

The paper provides a comprehensive documentation of taxa recorded from salt lakes. The evolution of the biota of salt lakes is also discussed.

O'KEEFE, J.¹, UYS, M.¹ & DAVIES, B.². ¹Institute for Water Research, Rhodes University; ²Freshwater Research Unit, University of Cape Town, SOUTH AFRICA.

Invertebrate responses to natural and modified perennial and temporary flow regimes

South Africa is generally a semi-arid region, with some 44% of its rivers having a naturally temporary flow regime. As scarce water resources are developed for human use, many of the flow regimes in naturally perennial rivers are being modified to temporary or intermittent flows. In other rivers, temporary flows are being converted to permanent by inter-basin transfers of water, and in some others, irrigation demands have resulted in unseasonal water releases downstream of dams and IBT's. This paper presents a comparison of existing invertebrate databases for South African rivers in the following categories:

- Naturally perennial (the Sabie River)
- Naturally temporary (the Sand River and the Kowie River)
- Modified perennial to temporary (The Luvuvhu and Letaba Rivers)
- Modified temporary to perennial (The Great Fish River)
- Modified perennial with reversed seasonal flows (The Great Berg River)

This selection of rivers gives a wide range of natural and modified flow regimes from which we can assess the sensitivity and resilience of different invertebrate taxa, in the context of the conservation of the biodiversity of South Africa's rivers.

KINGSFORD, R.T.¹ & HALSE, S.A.². ¹NSW Nat. Parks & Wildl. Serv., PO Box 1967, Hurstville, NSW 2220, Australia; ²Dept Conserv. & Land Manage., Wildl. Res. Ctr, PO Box 51, Waneroo, WA 6065, AUSTRALIA.

Waterbirds as the 'flagship' for the conservation of arid zone wetlands?

Arid zone wetlands should not longer be viewed as the poor cousins of tropical wetlands or northern hemisphere wetlands. The wetlands of the arid zone are numerous and diverse. They also often support a diverse and extremely abundant waterbird fauna: a fact not well recognized because these wetlands are not near where we live. Aerial survey techniques have radically improved our knowledge of these wetlands and their waterbirds. This information is critical as there is increasing development pressure on these wetlands, particularly through water extraction upstream. Area under irrigated cotton in eastern Australia has expanded considerably in the past decade as irrigators have developed the infrastructure to capitalize on variable flows. Areas of wetlands have declined and waterbird populations have been affected. The relatively high public interest in birds can be used to progress the conservation of wetlands in the arid zone. Waterbirds are charismatic and interest can easily be engendered. Waterbirds are also often the focus of international agreements. With developing aerial survey techniques, data on all species of waterbirds may be collected simultaneously. Given the diversity of waterbirds and their

food habits, these data can be used to compare wetlands and perhaps as importantly measure the impact of humans on wetland ecosystems.

KENNEDY, J.H. & COOK, R.E. Department of Biological Sciences, University of North Texas, Denton, Texas 76203-3078, USA.

Diversity, interactions and conservation of macroinvertebrates inhabiting Southern High Plains Playa Lakes near Amarillo, Texas, USA

