

Forum: Environmental Commission

Issue: Addressing the issue of diminishing biodiversity

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Introduction

There are almost 2 million species of animal on our planet, of which 16,306 are threatened with extinction. This is a considerable increase from last year's statistic of 16,118, and the fact of the matter is that extinction is becoming more and more likely for large numbers of species all over the world. Biodiversity is key to human life as it ensures sustainable survival for all living beings, and the decrease in this variety of organisms is beginning to have a prominently negative impact on many common ecosystems, such as tropical rainforests.

Higher biodiversity in a given habitat ensures that events such as changes in climate and the spread of disease do not destroy entire species or habitats. Furthermore, it sustains economies and provides future generations with a greater chance of survival. The loss of biodiversity has only recently come into light, despite having been a threat since the age of the dinosaurs, whose extinction may well have been a result of this. Humans have driven an uncountable number of species into extinction, by fishing, hunting, and other practices which greatly endanger the lives of organisms all over the world.

Deforestation is one of the main factors in the alarming decrease of biodiversity. Forests are home to a large number of animal species, and the removal of forest land affects not only plant life but many systems of animal life as well. About 31% of our land is covered in forest; however, this percentage is decreasing at a much higher rate than in previous years. Food webs, a complex system of nutrition in every habitat, can be majorly impacted as well in the event that an organism goes extinct. Deforestation can also lead to a more extreme case known as desertification, which

permanently prevents any wildlife from regrowing in an area. This decrease of biodiversity, however, can be reduced or possibly prevented through methods such as reforestation, as well as choices made by the general public that can, in fact, have a larger impact than predicted.

Definition of Key Terms

Biodiversity

The variety of wildlife (both plant and animal) present in a certain area or habitat.

Desertification

The process by which originally fertile land becomes eroded and lacking in nutrients, making it difficult for plant life to grow.

Ecosystem

The interconnected system of organisms in a specific habitat that relies on each other for sustainable survival. In an ecosystem, the balance between organisms is crucial and if this balance is affected, it can negatively impact all of the organisms in the habitat.

Habitat

The area where a certain organism feeds, shelters, and survives. Common habitats include oceans, forests, deserts, and grasslands.

Global Warming

The increase in the Earth's average surface temperature, which is caused by the greenhouse effect. The greenhouse gas layer in the atmosphere thickens due to emissions from industrial factories and municipal areas, trapping infrared radiation from the Sun and re-emitting it towards Earth, causing "warming" of its surface.

Climate Change

The overall climate over the world changing, and often becoming more extreme, such as large droughts, floods, and storms occurring; weather patterns becoming unpredictable; summers becoming hotter and drier, and winters becoming colder and harsher; as well as weather phenomena such as the El Niño happening more commonly.

Endangered

An endangered species is one that has a low or declining population, with the possibility of its extinction: this is when the species is no longer alive and present anywhere on Earth.

Background Information

Deforestation

Deforestation is the clearance of trees or other forest plant life in order to use the land for non-forest purposes. Deforestation has a major impact on biodiversity of a habitat or ecosystem as the destruction of forests affects many food webs and subsystems within a habitat itself. It is estimated that 1.5 acres of forest land are lost per second due to deforestation, and thus loss of land is also a loss of habitat for thousands of forest species, which can have an impact on human life as well. The crops and animals that are our main source of nutrition are affected by the ecosystem that they originate in, and a negative impact on this ecosystem can have a negative impact on each species present there. Deforestation has a direct correlation to air pollution since the decrease in plants — especially trees — releases large amounts of carbon dioxide into the atmosphere and reduces the intake of carbon in the future. This has an impact as it eventually leads to climate change, which is covered later.

Pollution

As our society industrialises and becomes increasingly dependent on resources such as oil and fossil fuels, pollution of our land, ocean, and atmosphere is becoming evident. Pollution of the atmosphere can lead to the decline of common species such as lichens, as well as amphibians, which are known to have been an indicator of diversity. If amphibian populations are declining, it is likely that biodiversity is also decreasing, and unfortunately, amphibians are becoming scarcer due to increased pollution of the environment, indicating that other species are further declining as well.

