An Analysis of How Microplastics Impacts the Environment & People

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Abstract:

Microplastics are an ever-growing global environmental concern due to their bioaccumulation ability to impact the environment and human health. This paper will examine the sources of microplastics, their effects on the environment, wildlife, ingestion, entanglement, and specimens, and potential solutions to reduce the amount. Studies have shown that microplastics are present throughout all aquatic habitats and terrestrial soils and have been associated with dramatic effects on animals varying from gut blockage or ulceration to decreased reproductive success. Microplastics also accumulate in food webs, where they may transfer hazardous substances up the chain and eventually be consumed by humans at higher concentrations than what is found in the environment itself. The paper will recommend further research to protect the environment and people from the dangers posed by these tiny particles.

Keywords: *Microplastics, Entanglement, Ingestion, Bioaccumulation, Toxins, Food chain*

Introduction

Nowadays the species that consume plastic like fish, shrimp and other marine sources of food are ending up on our own plates. Scientists have discovered that microplastics are ingested and breathed by people in recent years, with an adult absorbing up to 121,000 micro particles each year (Cox et al., 2019). The consequences remain unknown, this is due to our lack of understanding of natural work, and our lack of connection. Recent Studies have also outlined that Microplastic particles have found their way inside human blood (Lang, 2022). Plastic currently runs our culture; practically everything we buy contains some type of plastic. Plastic fibers have had an impact on the drinking water of cities and villages all over the world (Orb Media, n.d.).

Fishing lines entangled 65% of the coral communities on the Hawaiian island of Oahu, and 80% of these populations were entirely or partially dead. Plastic is much more than food for animals; they become entangled in plastic. Even in the distant Arctic deep water, up to 20% of sponge

colonies have become entangled in plastic, and entanglements have risen with time (WWF International, 2022). Furthermore, due to the significant amount of plastic that enters our oceans every year, seabirds in the Pacific are utilizing plastic to construct nests (NHM, n.d). When animals consume plastic, it cannot be digested or passed and hence remains in the stomach. Plastic in an animal's digestive tract can impede digestion and result in a protracted and painful death.

Even if all plastic pollution imports into the ocean were to cease immediately, this deterioration process implies. Between 2020 and 2050, the amount of micro plastics in the oceans and on beaches will more than treble (WWF International, 2022). We must learn to reduce our plastic usage immediately.

Literature Review & Discussion

This section of the research paper contains extensive studies on the impact of plastic on ecosystems and people, and why animals consume plastic. Previous research and literature, as well as published reports within the last four years, were considered as sources.

Movement of plastic within an ecosystem

Plastics decompose quickly, with plastic bags having a 20-year lifespan and straws taking up to 200 years to degrade. Plastic water bottles may disintegrate for up to 450 years and 75% of them are not recycled, ending up in landfills, cluttering roadsides, and contaminating rivers and oceans. Coffee pods take more than 500 years to degrade and can emit hazardous levels of methane gas. 3.5 billion toothbrushes are sold worldwide and can degrade in 500 years or more. (Australia, 2021).

Microplastics are tiny plastic particles with a diameter of less than 5 mm that originate from both primary and secondary sources. The principal sources are polyethylene (PE), polypropylene (PP), and polystyrene (PS) particles in cosmetic and medical goods, although microplastics can fragment until they approach the size of dust particles (Begum, 2020).

Figure 1 shows microplastics to scale and a comparison of their size to many biological organisms.

