

EXECUTIVE SUMMARY

RATIONALE

The importance of wetland habitats for various human concerns and as a critical store of biodiversity is now recognised on a worldwide scale. Traditionally, research and conservation attention has been centred on rivers and lakes and only relatively recently has the focus shifted to wetlands. The recent emphasis on wetland protection and management has created an urgent need to develop assessment tools to establish and monitor human impacts in wetland ecosystems so as to prioritise wetlands for conservation and rehabilitation actions and to monitor the effects of these actions. Biological assessment or “bioassessment” is one of the means of investigating wetland condition and involves the evaluation of ‘a wetland’s ability to support and maintain a balanced, adaptive community of organisms having a species composition, diversity and functional organisation comparable with that of minimally disturbed wetlands within a region’ (DWAF, 2004, adapted from Karr and Dudley, 1981). Potential indicator groups for bioassessment purposes include macrophytes, algae and diatoms, aquatic invertebrates, birds and fish. Macrophytes emerge as the most popular biotic assemblage for use in wetland bioassessment worldwide and the ecology and functioning of wetland plants is relatively well understood in comparison to other biotic assemblages inhabiting wetlands (Adamus *et al.*, 2001; DWAF, 2004). Aquatic invertebrates are regarded as the second most useful group for wetland bioassessment worldwide (Adamus and Brandt, 1990; Butcher, 2003; DWAF, 2004), although their ecological and functional roles in wetland ecosystems are not well understood.

The topic of this study centres on the use of aquatic invertebrates as a bioassessment tool for inland wetlands in South Africa. Marine (open ocean) and estuarine wetlands (connected to the sea) are not covered in this report. Successful wetland bioassessment programmes using aquatic macro-invertebrates have been developed and implemented in parts of the USA (Helgen, 2002), suggesting their beneficial use for bioassessment in other parts of the world. In South Africa, a method of assessing and monitoring wetland condition is required in order to meet national legislative requirements (National Water Act No. 36 of 1998). The Wetland Health and Importance (WHI) Research Programme was launched in April 2006 by the Water Research Commission (WRC) under Phase II of the National Wetland Research Programme. This study investigates the feasibility of using invertebrates in the bioassessment of wetlands and forms one of the components of the WHI.