United Nations Environment Programme

&MUN XII

Note from the In-Room Director

Hello Delegates,

Welcome to &MUN XII! My name is Emerson Rosenthal-King and I will be your In-Room Director for the *United National Environment Programme*. To tell you a little about myself, I have been involved with the International Relations Club since Freshman Year. I've chaired or directed at our middle school and high school conferences (WMIDMUN and WMHSMUN) and served as this year's WMIDMUN Secretary-General. Outside of IRC, I am involved in Young Democrats and my fraternity. In my spare time, I enjoy reading, watching bad comedies, and exploring Colonial Williamsburg.

As a political nerd, I could not be more excited about directing this committee. While not always easy, I expect everyone to acknowledge and respect differing opinions. I have no doubt each of you will be able to do this.

As we move forward, put yourself in the mind of your nation: what decisions will be best for your state? How can these decisions be paired with what is best for your key allies? These will all be important considerations as you ponder where the UN should go next. I'm looking forward to a week of vigorous debate and fun!

Best Regards,
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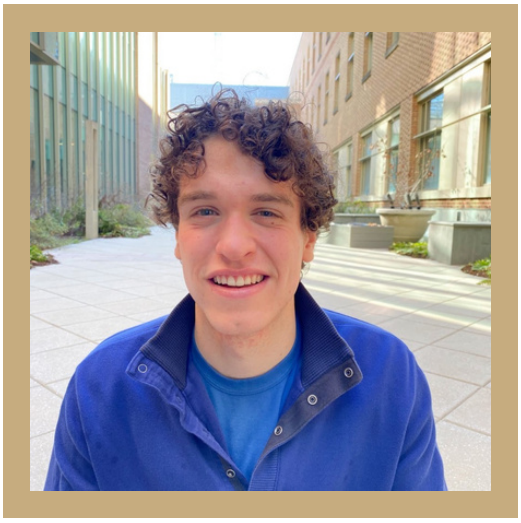


Background

Introduction

The United Nations Environment Programme's (UNEP) mission is to "inspire, inform, and enable nations and people to improve their quality of life without compromising that of future generations." It seeks to achieve this mission through addressing its six areas of focus: climate change, post-conflict and disaster management, ecosystem management, environmental governance, harmful substances, and resource efficiency/sustainable consumption and production. While examining these key factors in environmental wellbeing, the UNEP is becoming increasingly concerned with the vast environmental degradation occurring across the globe, particularly noting that it is imperative to pursue further international collaboration in these efforts. Nowhere in the world is this degradation more evident than in the world's oceans, which are currently facing a crisis of pollution and a related lack of biodiversity. Therefore, it is up to delegates in this committee to consider all of the six pillars in collaboratively addressing environmental concerns in international waterways.

History of the UNEP

The UNEP was founded in 1972 to "monitor the state of the environment, inform policy-making with science, and coordinate responses to the world's environmental challenges." In 1975 the UNEP organized the first World Environment Day, which has been celebrated every June 5th since. Over the years, the UNEP has been instrumental in making agreements such as the Convention for the Prevention of Pollution from Ships (MARPOL '73), the Convention on Migratory Species (Bonn Convention '79), and the Cartagena Convention ('83).

The UNEP has hosted numerous conventions all focused on different aspects of impending climate problems. Since its conception, these conventions have become larger and more widely publicized. The UNEP currently encompasses membership from 193 nations, and was upgraded in 2012 from a governing council of 58 member states to an environmental assembly consisting of all UN member states.

Recent Successes

In 2023, while many devastating climate events occurred across the globe, the UNEP took essential steps in seeking meaningful change to the course of environmental degradation and climate change. In March, the UN General Assembly adopted a resolution asking the International Court of Justice (ICJ) to determine if nations have a legal obligation to take action in the fight against climate change. The ICJ has yet to publish a decision, but an advisory opinion confirming a legal responsibility can spur nations into action. A report by the UNEP also found that since 2017, climate-related lawsuits have more than doubled, implying that climate advocacy in legal settings is beginning to be recognized as legitimate.

