

Review

Wetlands and invertebrate disease hosts: Are we asking for trouble?

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Abstract

Wetlands provide a range of benefits to society, and yet in South Africa wetlands continue to be affected by human activities. Considerable effort is now being directed towards rehabilitation of degraded wetlands and the construction of artificial systems to treat effluent and stormwater. At the same time, wetlands provide potential habitat for vectors or intermediate hosts (collectively referred to in this document as ‘invertebrate disease hosts’: IDHs), of parasites implicated in the transmission of such important diseases as malaria and schistosomiasis (bilharzia). The present review considers, for the 2 major IDHs (mosquitoes and schistosome-transmitting snails), the type of habitat required by the water-dependent life stage and the ways in which wetland degradation, rehabilitation and creation may affect the availability of suitable habitat. General practical measures for minimising pest species, particularly mosquitoes, are included. This review also highlights other issues that require research and testing in the South African context, including: the IDHs implicated in less well-known diseases (both of humans and animals) and the control of mosquitoes and schistosome-transmitting snails through biomanipulation. We conclude that in regions of the country where the diseases are prevalent there is the likelihood that wetland rehabilitation and creation could inadvertently encourage the IDHs responsible for transmitting malaria and schistosomiasis. Assessment of the potential risks and benefits of a proposed wetland modification needs to be undertaken in a holistic manner using an adaptive framework that recognises the critical need to balance human and environmental health. Possible ways of controlling IDHs both in an environmentally- and socio-friendly manner need to be investigated using a multi-disciplinary approach engaging invertebrate biologists, health care officials, wetland scientists and also sociologists and economists.

Keywords: vectors, malaria, *Anopheles arabiensis*, *Anopheles funestus*, mosquitoes, schistosomiasis, bilharzia, *Bulinus africanus*, *Bulinus globosus*, wetland rehabilitation, wetland creation, wetland degradation