

What are the main causes of biodiversity loss? How can we protect and preserve biodiversity? (CSS-2023)

### (i) INTRODUCTION:

Biodiversity refers to the variety of living organisms, including plants, animals, fungi and microorganisms, as well as ecosystems in which they exist.

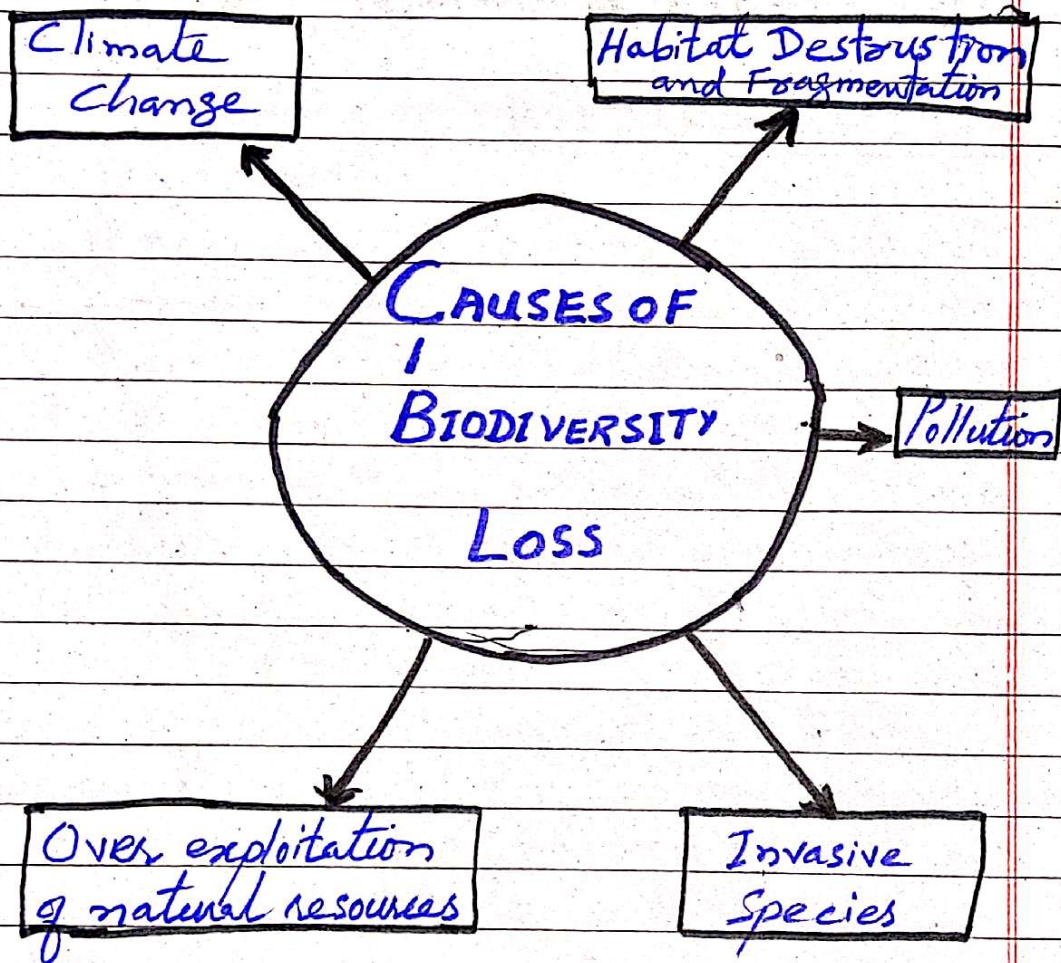
It encompasses the diversity of species, genetic diversity within species, and the variety of ecosystems and ecological processes. According to the Convention on Biological Diversity (CBD):

"Biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." The causes of biodiversity losses are habitat destruction and fragmentation, climate change, overexploitation of natural resources, pollution, invasive species.

The biodiversity can be protected and preserved by conservation education and awareness, protection of areas and conservation resources, international cooperation and policy frameworks, sustainable land and resource management.

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## (ii) CAUSES OF BIODIVERSITY LOSS



### 1. Habitat Destruction and Fragmentation

Habitat destruction, and primarily due to human activities such as deforestation, urbanization, and conversion of land for agriculture, is one of the leading cause of biodiversity loss. Fragmentation of habitats further exacerbates the problem by isolating populations and reducing gene flow.

According to the United Nations, around 80% of the Earth's terrestrial biodiversity is found in forests, which are being destroyed at an alarming rate. It is estimated that each year, we lose approximately 18.71 acres (7.6 million hectares) of forest, equivalent to 27 acres every minute.

## 2. Climate Change:

Climate change, driven by human induced greenhouse gas emissions, poses a significant threat to biodiversity. Rising temperature, changing rainfall patterns, and extreme weather events can disrupt ecosystems and alter species' habitats. This can lead to shifts in species' distributions, reduced reproductive success, and increased vulnerability to diseases.

The Intergovernmental Panel on climate change (IPCC) warns that if global warming exceeds 1.5 °C above pre-industrial level, the risks to biodiversity and ecosystems will be severe. It is estimated that approximately one million species are currently at risk of extinction due to climate change.

## 3. Over-exploitation of natural resources

Unsustainable harvesting

of plants, animals, and other natural resources is a significant driver of biodiversity loss.

Examples include overfishing, illegal wildlife trade, poaching, and excessive logging. These activities can deplete populations, disrupt food webs, and alter ecosystem dynamics.

According to the United Nations Environmental Programme (UNEP), over 30% global fish stocks are currently being harvested at unsustainable levels, jeopardizing marine biodiversity and the livelihood of millions of people who depend on fisheries.

