



## Loss of Mangrove Cover on Katchal Island

**For Prelims:** National Aeronautics and Space Administration (NASA), Nicobar archipelago, Mangrove cover

**For Mains:** Significance of Mangroves ecosystem

### Why in News?

Recently, a study by the [National Aeronautics and Space Administration \(NASA\)](#), highlighted the loss of [mangrove cover](#) on Katchal island, part of India's [Nicobar archipelago](#).

- It showed the extent to which mangroves had been lost globally over the past two decades.

### What are Mangroves?

#### ▪ About:

- Mangroves are tropical plants that are adapted to loose, wet soils, salt water, and being periodically submerged by tides.

#### ▪ Features:

- **Saline environment:** They can survive under extreme hostile environments such as high salt and low oxygen conditions.
- **Low oxygen:** Underground tissue of any plant needs oxygen for respiration. But in a mangrove environment, the oxygen in soil is limited or nil.
  - For the purpose of breathing, they develop special roots called **pneumatophores**.
- **Survival in Extreme Conditions:** With their roots submerged in water, mangrove trees **thrive in hot, muddy, salty conditions** that would quickly kill most plants.
- **Viviparous:** Their seeds germinate while still attached to the parent tree. Once germinated, the seedling grows into a propagule.
  - A **propagule is a vegetative structure that can become detached from a plant and give rise to a new plant**. Examples include a bud, sucker, or spore.

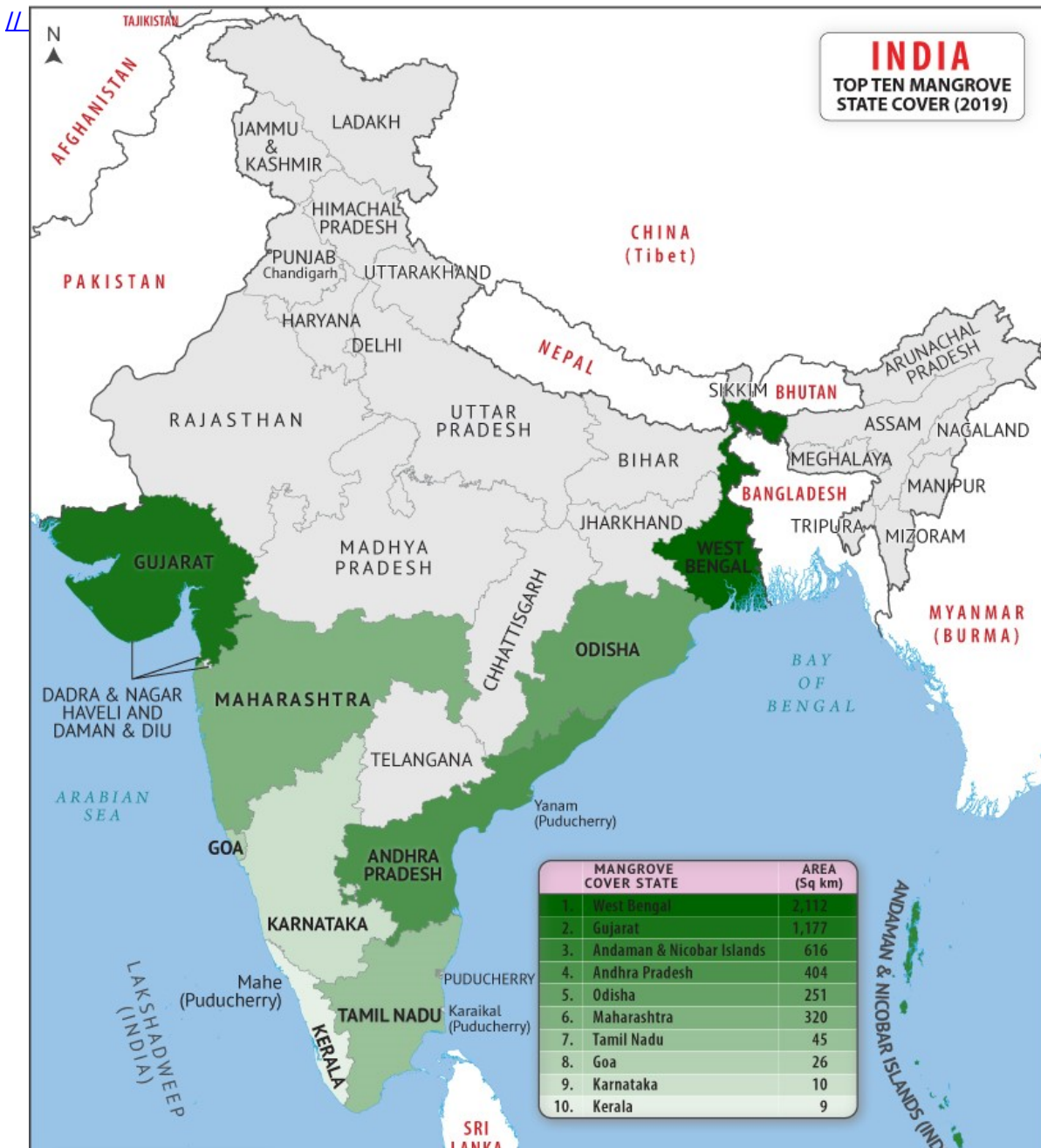
#### ▪ Significance:

