assessing the usefulness of rapid biological assessment in lentic, macrophyte-dense wetlands. Time-standardized rapid assessment techniques recover a large percentage of total macroinvertebrate taxa but may not always accurately indicate rank order abundance. In particular, comparisons of community structure estimates from lotic and lentic habitats in the wet-dry tropics indicate that accuracy decreases (= increased selection biases) with the quantity of detritus in samples. Other factors that may influence the community structure of live-sorted samples include sampling technique and also time-standardised sorting wherever total macroinvertebrate abundance and taxonomic richness in samples are high. Despite the inherent limitations of non-quantitative sampling techniques, results from a survey of 7 lentic waterbodies in the Alligator Rivers Region of the Northern Territory (in which such techniques were employed) detected an environmental gradient correlated to mining impact.

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Using community structure for biomonitoring in Australian streams and wetlands

The Monitoring River Health Initiative (MRHI) is a nationwide project that uses aquatic invertebrate communities to monitor the ecological condition of rivers throughout Australia. The MRHI is based on the highly successful RIVPACS program, developed in the United Kingdom during the past 20 years. An overview of the Western Australian component of the MRHI is given, with particular emphasis on the seasonal and episodic nature of many of State's rivers and the parallels that can be drawn between monitoring such waterbodies and monitoring lentic wetlands. Unlike RIVPACS, the MRHI uses family level identification to monitor ecological condition: preliminary studies showed this level of taxonomic discrimination was adequate for biomonitoring. In a recent project on the Swan Coastal Plain, near Perth, we used order level identification to quantify biomass of invertebrate prey for the endangered Western Swamp Tortoise, *Pseudemydura umbrina*. This study also showed that course level identification of aquatic invertebrate communities, when coupled with biomass data, provides sufficient information to characterise local wetlands The characterisation obtained using order level data was more stable than that resulting from species level information and we suggest that higher level identifications, combined with abundance data, are appropriate for biomonitoring.

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Determination of water requirements for wetlands in the Murray-Darling Basin

The Murray-Darling Basin contains Australia's largest and most important river system and associated wetlands. The wetlands of the Murray-Darling Basin are characterised by their requirements for intermittent watering. This paper reports on studies that have been undertaken to determine water requirements of wetlands in the basin and suggests a framework for determining water requirements and management actions. The framework is reach-based and uses the RAMSAR International Agreement on the Importance of Waterbird Habitat concept of ecological character to establish a base line to monitor change. Case examples of the Integrated Water Strategy, the Barmah-Millewa Forest and the Lachlan wetlands watering requirements are examined in the light of this framework. Ecological character is related to the classification systems used and is a source of information for management, monitoring and performance evaluation.

The reasons for moving to this framework are to establish a base line for change, and the need for water management to have an integrated approach and to link to existing information and classificaiton systems. The Integrated Water Strategy for Murray Wetlands is the study that currently meets most of the requirements of the framework. The framework links all management requirements and sets in place an ecological basis for determining water requirements.

