Managing watsonia invasion in the threatened plant communities of south-west Australia's clay-based wetlands

The plant communities of clay-based wetlands comprise a flora of more than 600 species. At least 50 per cent are annual or perennial herbs, 16 occur only on the clay-pans and many are rare or restricted. Invasion by *Watsonia meriana* is one of the major threats to our few remaining intact clay-based wetlands.

By Kate Brown, DEC

While the majority of seasonal wetlands in south-west Australia are connected to the regional groundwater, some are found on clay substrates that rely solely on rainwater to fill. These wetlands are characterised by temporally overlapping suites of annual herbs that flower and set seed as the wetlands dry through spring. During summer, the clay substrates dry to impervious pans.

Trials to manage watsonia

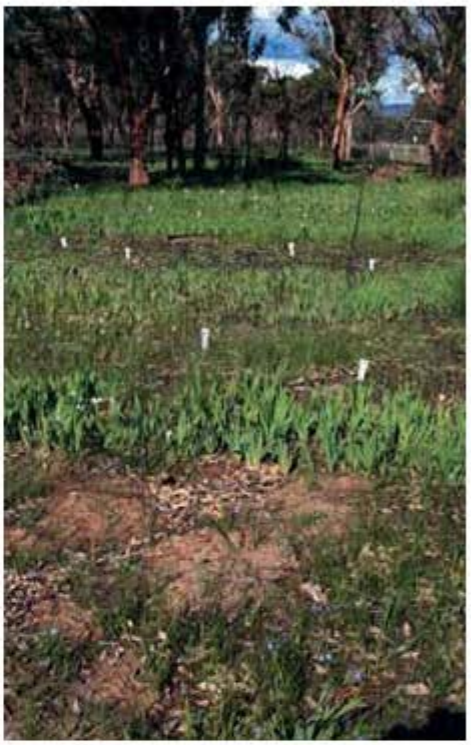
Meelon Nature Reserve, a remnant clay-based wetland 200 kilometres south of Perth on the eastern side of the Swan Coastal Plain, has been the focus of a three-year study investigating possible management techniques for watsonia where it is invading these communities.

The herbicide 2-2DPA (10g/L) with the penentrant Pulse® (2.5mL/L) was applied from a backpack unit in September 2005. Herbicide application on invasive geophytes such as watsonia should take place just as the underground storage organ is exhausted and this often coincides with flowering. For watsonia in south-west Australia, this corm exhaustion generally occurs in September.

One year after the initial treatment, a 97 per cent reduction in the cover of watsonia was recorded and importantly there was little evidence of off-target herbicide damage to native plant species.

The influence of fire

During the following summer in February 2007, a wildfire burnt across the reserve and through the study area. In September 2007 a significant increase in the cover and diversity of native species was recorded across the study area. Some species such as *Dichopogon preissii* had not been recorded at all before the fire. Others, such as the native sedges *Cyathochaeta avenacea* and *Chorizandra enodis*, and a number of native geophytes including *Chamaescilla gibsonii*, *Tribonanthes australis* and *Burchardia multiflora* increased greatly in cover following the fire.



Left: Watsonia invading the clay-based wetlands of Meelon Nature Reserve.
Right: Results of the watsonia control trials look promising as the bands of treated and untreated areas in this photo clearly show. Photos – Kate Brown

These initial results are promising for management of watsonia invasions in these clay-based wetlands. Indications are that once watsonia has been killed the communities have the capacity to regenerate, with fire potentially playing a significant role in the process. In the parts of Meelon Nature Reserve outside our study area where watsonia had not been controlled, we observed prolific flowering of watsonia following the fire. It will be interesting to see if this leads to watsonia recruitment into our study area in 2008.

The study has been a collective effort involving staff from DEC and members of the local Dwellingup community.

In September 2007 a workshop and field day was run in conjunction with the Waroona Land Care Centre for land managers in the region. The day provided the opportunity to share the results of our work and to provide advice to local landholders, many closely involved in the management of plant communities associated with clay-based wetlands.

Note: Further trials have indicated that 2-2DPA at 5g/L (half the rate trialled in the above study) provides effective control of watsonia and so this is our current recommendation.

Further reading

Brown, K., Paczkowska, G., Huston, B. and Withnell, N. (2008) Managing Watsonia invasion in the threatened plant communities of south-west Australia's clay-based wetlands. *Australasian Plant Conservation* 17(1): 8-10.