

Salt Marshes - Natural Coastal Buffers

Prelims: *Current events of national and international importance | Environment*

Why in News?

A recent study published in *Nature* highlighted how salt marshes reduce wave energy and protect coastlines from storm surges.

Salt Marshes

- **Definition** - Coastal wetlands between land and sea, dominated by salt-tolerant vegetation.
- **Indian Distribution** - Gujarat has India's largest salt marshes, followed by Tamil Nadu, Andhra Pradesh and Maharashtra.
- **Extent** - A 2020 study estimated India's salt marshes cover approximately 290 sq. km.



Salt Marshes Protect Coastlines?

- **Wave Reduction** - Dense plant stems create resistance and reduce incoming wave energy.
- **Sediment Stability** - Root networks bind sediments and prevent coastal erosion.
- **Natural Barriers** - Elevated marsh surfaces help dissipate wave energy.

Key Findings of the Recent Study

- **Experimental Setup** - Researchers tested 306 sq. metres of live marshland in a 300-metre-long wave flume.
- **Vegetation Damage** - Plant biomass declined by 75- 80%, while marsh elevation fell only 7 mm.
- **Wave Attenuation** - Vegetation reduced 75 cm waves by 6- 22%, but 2-metre waves by only up to 6%.
- **Storm Protection** - Vegetation can reduce smaller storm waves by over 10%, reaching 50% in some locations.

Threats to Salt Marshes

- **Coastal Development** - Aquaculture and infrastructure expansion destroy marsh habitats.
- **Climate Change** - Rising sea levels and stronger storms threaten vegetation.

Significance

- **Disaster Management** - Reduces coastal flooding, storm surges and erosion.
- **Biodiversity** - Supports wildlife and maintains coastal ecosystems.
- **Climate Resilience** - Provides nature-based coastal protection.

Reference

[The Hindu| How the humble salt marsh softens the ocean's fury](#)