Ocean species are also struggling, including mammals, birds, and fish. This decrease in biodiversity will affect both land and water ecosystems and will affect us majorly as a species as well.

Air pollution occurs mainly because of the overuse of fossil fuels by humans. As mentioned throughout, this can cause global warming and climate change, causing habitat destruction for many species. As amounts of silver, carbon, and other toxic materials increase in the atmosphere, particularly sensitive species can be majorly affected, and the loss of these can throw entire food webs out of balance and have a chain effect. Air pollution can also cause the excess dissolving of carbon dioxide into oceans, which can have consequences on marine wildlife. An excess of carbon dioxide can cause marine suffocation and global warming also affects ocean temperatures, which when drastically changed, can cause difficulties in terms of adaptation for species. Ocean pollution is also dangerous because it can often be mistaken as food by animal species and several organisms, including fish species, sea birds, and sea turtles, have been injured due to ingestion or being trapped in plastic substances littering in the ocean. In addition to this, layers of litter covering the ocean surface often block sunlight which can affect plant life majorly since they require this natural light in order to photosynthesise as a means of sustenance.

Acid Rain

Acid rain is caused by emissions of sulphur dioxide and nitrous oxides into the atmosphere. These are, more often than not, released from factories, industrial areas, modes of transportation (typically cars and buses), and occasionally normal homes. These gases, once emitted, dissolve into collected rainwater in the atmosphere, and reduce its pH, making it acidic and therefore the name "acid rain." When this precipitation reaches Earth, apart from causing corrosion of surfaces in urban areas, can have consequences in forest land and oceans as well. Rainwater is, of course, a main source of water for vegetation in forests all over the world, and the absorption of acidic water into soil can change its pH immensely, and since plants usually grow in pH specific soils, can cause a decline in several plant populations, and cause habitat destruction for grassland and forest species. Small water bodies such as lakes and ponds, which provide a water source for organisms in many habitats can also become contaminated and acidic, which is a danger to animals that consume it. As for ocean species: the pH of the ocean will obviously have an impact on the plants, animals, and other organisms living in it. As sulphurous and nitrous gases continue to be released, alongside greenhouse gases, the amount of acidic water and carbon dioxide in the oceans will increase, which can cause the extinction of ocean species, especially in areas where biodiversity is already low, and organisms struggle to adapt to changes in the environment.

Climate Change

Fossil fuels are a finite source of energy that are now being used very liberally by humans and have become an integrated part of our lives. A common fuel is coal, which is a source of thermal energy for heating water, providing insulation, and electricity internationally. However, this poses a large threat to our environment: fossil fuels for industrial use release large amounts of greenhouse gases into the atmosphere. Examples include carbon dioxide, methane, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and ozone. These gases have a complex chemical structure which allows them to trap heat energy from the Sun which is reflected off of the Earth's surface and emit it back towards Earth. As our daily use of fossil fuels increases, the Earth's average temperature increases proportionately, and this can have a major effect on our climate. From 1850 to 2005, the average global temperature, as observed by the Intergovernmental Panel on Climate Change (IPCC) increased by 0.76°C, which is a large statistic in terms of global warming. In addition to this, the average sea level increased by 10 centimetres over the last 10 years. By 2100, it is predicted that temperatures will rise by somewhere between 1.4°C to 5.8°C, which can cause further increases in sea level, as well as climate patterns changing dramatically. Global warming has many negative repercussions on wildlife, with one substantial effect being the melting of the polar icecaps. This not only destroys habitats of Arctic and Antarctic species but leads to a rise in sea levels, which correlated to flooding and droughts in particular areas. Global warming also affects weather patterns, such as floods and droughts as aforementioned, but also tropical storms, blizzards, precipitation, and others. These sudden changes are often difficult to adapt to as a species and can cause large population decreases of species. This creates a paradoxical situation since the lower biodiversity of a species then creates a lower chance of adapting and therefore decreases its population further, which can eventually lead to extinction.

