

## Medicinal Significance of Biodiversity

### Why in news?

The loss of biodiversity in the recent times drives the medicinal species to extinction and ultimately jeopardizes the human health.

### What is the status of biodiversity loss in India?

- According to a recent report, India has seen the highest rise in deforestation in the last 30 years.
- Deforestation witnessed high surge between 2015 and 2020 and ranked India the 2<sup>nd</sup> most deforested after Brazil.
- According to the Centre for Science and Environment's (CSE), over 90% of the area in India's 4 biodiversity hotspots have been lost.

#### Biodiversity hotspots in India

1. Himalayas
2. Western Ghats
3. Indo-Burma area
4. Sundaland

### What is the medicinal significance of biodiversity?

- Animals, plants, fungi and bacteria which constitutes the biodiversity, holds a treasure trove of chemicals used to treat various diseases in humans. For example,
- **Poison dart frogs** - They have compounds that are good anesthetics and antibiotics.
- **Horseshoe Crab** - The bright blue blood of the horseshoe crab was used in the development of Covid vaccines.
- **Pacific yew tree** - Paclitaxel, a drug used to treat cancer was derived from the bark of the tree.

*Pacific yew tree is now classified as near threatened under the IUCN Red List*

- **Cone snails** - Ziconotide, a drug that is used to treat severe pain comes from cone snails.
- **Weaver shrimp & Cyanobacteria** - Shrimps weave the bacteria into nests, which provide protection from predators by producing a toxic molecule.
- These toxic molecules have potential to treat pancreatic cancer in humans.
- **Traditional Medicine** - Latex from fig trees are used to treat intestinal parasites in the Amazon and neem oil is used to treat skin disorders in India.

*According to the UN's Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), around 70% of cancer medications are based on nature.*

### **What causes the loss of biodiversity?**

- **Overharvesting** - According to the 2017 estimate, the world has overfished a 3<sup>rd</sup> of global stocks.
- **Land conversion** - Since 1990, around 420 million hectares of forest has been lost through conversion into farmland or for other uses.
- **Climate change** - Growing carbon dioxide levels lead to an increase in *ocean acidification*, *bleaching corals* and destroying vast habitats.
- **Natural causes** - For example, *Chytrid fungus* causes a disease in amphibians that has wiped out as many as 90 species of frog.

*According to a report published by the Royal Botanic Gardens, London, around 40% of the world's plant species are threatened with extinction,*

### **What are the impacts of loss of biodiversity?**

- It affects local communities to access traditional medicines
- Still, 4 billion people primarily rely on natural remedies to heal themselves.
- It also causes the loss of access to molecules that are yet undiscovered.
- Beyond drug discovery, it will also affect the humans in many other ways. For example,
  - **Clean air** - Trees take pollutants, like carbon dioxide, out of the air.
  - **Clean water** - Wetlands keep water clean.
  - **Pollination** - Insects are required to pollinate our crops to provide us with food, etc.
- The recent [COP-15](#) concluded in Montreal, Canada have put forward various measures to safeguard biodiversity including the [30 x 30 target](#).

*Human health and planetary health are intricately intertwined and you can't have one without the other*

#### **IPBES**

- It was established based on Busan outcome.
- In 2012 became an independent intergovernmental body.
- The seat of the IPES's secretariat is located in Bonn, Germany.
- All States Members of the United Nations are eligible for IPBES membership.
- But it is not a United Nations body.
- The UN Environment Programme (UNEP) provides secretariat services to IPBES.
- **India** is one of the member of IPBES.

## References

1. [The Indian Express | Significance of Biodiversity](#)
2. [Down To Earth | India's biodiversity Status](#)
3. [The Guardian | Biodiversity](#)
4. [IPBES | About IPBES](#)

