

FORUM:	Environment Commission
ISSUE:	Measures to Preserve Biodiversity by Protecting Endemic Species
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Introduction

Biodiversity makes up the world we live in, including various kinds of life such as animals, plants, fungi, and even microorganisms. This underpins the health of the planet and has an extreme influence on all living organisms. Therefore, it is crucial to preserve biodiversity as it functions as the ecosystem that supplies oxygen, habitat, clean air, and water, and many more ecosystem services that also help to prevent climate change.



Figure 1: Showing biodiversity

There are many kinds of organisms that are involved in the ecosystem, and endemic species exist that are uniquely found in only one part of the world. Due to urban, commercial, agricultural, and coastal development, tremendous numbers of species face the problem of habit loss, leading to them being endangered. However, endemic species are especially influenced by this issue as they are only found in one part of the world, therefore there are fewer numbers of endemic species compared to universal species. Moreover, endemic species can only survive environments, and sometimes there are geographical restrictions to expand beyond which are factors that lower the numbers of endemic species which contrast with universal species. Protecting the endemic species is vital since all organisms have their essential role in the ecosystem. For that reason, “conserving and enriching the biodiversity of their geographical region” through protecting the endemic species is crucial. Since endemic species have specific adaptations to their environments, other species that habit in that specific region would be negatively affected as the ecosystem collapses if the endemic species are not protected.

The lack of protection of endemic species will lead to consequences such as food supplies being more vulnerable to pests and diseases, and even causing a lack of fresh water which is a need for every living organism. Therefore, it is crucial for the Environment Commission to devise effective and pertinent solutions that will prevent the further loss of endemic species and preserve biodiversity, considering that biodiversity involves and impacts every life of organisms on this planet.



Background

Endemic Species

Species are becoming extinct faster than at any time in history. This also includes the endemic species, which have a higher vulnerability to extinction. Every 200 species are becoming extinct every day, and by 2050, which is only a few decades away, as much as 30-50% of the species are estimated to be extinct. As more and more species are becoming extinct, the collapse of the ecosystem has started to the degree it is noticeable, especially for the endemic species and their impact on biodiversity.

Endemic species endangerment and extinction have three major causes, which are overhunting, overharvesting, and the introduction of non-native species. This includes the spread of diseases, habitat loss or degradation, and depending on the species, have different causes to their endangerment. For example, the decline of the South China tiger has been caused by overhunting for the use of medicine. On the other



Figure 2: Orangutan lost its habitat

hand, birds in the Hawaiian Islands suffered from the outbreak of diseases and predation by introduced species. Therefore, there are some limitations to protecting all the endemic species since all of them have different causes for endangerment, however, it is definite that humans are making the sufferings of endemic species worse and leading to loss of biodiversity.

Causes of biodiversity loss

Natural ecosystems have declined by 47% on average, and this shows the extreme biodiversity loss over the past few decades. The main causes of biodiversity loss are due to habitat loss, and they are caused by thinning, fragmenting, or outright destruction of an ecosystem's plant, such as soil, hydrologic, and nutrient resources. The pollution creates harmful nutrients and substances in the ecosystem. For instance, pollutants such as "sulfur can lead to excess levels of acid in lakes and streams, damage trees and forest soils; atmospheric nitrogen can reduce the biodiversity" (United States Environmental Protection Agency). Moreover, the air pollution emitted from human-made sources can damage plant species due to ground-level ozone leading to reductions in growth and survivability of plant species seedlings.

Effect of endemic species on biodiversity (Polar bears)

One of the examples of a decline in biodiversity and collapse of the ecosystem is shown through the case of polar bears. They are endemic species, which have habitats in the Arctic Circle of the North Pole. The drastic climate change throughout the decades is considered the main cause of polar bears being endangered. They are one



Figure 3: Food chain of Polar Bears

of the largest land carnivores, and they are known as the “keystone species, the apex of the ecosystem,” which play a role in keeping the biological populations in balance and maintaining the food chain. As the number of polar bears decreases, it would impact other species that live in the same region. Normally, polar bears hunt seals, however, due to a lack of steady ice, they would change their target and threaten other arctic species such as Arctic fox or walrus. On the other hand, the arctic foxes and birds depend on the remainder of the polar bears as sources of food, therefore this highlights that the species are facing a lack of food, and there would be a collapse in the food chain of species. Moreover, the collapse in the food chain would also impact the food source for humans, since polar bears would threaten fish instead of their original food source seals, leading to the population of crustaceans and fishes to decrease for the human population’s food source. Due to only one type of endemic species becoming endangered, it is causing an imbalance in the whole ecosystem, but also causing the decline in number of species that live in that specific region.