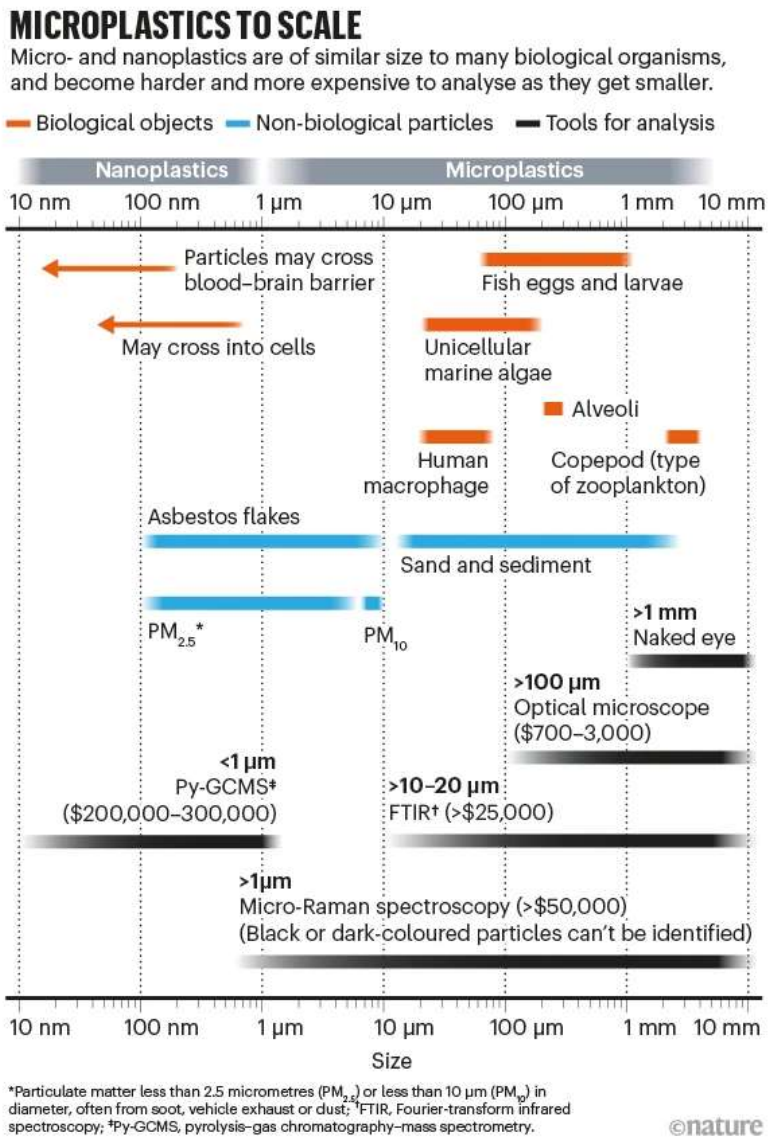

Figure 1. *Microplastic to Scale.* *(Lim, 2021)*

Plastics are long-chain organic polymer composites composed of chemical monomers sourced from fossil fuels that are combined to form repeating strands. They are present in biodegradable molecules such as deoxyribonucleic acid and starch, as well as more ecologically stable substances such as cellulose and chitin. Because synthetic polymers have only been widely made after 1950, they are more resistant to biodegradation (Hale et al, 2020). Untreated domestic discharge, leaks of plastic resin powders or pellets used for airblasting, and sewage sludge containing synthetic fibers or sedimented microplastics all contribute to the presence of primary

microplastics in the aquatic environment (Horton et al., 2017). Secondary causes of microplastic contamination include microplastics released during municipal solid waste collection and disposal operations, as well as human behaviors such as littering. Large plastic items and their breakdown products can enter aquatic habitats by wind dispersal, soil erosion, and surface runoff. Landfills, wastewater sediments and effluents, industrial facility losses, plastic agricultural mulch, polymer coatings, and vehicle tire abrasion are all examples of land-based microplastic sources. Historically, landfills have been situated in low-lying areas, but as sea levels rise, these areas will experience more flooding and erosive conditions, which will result in an increase in the amount of plastic waste that is dumped. Construction and demolition landfills (C&D) are places where debris from natural catastrophes like hurricanes, tsunamis, and wildfires is stored. C&D trash is considered less dangerous than other wastes, however it may include significant levels of additives in plastics (Hale et al., 2020).

In reviewing the literature, the results showed that most of research has been done on Aquatic Environments. Once plastic enters terrestrial habitats, rivers and lakes convey it from deep inside the soil to the sea, making them major contributors to ocean pollution. It is estimated that 1,000 rivers account for more than 80% of global annual riverine plastic emissions into the ocean, which range between 0.8 and 2.7 million tonnes per year, with small urban rivers being among the most contaminated (unep.org, n.d.).

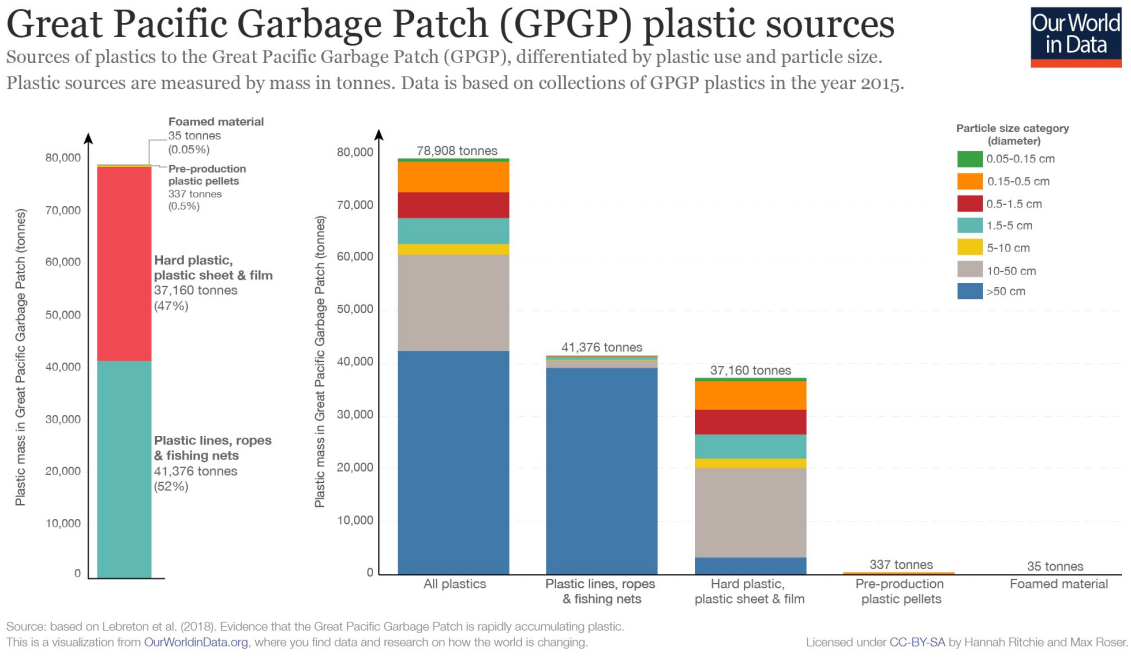

Figure 2. *Great Pacific Garbage patch Plastic Sources (Lim, 2021)*

Effects of Microplastic on Ecosystems

The purpose of this study was to identify the impact of microplastic on the environment and how it moves through an ecosystem. Ingestion of microplastics by a number of species can deplete energy reserves, as well as bioaccumulate and biomagnify along the food chain. It is also prone to adsorbing a wide range of compounds, including heavy metals, and it has the potential to convey priority contaminants to aquatic life. The second part of the challenge is determining the consequences of microscopic grains of plastic on people or animals. Microplastics have been exposed to animals in over 100 laboratory investigations, but their findings are difficult to interpret due to their variety of shapes, sizes, and chemical compositions (Lim, 2021).

