Tadpole shrimp (notostraca) in a pan in the Northern Cape

Digging into the dry wetlands of the Northern Cape

When travelling from Kenhardt to Calvinia in the Northern Cape Province, thousands of blue blots on the road map stagger the mind, all representing waterbodies in a very dry landscape. Only a few travellers will be fortunate enough to see them come alive after a good rainfall event.

These waterbodies, or "pans", are abundant features in arid regions, differing from the familiar wetlands in humid regions, which are continuously inundated systems with saturated soils, by only being inundated every few years.

A wetland resurrection

When pans become inundated after sufficient rainfall, invertebrates like branchiopods and dipterans hatch out and algae are reactivated. Wildlife, especially water birds, gathers to feast in the resurrected systems. These events are short-lived due to the high evaporation rates of the region and therefore organisms are well adapted to rapidly benefit from favourable conditions and ensure genetic continuity.

These pans are possibly among the most sensitive ecosystems in the region, potentially supporting many species of conservation significance and possibly acting as key ecosystem features for temporarily dormant and migrant species. They are subject to various threats, including livestock agriculture, crop farming, salt mining, damming, ploughing to enhance infiltration, alien invasion, recreational activities and speed record attempts.

The recent shift of development focus to the province in terms of uranium mining, fossil fuels, renewable energy and radio astronomy has not only increased anthropogenic pressure on the wetland ecosystems, but subsequently revealed the immense necessity to fill the knowledge deficit for the region, especially in the field of freshwater ecology.

Digging into the pans

Dr Betsie Milne, a DST-NRF Professional Development Programme Postdoctoral Fellow at the SAEON Arid Lands Node intends to characterise ephemeral pans in the Northern Cape Province by using remote sensing and in-situ sampling protocols so as to establish a long-term monitoring framework.

By studying the biodiversity of pans and their structure and functioning, it will be possible to evaluate the significance of impacts and changes in these systems in relation to global and land use change. SM