



Wetlands

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Why in News?

- World Wetlands Day is celebrated every year on 2nd February.
- This day marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in Ramsar, Iran.
- In 2019 World Wetlands Day was celebrated with a theme – 'Wetlands and climate change'.

Introduction

- Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water.
- Wetlands are defined as: "lands transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water".

Types

Wetlands take many forms including:

- **Coastal Wetlands:** Coastal wetlands are found in the areas between land and open sea that are not influenced by rivers such as shorelines, beaches, mangroves and coral reefs. A good example is the mangrove swamps found in sheltered tropical coastal areas.
- **Shallow lakes and ponds:** These wetlands are areas of permanent or semi-permanent water with little flow. They include vernal ponds, spring pools, salt lakes and volcanic crater lakes.
- **Marshes:** These are periodically saturated, flooded, or ponded with water and characterized by herbaceous (non-woody) vegetation adapted to wet soil conditions. Marshes are further characterized as **tidal marshes and non-tidal marshes**.
- **Swamps:** These are fed primarily by surface water inputs and are dominated by trees and shrubs. Swamps occur in either freshwater or saltwater floodplains.
- **Bogs:** Bogs are waterlogged peatlands in old lake basins or depressions in the landscape. Almost all water in bogs comes from rainfall.
- **Estuaries:** The area where rivers meet the sea and water changes from fresh to salt can offer an extremely rich mix of biodiversity. These wetlands include **deltas, tidal mudflats and salt marshes**.

Importance

- Wetlands are highly productive ecosystems that provide the world with nearly two-thirds of its fish harvest.
- Wetlands play an integral role in the ecology of the watershed. The combination of shallow water, high levels of nutrients is ideal for the development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish and insects.
- Wetlands' microbes, plants and wildlife are part of global cycles for water, nitrogen and sulphur. Wetlands store carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide.
- Wetlands function as natural barriers that trap and slowly release surface water, rain, snowmelt, groundwater

and flood waters. Wetland vegetation also slow the speed of flood waters lowering flood heights and reduces soil erosion.

- Wetlands are critical to human and planet life. More than one billion people depend on them for a living and 40% of the world's species live and breed in wetlands.
- Wetlands are a vital source for food, raw materials, genetic resources for medicines, and hydropower.
- They play an important role in transport, tourism and the cultural and spiritual well-being of people.
- They provide habitat for animals and plants and many contain a wide diversity of life, supporting plants and animals that are found nowhere else.
- Many wetlands are areas of natural beauty and promote tourism and many are important to Aboriginal people.
- Wetlands also provide important benefits for industry. For example, they form nurseries for fish and other freshwater and marine life and are critical to commercial and recreational fishing industries.

Threats to Wetlands

- **Urbanization:** Wetlands near urban centres are under increasing developmental pressure for residential, industrial and commercial facilities. Urban wetlands are essential for preserving public water supplies.
- **Agriculture:** Vast stretches of wetlands have been converted to paddy fields. Construction of a large number of reservoirs, canals and dams to provide for irrigation significantly altered the hydrology of the associated wetlands.
- **Pollution:** Wetlands act as natural water filters. However, they can only clean up the fertilizers and pesticides from agricultural runoff but not mercury from industrial sources and other types of pollution.
There is growing concern about the effect of industrial pollution on drinking water supplies and the biological diversity of wetlands.
- **Climate Change:** Increased air temperature; shifts in precipitation; increased frequency of storms, droughts, and floods; increased atmospheric carbon dioxide concentration; and sea level rise could also affect wetlands.
- **Dredging:** The removal of material from a wetland or river bed. Dredging of streams lowers the surrounding water table and dries up adjacent wetlands.
- **Draining:** Water is drained from wetlands by cutting ditches into the ground which collect and transport water out of the wetland. This lowers the water table and dries out the wetland.
- **Introduced Species:** Indian wetlands are threatened by exotic introduced plant species such as water hyacinth and salvinia. They clog waterways and compete with native vegetation.
- **Salinization:** Over withdrawal of groundwater has led to salinisation.

Conservation Efforts

Ramsar Convention

- The Convention came in to force in 1975.
- The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".
- **Three pillars of the Convention are:**
 - Work towards the wise use of all their wetlands.
 - Designate suitable wetlands for the list of Wetlands of International Importance (the "Ramsar List") and ensure their effective management.
 - Cooperate internationally on transboundary wetlands, shared wetland systems and shared species.
- India has 27 Ramsar Sites which are the Wetlands of International importance.

Montreux Record

- It is maintained as part of the Ramsar List.
- Montreux Record is a register of wetland sites on the List of Wetlands of International Importance where changes in ecological character have occurred, are occurring, or are likely to occur as a result of technological developments, pollution or other human interference.

- Two wetlands of India are in Montreux Record: Keoladeo National Park (Rajasthan) and Loktak Lake (Manipur). Chilka lake (Odisha) was placed in the record but was later removed from it.

Conclusion

- To counter unplanned urbanization and a growing population, management of wetlands has to be an integrated approach in terms of planning, execution and monitoring.
- Effective collaborations among academicians and professionals, including ecologists, watershed management specialists, planners and decision makers for overall management of wetlands.
- Spreading awareness by initiating awareness programs about the importance of wetlands and constant monitoring of wetlands for their water quality would provide vital inputs to safeguard the wetlands from further deterioration.