45 nations so far have joined the Freshwater Challenge, the most significant global effort to restore rivers and wetlands. This challenge aims to support the restoration of more than 300,000 km of degraded rivers and more than 350 million hectares of degraded wetlands. The country-led initiative combines different levels of government, from high-level policy reform down to local grass-roots organizations, to effectively restore freshwater sources. This initiative provides a strong example of international support for individualized national action in addressing the issue of polluted waterways.

In June of 2023, World Environment Day highlighted potential solutions to plastic pollution, and the historic "High Seas" treaty was adopted. World Environment Day 2023 was hosted by Côte d'Ivoire and emphasized the need for a "whole-of-society" approach. The campaign had been preceded by a resolution establishing the intergovernmental negotiating committee to act as a legally binding global instrument to end plastic pollution. The High Seas Treaty, signed in September 2023, established joint governance over the vast majority of the Ocean to tackle environmental degradation and losses in biodiversity globally.

COP 28 ended with nearly 200 nations agreeing to take climate action to keep the global temperature limit at 1.5° C. The UN climate change conference held in Dubai was the biggest, hosting more than 150 heads of state and government. The conference recognized that efforts to reduce greenhouse gas emissions and strengthen climate change resilience in the global community were falling short. The conference ended with a decision to increase efforts across all action areas unilaterally.

Topic 1: Reducing Aquatic Pollution

Water pollution is not a new phenomenon. Since our earliest ancestors, bacteria and disease have contributed to contamination of water supplies. As the world has become increasingly interconnected and industrialized over the last 500 years, such contamination has only been exacerbated. New forms of pollution, particularly industrial waste, have severely compromised the health of our waterways, and subsequently, human beings. Today, unsafe water kills more people each year than war and all other forms of violence combined. Addressing this issue is critical, as usable water sources are finite, with less than 1% of the earth's freshwater being accessible to humans. Without action, the challenges will only increase as access to safe drinking water will continue to decrease while global demand for freshwater is expected to increase by nearly a third by 2050.

Understanding the mass scale of water pollution is challenged by a lack of transparent, globally-sourced information. The UNEP has been working to combat this lack of transparency through engaging in long-term data collection efforts, including a study presented in 2021 where researchers surveyed over 75,000 bodies of water throughout 89 different countries and ultimately determined that over 40% were considered severely polluted. This data was gathered in conversation with the international community's failure to remain on track to meet Sustainable Development Goal (SDG) 6, which seeks the "availability and sustainable management of water for all" by 2030. Thus, the international community and the UNEP in particular need to consider how to further collect and disperse up-to-date data that provides information on the scope of the problem at the global level to further encourage actions towards previously established goals of achieving clean waterways.

It is also imperative to understand that pollution occurs in two forms; point source and nonpoint source. Point source pollution comes from a singular source of which it can be traced back to, such as a factory or sewage treatment plant. Nonpoint source pollution refers to a combination of pollutants from a broad area instead of coming from specific, identifiable sources. A common example of nonpoint source pollution is runoff, as before entering waterways, it accumulates chemicals, debris, and further pollutants from areas such as yards, parking lots, and construction sites. Understanding the existence of nonpoint source pollution is critical to addressing this topic because it shows that while a lot of pollution is from companies and activities that can be specifically pointed to, pollution is also a broader issue beyond this that can include issues that are caused by compounding individual human activities.

Plastic Pollution

Plastic debris poses a significant threat to marine life. Marine animals such as seabirds, fish, turtles, and marine mammals can become entangled in plastic waste or ingest it, leading to injury, suffocation, starvation, and death. Large plastic items such as fishing nets and bags can entangle animals, while smaller plastic fragments, known as microplastics, can be mistaken for food. Plastics in waterways can also disrupt aquatic ecosystems and food chains; when marine organisms ingest plastic debris, the plastic bioaccumulates and

biomagnifies in the food chain, leading to toxic effects and ecosystem disruption. Plastic pollution also alters habitats, smothering coral reefs, seabeds, and other sensitive ecosystems. Plastics can release harmful chemicals and additives into the water, posing risks to aquatic organisms and human health. Additives such as phthalates, bisphenol A (BPA), and flame retardants can leach from plastics, contaminating water and potentially causing endocrine disruption, reproductive problems, and other health effects for marine life. Plastic debris also acts as a vector for transporting invasive species, including microbes, algae, and tiny marine organisms. These invasive species can hitchhike on floating plastic debris and spread to new areas, potentially disrupting native ecosystems and outcompeting local species. 12 million tonnes of plastic make it into the ocean each year, and 80% of all marine debris is plastic.

