Saltmarshes

Morphodynamics, Conservation and Engineering Significance

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EDITED BY

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Preface

Coastal saltmarshes are areas of land covered principally by halophytic vegetation which are regularly flooded by the sea. They occur in many temperate and high-latitude estuaries and on sections of open coast which are protected from extreme wave action by wide intertidal flats and barrier complexes. Extensive areas of reclaimed coastal marsh, now largely fresh, are also found in many countries, including Great Britain.

Attitudes towards saltmarshes have traditionally been diverse. They have long been valued by ecologists, ornithologists and conservationists as important wildlife habitats, and as field laboratories for scientific investigation. Marshes and associated mudflats provide feeding grounds and nesting sites for a wide range of wading birds, and act as important migration stop-over sites. Academic geomorphologists, sedimentologists and geochemists have also valued saltmarshes as dynamic natural environments in which the interaction of natural physical, chemical and biological processes can be observed, monitored and demonstrated for teaching purposes. In a commercial sense, saltmarshes have been valued by farmers as sites for seasonal grazing and wild-fowling, or as potential sites for reclamation and arable cultivation. On the other hand, industrialists and local planning authorities have often viewed saltmarshes as areas of low economic value suitable only for waste-dumping and industrial development. The majority of the general public have also preferred to choose sandy and rocky coasts for recreational and residential development, and thought it appropriate to choose saltmarshes as sites for petrochemical complexes and dock developments. The attitude of engineers to saltmarshes has traditionally reflected the objectives of their clients, which have principally been to enclose, drain and reclaim marshes, and to limit their growth as undesirable influences on navigation and beach quality. However, in recent years the potential value of saltmarshes in coast protection and flood defence has been increasingly recognized. Concern about the effects of accelerated sea-level rise and a possible increase in storminess which have been predicted to occur during the next century, coupled with a decline in the value of agricultural land and the increasingly vociferous arguments being forwarded by environmental pressure groups, has caused the authorities responsible for flood defence and coast protection to review their current strategies. Options of land abandonment and 'set-back' of sea walls on a large scale are now being actively considered, and there is renewed interest in the development of new 'soft-engineering' methods for saltmarsh creation and restoration. This growth of interest has revealed that many of the basic physical and biological

processes governing the formation and dynamics of saltmarshes remain poorly understood and require further study.

It was against this background that a one-day workshop on the 'Morphodynamics, Conservation and Engineering Significance of Saltmarshes' was held at the Postgraduate Research Institute for Sedimentology, University of Reading, on 24 April 1991. Seven leading authorities in British coastal saltmarsh research were invited to summarise the current status of knowledge in their specialist subject areas prior to a discussion of outstanding problems and requirements for further work. The meeting was attended by over fifty participants drawn from a wide range of university departments, Government research establishments, the National Rivers Authority, and engineering consultancy companies. This book, which is based on the formal contributions to the workshop, has been produced with the intention of making available the information presented to a wider international audience.

J.R.L. Allen K. Pye Reading May 1991