Major Countries and Organizations Involved

Brazil

Brazil is known for having some of the largest areas of rainforest in the world. Forests contain high biodiversity and plant and animal life is very rich in numbers and variety. However, this also provides a resource for keen farmers and miners who intend to use cleared land for their purposes. However, Brazil's government has been taking action and sanctioning illegal deforestation, which has

led to a promising decrease in the act. Furthermore, the Brazilian Environment Agency has also been increased funds towards the cause and several campaigns have been held to spread awareness of this issue. Despite this, the rainforest area has been decreasing and measures need to be taken seeing as previous actions by the government have not proven sufficient and biodiversity levels are dropping at a concerning rate. Brazil has also adopted its National Biodiversity Policy, which addresses several aspects of this issue such as habitat conservation, sustainable resource use by humans, as well as public awareness. The National Biological Diversity Program created in 1994 aims to enforce this, taking into account Brazil's richness in wildlife variety, and hoping to preserve it through both government and NGO action. The Diversity Program also looked at enforcing the CBD and promoting international cooperation on the issue of biodiversity conservation through this internationally recognised convention. Through media, the program also worked on educating the general public on sustainable human use of natural resources in order to reduce the negative impact on the environment.

China

China is known to be one of the most polluted countries in the world, due to its high population density in urban areas, which is the main factor of both its land and air pollution, creating the multitude of environmental problems that are causing the extinction of species worldwide and the decline of biodiversity. In September 2013, China released its Air Pollution Action Plan, which over the past five years, has made significant changes to the levels of pollution, especially in larger cities. By setting a target of PM2.5 levels in key cities, air quality was ameliorated by 33% in Beijing, which involved reducing the PM2.5 level from 89.5 micrograms per cubic metre to 60 micrograms per cubic metre. Although a massive decrease, Beijing achieved this by closing down its coal-powered factories and power stations, as well as banning the use of coal to provide thermal energy in nearby areas. This sparked controversy amongst the people, but the PM2.5 average level dropped to 58 micrograms per cubic metre annually: a 35% decline. The Pearl River Delta improved air quality by 15%, and alongside the Yangtze delta, beat their air quality target that had been set. However, the World Health Organisation (WHO) has set an annual average PM2.5 level target of 10 micrograms per metre cubed, which China is far from achieving. On July 3, 2018, China has created a new set of targets with a broader spectrum in hope for further improvement. High levels of air pollution are dangerous in terms of climate change and can cause global warming and acid rain, endangering species living in these habitats that are becoming damaged.

World Wide Fund for Nature (WWF)

In the first ten years of its establishment, the WWF raised US \$5.6 million in order to support projects relating to biodiversity conservation all over the world. Over 365 projects, including resistance against poaching and awareness raising for citizens everywhere, were funded by this money, and fundraising became one of the WWF's main aims, as it provides an effective method of both education as well as economic support for environmental issues. Furthermore, some of these grants went towards establishing the Charles Darwin Foundation Research Station, which has worked towards raising awareness amongst the Ecuadorean people and government. The Galápagos Islands are very high in terms of biological diversity, making them also highly vulnerable to the destruction of this. However, because of the WWF's efforts with other organisations, the Galápagos Special Law was adopted in 1998 which worked towards this. As well as this, the Galápagos Marine Reserve was created, which works towards the preservation of wildlife in the seas and oceans which are equally as important to our planet as those on land. In addition to this, the organisation has also been working to form protected areas of wildlife worldwide in order to preserve animal and plant populations, especially those that are declining. For example, in 1969, the WWF joined with the Spanish government to establish Coto Doñana National Park, a wetland reserve that took the place of the Guadalquivir Delta marshes in Spain. This site was a refuge for many species of migratory birds, as well as two species that were, at the time, critically endangered: the Iberian lynx, and the Spanish imperial eagle. Today, over 1 billion hectares of land are supported and protected by the WWF to reduce the habitat destruction internationally.