Every year, more than 460 million tons of plastics are produced globally, and only nine percent of it gets recycled. Plastic waste is generated during plastic products' production, consumption, and disposal. After being released into the environment, the plastics break down into microplastics and nanoplastics, which are transported to the ocean and atmosphere and remain in the environment for hundreds of years.

The majority of plastic that ends up in the ocean gets there through littering, illegal dumping, improper waste disposal, leakage from landfill sites, and improper disposal of personal care products. Approximately 36 percent of all plastics are used in packaging, which includes single-use plastic products for packaging and beverage containers. The UNEP has proposed redesigning products and packaging to use less plastic, thus promoting the idea of reuse, recycling, reorienting, and diversifying the system. These waste challenges are only exacerbated by increasing tourism around the world, as noted through the case of Jyrgalan, a village in the Kyrgyz Republic, which recently inaugurated its first waste collection facility with aims to address the growing waste challenges brought on by the rise in tourism. Similarly, the efforts of fishers in Greece to stop littering and recover marine plastic demonstrate the potential for individuals and industries to play a proactive role in combating plastic pollution. As in the case of fishermen in Greece, incorporating practices such as using nets to collect marine debris, fishers can contribute to cleaner oceans and protect marine ecosystems.

Plastic is not just harmful to oceans in the short term; due to plastic’s chemical composition, it remains in the environment for hundreds of years, causing downstream effects as well. Each plastic water bottle can last up to 450 years in aquatic conditions. Reducing new plastic production is only half the battle to minimize pollution, as states and international bodies also need to consider methods for extracting pre-existent plastic from waterways.

Militaries and Waterways

Modern day militaries are highly developed across the globe, recruiting many individuals and demanding the expansion of many forms of infrastructure during both times of peace and armed conflict. These developments, however, do not come without consequences to the environment and waterways in particular. During this era of military development, the environment faces significant repercussions due to the emissions, resource consumption, and

environmental degradation that occur as a result of military action. The competitive nature of militaries worsens the issue, as militaries around the world are constantly increasing their emissions and water usage to gain relative strength. A strong example of this is the United States military; if the US military were to be its own nation state, it would be the 47th largest emitter of all the states in the world. As the US left the 1997 Kyoto Protocol, an international agreement on reducing greenhouse gas emissions, the US is exempt from reporting military emissions to multilateral agencies and other states. Thus, militaries both create aquatic pollution and can also avoid reporting data on it.

Militaries around the world use up and contaminate significant amounts of water throughout their training protocols, in base operations, and through weapons testing and production. While there is a significant lack of information regarding these impacts, it is clear that water is both highly used and polluted by militaries across the globe. Water is used during training and in base operations, as military bases are often located within water and surrounding land. It also takes a significant amount of water to construct and maintain military equipment, particularly vehicles and weapons. As science develops, weapons also begin to include more hazardous materials, which often end up in waterways. The threat of oil spills is high when it comes to militaries, as they use significant amounts of oil, particularly militaries in the global west. Therefore, this committee should also consider how to mitigate water usage and pollution by militaries as well as how to increase access to information on this subject.

Other Forms of Pollution

Alongside the major contributors to aquatic pollution, there are other prominent impacts that are imperative to policy consideration. Consumerism, encompassing fast fashion, chemical processing, etc., has been driven by the relentless capitalistic production and consumption of goods. The engines moving our modern economy: fast fashion's rapid turnover of clothing contributes to significant water and chemical pollution, with textile dyeing and treatment processes releasing hazardous substances directly into water bodies. Additionally, the disposal of fast fashion garments exacerbates plastic pollution, as synthetic fibers shed microplastics during washing, infiltrating aquatic environments. The extraction and refinement of oil, integral to both plastic production and energy consumption, result in devastating oil spills and contribute to greenhouse gas emissions. Under the influence of consumerism in water pollution, it is important to emphasize that these are all factors interconnected, necessitating systemic changes in consumer behavior/industrial practices and implementing circular economy models to minimize waste and pollution in these environments.

