

# Habitat Destruction, Fragmentation and Degradation and Global Climate Change



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Course: Biodiversity and Its Measurement

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**Biodiversity** (biological diversity) is the **total variability among living organisms** from all sources—including terrestrial, marine, and other aquatic ecosystems—and the ecological complexes of which they are part..

**Scientifically, biodiversity is studied at three main levels:**

- ▶ **Genetic Diversity** – Variation of genes within a species (e.g., different crop varieties or animal breeds).
- ▶ **Species Diversity** – Variety and abundance of different species in a given area.
- ▶ **Ecosystem Diversity** – Variety of ecosystems (forests, grasslands, wetlands, coral reefs, etc.) within a region.

# Why Do We Study Biodiversity?

Studying biodiversity helps us understand how life on Earth functions and how to protect it. Scientifically and socially, it is important for several key reasons:

- To understand ecosystem functioning
- To prevent species extinction
- To conserve natural resources
- To maintain ecological balance
- To support human survival
- To improve agriculture and medicine
- To study evolution and genetics
- To address environmental problems
- To support sustainable development
- For economic and cultural importance

# SOME KEY CHALLENGES AFFECTING BIODIVERSITY

## ► **Habitat destruction:**

The complete removal or elimination of a natural environment, making it unable to support the species that previously lived there.

## ► **Habitat fragmentation:**

The process by which a large, continuous habitat is broken into smaller, isolated patches, often due to human activities like roads, farming, or urban development.

## ► **Habitat degradation:**

The deterioration of a habitat's quality, reducing its ability to support wildlife and ecological functions, even though the habitat may still physically exist.

## ► **Climate Change:**

refers to long-term changes in Earth's climate patterns, including temperature, rainfall, storms, and wind patterns.

# Deforestation in Rural Sierra Leone



## Sierra Leone suspends timber export over deforestation concerns



Source: Xinhua | 2018-04-11 20:57:05 | Editor: huaxia



# Marine Pollution of the Coastal Waters of Sierra Leone



# Major types of Pollutants

## 1. Plastic and solid waste

- Large amounts of plastic waste (bottles, sachets, fishing gear, flip-flops, etc.) enter the sea from poor waste management on land and accumulate along beaches and in coastal waters, harming marine life and livelihoods.

## 2. Oil and petroleum pollutants

- Spills, burnt oil residues, bilge and ballast water discharges from ships and industrial vessels contribute oil-based pollution along the coast and estuaries.

## 3. Sewage and untreated waste water

- Direct discharge of sewage and storm drainage into waterways flows into the estuary and coastal zone, contributing nutrient and bacterial pollution.



# Effects of climate change

## Terrestrial (Land) Environment

- Increased wildfires
- Habitat loss for wildlife
- Species extinction
- Reduced crop production
- Heatwaves
- Desertification

## Marine (Ocean) Environment

- Coral bleaching
- Rising sea levels
- Coastal flooding and erosion
- Fish migration
- Harmful algal blooms
- Ocean acidification



# Impacts on Aquatic habitats





**THANK YOU FOR YOUR ATTENTION!**