



## Salt Marshes Succumb to Sea Level Rise

**For Prelims:** Salt marshes, carbon sink, coastal ecosystem.

**For Mains:** Importance of salt marshes in the coastal ecosystem, threats and conservation methods, Ecosystems under threat.

### Why in News?

For the past 50 years, researchers from the **Marine Biological Laboratory (MBL)** have monitored the vegetative cover of the **Great Sippewissett Marsh in Falmouth, Massachusetts**, to examine the effects of increased nitrogen levels on the marsh grass species there.

- But a recent study suggests that by the turn of the century, **more than 90% of these biologically productive ecosystems could be lost to [sea level rise](#).**

### What are Salt Marshes?

#### ▪ About:

- Salt marshes are **coastal [wetlands](#) that are regularly flooded and drained by tides.** They are unique ecosystems that are **situated between land and sea**, and they consist of a **mixture of grasses, sedges, rushes, and other plants** that can **tolerate high levels of salt.**

#### ▪ Characteristics:

- Salt marshes are marshy because the soil may be composed of deep mud and peat. Peat is made of decomposing plant matter that is often several feet thick.
- Salt marshes smell like **sulfurous rotten-egg smell.** Because salt marshes are frequently submerged by **tides and contain a lot of decomposing plant material, oxygen levels in the peat can be extremely low**—a condition called **hypoxia.**
  - Hypoxia is caused by the growth of bacteria which produce the sulfurous rotten-egg smell that is often associated with marshes and mud flats.



## What are the Advantages of Salt Marshes?

- Salt marshes have long been considered **one of the most productive and biologically diverse ecosystems on the planet**. They serve as a vital habitat for numerous species of fish, birds, and other wildlife.
- Salt marshes are the **“ecological guardians of the coast”** that maintain healthy fisheries, coastlines and communities.
  - They provide shelter, food and nursery grounds for more than **75% of coastal fisheries species including shrimp, crab and many finfish**.
- Salt marshes also **protect shorelines from erosion** by creating a buffer against wave action and by trapping soils.
- Salt marshes **reduce the flow of flood water and absorb rainwater**. By filtering runoff and excess nutrients, salt marshes also help to maintain water quality in coastal bays, sounds and estuaries.
- Salt marshes are also important **carbon sinks**, meaning they absorb and store large amounts of carbon dioxide from the atmosphere. This helps to mitigate the impacts of climate change by reducing the amount of greenhouse gases in the atmosphere.

## What are the Threats to Salt Marshes?

- Despite their numerous advantages, **salt marshes are facing a number of threats that could put their survival at risk**. One of the most significant of these threats is sea level rise.
  - **As sea levels continue to rise** due to climate change, **salt marshes are at risk of being submerged and disappearing entirely**.
- Another threat to salt marshes is the **introduction of excess nitrogen, which can alter the balance of plant species** and lead to a loss of biodiversity. This excess nitrogen can come from a variety of sources, including fertilizer runoff from agricultural fields and urban areas.
- Anthropogenic activities, such as the **construction of seawalls and other structures along the coast, can also prevent salt marshes from migrating landward** in response to rising sea levels.
  - This can lead to a phenomenon known as **“coastal squeeze,”** where the marshes are squeezed between rising seas and man-made barriers.

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

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