Further ventilating the impact of waste, other forms including nuclear and sewage material have posed grave risks to ecosystems and human health. The discharge of radioactive waste during routine industrial operations have unwaveringly worked to shatter aquatic biodiversity and contaminate food chains. These materials include the heedless disposal of medical equipment, laboratory tools, and reactor treatment residuals. Accidental releases, such as the Fukushima Daiichi nuclear disaster in 2011, serve as stark reminders of the

potential consequences of radioactive contamination. As for the global disposal of sewage, an alarming 80% of wastewater flows back into the environment without proper treatment or reuse. This untreated effluent has introduced a cocktail of pathogens, nutrients, and toxic chemicals into water bodies, fueling the spread of waterborne diseases and contributing to ecosystem degradation. Particularly in developing countries, inadequate wastewater treatment infrastructure exacerbates the problem, perpetuating a cycle of pollution and environmental degradation. When looking to possible policy reform, it is imperative that this committee looks to larger structures of economy and industry in order to remedy the impending detriments of these omitted polluting factors.

Current Situation

In modern times, aquatic pollution has had dire effects on human health. Currently, about 3 billion people are currently at risk for disease due to contaminated water quality, as pathogens in water lead to diseases such as cholera, dysentery, and typhoid. Around 829,000 people die each year due to poor sanitation and unsafe drinking water. Of this population, about half include children under 5 years old. Diseases and other health complications derived from water pollution make up around 5% of deaths within this age group. Fertilizers, which often end up in water from runoff, are responsible for increasing cases of stunted growth in children by as much as 19%.

Beyond causing a human health crisis, aquatic pollution also is harmful to marine life, aquatic environments, and food webs. Eutrophication, or the over-enrichment of nutrients, particularly nitrogen and phosphorus, in bodies of water, is a common result of aquatic pollution from agricultural causes. The excess nutrients lead to the development of algae blooms, which significantly decreases oxygen levels in the water, leading to dead zones. These dead zones are harmful to the ecosystem at whole and in particular harms marine life that requires oxygen to survive. Thus, the lives of humans, marine animals, and marine ecosystems are increasingly threatened as the issue of aquatic pollution continues.

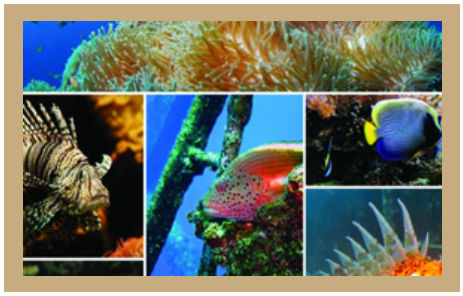
Multilateral initiatives have previously been established, particularly on the issue of plastic pollution. For example, the UNEP implemented the Global Partnership on Marine Litter, a collaborative initiative that brought together governments, international organizations, industry, and NGOs to address marine litter and plastic pollution. This partnership was launched in 2012 at the Rio+20 United Nations Conference on Sustainable Development with the goal of promoting cooperation, knowledge sharing, and capacity building to prevent and reduce marine litter, particularly plastic pollution. It supports the implementation of regional and national action plans, facilitating the exchange of best practices and fostering innovation and research to address the issue. In addition, stakeholders collaborate on various activities, including policy development, clean-up efforts, public awareness campaigns, and initiatives to promote sustainable consumption and production practices. This partnership also aims to mobilize global, regional, and national action to tackle marine litter and protect marine ecosystems.