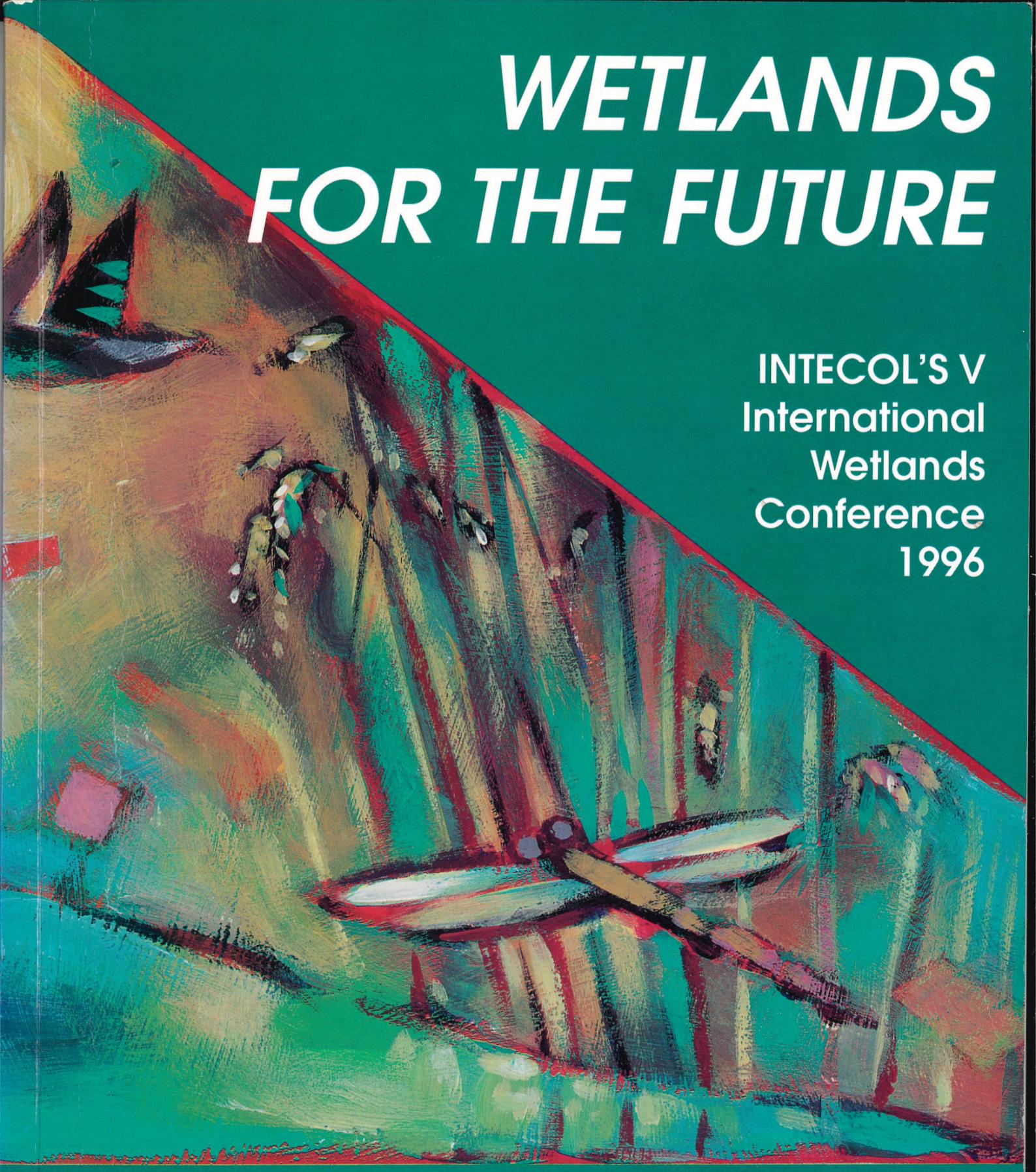
Macroinvertebrates inhabiting playa lakes on the high plains, near Amarillo Texas, were studied over several fill-dry cycles. These temporary water bodies are sites of high invertebrate diversity in an otherwise semi-arid agricultural region. Diversity increased over time. The greatest diversity was observed in an unmodified playa in which conservation and management practices were followed that minimized agricultural impacts. Temporal shifts were noted in the macroinvertebrate composition. Among the first colonizers are those with desiccant resistant stages: annelids, mollusks, crustaceans and insects (Diptera). Other early colonizers were insects, represented by Culicidae and Chironomidae, that aerially colonized within a few days of inundation. Rapid development was observed in many insects. The mayfly *Callibaetis floridanus*, for example, required only 10-11 days to complete development.

HOLLIS, G.E. Wetland Research Unit, Department of Geography, University College London, 26 Bedford Way, London WC1H OAP, UK.

The hydrology of internationally important wetlands in the Maghreb

The semi-arid to arid North African countries of Tunisia, Algeria and Morocco have high rates of population growth, coastward migration to cities, agricultural development through irrigation, staple food imports and an absolute water scarcity with c1000 people per million m³ of water resources. Yet they retain a large number of wetlands including Ramsar listed wetlands of international importance for their migratory and breeding birds. However, the future of these wetlands is threatened by hydrological changes wrought by human agency. Garaet El Ichkeul, in northern Tunisia, is having dams and related irrigation schemes constructed on each of its six rivers and around 50% of the freshwater is to be diverted from the catchment. In spite of over 20 years of studies and conservation efforts, dramatic ecological change seems inevitable at Ichkeul. The turbulent politics of Algeria exacerbates the conservation problems of the north-eastern El Kala wetland complex. Lac Oubeira (30 km²) has been pumped dry by irrigators forcing supplies to El Kala town to be tankered until new wells were established in the coastal dunes. Lac Tonga (24 km²) has been partially drained whilst emergency flood alleviation works at the previously undisturbed Lac des Oiseaux caused desiccation of this lake too. The abandonment of a dam during construction has intensified water abstraction within the wetland complex for the industrial town of Annaba. At Merja Zerga, a 37 km² tidal lagoon in Morocco, major hydrological changes in water quantity and quality have followed the desiccation of one river for irrigation and the six-fold increase in fresh, but polluted, inputs through the drainage of a neighbouring

WETLANDS FOR THE FUTURE



INTECOL'S V
International
Wetlands
Conference
1996

CONFERENCE PROGRAMME AND BOOK OF ABSTRACTS

22-28 September 1996 Perth, Western Australia

PUBLICATION SPONSOR Department of Environmental Protection Western Australia

PRINCIPAL SPONSORS Australian Native Conservation Agency • Society of Wetland Scientists • The University of Western Australia