ORGANIC MOUND SPRINGS OF THE SWAN COASTAL PLAIN

Organic mound springs occur where the heavy clay soils of the Guildford Formation on the eastern side of the Swan Coastal Plain and the Bassendean Dune sands meet. The Bassendean sands contain the Gnangara Mound, a shallow aquifer that extends from the Moore River to the Swan River. This groundwater is forced to the surface at a series of discharge points on the eastern boundary of the aquifer where waters encounter the impermeable Guildford clays. A permanent supply of fresh water allows the continuous growth of vegetation. The build up of decayed plant material from this dense vegetation forms peat around the permanent water supply. Water is continually forced, under pressure, to the surface, carrying sand and silt, which enhances the formation of the peat mounds.

Kings Mound Springs in Bullsbrook showing flooded gum, rushes and bracken fern. Photo – Val English

These mounds provide a year-round wet area for a number of unique animals that cannot survive drying out. They are a refuge for seed shrimp, roundworms, mites, side swimmers, water fleas, copepods, worms and insects, that used to occur over a much greater area millions of years ago when Australia was much wetter. Underground species that naturally occur in the groundwater may also emerge and be found at these springs.

Historically, the mound springs were common within their narrow range, forming a north-south line parallel to the Darling Scarp. They have typically been excavated to create farm dams or cleared and sealed with limestone to provide pasture for horses and cattle. The mound springs have been listed as a threatened ecological community because they are now extremely restricted in distribution. With only three vegetated springs remaining which face a number of significant threats, the mound springs have been classified as Critically Endangered.

The conservation of the Mound Springs' plants and animals depends on maintaining the quality and quantity of the water supplied from the Gnangara Mound and the pressure head caused by the presence of dunes adjacent to each of the springs. Management practices on land adjacent to the mounds have the potential to change the water quality and quantity to the springs. Some of the invertebrate species that live in the peat mounds do not have dormant stages and would not survive if the peat mounds dried out. A combination of a drying climate and increased use of the waters of the Gnangara mound pose the biggest threat to the mound spring community, with one area of mounds springs drying up at the surface recently.

Other threats to the mounds include increased weed invasion and too frequent fire. Too many hot fires are likely to impact the wetland-adapted flora and fauna. In the extreme the peat itself can be completely burned out by hot fires under dry conditions. Although the mound spring vegetation is generally not susceptible to dieback disease caused by the pathogen *Phytophthora*, the vegetated dunes adjacent to the mounds contains *Banksia* woodland, which is highly susceptible to the disease. Loss of this dune vegetation may alter the local hydrology.

For further information please contact the Department's Swan Region office on (08) 9368 4399.

Recovery

of threatened ecological communities

The Department of Conservation and Land Management (the Department) is committed to ensuring that Critically Endangered Ecological Communities are not totally destroyed. This is done through the preparation of an Interim Recovery Plan (IRP), which outlines the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened ecological communities in the wild and begin the recovery process.

ORGANIC MOUND SPRINGS OF THE SWAN COASTAL PLAIN

The Department has set up a Threatened Flora and Communities Recovery Team for the Swan Region to coordinate the implementation of recovery actions that address the greatest threats to the survival of the mound springs community. Recovery Teams consist of representatives from the Department, community groups, private landowners, local shires and various government agencies. Recovery actions that have been, and will be, progressively implemented to protect threatened ecological communities include the following:

Protection from current threats:

Weed control, fencing, conducting surveys for new occurences, and regular monitoring of the health of and flora and fauna each area of the community.

Protection from future threats:

Developing strategies to manage fire and dieback, acquiring areas as conservation reserves, rehabilitating degraded areas, and ensuring that all relevant people are aware of the community and the need to protect all occurences from threats identified in the Interim Recovery Plan.

IRPs will be deemed a success if there is an increase in the area and/or number of occurrences of the community under conservation management, hydrological and biological processes and the diversity and composition of native species are maintained, and there is an improvement in the condition of the habitat, through the re-establishment of fringing buffer vegetation and a reduction in the numbers of weeds and threatening processes.

Vegetated mound springs in Ellenbrook. Photo – Val English

Fire and grazing were a threat to this Mound Spring in Muchea. Photo – Val English

Staff from the Department of Conservation and Land Management surveying mound springs in Ellenbrook. Photo – Val English

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