The Ecology of Poole Harbour
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Conclusion: Science, Development and Management

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In this book, the contributors have demonstrated two general features of Poole Harbour: first, its considerable value as a significant and novel natural coastal environment with an important role in terms of biodiversity; second, the range and intensity of anthropogenic impacts on the harbour as a consequence of burgeoning development-related pressures ranging from tourism and leisure through industry and port activities to waste disposal and even hydrocarbon extraction. In looking to the future we must acknowledge that these twin features of the harbour, while they generate considerable potential conflict, cannot be seen as distinct from one another in terms of harbour ecology or management solutions. Rather environment and development as the Brundtland Commission observed (World Commission on Environment and Development, 1987) are inexorably linked and interrelated. Poole Harbour demonstrates this link not to be a purely recent phenomenon. Archaeological research supported by Poole Maritime Trust and the Poole Harbour Heritage Project shows the modern nature of the harbour to have been shaped by human communities over several millennia through land reclamation, port construction and modifications to land use and landscape within the harbour's catchment. However, the rate and intensity of anthropogenic alteration has accelerated during the past two centuries.

While development cannot flourish on an unsustainable environmental resource base, it is nevertheless inevitable, and is indeed an important contributor to human benefit on local, regional and international levels. Resolving the conflicts between environment and development cannot, therefore, be achieved by unco-ordinated institutions and policies, and it is in this context that the concept of integrated coastal zone management (ICZM) has emerged (World Bank, 1993; European Science Foundation, 2002). Cicin-Sain (1993) emphasized that 'integration' in coastal management is essential at several levels, one being integration among disciplines. Sustainable ICZM depends on understanding the social-economic-cultural-legal processes which bring about change, produce impacts and recognize opportunities for sustained development. Poole Harbour is managed by the Poole Harbour Commissioners whose "statutory duty is to conserve, regulate and improve" the harbour. Their Environmental Policy Statement emphasizes that they recognize "the special position of Poole Harbour as a natural asset and will

continue to promote its sustainable use, balancing the demands of its natural resources and resolving conflicts of interest". An Aquatic Management Plan designed to zone activities throughout the harbour is already in effect and managed through a committee which brings together the Commissioners, the local authorities and bodies such as English Nature to monitor and resolve such conflicts as they arise. The land around the harbour and its catchment where many activities occur which can profoundly affect the ecology of the harbour, are subject to both planning legislation and also to a wide range of land designations which derive from both national and European regulations. Some of these specify the data which must be collected to assure the proper implementation of the regulations and this in turn provides a role for scientific research.

Sustainable management cannot in itself be effective unless established on a scientific foundation. Much scientific work within the harbour has been undertaken in order to understand issues such as water quality and shoreline change, which have implications for the sustained ecological and economic well-being of the harbour. However, because these studies have often been focused upon specific (and often pressing) problems of public concern, such as planning issues, or are focused primarily on monitoring in relation to statutory requirements, they stand apart from other research being carried out within the harbour. In this context, in order to make progress in terms of the science of the harbour, a more coherent scientific effort should combine a whole system focus with a multidisciplinary approach. Such an approach would improve our understanding of the Poole Harbour ecosystem as a whole in terms of its geomorphology, hydrology and physico-chemical characteristics and their relationship to biodiversity, species distribution, population dynamics and community ecology. Integral to such work would be an examination of the environmental impacts and interactions of anthropogenic agents on the ecosystem, and an enhanced understanding of how the human community responds to an improved understanding of the dynamics of the harbour system.

We hope that this book demonstrates that much has already been achieved in relation to such strategic themes. But much also remains to be done. In particular, while over the last few years important projects have considerably enhanced our knowledge of the components of the system, there remains the need for a deeper understanding of the harbour's ecology in the sense of establishing some of the key causal interrelations across physical, chemical and biological phenomena (anthropogenic and natural). If we can gain a greater grasp of causality in the Poole Harbour system, then we can begin to understand the consequences of anthropogenic agents and interventions in ways which would provide a stronger basis for decision-making and conflict resolution.

We recognize that Poole Harbour research, if set only in its local context, is unlikely to draw considerable and sustained additional research resources much beyond those already being invested. However, we believe that Poole Harbour has the potential to become more prominent in national and international research terms. The number of agencies currently committed to the harbour is not insignificant and neither is the aggregate value of their commitment. This book provides ample evidence of substantial

resources of money and time invested in Poole Harbour research by organizations such as English Nature, the Environment Agency, Poole Harbour Commissioners, Wessex Water, Natural Environment Research Council among others – and through the work of academics and students at the Universities of Bournemouth, Greenwich, Southampton and Swansea. We suggest that, notwithstanding the particular statutory or other interests represented by such organizations, improved co-ordination of such work sometimes in the form of multi-agency projects, would lead to better returns in relation to our overall understanding of the harbour, whilst also of necessity continuing to meet the particular needs of the individuals and agencies involved.

Such co-ordination, in so far as it results in the improved elucidation of scientific and management issues may also provide a basis for drawing new resources from national or European sources for scientific research. To achieve this potential, Poole Harbour must be situated in its international context. In the Introduction, we noted that immediately adjacent to Poole Harbour is some of the most expensive real estate in the world. The fact that this real estate lies in such close proximity to internationally significant bird populations gives force to our assertion that Poole Harbour represents *par excellence* the environment-development debate in microcosm. It is not only these features, however, that provide Poole Harbour with international significance. The harbour has an established history in terms of the naturalization of non-indigenous species – indeed five of the chapters in this book focus on such invasions. Moreover, it has been asserted (English Nature, 1994) that Poole Harbour has the highest summer temperature maxima of any significant size marine water mass in the UK. Currently, in marine science, ecological community changes such as the naturalization of tropical species in temperate waters are being attributed to climate change. Arguably, the Manila Clam population in Poole Harbour is a case in point. In any event, lack of systematic knowledge of ecosystem responses to climatic change is widely recognized as an important scientific and indeed political issue (European Science Foundation, 2002). On the basis of existing Poole Harbour literature and historical data combined with improved co-ordination of effort, Poole Harbour could provide a site of considerable utility as a case study in terms of climate change related ecological work.

In any event, we hope and expect that the Poole Harbour Study Group will continue to encourage research on Poole Harbour and moreover facilitate the co-ordination of that research, and that this book, by drawing together reports on a wide range of aspects of the ecology of the harbour so as to make accessible a better overview than would otherwise be available, will further assist with that effort.

References

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