Non-marine aquatic invertebrates: Challenges and case studies

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There are thousands of species of aquatic invertebrates in Western Australia in 13 phyla, ranging from single-celled protozoans to marron. They inhabit wetlands as diverse as groundwater aquifers, rain-filled hollows in trees and massive salt lakes. Very few of these are currently listed as threatened species, though more are members of listed threatened ecological communities, especially as components of stygofaunal communities. A large proportion of aquatic invertebrate species have rarely been collected during survey and monitoring projects, but whether these are threatened is difficult to establish for a number of reasons. Particular challenges include difficulty of identification, taxonomic impediments, the small number of wetlands for which we have adequate data, dispersed datasets, the nature of many Western Australian wetlands (e.g. extreme variability in character), lack of basic biological information for most species, aspects of invertebrate ecology such as short life spans and aestivation, and low community awareness or interest. Most of these are also problems for most terrestrial invertebrate groups. *Parartemia* brine shrimp, which have higher diversity and endemism in southern WA then elsewhere, illustrate some of these problems. The extent of their diversity and distribution in WA has only recently been revealed. One species, *Parartemia contracta*, was listed as a priority one fauna species in 1995 on the basis that it was thought to be rare and restricted, although this is now known to be one of the more common and widespread species of the genus. Other more recently discovered species do appear to be rare and in decline but, despite both broadscale (e.g. Wheatbelt biological survey) and targeted *Parartemia* surveys, an insufficient proportion of potential wetland habitats has been surveyed to determine their occurrence and distribution. Furthermore, the reason for apparent loss of some populations is unclear, although aspects of salinisation appear to be involved. They also inhabit wetlands that are dry more often than flooded so surveying for them needs to be opportunistic rather than fixed time projects. These challenges are not insurmountable but illustrate the need for ongoing collaborative research and data sharing amongst researchers.

Threatened Species Research Forum

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A Review of WA Government Research into Threatened Species