Carolina Wetlands Association

THE IMPORTANCE OF MARSH MIGRATION CORRIDORS

Coastal tidal marshes

provide essential ecosystem services buffering inland freshwater streams, swamp forests, farmlands, and water supplies from saltwater intrusion by their suppression of storm surges. As sea level continues to rise at roughly four inches per decade, the lower edges of tidal marshes will be submerged, and the upper edges must expand inland to preserve their storm buffering benefits. As the climate changes in the Carolinas, it is crucial to provide protected corridors through which coastal tidal marshes that cover hundreds of miles can migrate inland.

Coastal marsh migration

occurs when rising sea levels and sediment accumulation allow grasses, sedges, and other marsh plants to shift inland when barriers are absent, as storm surges increase soil salinity.[1] Marsh migration and saltwater intrusion can transform ecosystems, turning forests into ghost forests [2,3,4] and affecting low-lying farmland, freshwater aquifers, crops, and soil fertility. [2,3,4,5,6]

Coastal Marsh Ecosystem Services:[7]

Shoreline Protection: Absorbs wave action, reduces erosion and impacts from hurricanes and extreme weather.

Flood Control: Absorb storm surges and reduce coastal flooding.

Prevent saltwater intrusion: Safeguards agriculture and drinking water.

Water filtration: Traps pollutants and reduces nutrients.

Critical habitat: Provided for fish, birds, and other wildlife.

Carbon Sequestration: Store carbon and mitigate climate change.

Coastal Marsh Threats in the Carolinas:

Human Hydrologic Management: Includes activities like ditching, channelization, and upstream dams or barriers that limit sediment flow from rivers.[8]

Man-made Marsh Migration Barriers: Shoreline development, such as bulkheads, seawalls, berms, and roads, create hard barriers that obstruct marsh migration.[9]

Sea Level Rise: Can transform marshes into open water if the rise occurs too quickly.[1]

Marsh Corridor Solutions

Identify & Prioritize Corridors: Use GIS and modeling to assess land availability sea level rise, and community value.[1,10]

Community Collaboration: Engage local stakeholders to align environmental and community goals for long-term success.[11]

Agricultural Transition: Adapt farms to sea level rise by maintaining tidal marsh buffers, planting salt-tolerant crops, or shifting to aquaculture.[1,12,13]

Conservation & Land Management: Establish migration corridors through easements1, invasive species and dead tree removal,[12,13,14] and hydrology and topography maintenance.[8,14]

Regulatory Actions & Incentives: Implement policies to limit development and promote living shorelines for marsh protection.[8,11,13]

Carbon & Nutrient Incentives: Use carbon markets and pollution credits to encourage private contributions to marsh migration corridors.[14]

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