, with entanglement by fishing-related gear, balloons and plastic bags evolving as the utmost danger to seabirds, sea turtles and marine mammals.

Onwuegbuchunam *et al*., (2017) conducted a microbiological and physico-chemical examination of samples of ships' wastewater to define the condition of marine pollution in the port environment. The microbiological and physico-chemical examination were based on specimens from two ports namely Apapa and Calabar ports. They also conversed the policy implications of the developed model. They found proof to recommend the use of an integrative model that combines a judicial agenda with input from persistent scientific study.

Conclusion: Due to the ocean pollution, lots of complicated problems are highlighted and caused problems to the human as well as animals. Ocean is the main part of the ecological cycle and therefore human should be understand the value and importance of the ocean. As we know that we the humans are the main factors for polluting the ocean, therefore, we have to be involved to get the solution by curtailing our way of living. It is important to preserve and protect the coastal environment legal and responsible applications of scientific knowledge on all aspects.

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