The Honolulu Strategy for marine debris prevention is a framework developed by the UNEP that aims to guide international action on marine debris, with a particular focus on plastic pollution. This strategy outlines a set of principles and actions in order to prevent, reduce, and manage marine debris, which includes plastic litter at the global, regional, and national levels. This strategy emphasizes the importance of addressing the root causes of marine debris, such as unsustainable consumption and production patterns, inadequate waste management, and lack of public awareness. The Honolulu Strategy is highly focused around prevention methods, as it incorporates measures to reduce the generation of marine debris, such as plastic waste, through policies, regulations, and initiatives to promote sustainable practices. In addition to prevention, the Honolulu Strategy includes clean-up and remediation efforts to remove existing marine debris, including plastic litter, from coastal and marine environments. These initiatives also include conducting research monitoring activities to better understand the sources, distribution, and impacts of marine debris and inform decision-making and policy development. It is imperative for the UNEP and its member states to take further action beyond ongoing agreements, as it is clear the problem is only continuing to persist and endanger lives.

Questions to Consider

1. What preventative and restorative strategies can be adopted to mitigate pollution in waterways? Should one type of strategy be prioritized over the other?
2. How can the international community work together to better the health of internationally owned waters?
3. How can the UNEP encourage states to adopt anti-pollution measures despite there being economic and military incentives for them to continue pollution at its current rates?
4. How can the UNEP further collect data on this issue when it spans across the entire globe, requiring participation and attention from every state?

Topic 2: Promoting Biodiversity in the Ocean



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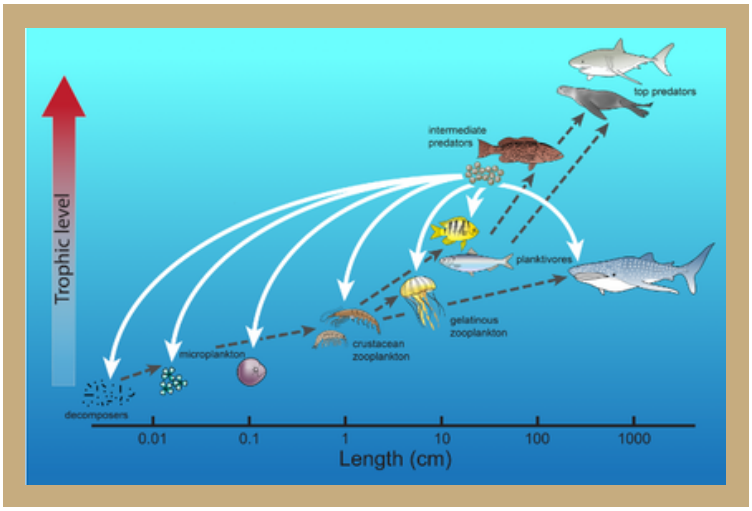
The ocean contains large swaths of the globe's biodiversity. Between half a million and ten million different species call the ocean their home. These species are incredibly important to all life on earth. Marine phytoplankton produce half of Earth's oxygen. But, a healthy ocean is impossible without robust biodiversity. Major coral bleaching events are becoming increasingly common, and marine biodiversity is suffering as a result. Projections suggest that by 2050, all coral reefs will be actively threatened by effects of climate change on the ocean. Over the past 200 years oceans have been the largest carbon emission absorbers, but the plants responsible are now themselves threatened by ocean warming, ocean acidification, and other problems facing the aquatic world. Biodiversity in the oceans affects many aspects of Human society, from aquatic tourism to reefs that slowly are disappearing around the globe, to the global fishing industry that finds stocks increasingly depleted and affected by dangerous carcinogens. Biodiversity in all types of oceanic organisms is critical in preserving a critical food source for close to 12% of the world population. Purely on a scientific standpoint, the destruction of countless species is a huge cultural and scientific event, with prominent species such as the Maroon Clown-Fish, Humpback whale, Great White shark, and Blue tang, all critically threatened. It is up to delegates now to ensure that future generations watching *Jaws* or *Finding Nemo* aren't exploring species lost to the negative effects of humanity.