Problems Raised

Climate Change

The UN Environment Programme (UNEP) claims that the loss of biodiversity has a significant effect on climate change. Since the natural ecosystems provide a wide range of ecosystem services, such as food, water, protection from diseases, and even prop up the global economy, maintaining the biodiversity to prevent the ecosystem’s collapse plays a crucial role in tackling the climate crisis. According to the research of the United Nations Environment Programme (UNEP), shows that land-based

and marine ecosystem play an important role in regulating the climate. This is because currently they absorb half of the human-made carbon emissions. The head of the UNEP, Mireya Atallah states: “without protecting and restoring the ecosystem, we have no chance of getting to the 1.5C target”. Therefore, the loss of endemic species and decline in biodiversity will accelerate the increase in climate change.

Threatened Food Source Stability

Endemic species play an important role in ensuring the sustainability of food production for all living organisms, as they are involved in the food chain of the ecosystem. If the organism is removed from the food chain, it would spoil the flow of nutrients in the



Figure 4: Showing effects of climate change

ecosystem. Since organisms are highly dependent on each other, even one loss of an organism may bring a great imbalance to the ecosystem. Then, other species would end up being extinct or find alternative food sources that will even cause more imbalance to the ecosystem. As the polar bear case mentioned above, every organism involved in the food chain will be influenced, therefore considering the survival of endemic species, and the sustainable food production for humans as well, maintaining biodiversity is extremely crucial considering the long-term effect the loss of biodiversity will have.

Lowered ecosystem's stability and productivity

The stability of the ecosystem decreases when a change in the population of endemic species happen, because species are highly dependent on each other. This means that the ecosystem with less biodiversity will have more species that rely on the same food source and shelter. Therefore, declining biodiversity also lowers the ecosystem's productivity since there will be less biomass produced heavily relies on organic materials such as plants and animals. Moreover, the loss of biodiversity will further lower the quality of ecosystem's services, such as maintaining soil, and purifying water since there will be an imbalance in the ecosystem, and the roles that the endemic species take in specific regions for the ecosystem's services will diminish.

International Actions

Kunming-Montreal global biodiversity framework



In 2022, governments from various countries met at the UN Biodiversity Conference COP15 in Montreal to reach an agreement to protect 30% of land and water, while only 17% of terrestrial and 10% of marine areas are being protected. UN

Biodiversity Conference has provided countries with the framework for protecting the world’s habitat for various species which also including the endemic species. The Kunming-Montreal global biodiversity framework calls for raising USD 200 billion by 2030 to preserve biodiversity. This framework involves the long-term general strategic approaches to mainstream biodiversity, and sustainable wildlife

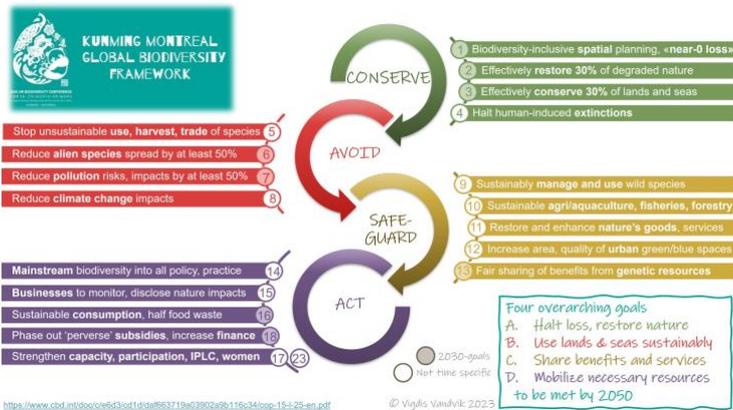


Figure 5: Showing the goals of Kunming Montreal Global Biodiversity Framework

management to preserve biodiversity through protecting endemic species.

Landmark Treaty

The United Nations has confirmed the Landmark Treaty, and this negotiation tackles environmental degradation and prevents biodiversity loss. On March 7th, 2023, the Landmark Treaty has been updated to expand the region of species protection to the ocean. This new treaty will allow to establish large scale marine protected areas, which would help to meet the global commitment of the Kunming-Montreal global biodiversity framework by 2030.

Paris Agreement

The Paris Agreement sets out the global framework to avoid hazardous climate change. It has been adopted in 2015, and there are currently 194 parties that have joined the agreement. The Paris Agreement tackles a wide range of solutions for climate change by reducing greenhouse gas emissions and carbon dioxide. Since the loss of the ecosystem is also known to have a significant effect on climate change, the Paris Agreement involves goals to preserve the ecosystem by maintaining biodiversity.