Animals are affected by plastic in two ways: either eat it or become entangled in it. A vast variety of marine animals, reptiles, birds, and fish have been entangled, leading in acute and chronic injury or death. Dissection of beached corpses frequently yields evidence of consumption, and considerable quantities of plastic sheeting and plastic bags have been found in the stomach chambers of turtles and toothed whales. Debris ingestion has been found in 46 (56%) of the cetacean species studied, with rates as high as 31% in some. Closely related species' vulnerability can be influenced by differences in their eating patterns

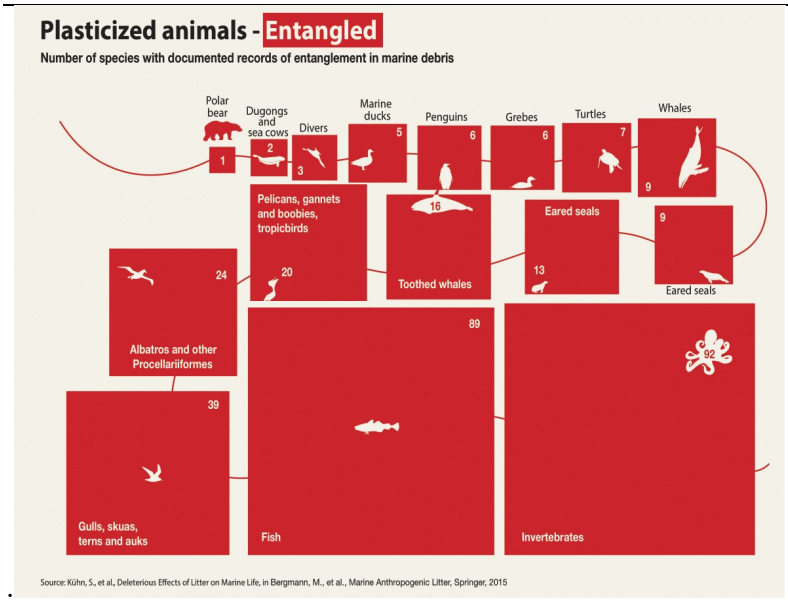

Figure 3 : *Number of species with documented records of entanglement in marine debris. (UNEP, 2017)*

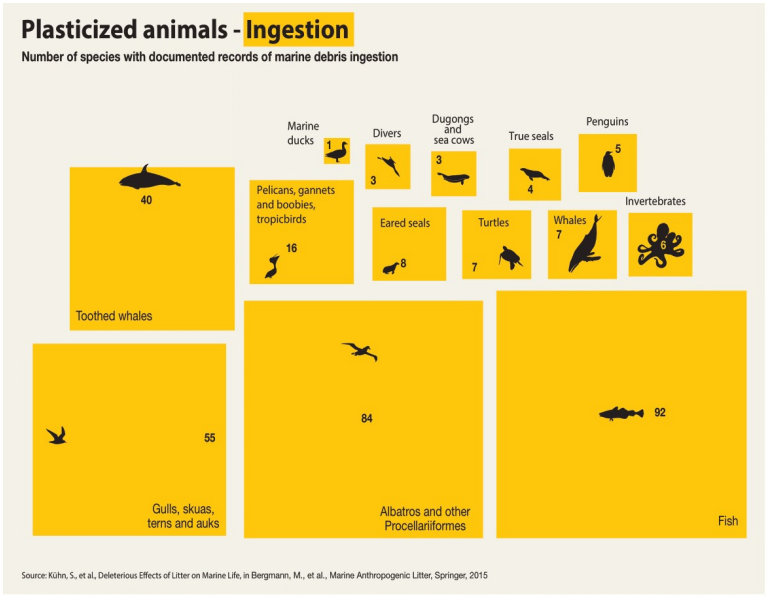

Figure 4: *Number of species with documented records of marine debris ingestion. (UNEP, 2017)*

The most crucial information in this book is that coral reefs are especially vulnerable to damage by abandoned, lost, or otherwise discarded fishing gear (ALDFG). ALDFG is most noticeable in shallow tropical reefs, although it may also be found on continental borders. Sea rubbish tends to congregate in mangrove forests, which may act as a partial sink for plastics. Zooplankton are a diverse group of marine vertebrates and invertebrates, including those that spend their whole life cycle (holoplankton) and those with larval stages (meroplankton). Many feed on phytoplankton and transfer this energy up the food chain, increasing the chances of coming into

contact with microplastics. Due to the difficulties of regulating or monitoring numerous environmental conditions, such as eating history, field investigations on the biological effects of microplastics are limited (Phuong et al., 2016). As a result, field-based microplastic research is currently focusing on the presence/absence, amount, and distribution of microplastics in the marine environment and marine organisms (Zara L.R. Botterell, 2018).