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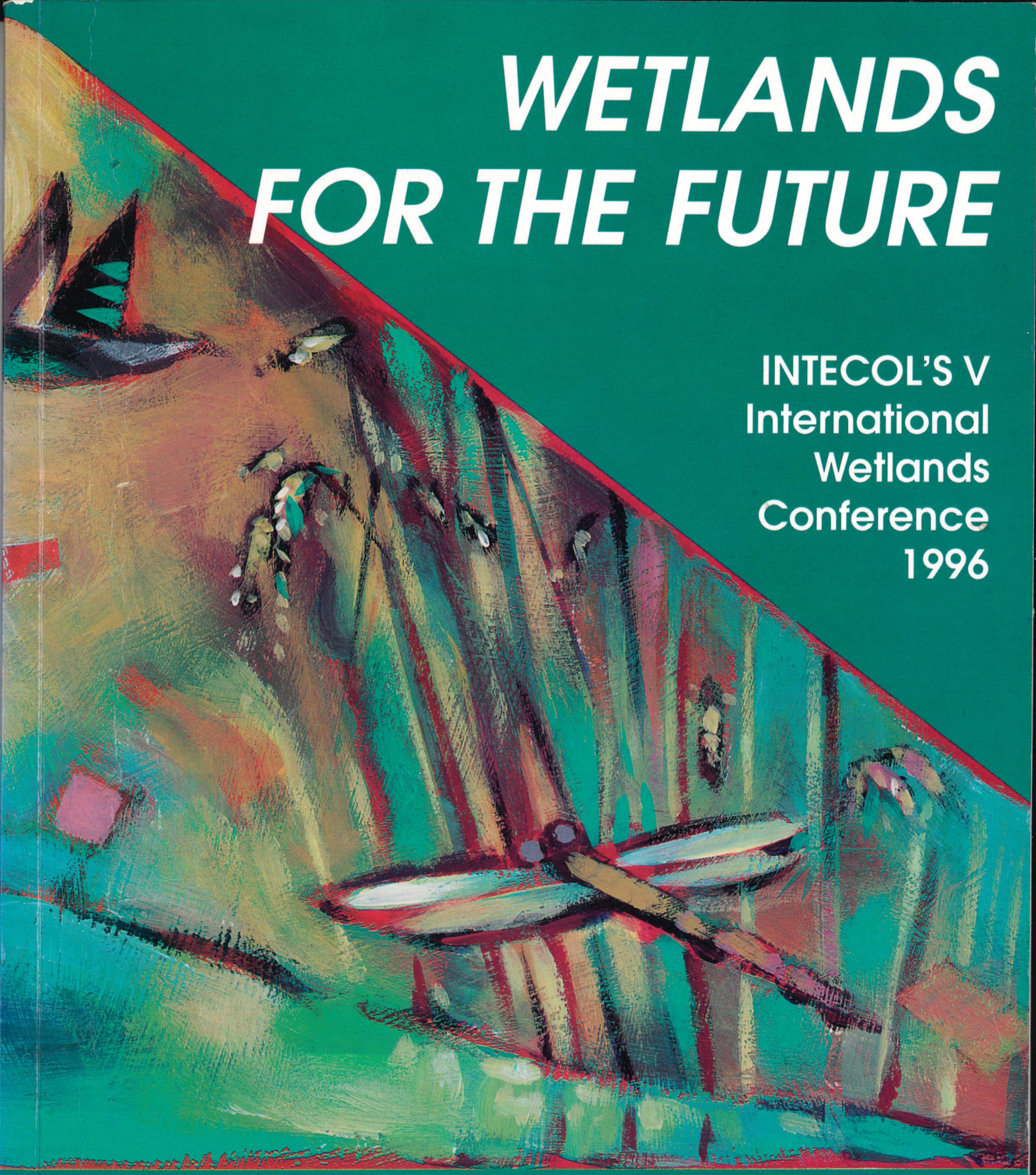
The metapopulation concept - an old story seen with new eyes

It seems that terrestrial, marine or wetland biologists are using quite different empirical methods and theoretical concepts due to the differences of their systems under study but also as a result to their distinct traditions in research. A closer look, however, reveals in many cases, that the main problems of their investigations including sampling strategies, shortness of the time series used etc. are very similar. This is because the fundamental questions addressed are mostly the same independent of the phrasing used. A common aim is the detection of spatial and temporal patterns and an understanding of the ecological processes causing them. Nature is characterised by permanent changes according to the observational time scale used. Time-dependent changes of habitat quality very often results from a shifting mosaic of suitable habitats, spatial subdivisions, extinction and recolonization of populations. These are ubiquitous phenomena in all natural communities. In terrestrial and more precisely in landscape ecology, the metapopulation concept was developed as a powerful tool for these kind of questions and it seems surprising that up to date very little of this concept and of the ideas behind it has entered the field of aquatic ecology. We shall ask for the potential of this approach for coastal ecosystem research. Focussing on habitat changes as a result from biological successional processes, geomorphological changes or anchropogenetic influences, we will discuss limits as well as possible applications of the metapopulation concept as related to conservation management.

WETLANDS FOR THE FUTURE



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