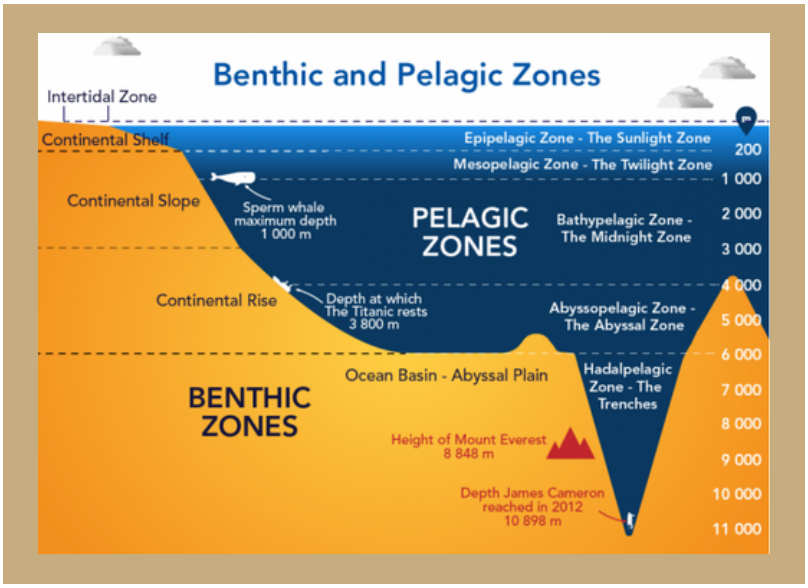
Importance of Biodiversity

The oceanic food chain relies on a diverse array of organisms, from the small plankton to the largest sharks and whales, each step is critical in maintaining a delicate balance. Oceanic diversity is most clearly seen in major hotspots such as coral reefs, where up to 25% of all marine life can be found.



These vibrant ecosystems serve as nurseries for countless fish species, providing shelter and food for their early stages of life. Coral reefs also support a myriad of other organisms, including sponges, mollusks, crustaceans, and sea turtles. The rich biodiversity of coral reefs not only sustains the marine life within them but also attracts larger predators such as sharks and barracudas, contributing to the overall health and balance of the oceanic ecosystem.

Additionally, the oceanic food chain extends into vast pelagic zones where schools of fish, such as tuna and mackerel, roam the open waters, pursued by predators like dolphins and marlins. These pelagic zones are also home to apex predators like the great white shark and the orca, which play crucial roles in regulating the populations of their prey species and maintaining the balance of the entire food web.



In addition to visible marine life, microscopic organisms such as phytoplankton and zooplankton form the foundation of the oceanic food chain. Phytoplankton, through photosynthesis, produce oxygen and serve as primary producers, while zooplankton, including tiny crustaceans and larvae, form the basis of many marine food webs, providing sustenance for a wide range of filter-feeding organisms, including various species of fish and whales.

The interconnectedness of these diverse organisms underscores the complexity of the oceanic ecosystem and highlights the importance of preserving its delicate balance. Human activities, such as overfishing, pollution, and climate change, pose significant threats to marine biodiversity and the stability of the oceanic food chain. Conservation efforts aimed at protecting marine habitats, regulating fishing practices, and mitigating the impacts of climate change are essential for ensuring the long-term health and sustainability of our oceans as well as the sustainability of our food chains.

Impacts of commercial fishing

One of the largest threats to ocean biodiversity is the effects of overfishing and commercial fisheries. Unsustainable fisheries practice as well as increasingly harmful by catch has caused drastic damage to the marine ecosystem. Overfishing and commercial fisheries represent one of the most pressing threats to ocean biodiversity and the overall health of marine ecosystems worldwide.

Firstly, overfishing has led to the depletion of numerous fish species across the globe, including commercially valuable fish critical to the food chain such as: tuna, cod, and salmon. This depletion disrupts the ecological balance within marine environments and can lead to cascading effects throughout the food web. Moreover, commercial fishing practices, such as bottom trawling and dredging, cause extensive damage to marine habitats such as coral reefs, seagrass beds, and deep-sea ecosystems, thereby threatening the stability of these fragile environments.