An experiment was set up to test if microplastics migrate down the food chain by contaminating microplastics by soaking them in Sydney Harbour for two months and then feeding them directly to beach hoppers, which are small jumping crustaceans at the bottom of the coastal food web. The microplastics were easily eaten as part of the beach hoppers' diet, but after five days, they caused weight gain, reduced hopping ability, and, in some cases, mortality. Beach hoppers may not be able to locate shelter as fast if they can't hop as far or as high, placing them at risk of being eaten or drying out in the exposed conditions of sandy beaches. Gobies are medium-sized predators that dwell in shallow waters and play a vital role in connecting coastal ecosystems to the deeper ocean (Culum Brown, Williamson and Tosetto, 2016).

Mariana Fuentes of Florida State University led a research that discovered and measured the amount and kind of microplastic at loggerhead nesting sites in the northern Gulf of Mexico, between St. Joseph State Park and Alligator Point in Florida. The temperature of the sand during egg incubation affects the sex of sea turtle eggs, with more females and more males being produced in warmer sand than in colder sand. Microplastics may also raise the temperature of sand if the plastic pigment is black, tipping the balance of genders toward producing only females and reducing the chances that the species will successfully reproduce in the future. These short studies may not often reveal minor changes over time, leaving a gap in our knowledge (Fuentes, 2018).

Rillig (2012) was the first to investigate soil microplastic pollution. Littering, sewage sludge and compost additives, plastic mulching, irrigation and floods, and air deposition are all methods for microplastics to enter the soil. Microplastics can degrade soil quality and nutrient cycling by altering the physical properties of the soil, lowering fertility, and disrupting the existing microbial communities. Furthermore, micro-plastics have the ability to adsorb a wide range of potentially hazardous chemicals.

Lumbricus terrestris, an anecic earthworm, was used in an experiment to demonstrate how the creatures trasported plastic. Four mature earthworms were utilized in this study, and four commercially available polyethylene (PE) microplastics were chosen for this investigation. The

presence of earthworms had a considerable favorable influence on the movement of microplastic particles away from the topsoil, and the degree of this effect was considerably changed by microplastic size. Throughout the 21-day trial period, microplastics of all sizes entered the middle and bottom soil layers, with the smallest particles (PE-1) moving the most into the bottom soil layer. There was also a clear overall influence of earthworm presence and particle size on microplastic dispersion at different soil depths. It is thought that soil texture is an important factor in determining the effect of microplastics on soil characteristics, but further study is needed to test this hypothesis (Rillig et al, 2017). Although soil macrofauna are known to be litter converters and ecosystem engineers, the impact of microplastics on isopods and snails is unclear. Numerous studies have demonstrated that various earthworm species, including Lumbricus terrestris, Eiseniaandrei, and Eisenia fetida, may consume microplastics. Although microplastics have been demonstrated to have a small influence on earthworm fitness in the natural soil environment, their ecological concern cannot be overlooked (Baile Xu et al, 2020).

Other studies concentrated on Cryptopygus antarcticus, a species of "collembolan" commonly known as Antarctic springtail and an essential component of all soils worldwide. Elisa Bergami with Ilaria Corsi of the University of Siena discovered creatures feeding on algae, moss, and lichens that developed on polystyrene foam, which is made of the same polystyrene that is used in everyday packaging. Infrared spectroscopy disclosed polystyrene micro-fragments in the digestive tract of tiny animals such as collembolans, implying that collembolans may travel and redistribute microplastic fragments throughout a whole length and depth of the soil, potentially having a negative impact on plant-soil interactions. Scientists must quantify these effects and determine how microplastics integrate into the global matter cycles (Caruso, 2020).

Additionally, microplastics can impact carbon and nitrogen turnover in terrestrial ecosystems by influencing plant development and influencing vegetation carbon stores. A trial with 10% PLA addition revealed a decrease in maize biomass and chlorophyll content in leaves, but PE had no impact (Wang et al. 2020). PLA and its intermediate metabolites may influence plant development by altering the structural qualities of soil and microbial populations. PE, LDPE, and PLA have been shown to have a detrimental effect on maize root growth at all growth stages, as well as lower biomass accumulation of maize roots and buds. Microplastics also limit rye-grass germination rate and biomass, watercress germination rate, rice seedlings, and kidney bean growth (Meng et al. 2021). Microplastics have a negative influence on the germination and development of most plants, and biodegradable plastics have a greater impact. They clogged root

pores, restricted root development, accumulated in angiosperm seed coats, and impeded water absorption. Li et al. (2019) discovered that MPs were strongly absorbed and enhanced in lettuce roots, moved to the aboveground, and accumulated in stems and leaves during indoor culture tests. Nanoplastics with lower particle sizes penetrate tobacco cells via endocytosis, and microplastics can infiltrate plants through gaps generated during lateral root development (Yao, 2022).

Microplastics in soil are difficult to study due to their slow movement and decomposition. They have a high carbon content and will decay slowly, causing microbial immobilization. Contaminant transport or adsorption can add diverse qualities to soil, and harmful compounds may be carried into soil with these microplastic particles (Rillig, 2019). Sadly, little study has been conducted on the ecological consequences of microplastics on soil. Further research on the dangers of this class of pollutants is needed to direct efforts to address their prevalence in the environment.

