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TITLE: Saltmarshes in a time of change

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ABSTRACT:

Saltmarshes are a major, widely distributed, intertidal habitat. They are dynamic systems, responding to changing environmental conditions. For centuries, saltmarshes have been subject to modification or destruction because of human activity. In this review, the range of factors influencing the survival of saltmarshes is discussed. Of critical importance are changes in relative sea level and in tidal range. Relative sea level is affected by changes in absolute sea level, changes in land level and the capacity of saltmarshes to accumulate and retain sediment. Many saltmarshes are starved of sediment because of catchment modification and coastal engineering, or exposed to erosive forces, which may be of natural origin or reflect human interference. The geographical distribution of individual saltmarsh species reflects climate, so that global climatic change will be reflected by changes in distribution and abundance of species, although the rate of change in communities dominated by perennial plants is difficult to predict. Humans have the ability to create impacts on saltmarshes at a range of scales from individual sites to globally. Pressures on the environment created by the continued increase in the human population, particularly in developing tropical countries, and the likely consequences of the enhanced greenhouse effect on both temperature and sea level give rise to particular concerns. Given the concentration of population growth and development in the coastal zone, and the potential sensitivity of saltmarsh to change in sea level, it is timely to review the present state of saltmarshes and to assess the likelihood of changes in the near (25 years) future. By 2025, global sea level rise and warming will have impacts on saltmarshes. However, the most extensive changes are likely to be the direct result of human actions at local or regional scales. Despite increasing recognition of the ecological value of saltmarsh, major projects involving loss of saltmarshes but deemed to be in the public interest will be approved. Pressures are likely to be particularly severe in the tropics, where very little is known about saltmarshes. At the local scale the cumulative impacts of activities, which individually have minor effects, may be considerable. Managers of saltmarshes will be faced with difficult choices including questions as to whether traditional uses should be retained, whether invasive alien species or native species increasing in abundance should be controlled, whether planned retreat is an appropriate response to rising relative sea level or whether measures can be taken to reduce erosion. Decisions will need to take into account social and economic as well as ecological concerns.

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