#### 4. Population Pollution:

Pollution, including air, water, and soil pollution, poses a threat to biodiversity. Chemical pollutants, such as pesticides and industrial waste, can contaminate ecosystems and harm species. Pollution can also lead to habitat degradation and reduce the availability of clean water and suitable habitats.

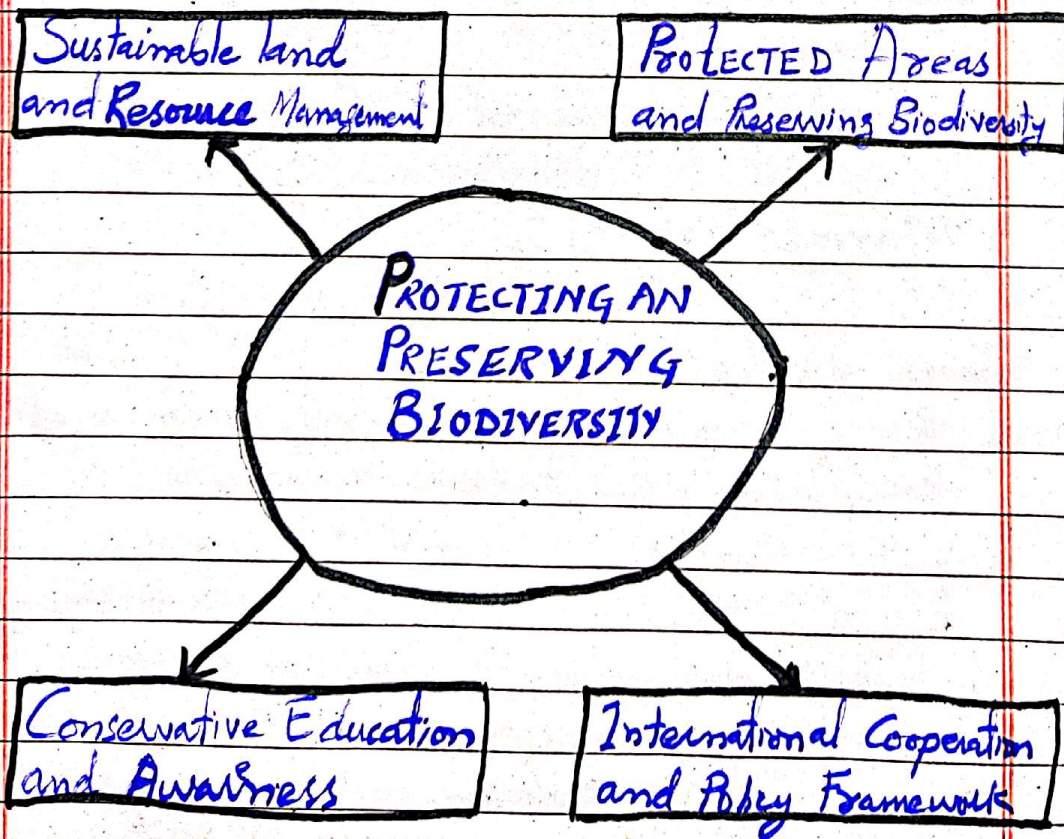
"Pollution is a serious threat to biodiversity. It affects both aquatic and terrestrial ecosystems, disrupting natural processes and endangering countless species" - (UNEP)

## 5. Invasive Species

Invasive species, introduced by human activities, can outcompete native species, disrupt ecosystems, and drive native species towards extinction. These species often lack natural predators and can rapidly spread, causing significant ecological imbalances.

"Invasive species are one of primary drivers of biodiversity loss globally, posing a significant threat to native ecosystems, and species" (IUCN)

### (iii) PROTECTING AND PRESERVING BIODIVERSITY



## 1. Protected Areas and Conservation

### Reserves:

Establishing and effectively managing protected areas is crucial for safeguarding biodiversity. These areas can range from national parks and wildlife reserves to marine sanctuaries. Protected areas provide habitats for species, help conserve genetic diversity, and offer opportunities for research and education.

"Protected areas are cornerstone of global conservation efforts, providing safe heavens for biodiversity and ensuring the preservation of natural ecosystems for future generations" (IUCN)

## 2. Sustainable Land and Resource

### Management:

Adopting sustainable land and resource management practices is vital to minimize habitat destruction and fragmentation. This includes promoting responsible forestry, implementing land-use planning, and supporting sustainable agriculture techniques that minimize ecological impacts.

"Sustainable land and resource management practices can help strike a balance between human development and the preservation of biodiversity."

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ensuring the long-term well being of both people and ecosystems" (FAO)

### 3. Conservation education and Awareness

Enhancing public awareness and understanding of biodiversity is crucial for its conservation. Education programs, campaigns, and community engagement can promote sustainable behaviors, reduce demand for illegal wildlife products, and foster a sense of stewardship towards nature.

"Conservation education plays a vital role in empowering individual and communities to make informed choices that protect biodiversity and contribute to the sustainability of our planet." (WWF)

### 4. International Cooperation and

#### Policy Frameworks:

Global collaboration and strong policy frameworks are essential for addressing biodiversity loss. International agreements such as the Convention on Biological Diversity (CBD) and the United Nations Sustainable Development Goals (SDGs) provide guidance and targets for biodiversity conservation.

"Protecting and preserving biodiversity requires

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concerted efforts and collaboration at all levels - local, national, and international - to ensure the effective implementation of policies and the mobilization of resources".  
(CBD).

#### (IV) CONCLUSION:

At the end, it is important to address these factors of biodiversity loss through sustainable land and resource management, protected areas, conservation education, and international cooperation. Efforts must be ~~take~~ <sup>made</sup> to raise awareness, promote responsible behavior, and prioritize the preservation of biodiversity to ensure a sustainable future for all life on Earth.