Reason behind the Consumption of Microplastic

Plastic in the environment can have significant implications; thus, we must understand why creatures in a recognized habitat choose plastic as a food supply, nesting material, and so on. The finest illustration of this is observed in marine birds, who are especially sensitive to plastics being mistaken for natural prey. Plastics were discovered in the bellies of most deceased laysan albatross (Phoebastria immutabilis) chicks on the Pacific Ocean's Midway Atoll, and plastic particles are so common in the bowels of northern fulmars (Fulmarus glacialis) that they have been chosen as a key predictor of plastic pollution in the OSPAR region. New evidence of plastic transfer from prey to predator has emerged, most notably from the study of regurgitated food pellets from a great skua (Stercorarius skua) colony (HANEY, 2020). When plastic is swallowed, it can clog and physically harm the digestive tract, limiting the birds' capacity to digest and feed. Plastic's surface also absorbs hazardous substances from its surroundings, which are deposited inside the animal and absorbed into the bloodstream. This accumulates in the tissues over time and has a negative impact on the bird's hormone balance, immunological system, and capacity to breed. Additionally, when birds vomit food to feed their young, they are absorbing harmful plastic before they even fly (Begum, 2019).

Figure 5: *Stomach content of a Shearwater chick on Lord Howe Island.*

(Davis, 2019)

According to research, brown boobies can serve as markers of the degree of plastic waste in the tropics. Researchers from the University of Tasmania and the Museum investigated the quantity of plastic discovered in brown booby nests from Australia's west coast to Brazil's east coast. There was just a tiny overlap between what the crew found on the beaches and what the birds used as nesting material. This shows that the boobies had preferences, but what caused this variance is yet unknown (Davis, 2018).

Because of this, The number of flesh-footed shearwaters on Lord Howe has declined dramatically, according to current population estimates, albeit not all species are suffering equally. Plastic is swallowed by Australian wedge-tailed shearwaters, however they consume far less than other species and it does not appear to have a significant negative impact on their body proportions (Pavid, 2018). In underwater ecosystems, plastic is consumed to great extents. Sea cucumbers, for example, can eat up to 138 times the amount of plastic predicted given its dispersion in the soil. In a study Gweek, Cornwall, UK, ten (32%) of the individual fish analyzed included 18 verified microplastic particles. The majority (72%) were fibres, with fragments accounting for the remaining 28%. The most prevalent hues were orange and green (11%), red and blue (28% each), black (22%), and black and blue (18% each). The most common particles found were black (27%), clear (transparent) and red (both 23%), blue (15%), and orange (12%). (Nelms et al, 2018). In addition to smelling and seeing, animals use other senses, such as echolocation, to locate food. According to a 2017 BBC article, several deceased sperm whales and certain other toothed whales have been found with stomachs stuffed with plastic bags, vehicle parts, and other human rubbish (Gabbatiss, 2017). Figures 6 and 7 indicate the species harmed by plastic, as well as the reported cases (Tekman et al, 2022).

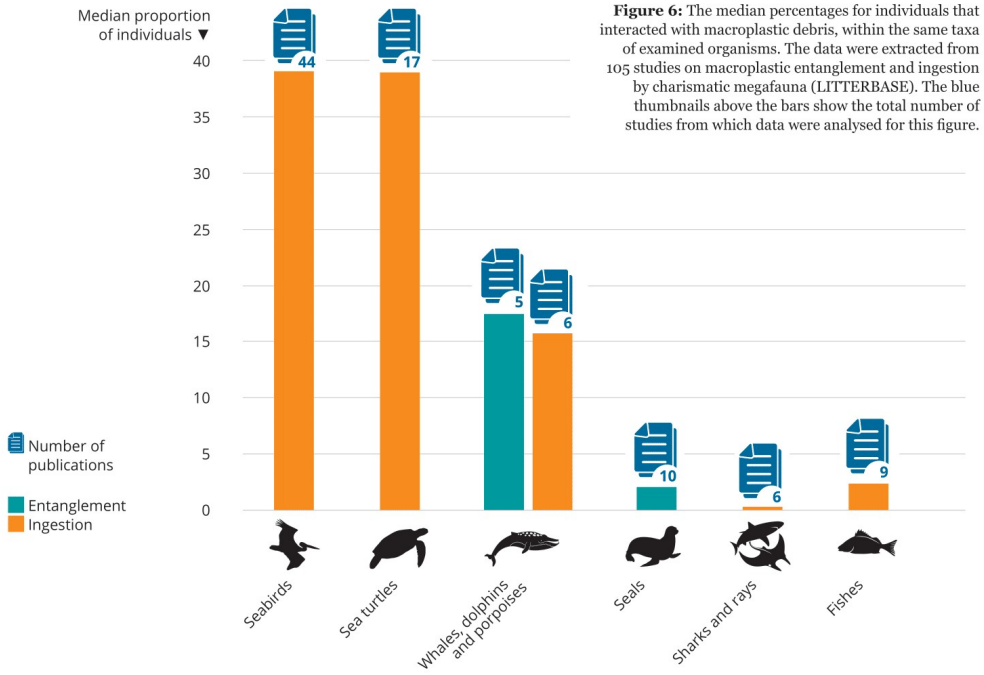

Figure 6: The median percentages for individuals that interacted with macroplastic debris, within the same taxa of examined organisms. The data were extracted from 105 studies on macroplastic entanglement and ingestion by charismatic megafauna (LITTERBASE). The blue thumbnails above the bars show the total number of studies from which data were analysed for this figure.