UN Decade on Ecosystem Restoration

The UN Decade on Ecosystem Restoration was launched in 2020, to preserve the degradation of ecosystems on every continent and ocean. Some countries have succeeded in restoring 1 billion hectares of degraded land, which has recovered the habitat loss for many species. UN Decade on Ecosystem Restoration will involve 2000 comments from Member states, scientists, restoration practitioners, and



youth groups to target the restoration of land and ocean. Its goal is to aim to restore 350 million hectares of degraded landscape by 2030.



Figure 5: Showing before and after of ecosystem restoration

Endangered Species Act

The Endangered Species Act of 1973 provides the framework to protect endangered species, and their habitats. Although this primary law was set by the United States, it is still being practiced domestically and abroad. This law restricts the “destruction or adverse modification of designated critical habit of such species”. Furthermore, this law prohibits any actions that may harm the endangered wildlife, such as import, export, interstate, and foreign commerce are generally prohibited.

Key Players

Intergovernmental Panel on Climate Change (IPCC)

IPCC is the is an intergovernmental body of the United Nations. IPCC provides a scientific database for the Paris Agreement and provides comprehensive assessment reports on climate change. They provide a practical guideline for Parties and Paris Agreement to prepare the national greenhouse gas inventories.

United Nations Environment Programme (UNEDP)

The United Nations Environment Programme is responsible for coordinating responses to the environmental issues within the United Nations system. UNEDP was established in 1972, and for over 50 years, the UNEDP has been working with governments and civil society to encourage the transition to low- and zero-carbon emissions in key sectors such as energy, agriculture, forest, and many more.

United States

The United States is a North American country that strongly supports protecting endemic species through the Endangered Species Act to provide an international framework to conserve the threatened and endemic species.

Worldwide Fund for Nature (WWF)

The Worldwide Fund for Nature is an international non-governmental organization that was founded in 1961 to stop the destruction of nature and recover. WWF partners at all levels, and they



transform markets and policies towards sustainability. One of their main purposes is also to sustainably preserve the rich biodiversity of endemic species. They also collaborate with partners and local communities to establish a management plan for the species.

Possible Solutions

Restoring habitats of endemic species

One of the possible solutions to preserve biodiversity through protecting endemic species can be to restore the habitats of endemic species. Since the loss of endemic species is mainly due to loss of habitat, there will be significant change if the habitat is restored. Habitat restoration can be accomplished through the protection and reestablishment of plants by returning abiotic factors, such as soil, chemistry, water content, and disturbance. Furthermore, there can be biotic factors that include species composition and interactions among species. The most common strategies to restore habitats are tree planting, coral rehabilitation, forest rewilding, invasive species eradication, and green space creation. Restoring habitats of any species requires a tremendous amount of time, management, and planning, therefore collaborations between member states with key players in this issue, such as the UNEDP, and WWF would be an effective method to protect and increase the number of endemic species.



Figure 6: Showing the eight principles underpinning ecological restoration

Investigating for endemic species

For habitat restoration to happen, it is crucial to have enough database, knowledge, and technology to make it possible. There can be more investments for the investigation for ecosystem restorations, or more conferences between member states, and the UN can be held to discuss the technologies and supplies for restoration. Moreover, since endemic species only live in regions, it is essential to research the number of endemic species that exist in a specific region and carry out further research to find the most suitable solution to protect them.

Regulations to preserve the ecosystem

The habitat of endemic species, or endemic species itself is used by humans for commercial purposes. There are still many cases where people do not follow the regulations that the member states have set, therefore raising the fines, or changing the pre-existing laws can be beneficial to prevent more habitat loss of endemic species. There should be continuous monitoring in specific regions where endemic species exist, and it would be valuable to create reports on the endemic species to monitor the current situations.

Raising Public Awareness



Figure 7: WWF in public to raise awareness

Raising public awareness is crucial to protect the endemic species. Since many of the endemic species cannot be seen commonly, the public is not aware that certain species even exist. Spreading more awareness of these endemic species is important because as more people are aware of them, it would be easier for the public to make the right choices for the endemic species. There can be more compulsory educational programs for schools/universities to follow about preserving

biodiversity and protecting endemic species. Furthermore, campaigns can be held internationally or domestically with the support of NGOs or the UN to take actions to preserve biodiversity.

Glossary

Biodiversity

Biodiversity is the variety of life on Earth. It is a measure of variation on genetics, species, and the ecosystem level.

Climate Change

Climate Change is the long-term change in temperatures and weather patterns. Climate change can be natural; however, since the 1800s, human activity is accelerating the climate change.

Ecosystem

An ecosystem is the geographical area of living organisms exist.



Endemic Species

Endemic species are living organisms that are uniquely found in one specific region on Earth. They are commonly found in isolated regions of the world, such as islands, but they can also be found in any places on Earth.



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