

## Preface

This issue offers eight separate papers, each presented at the Fenner Conference on the Environment—Biodiversity Conservation in Freshwaters held at the Academy of Sciences in Canberra, Australia, in July 2001. The Conference brought together Australian scientists, policy makers, and managers to exchange views on the issues and challenges confronting the conservation of freshwater biodiversity in Australia (Georges and Cottingham, 2002).

The Conference had a strong focus on the nature of decision-making when it comes to Australian freshwater biodiversity. While policy-makers, managers and scientists develop their principles, modes of investigation, and knowledge base, they are under increasing pressure to provide advice and expertise on an immense range of environmental crises, from ways to conserve endangered species to assessing the downstream effects of new dam proposals. It was recognized early in the Conference that decisions regarding appropriate responses often need to be made on a time-scale of the immediate to the very near future. In this respect, the conservation of biodiversity is a crisis discipline. It demands an adaptive approach, where intervention and research, including monitoring and evaluation, go hand in hand to achieve improved conservation outcomes and improved knowledge as a basis for future action.

Interventions to achieve biodiversity conservation objectives have been most effective where they have taken a comprehensive and systematic approach that integrates social, economic, and environmental aspects. Negotiating a path to effective solutions requires input from a range of government bodies, non-government agencies, community groups and private land-holders whose activities influence the biodiversity of inland waters, whether positively or negatively. Science has an important and arguably central role in biodiversity conservation but its contribution is not always clear, being moderated by a range of socio-economic factors. We require prudent and precautionary use of the best available knowledge and decision-making frameworks, integrating scientific, social, economic, and political dimensions, if we are to avoid well-intentioned and expensive management that is ineffective or even counterproductive.

Of the many important initiatives discussed at the Fenner Conference, the following four were considered to be of the highest priority for action at a national scale:

- The Australian States and the Commonwealth of Australia should work together to establish an enduring national series of Special Catchments for the Management of Biodiversity (alternatively referred to as National Heritage Rivers or National River Reserves).
- Australia needs an increased inventory effort (wetlands, streams, springs, groundwater) and validation of surrogates for freshwater biodiversity that may be used by resource managers to identify, manage, and monitor areas of high conservation value. We need to stem the decline in our capacity to undertake taxonomic work in our universities, museums, and research organizations. Molecular or genetic techniques, such as allozyme analysis and DNA sequencing, can offer many new insights in this area.
- The Australian States and Territories need to take immediate additional actions to protect, and where necessary rehabilitate, high value systems such as wetlands of national significance and Ramsar sites. We need to go beyond simply listing sites or planning recovery, and take action.
- The Commonwealth of Australia, and its States and Territories should jointly establish a national invasive species action plan, including rapid response plans for new or potential invaders.

These priorities resonate with the views represented in this special issue. The papers here cover a broad cross-section of perspectives on freshwater biodiversity in Australia, from single species approaches, to taxonomic groups, to special habitats and ecosystems, wetland restoration, river degradation, modifications to hydrology, and protective measures for rivers.

As an epilogue, Cullen presents a provocative opinion on the challenges facing Australians in the quest for more appropriate management of inland aquatic biodiversity. This is presented from his perspective as the recently retired Founding Chief Executive Officer of the Cooperative Research Centre for Freshwater Ecology, and influential member of the Australian Prime Minister's Science Engineering and Innovation Council.

Georges, A., Cottingham, P., 2002. Biodiversity in inland waters—priorities for its protection and management. Technical Report 1/2002, Cooperative Research Centre for Freshwater Ecology. Canberra, Australia.

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