- Mangroves **trap and cycle various organic materials, chemical elements, and important nutrients in the coastal ecosystem**.
- They provide one of the basic food chain resources for marine organisms.
- They provide **physical habitat and nursery grounds for a wide variety of marine organisms**, many of which have important recreational or commercial value.
- Mangroves also, **serve as storm buffers by reducing wind and wave action in shallow shoreline areas**.

#### ▪ Area Covered

- **Global Mangrove Cover:**
  - The total mangrove cover in the world is one 1,50,000 sq kms.
  - **Asia has the largest number of mangroves worldwide.**
    - South Asia comprises 6.8% of the world's mangrove cover.
- **Indian Mangrove Cover:**

- **India's contribution is 45.8%** total mangrove cover in South Asia.
- According to the [Indian State Forest Report 2021](#), Mangrove cover in India is 4992 sq. Km which is **0.15% of country's total geographical area**.
- **Largest Mangrove Forest: Sundarbans** in West Bengal are the largest mangrove forest regions in the world. It is listed as a [UNESCO World Heritage Site](#).
  - The forest is home to the [Royal Bengal tiger](#), [Gangetic dolphins](#) and [Estuarine crocodiles](#).
- **Bhitarkanika Mangroves:** The second largest mangrove forest in India is [Bhitarkanika](#) in Odisha created by the two river deltas of River **Brahmani** and **Baitarani**.
  - It is one of the most significant [Ramsar wetlands](#) in India.
- **Godavari-Krishna Mangroves, Andhra Pradesh:** The [Godavari-Krishna mangroves](#) extend from Odisha to Tamil Nadu.



**What are the Key Highlights of the Study?**

- The study shows the real extent of tidal wetlands lost between 1992 and 2019 on Katchal Island in the Nicobar Islands in the eastern Indian Ocean.
- The mangroves had the **highest ratio of loss** to gain among the three types of tidal wetlands it studied.
  - The other two were tidal flats and marshes.
- Mangroves showed an estimated net decrease of 3,700 square kilometers between 1999 and 2019.
  - Despite the losses, there have been **gains of 2,100 square kilometers** indicating the considerable dynamism of these systems.
- **Reasons for loss:**
  - **Natural cause:**
    - There was an earthquake with a magnitude of 9.2 during the **Tsunami** of 2004, during which the islands experienced up to 3 meters (10 feet) of land subsidence.
      - This **submerged many mangrove ecosystems**, resulting in a loss of more than 90% of mangrove extent in some areas.
  - **Other Factors:**
    - **Sea level rise**, shoreline erosion, storms, altered sediment flow, and subsidence.
- **Human Induce:**
  - Some 27% of the losses and gains were directly caused by human activity.
    - They alter wetlands through development, water diversion projects, or by converting the land to **agriculture** or aquaculture.
- **Present Status:**
  - It's very difficult that the earlier mangrove cover will ever come back but there has been a rise in their numbers in other places since they propagate themselves through **propagules**.

## Way Forward

- Conservation needs to be linked with a broader perspective with active community involvement, environmental security, and reducing any risks from natural calamities.
  - Such measures need to be adopted more holistically in view of anticipatory adaptation measures which hold the clue for successful and effective management.

## UPSC Civil Services Examination Previous Year Question (PYQ)

### Prelims

**Q. Which one of the following regions of India has a combination of mangrove forest, evergreen forest and deciduous forest? (2015)**

- (a) North Coastal Andhra Pradesh
- (b) South-West Bengal
- (c) Southern Saurashtra
- (d) Andaman and Nicobar Islands

**Ans: (d)**

**Exp:**

- North coastal Andhra Pradesh has mangroves and dry evergreen forests.
  - South West Bengal has mangroves and evergreen forests.
  - Southern Saurashtra has mangroves, dry deciduous, tropical thorn forests etc.
  - The tropical islands of Andaman and Nicobar have a combination of mangrove forests, evergreen forests and deciduous forests.
- Therefore, option (d) is the correct answer.

### Mains

**Q.** Discuss the causes of depletion of mangroves and explain their importance in maintaining coastal ecology? **(2019)**

**Source:** [DTE](#)

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