

Seagrass

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Why in News

Recently, the **restoration process of seagrasses** has been taken up by Tamil Nadu in the **Gulf of Mannar**.



Key Points



- **Seagrasses:**
 - These are **flowering plants** that **grow submerged in shallow marine waters** like bays and lagoons.
 - These have **tiny flowers** and **strap-like or oval leaves**.

- **Evolution:**

Terrestrial plants evolved about **850 million years** ago from a group of green **algae** and seagrasses evolved from terrestrial plants that recolonised the ocean **70-100 million years ago**.

- **Food Production:**

Like terrestrial plants, seagrasses also **require sunlight for photosynthesis** from which these **manufacture their own food** and **release oxygen**.

- **Reproduction:**

- **Sexual Reproduction Method:** The **pollen from the flower of the male plant is transferred to the ovary of the female** flower through this method.

This is known as **submarine pollination**. Most species undergo this process and complete their life cycle underwater.

- **Asexual Reproduction Method:** Seagrasses can also reproduce asexually by **branching off at their rhizomes** (modified subterranean plant stem that sends out roots and shoots from its nodes).

Because of this character, they **can recover after being cut by grazers or disturbed by storms**.

- **Order and Species:**

- There are **60 species** belonging to four families in the **order Alismatales**.
- Some of the important seagrasses are **Sea Cow Grass** (*Cymodocea serrulata*), **Thready Seagrass** (*Cymodocea rotundata*), **Needle Seagrass** (*Syringodium isoetifolium*), **Flat-tipped Seagrass** (*Halodule uninervis*), etc.

- **Habitat:**

- Though seagrasses **inhabit all types of substratas** (layers) from mud to rock, the lush green seagrass beds are **found extensively in muddy and sandy substratas**.
- These occur all **along the coastal areas of India** and are abundant in the **Palk Strait** and Gulf of Mannar in Tamil Nadu.

- **Significance:**

- Seagrasses are considered '**Ecosystem Engineers**' as they are known for providing many ecosystem services and are also called '**the lungs of the sea**' as they release oxygen into the water through photosynthesis.
- **Sequesters up to 11% of the organic carbon** buried in the ocean even though they occupy only 0.1% of the ocean floor and **absorb 83 million tonnes of carbon from the atmosphere annually.**
 - Seagrasses can capture carbon from the atmosphere **up to 35 times faster than tropical rainforests.**
- **Help maintain water quality** by trapping fine sediments and suspended particles in the water column and increase water clarity.
- **Filter nutrients released from land-based industries** before they reach sensitive habitats like **coral reefs.**
- **Prevent soil erosion** as the extensive vertical and horizontal root systems of seagrasses stabilise the sea bottom.
- **Provide food as well as habitat** for fishes, octopuses, shrimp, blue crabs, oysters, etc.
 - Endangered marine organisms like **dugong** (Sea Cow), **green turtle**, etc, **graze directly** on seagrass leaves.
 - **Bottle-nosed dolphins feed on the organisms** that live in seagrass areas.
 - **Detritus** (natural waste) of decomposed dead seagrass **supplies food for worms, sea cucumbers, crabs, etc.**
 - **After decomposition**, it releases **nutrients like nitrogen and phosphorus** which are absorbed by seagrasses and phytoplankton.
- **Protect** juvenile and small adult fish **from large predators** and also protect worms, crabs, starfishes, sea cucumbers, sea urchins, etc, **from strong currents.**
- **Provide ideal nursery sites** for important commercial marine life like squids and cuttlefish.

- **Threats:**

- Seagrass beds are facing **decline all over the world at the rate of 2-5% annually.**
 - Around 30,000 square kilometres of seagrass has been lost during recent decades at a global level.
- These face **natural disturbances** like grazing, storms, **ice-scouring** (abrasion and erosion of seabeds by glaciers.) and **desiccation** (extreme dryness).
- **Human disturbances** like **eutrophication**, mechanical destruction of habitat, overfishing, release of nutrients, coastal engineering construction, pollution, etc are destructive for them.

Way Forward

- If seagrass habitats are lost, the marine organisms that depend on them for their survival may also face extinction, resulting in the loss of marine ecosystem productivity.
- Protection and restoration should be attempted at a global level as it can play a significant role in mitigating climate change.
- There is an urgent need to take earnest measures to conserve seagrasses and their habitats. For that, the **International Union for the Conservation of Nature** (IUCN) should intervene immediately and study the status of the different seagrass species before they become extinct.

Source: DTE