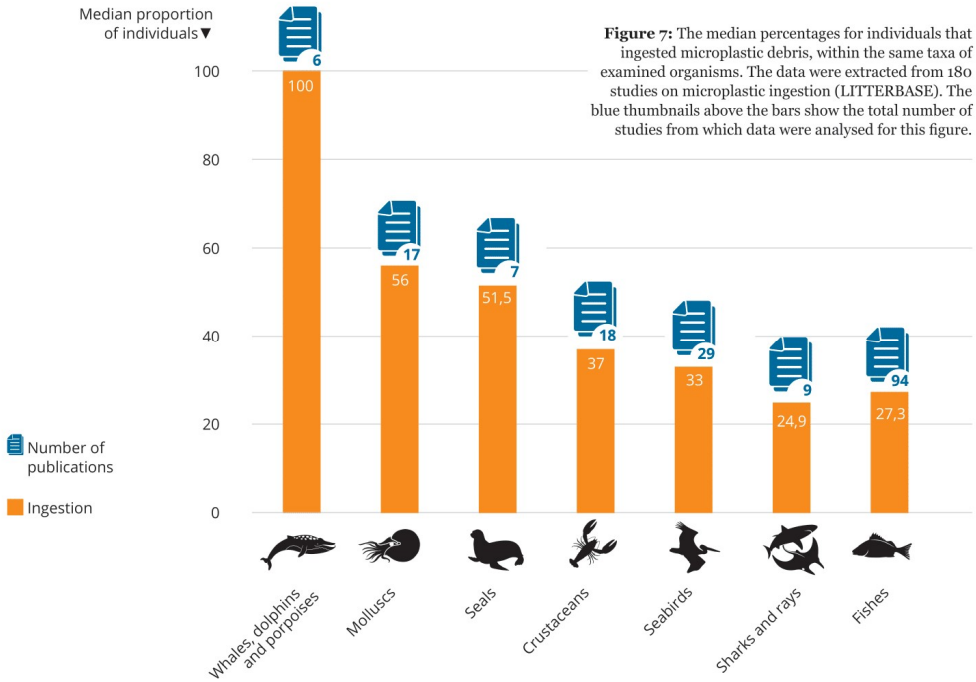

Figure 7: The median percentages for individuals that ingested microplastic debris, within the same taxa of examined organisms. The data were extracted from 180 studies on microplastic ingestion (LITTERBASE). The blue thumbnails above the bars show the total number of studies from which data were analysed for this figure.

Microplastic-pollutant complexes exacerbate the dangers of pollutants that are attached to the microplastic, resulting in physiological stress, morphological abnormalities, immobility, neurotoxicity, oxidative damage, enzymatic dysregulation, reduced rate of growth, decreased

chlorophyll concentration, altered immunological response, genotoxicity, and death. According to studies, contaminants desorb in the guts of living organisms before going on to the systemic circulation, gastrointestinal epithelia, and other tissues (Amelia et al, 2021).

Rafting is the transfer of organisms adhering to floating natural objects such as wood, macroalgae, and pumice. Floating plastics have expanded and offered a new substrate, potentially altering the populations of marine creatures. Macro and microplastic trash are home to a broad array of creatures, some of which are unique from the surrounding saltwater. Microplastics can stimulate the attachment of bigger creatures that utilize chemical and/or physical properties as a cue to settle, as well as the dissemination of viruses that can endanger people and marine animals. A variety of jellies with medusa and associated polyp phases were found in DNA sequences recovered from microplastic in the Atlantic (GESAMP 2016). Experimental findings indicate that planulae preferentially cling to PEsheets over a variety of natural substrates, causing significant social and economic costs to the fisheries (Kershaw, 2016).

Microplastics might be mistaken for natural food by a species or passively consumed during regular feeding behavior. Zooplankton have been observed to consume microplastics ranging in size from 0.5 to 816 mm, with small microplastics being consumed more frequently than bigger microplastics. Meroplankton showed size selectivity as well, with Pacific oysters' larvae of all ages able to eat 7.3 mm polystyrene beads but only the bigger larvae able to ingest 20.3 mm beads. Microplastics can also appear as irregularly shaped pieces as a result of weathering and decomposition of bigger polymers. According to studies on microplastic ingestion in the field, the majority of swallowed microplastics were fibres, and pale-colored microplastics may boost bioavailability owing to similarity to prey items. Adsorption causes microplastics to infiltrate the marine environment and create a coating of organic and inorganic chemicals. Polyethylene (PE), a lower density microplastic, is anticipated to be available at the ocean's surface and become accessible to organisms at various levels of the water column. Yet, microplastics are expected to vary in density and buoyancy due to transformational processes like as biofouling and animal ingestion/egestion, making them accessible to benthic suspension and deposit feeders. The chemical makeup of microplastics is a significant feature, and their hydrophobic qualities can contribute to the development of aggregations and integration within marine aggregates. Externally, these assemblages have been observed on copepod extremities, swimming legs,

feeding equipment, antennae, and furca, as well as inside the gastrointestinal tract. The anterior midgut of certain copepod species was discovered to collect microbeads, which were then ingested within compact feces pellets (Botterell, 2019).

