

## Wetland Ecosystem

### I. Aquatic Ecosystems

Aquatic ecosystems are plant–animal communities occurring in water bodies.

#### Classification (by salinity):

- **Freshwater (<5 ppt)**
  - **Lentic** : ponds, lakes, bogs, swamps
  - **Lotic** : rivers, streams, springs
- **Brackish (5–35 ppt)**
  - Estuaries, mangroves, salt marshes
- **Marine (≥35 ppt)**
  - Seas, oceans, coral reefs

### II. Wetland Ecosystem

- Wetlands are **marshy or peatland areas** with **static or flowing water**, fresh/brackish/saline, including **marine waters up to 6 m depth at low tide**.
- Act as **ecotones** (transition zones) between **terrestrial and aquatic ecosystems**.

#### Examples:

- Mangroves
- Floodplains
- Lake littorals
- Marshes and swamps

#### Key Characteristics:

- Periodic flooding or waterlogging
- **Hydrophytes** (water-adapted plants)
- **Hydric soils** (oxygen-deficient)

### III. Wetlands in India

- Over **27,000 wetlands**
  - ~23,000 inland
  - ~4,000 coastal
- Cover **18.4% of India's area**
- ~70% under **paddy cultivation**
- Range from **Himalayan high-altitude wetlands** to **coastal lagoons, mangroves, and coral reefs**

#### IV. Wetlands vs Lakes

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<b>Feature</b>	<b>Lake</b>	<b>Wetland</b>
<b>Depth</b>	Usually >3 m	Usually <3 m
<b>Dominant producers</b>	Phytoplankton	Macrophytes
<b>Productivity</b>	Low	High
<b>Trophic status</b>	Oligotrophic	Mostly eutrophic
<b>Flood control</b>	Limited	Significant
<b>Food chain</b>	Grazing	Detritus
<b>Vegetation</b>	Sparse	Abundant

#### V. Importance of Wetlands

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- Flood mitigation and shoreline protection
- Groundwater recharge
- Water purification & nutrient recycling
- Biodiversity hotspots (migratory birds, fish)
- Climate regulation
- Genetic reservoirs (e.g. rice)
- Support eco-tourism and livelihoods

#### VI. Causes of Wetland Degradation

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- Industrial & domestic pollution
- Agricultural runoff (eutrophication)
- Encroachment & land conversion
- Overfishing & aquaculture
- Invasive species (water hyacinth)
- Sand mining & deforestation

#### VII. Measures to Protect Wetlands

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- Scientific **demarcation** & legal enforcement
- Treatment of effluents before discharge
- Control of invasive species
- Sustainable aquaculture
- Afforestation & soil conservation
- Community participation
- Eco-tourism with safeguards

#### National Wetlands Conservation Programme (NWCP)

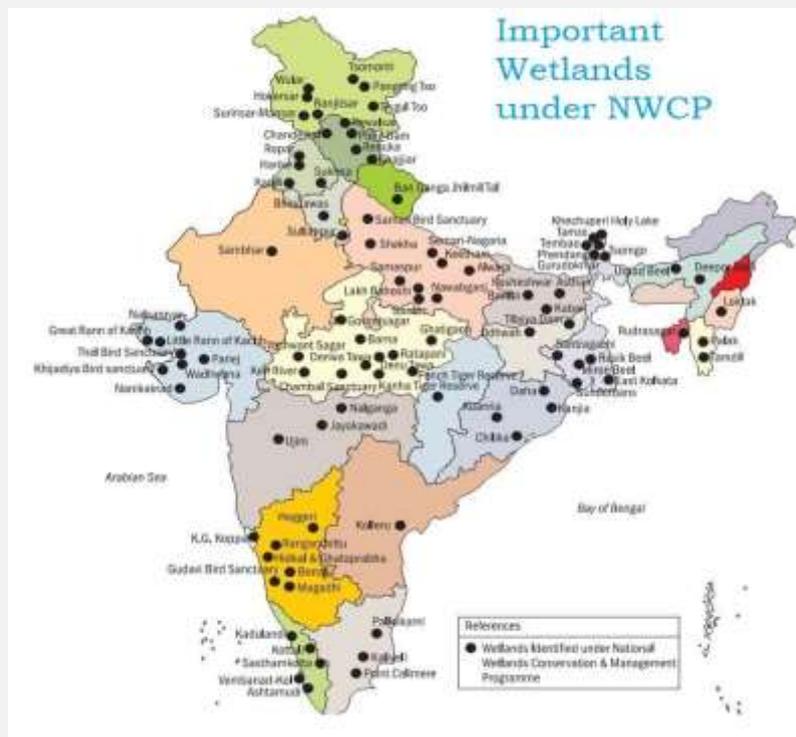
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- **Launched:** 1985–86

- **Nodal Ministry:** MoEFCC
- **Wetlands identified:** 115 (national importance)
- **Criteria:** Same as **Ramsar Convention**
- **Centre:** Coordination, funding, guidelines
- **States/UTs:** On-ground management

### Objectives:

- Prevent degradation
- Ensure wise use
- Wetland inventory preparation
- Monitoring & evaluation



### Ramsar Convention on Wetlands

- Signed: **2 February 1971**, Ramsar (Iran)
- **World Wetlands Day:** 2 February
- Parties: **170**
- Core principle: **Wise Use**
  - Maintenance of ecological character within sustainable development

### Ramsar Site:

- Wetland of international importance
- Government commitment to conservation

### Montreux Record

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- Register of Ramsar sites facing **ecological threats**
- Due to pollution, development, and human interference

### Wetlands International

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- **Global NGO** (not intergovernmental)
- Works on research, advocacy, policy support & field action

### MCQs

*Q1. With reference to wetlands, consider the following statements:*

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1. Wetlands are transition zones between terrestrial and aquatic ecosystems.
2. Wetlands are always freshwater ecosystems.
3. Hydric soils and hydrophytes are characteristic features of wetlands.

Which of the statements given above are correct?

- A. 1 and 2 only
- B. 1 and 3 only
- C. 2 and 3 only
- D. 1, 2, and 3

**Answer: B**

*Q2. Which of the following correctly distinguishes wetlands from lakes?*

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- A. Wetlands are deeper than lakes and have low productivity
- B. Wetlands are dominated by phytoplankton
- C. Wetlands are usually less than 3 m deep and highly productive
- D. Lakes have detritus-based food chains

**Answer: C**

*Q3. With reference to the National Wetlands Conservation Programme (NWCP), consider the following statements:*

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1. It was launched in 1985–86.
2. Criteria for identifying wetlands under the NWCP are the same as those of the Ramsar Convention.
3. Management of wetlands under the NWCP lies solely with the Central Government.

Which of the statements given above are correct?

- A. 1 and 2 only
- B. 2 and 3 only



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- C. 1 and 3 only
- D. 1, 2, and 3

**Answer: A**

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