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 2nd 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 3rd 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

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