Additionally, bycatch, the unintentional capture of non-targeted species during fishing operations, is a major issue associated with commercial fishing, with many threatened or endangered species being inadvertently captured. This incidental capture can have devastating consequences for their populations and ecosystems. Overfishing disrupts the intricate balance of marine ecosystems by altering predator-prey dynamics, species interactions, and nutrient cycling processes, leading to trophic cascades and ecological imbalances. Moreover, unsustainable fishing practices not only harm marine ecosystems but also have significant economic and social repercussions, undermining the livelihoods of coastal communities and destabilizing local economies.

Direct human impacts:

Aquarium pet trade

One of the other major impacts humans provide to marine ecosystems in the aquarium fish trade, a industry reaching close to $2.15 billion and spanning millions of specimens globally. The marine aquarium trade has had a bi-parted impact on the diversity of marine ecosystems, on one hand, promotion of captive breeding and sustainable aquaculture provides an increasingly critical portion of the conservation efforts, however, wild caught fish and demand for these species. The aquarium fish trade has become increasingly globalized, spreading through all corners of the globe, proving an increasingly complex impact on the biodiversity of our oceans.

On the positive side, the trade has spurred advancements in captive breeding and sustainable aquaculture practices. Through these efforts, conservationists aim to alleviate pressure on wild populations by providing alternatives to wild-caught specimens. Captive breeding not only reduces the need for harvesting from native habitats while increasing scientific research on these species.

However, despite strides in sustainable practices, the demand for wild-caught species increasingly grows. Iconic fish like Clownfish and Blue Tangs (*Finding Nemo* shout out) face increasing threats as they become highly sought out. The potential loss of diversity by overreliance on wild caught populations is broad, however the majority of the situation can be rectified with careful planning and promotion of captive bred programs.

Ecotourism

Tourism, particularly eco tourism, also plays a role in the human impact of biodiversity, with major tourist spots, such as the great barrier reef or florida keys suffering from increasingly

constant tourist visits, leading to degradation of the natural environment. This degradation impacts reef species significantly, providing another major aspect in the loss of biodiversity. In regions with limited economic resources but high concentrations of Coral reefs, such as Narua, Palau, and Micronesia, tourism provides an economic life line, at the cost of irreparable environmental damage.

In the face of mounting environmental concerns, sustainable tourism practices emerges as a sustainable alternative, however proves to be economically challenging to implement. Decreasing the economic impacts of switching to sustainable options for tourism needs to be addressed. Additionally, methods for sustainable implementation of tourism needs to be created and addressed from the ground up.

Indirect impact on biodiversity:

Ocean acidification

One of the largest indirect impacts of oceanic biodiversity is the increasing pH of the ocean caused by carbon emissions. Ocean acidification is primarily caused by the reactions between Carbon Dioxide and water and free carbonite ions to form carbonic acid. Carbonic acid is increasingly dangerous to oceans in multiple ways, damaging ocean invertebrates in particular. The increase in pH can alter fish behavior, and increases the chances that carbonic acid reacts with calcium carbonate, causing shelled organisms and invertebrates to have impacted shell and exoskeleton growth, as the calcium carbonate dissolves.

Ocean acidification is entirely a result of the increased carbon emission since 1800, leading to CO2 in the air. The burning and combustion of fossil fuels results in an increase in atmospheric carbon dioxide, which is absorbed into the ocean which acts as the world's largest carbon sink. As the CO2 gas dissolves, it reacts with the surrounding water, generating carbonic acid, which quickly dissociates releasing hydronium ions, decreasing the overall pH. Since 1800, this increased production of hydronium ions has dropped the oceans pH from 8.2 to 8.1, representing a 30% drop in pH as compared to the oceans ideal range. Although many organisms can tolerate this shift in pH, when paired with the intense effects from global warming it leaves many species vulnerable to deleterious genetic mutations, issues with reproduction, and premature cell death. Increased ocean acidity is particularly damaging to developing organisms. Recent research has demonstrated that seemingly minor shifts in pH can cause cellular apoptosis in critical fish larvae, depriving local ecosystems of keystone species and human populations of vital food resources.

