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***Characterisation, hydrology, and ecology of temporary wetlands in the Western Cape, South Africa.***

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Wetlands are an important type of ecosystem in the Western Cape, South Africa. They often contain a high biodiversity, provide food for migratory birds, store and purify water. As these wetlands may become groundwater recharge or discharge areas, they serve as important hydrological boundaries. Unfortunately, these systems are threatened by land use change, groundwater abstraction and climate change. A continuing decline in number is expected in the near future with resulting negative impact on the metacommunity structure and functioning of these wetlands. To protect these ecosystems, better knowledge on their functioning is needed (South African Water Act, 1998). In our study we characterized the status, hydrology and ecology of wetlands in the Western Cape, an important agricultural region.

The evolution of wetlands was assessed quantitatively by classifying a time series (80's until present) of Landsat images from the area Yzerfontein-Malmesbury. Numbers, sizes and spatial distribution of the water bodies were recorded. Zooplankton and macro-invertebrates were sampled from 58 temporary wetlands in four different regions (Cape Peninsula, Cape Flats, Cape Agulhas and Yzerfontein-Malmesbury) in 2004. The relation between the hydroperiod and biotic and abiotic variables was investigated and the hydrology of 15 wetlands in Yzerfontein-Malmesbury was explored.

Classifications of the satellite images show that a high density ( $>0.4$  wetlands/km<sup>2</sup>) of temporary and permanent wetlands is present in the region around Yzerfontein-Malmesbury. Most wetlands had a surface of less than one hectare. The classification failed to recognize small wetlands as the resolution is limited to the resolution of Landsat images, however these wetlands are valuable as stepping stones between larger wetlands. The hydrology of the temporary wetlands and its dependence on climate, evapotranspiration, soil type, run-off and groundwater is discussed. The hydroperiod of the studied wetlands had a statistically significant impact on the invertebrate fauna: the longer the hydroperiod, the more species were encountered. Our study has shown that many wetlands are still present in the Western Cape. However, our biological data indicate that an alteration in the hydrocycle of these wetlands (due to for example water abstraction) could have catastrophic consequences for the inhabiting fauna. By contributing to the knowledge of temporary wetlands in the area, this study is a direct implementation of the South African Water Act. More research is required for proper protection of these wetlands, especially on the interaction between groundwater hydrology and the functioning of these ecosystems.