Wildlife Conservation Society (WCS)

The WCS focuses on protecting wildlife all over the world, but mainly in 15 key regions that provide a home to over 50% of our planet's biodiversity. Their involvement in countries from South East Asia to areas in Europe has resulted in an incline in certain animal populations that have been previously endangered. Thailand's Huai Kha Khaeng (HKK) Wildlife Sanctuary is home to a tiger population that has been majorly affected by poaching. Through a partnership with the WCS, ranger patrols were increased which resulted in a population increase of over 60%, and ensures that poaching attempts are limited, preventing extinction for this species in the near future. The Burmese star tortoise in another rare species only residing in the central dry area of Myanmar. Once considered nearly extinct due to wildlife trade, the species has been revived because of the WCS's active breeding program, involving the Turtle Survival Alliance and the government in Myanmar. Trafficking became more closely monitored and approximately 175 tortoises were claimed, and the WCS

established three particular sanctuaries for these tortoises to be bred within wildlife facilities. The population has today increased to over 14,000 as a collective of both wild and captive Burmese star tortoises. A third species that have benefited from the intervention of the WCS is an adjutant stork. Once the world's rarest stork, residing in the Tonle Sap, a lake in Cambodia, this species has also been brought back from its heavy loss, caused by trafficking of its eggs and chicks, as well as habitat destruction. Alongside the Cambodia Ministry of Environment, the WCS worked towards involving the general public in the bird's protection by giving the protection of nests a monetary value. Citizens worked to protect stork nests, ensuring that they were able to breed without chicks and eggs being lost to illegal traders. From 30 pairs, the greater adjutant stork is now present in over 200 pairs, which is about 50% of its total population in the world.

Timeline of Events

| Date | Description of Event |
|----------------------------------|---|
| April 29 th , 1961 | The World-Wide Fund for Nature, a nongovernmental organization, is established to prevent the destruction of nature and focus on maintaining the Earth's biodiversity. |
| July 1 st , 1975 | The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) becomes an effective agreement between governments all over the world and aims to ensure that international wildlife trade is not endangering towards any species of plant or animal. |
| October 28 th , 1982 | The UN Charter for Nature is adopted, which is essentially a set of principles governing the protection of nature, with five "principles of conservation" which judges human treatment and effect upon the environment. |
| December 29 th , 1993 | The Convention on Biological Diversity (CBD) is effective and looks to preserve the biodiversity of organisms and work towards a more sustainable way of living in order to do so. |

June 20th - 22nd, 2012 The U.N. Conference on Sustainable Development, also known as the Earth Summit 2012, takes place, hoping to address global environmental issues and the preservation of ecosystems, as a follow up of two previous environmental conferences.

Relevant UN Treaties

- Preventing and reducing air pollution to improve air quality globally (**UNEP/EA.3/Res.8**)
- Addressing water pollution to protect and restore water-related ecosystems (**UNEP/EA.3/Res.10**)
- Managing soil pollution to achieve Sustainable Development (**UNEP/EA.3/Res.6**)
- Mainstreaming of biodiversity for wellbeing (**UNEP/EA.2/Res.16**)
- Combating desertification, land degradation and drought and promoting sustainable pastoralism and rangelands (**UNEP/EA.2/Res.24**)
- Strengthening the role of the United Nations Environment Programme in improving air quality (**UNEP/EA.1/Res.7**)
- Enhancing the work of UNEP in facilitating cooperation, collaboration and synergies among biodiversity-related conventions (**UNEP/EA.2/Res.17**)