According to recent studies, in Henderson one of the world's most polluted beaches. Approximately 500,000 hermit crabs are likely to be captured and killed by plastic debris on the islands, although only 60,000 are thought to be killed. As plastic washed up on the beaches, hermit crabs discovered the ideal trap, from little drink bottles to large fishing buoys and five-gallon gasoline barrels. Since plastic is so slick, crabs are unable to climb out once they have fallen in (Davis, 2019). They have also used plastic and litter as shells (Wild Thailand, 2013).

Effects of Plastic on Humans

Several commercial fish species consume microplastics, but little is known about the consequences of their intake. Only data from contaminant transmission and endpoints, such as buildup in tissues and changed predatory behavior, may be extrapolated from laboratory feeding trials utilizing non-commercial fish species. Microplastics can be ingested with feces, retained in the digestive tract, or translocated between tissues. There is inadequate data to assess the possibility of these pollutants being transferred to fish meat and hence becoming available to predators, including humans (Kershaw, 2016).

More than 690 marine species have been reported to have microplastics, ranging in size from microscopic zooplankton to gigantic marine creatures. People eat entire seafood species including mussels, oysters, shrimp, crabs, and certain small fish, which are where the majority of the microplastic found in seafood originates from. Microplastics have been found in the digestive systems of several commercial species, including plaice, herring, and Atlantic mackerel (Scombrus scombrus) (Pleuronectes plastessa). Microplastics have been found in scampi, also known as spider crabs (Maja squinado), and Norwegian lobsters (Nephrops norvegicus). Moreover, undigested brown shrimp and tiger prawns (Penaeus semiculcatus) have been shown to contain microplastics in their shell and muscle tissue (Crangon crangon). A laboratory research suggests that at high exposure levels, the edible seaweed species Fucus vesiculosus may get coated with microplastic particles. There is a sizable background level of plastic pollution in both marine and terrestrial environments, and during processing and packaging, microplastics may enter packaged salt and other food items that are wrapped in plastic (Azoulay, 2019).

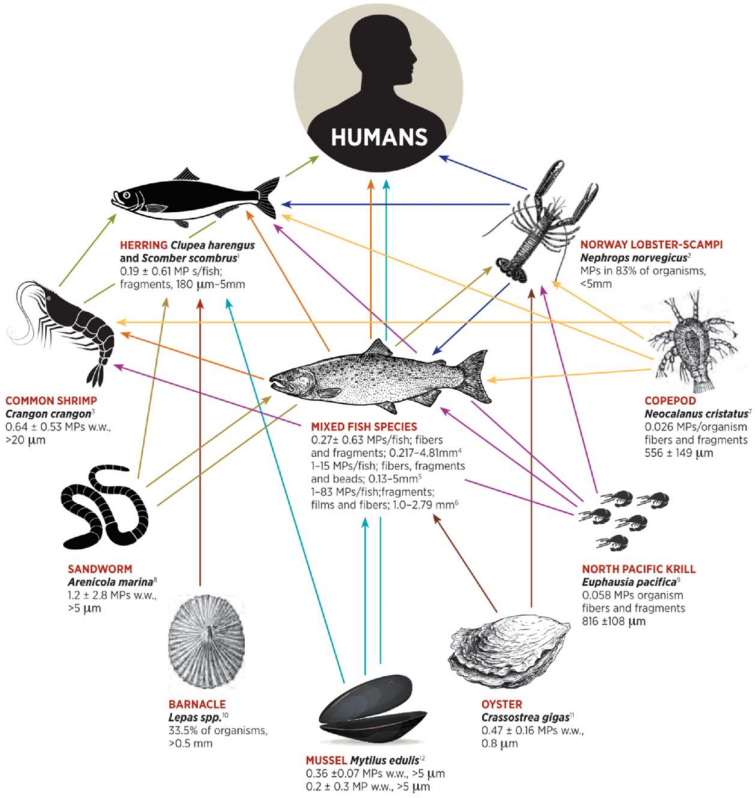

Figure 8: *Example of Multiple pathways for Human Exposure to Microplastics through Seafood.*(Azoulay, 2019)

Microplastics can enter the human body in two ways: orally through the mouth and into the stomach, or airborne through the nasal passages and into the lungs. Due to the possibility that microplastic particles might go from the digestive system to other tissues and function as a vehicle for hazardous substances, eating microplastics raises health concerns (Azoulay, 2019).

Plastic fragments were discovered in 17 of 22 blood samples taken from healthy adult participants in a recent study. One-fourth of the samples contained polystyrene, PET plastic, and polyethylene. Moreover, the attachment of microplastics to red blood cells' outer membranes may impair their capacity to transport oxygen (Carrington, 2022) (Leslie et al, 2022).

Since that microplastics may cross the placenta and enter breast milk, this finding of microplastics in blood has significant repercussions for women who are pregnant. 75% of the breast milk samples from 34 healthy mothers in Rome, Italy, contained microplastics. Although it has been determined that microplastics are harmful to human cell lines, lab animals, and marine life, it is still unknown how they will affect real humans. Recent research has revealed that

microplastics may be present in cow's milk and that babies who are bottle-fed likely consume millions of microplastics every day. The breast milk samples were collected, stored, and examined without the use of plastic. To exclude out contamination, control samples were also processed (Carrington, 2022).

