

ADVANCES IN
**ECOLOGICAL
RESEARCH**

Estuaries

29



EDITED BY
D. B. NEDWELL D. G. RAFFAELLI

SERIES EDITORS: A. H. FITTER D. G. RAFFAELLI



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Edited by

D.B. NEDWELL

Department of Biological Sciences, University of Essex, UK

D.G. RAFFAELLI

Department of Zoology, University of Aberdeen, UK

Series Editors

A.H. FITTER

Department of Biology, University of York, UK

D.G. RAFFAELLI

Department of Zoology, University of Aberdeen, UK

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Contributors to Volume 29

- K.S. BLACK, *Sediment Ecology Research Group, Gatty Marine Laboratory, University of St Andrews, St Andrews KY16 8LB, UK.*
- S. CROOKS, *Centre for Social and Economic Research on the Global Environment (CSERGE), School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK.*
- C.H.R. HEIP, *Netherlands Institute of Ecology, PO Box 140, 4400 AC Yerseke, The Netherlands.*
- P.M.J. HERMAN, *Netherlands Institute of Ecology, PO Box 140, 4400 AC Yerseke, The Netherlands.*
- D.O. HESSEN, *Department of Biology, University of Oslo, PO Box 1027 Blindern, 0316 Oslo, Norway.*
- T.D. JICKELLS, *School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK.*
- J. KROMKAMP, *Centre for Estuarine and Coastal Ecology, Netherlands Institute for Ecology, 4400 AC Yerseke, The Netherlands.*
- J.J. MIDDELBURG, *Netherlands Institute of Ecology, PO Box 140, 4400 AC Yerseke, The Netherlands.*
- D.B. NEDWELL, *Department of Biological Sciences, University of Essex, Colchester CO4 3SQ, UK.*
- D.M. PATERSON, *Sediment Ecology Research Group, Gatty Marine Laboratory, University of St Andrews, St Andrews KY16 8LB, UK.*
- R. SANDERS, *School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK.*
- M. TRIMMER, *Department of Biological Sciences, University of Essex, Colchester CO4 3SQ, UK.*
- R.K. TURNER, *Centre for Social and Economic Research on the Global Environment (CSERGE), School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK.*
- G.J.C. UNDERWOOD, *Department of Biological Sciences, University of Essex, Colchester CO4 3SQ, UK.*
- J. VAN DE KOPPEL, *Netherlands Institute of Ecology, PO Box 140, 4400 AC Yerseke, The Netherlands.*

Preface

The importance and ecological significance of estuaries as an interface between the land and sea has long been appreciated, with a considerable history of scientific examination of the physicochemical characteristics of estuaries and of the structure and function of estuarine biological communities. Recently, concern with increased nutrient loads to estuaries, and consequent eutrophication, has focused the attention of both ecologists and legislators. Trends towards a holistic, multidisciplinary approach to the ecology of the coastal zone has emphasized the interaction between the river catchment, the estuary and the coastal sea in terms of element fluxes. This has been epitomized, at least in Europe, by the imminent adoption of the Water Framework Directive by the European Community, which will require integrated management of water resources across the entire system of river basin, estuary and coastal sea.

In the last few years there has been increased research activity focused in estuaries, and there have been significant advances in understanding of at least certain aspects of estuarine ecology. However, much remains to be done before the complete framework of scientific background and understanding necessary for the integrated management strategy envisaged by legislation is in place. Without attempting to cover all aspects of estuarine ecology, this volume aims to provide overviews of a number of the important areas of estuarine research where there have been significant improvements in scientific understanding. This ranges from the macroscale in terms of how differences in river basins influence the loads of nutrients to estuaries (Hessen), through the impacts and fates of nutrient loads in estuaries (Nedwell *et al.*), to how both phytoplanktonic and benthic estuarine primary production are regulated (Underwood and Kromkamp). Paterson considers the influence of benthic microbial communities, while Herman *et al.* discuss the interactions between benthic animals and sediments. Many of the key factors influencing the outcome of management decisions for estuaries may not be ecological at all but result from economic, social or political pressures. Crooks and Turner review these aspects from the point of sustainability of estuarine resources.

We hope that this volume will provide both the specialist in estuarine ecology and the interested newcomer with new insights into the ecology of estuaries.

Dave Nedwell
Dave Raffaelli

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