

Sea Level Rise and Its Connection to the Origin and Future of New England's Salt Marshes

Abstract: Local sea level is affected by 2 major components; eustatic and isostatic effects. Since the end of the last ice age, eustatic sea level rise has been dramatic and essentially continuous world-wide. Regionally, there were some counter effects in sea level rise from isostatic rebound in central to northern coastal New England. Isostatic effects are minimal at this time in New England. Salt marshes as we currently observe them, only began to form about 3,000 - 4,000 years ago as the rate of sea level decreased enough to allow the formation of salt marshes in a moderately transgressive environment. Evidence suggests that we have not been able to detect an increase in the rate of sea level rise to date. As we face the prospect of potential increases in the rate of sea level rise over the next century, the data is ambiguous about how salt marshes will respond. Current predictions of the rate of sea level rise for the next century suggest that salt marshes may become dominated by wetter environments and subsequently evolve different vegetative ecosystems as marsh accretion rates struggles to keep pace with sea level rise. Sea level rise could potentially drown some salt marshes. Some current data suggests that salt marsh accretion rates are currently keeping pace with sea level rise.

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