Acute or chronic inflammation can be brought on by airborne plastic particles because of their size, shape, and interactions with various biological structures. Because of its smaller size, a microplastic particle may be deposited further into the lung, where it may make contact with the epithelium and subsequently diffuse or actively be taken up by cells to go throughout the body. The health effects of inhaled chemical additives and accumulated toxics in plastic particles are not yet known, and bio-persistence and dosage can be danger factors. (Azoulay, 2019) (Revell, 2021). In 11 out of 13 tissue samples from 13 patients undergoing surgery, microplastics were discovered, with polypropylene and PET being the most common types of particles. In two prior studies, microplastics were found in comparably high amounts in lung tissue taken from corpses (Carrington, 2022).

Methodology

This section provides an overview of current sampling and analytical methodologies for identifying microplastics in complex environmental media, allowing the reader to assess the completeness and correctness of the literature reporting their existence in the global environment. This study uses a combination of primary and secondary research. Secondary data was gathered from several studies on the subject of microplastics. Nonetheless, original research, primarily field research, was also used. This paper reviews, in detail, a range of key studies concerning microplastic pollution in environmental matrices. Here, 30 papers published between 2016 and 2022 are reviewed. However during field research, dead or diseased organism specimens were collected and their gut content studied this included animals like seagulls, pufferfish and mollusks. This study examines a number of important research on microplastic contamination in environmental matrices. The microplastic content of organisms can be determined in whole or on individual organs when water is sampled by towing a mesh net. Microplastics (10 micrometers) and nanoplastics (100 micrometers) may have more toxicological repercussions than those found in the stomach. Precautions must be taken to avoid and monitor contamination by nonsample-related microplastics during sample collection, processing, and detection. The bulk of features of Microplastics and their impacts were covered

by mixed study, resulting in a research deficit on two significant aspects, plastic in terrestrial ecosystems and the repercussions of humans eating plastic.

Research Questions

1. What are the consequences of plastic pollution on the ecosystem and people?

2. Why do creatures in an ecosystem seek out plastic as a food source, material for nesting, etc.?

Research Objectives

1. To investigate in depth how plastic degrades and spreads within an ecosystem and its consequences towards the ecosystem & People.
2. To look into the reason behind the attraction of Organisms to plastic as a food source, nesting material, and others

Limitations and Delimitations*:*

Limitations:

1. Limited access to data and research on microplastics in terrestrial environments due to the relatively new nature of the research topic.

2. Limited resources to conduct research on microplastics due to the cost of the necessary equipment.

3. Limited understanding of the effects of microplastics on human health due to lack of research. Limited access to research sites.

4. Limited understanding of the long-term effects of microplastics on humans.

Delimitations:

1. The research will focus on microplastics in marine environments, excluding other environments such as freshwater.

2. The research will focus on the effects of microplastics on marine life, including other potential effects on humans and the environment.

3. The research will focus on the sources of microplastics, excluding potential solutions to the problem.

4. The research will focus on the most commonly encountered types of microplastics, such as polyethylene and polypropylene.
5. Few Specimens collected in the field of study, for example, Aquatic and desert environments will be discussed.

Conclusion

In conclusion, microplastics are a growing environmental issue that is having increasingly devastating effects on both the environment and people. They have been found in numerous places around the world and are continuing to accumulate at alarming rates, this has resulted in many organisms ingesting and it can be lethal. Plastic as a material that takes many years to breakdown can find its way in the food chain in many different ways. Microplastics negatively impact aquatic ecosystems, food chains, and human health due to their small size which makes them difficult to detect or remove. Microplastics can also entangle wildlife, leading to injury or death. Every aspect of plastic from its components, color, size to texture, has shown to attract wildlife. Organisms like algae, bacteria, krill and others, inhabit surfaces or feed on the biofilm on the plastic and thus find ways into the food chain. Research has shown that exposure to microplastics can have a range of impacts on human health through direct contact or ingestion. While more research is needed to understand the full extent of their effects, it is clear that reducing plastic consumption is an important step towards mitigating the impact of this global pollution problem.

Reflection

This research paper on microplastics and its impact on wildlife and people was a very interesting and eye-opening experience. The research conducted, revealed the magnitude of the problem and the potential consequences of microplastics on both wildlife and people.

The research revealed that microplastics are a major environmental concern due to their ability to travel long distances and accumulate in the environment. The research also revealed that microplastics can have a negative impact on wildlife, such as fish, birds, and marine mammals. Microplastics can be ingested by animals, leading to a variety of health issues, including digestive blockages, organ damage, and even death. In addition, Microplastics can be ingested by humans, leading to a variety of health issues, including digestive blockages, organ damage, and even death. In addition, microplastics can also be absorbed through the skin, leading to a

variety of health issues, including skin irritation and allergies. Overall, this research paper on microplastics and its impact on wildlife and people was a very informative experience. It revealed the magnitude of the problem and the potential consequences of microplastics on both wildlife and people. It is clear that more research needs to be done to better understand the full extent of the problem and to develop strategies to reduce the amount of microplastics in the environment.