Previous Attempts to Solve the Issue

Slash and Burn Agriculture

This method of clearing land involves cutting down large areas of forest to provide land for crop farming. After cutting down wood, it is burned and the remaining layer of ash fertilises the soil, making it rich in nutrients so that further crops can be grown in order to prevent the occurrence of

desertification. Because of this, this method has become widely used, yet however, is still unsustainable in the long term. Firstly, this is a form of deforestation, directly resulting in the loss of habitat of species such as birds, insects, large mammals, and more. Another issue with this is the increase in carbon release and air pollution, contributing to global warming, which also affects the population of species worldwide. Studies have also shown that slash and burn farming has led to an increase in accidental forest fires, which can damage incredibly large amounts of land, leaving them in a condition that cannot be used for farming, and not to mention the fact that hundreds of species originally present there decreased in population. Moreover, despite having fertilised land, slash and burn farming does result in soil erosion due to the removal of root systems of vegetation once present there, which causes natural destruction of habitat when soil is eroded through heavy rains or winds. These weather conditions are becoming more and more common because of global climate change and are causing landslides and floods in these areas where soil erosion is occurring, as well as dust clouds during periods of drought.

Reforestation

Reforestation (or afforestation) is the process opposing deforestation by which cleared areas of forest land are replanted with trees. It is believed that this is effective as it restores habitats and once more increases the variety of vegetation in an area as well as the plant population in general to combat air pollution and climate change. Conservation International (CI) is involved in the restoration of the Amazon rainforest, which is the world's largest tropical rainforest. A large number of the world's species are concentrated here, resulting in an extremely high biological variety, but, unfortunately, this is declining at a very steep rate due to human intervention. The CI, the Brazilian Biodiversity Fund, and the Global Environment Facility (GEF) are working together to restore 73 million trees in the Amazonia region by the year 2023. The endeavour is to cover 30,000 hectares of land, but there are several flaws and limitations in this plan. Forests are being cleared at alarming rates, the Amazon losing 24,000 km² per year. 80% of forests that covered the Earth 8,000 years ago have been completely deforested, and we are now left with less than 20% of the vegetation we once had. The reality is, reforestation is extremely time-consuming and forests are being cleared faster than they can be replaced. Although reforestation is making up for some of the wildlife lost, it is not a viable solution since it will take years for all the plant life to grow back and it does not prevent the loss of habitat and animal species will continue to decline, even if habitats are resurrected afterwards.

Possible Solutions

Consumer Awareness

Awareness is key when it comes to consumer involvement in any environmental issue. Through education of the general public, large impacts can be made if unsustainable resources such as plastic and fossil fuels are used more conservatively in order to maintain the biodiversity of natural habitats. Implementing this in the education system allows children to consider their effect on the environment from a young age. In lessons such as geography, history, and other social sciences, teaching them about the dangers of habitat destruction and pollution can provide a more sustainable stance for the future. Influencing children is critical as they are the next generation and will have a massive impact on our environment. Campaigns, speeches, social media, and viral marketing can all be utilised in order to spread awareness on this issue for billions around the world. Public events are usually very accessible to general citizens and can educate them on the consequences of their actions even in everyday life.

Consumer Incentives

The influx of waste is leading to nature destruction due to landfill sites taking up much land that was originally natural habitat, as well as oceans becoming polluted and other impacts of littering. Increasing prices of items made from invaluable resources provided from forests and other natural habitats could decrease the consumption of these products. By encouraging the use of recycled or biodegradable materials, habitats can be preserved. It is also important to encourage the reduction of fossil fuel burning to reduce climate change rates as well as acid rain which is also caused by this. By promoting sustainable lifestyles, including the purchasing of reusable resources (bags, water bottles, etc.) and increasing the utilisation of public transport, pollution levels can decrease and assist in combating global warming.

Government Action

By criminalising actions such as mass deforestation by large companies or including some sort of monetary incentive for more sustainable methods of work, we can reduce the amount of biodiversity loss in large habitats where the majority of wildlife species reside. Another suggestion is implementing fines or taxes on forest-based resources or logging materials in order to allow companies to rethink economically their decisions and reduce the number of trees and plants lost through deforestation. Taxing materials such as common household fossil fuels, oils like crude oil,

and coal products can decrease their usage and focus. Creating “biodiversity hotspots” in areas where there are endangered species concentrated can prevent loss of these species. Governments can enforce this protection through supervision of these areas and can use previous examples like the WWF'S attempts to create national parks and reserves which are an effective solution in progress.

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