Ocean acidification also damages coral, perhaps the oceans most important engineering species. Coral are key to the ecological and biodiversity balance in both reefs and beyond, and decreased pH has numerous effects on its structure and functions, in particular, it leaves "dead" branches which are no longer being actively supported by the coral (yet remain key to the ecological niches of other species living within the reef) vulnerable to degradation and may decrease the coral's ability to build new branches. Any decrease in the ability of coral to build habitats for other ocean species will dramatically decrease the ocean's biodiversity, as the vertical and horizontal structural diversity created by coral cannot be replicated

elsewhere.

Even those organisms not physiologically affected by decreasing ocean pH are at risk of population crash or even extinction. As ocean pH changes, so do habitats, leaving populations vulnerable as competitors move into different habitats. Additionally, if a species prey is affected by ocean acidification, even if the predator's biology is not directly impacted, decreased prey availability will create a downward force on the predator's population. Any decrease in prey count will negatively affect the ecosystems carrying capacity, or maximum number of a species an ecosystem can sustainably support, creating a ripple effect both within an individual ecosystem and beyond.

Changing Ocean Current

Perhaps one the most under researched, but essential, human effects on ocean biodiversity comes from changing ocean current patterns. Ocean currents move water from location to another, such as the gulf stream which pulls warm water from the Gulf of Mexico and carries it to the North Sea off the coasts of Greenland, Iceland, and the United Kingdom, or can move water shallower and deeper, such as through the thermohaline effect in the deep ocean or differential heating in shallower regions. Both classes of currents are vulnerable to alterations due to the warming climate. For example, researchers have found the gulf stream is currently at its weakest level in over 1600 years, and possibly more. Even worse, many researchers believe that time is running out to preserve this essential current, which is critical for moderating the climates of Northern Europe and the Eastern United States. Any alterations in gulf stream currents leave both aquatic and land habitats vulnerable to shinkage, destruction, invasion by competing organisms, or difficulty in animal communication and migration patterns, decreasing overall biodiversity.

The thermohaline effect refers to cooler, slatier water having a higher density than warm, less saline water. As the cool water sinks, it is warmed by thermal springs or heat from the earth's core and rises. However, as it rises it cools, creating circular water currents in the deep ocean that distribute the relatively limited number of nutrients, allowing for increased biodiversity. Differential heating, where warm, shallow water moves away from the equator and toward the cooler poles via the coriolis effect, is also effective at distributing nutrients on a worldwide scale. However, with rising atmospheric and water temperatures, these cyclic patterns are becoming less robust. Additionally, the melting of arctic ice is dumping millions of gallons of freshwater into the oceans, further neagating sensitive thermohaline patterns. As ocean movement slows, so does the distribution of essential nutrients and dissolved gasses, creating stratification in ocean layers and creating “dead zones” where no organisms can survive.

Current Situation

Climate change solutions need to be enacted now. 2023 was one of the hottest years ever recorded with June, July, and August breaking temperature records globally. 40% of the world’s population live in coastal regions and healthy oceans are vital to societal longevity,

economic opportunity, and global health. Not only is the ocean in trouble, but a robust ocean fixes other issues posed by climate change, making it even more important to focus on now. It is now up to delegates to come together in the race against the clock in order to avoid environmental catastrophe.

Questions to Consider

1. What is a reasonable timeline for decreasing greenhouse gas levels to the standards deemed necessary by scientists?
2. How can established and emerging technology be adapted to aid ocean biodiversity?
3. What incentives can be implemented to reward sustainable fishing practices?
4. Which nations have the greatest responsibility in promoting biodiversity efforts globally?

Argentina
Australia
Bangladesh
Canada
Chile
China
Colombia
Comoros
Cook Islands
Costa Rica
Cuba
Denmark
El Salvador
Fiji
Finland
France
Germany
Greece
Guatemala
Honduras
India
Indonesia
Iran
Ireland
Italy
Japan
Jordan
Kenya
Kuwait
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South Africa
South Korea
Spain
Sri Lanka
Tanzania
Thailand
Turkey
UAE
United Kingdom
United States
Vanuatu
Vietnam

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