AVON-RICHARDSON SITES

Site 1 Lake Buloke Summary

The site is in environmental decline and is visibly salt affected.

Vegetation Description and Composition

This wetland is dominated by Red Gum open woodland with Black Box Woodland on the higher ground. The understorey is mainly Tangled Lignum and Cane Grass. The area had comprised 60 percent introduced species in 1997 with a gradual increase of introduced species to native species. The total number of introduced species has now reduced to about 50 percent of species present in 2002. There were two salt indicator species present in 1997, four salt indicator species present in 1998; this has reduced to three from 1999 onward. These results are more likely due to continued dry seasonal conditions and grazing pressures rather than any favourable change in groundwater salinity levels. Spiny Lignum classified as a rare species under the FFG (1998) Act was also recorded.

Tree Health

Six of the eight monitored trees have remained healthy, however two Red Gums have suffered rapid decline, especially in the last twelve months and are now virtually dead. These two trees, along with many at the site that have suffered heavy defoliation by Gumleaf Skeletoniser Caterpillars, contained many dead branches and extensive epicormic growth. Leaf chloride concentrations suggest that saline groundwater is having a detrimental effect on many trees at Lake Buloke.

Birds

Seventeen birds were recorded at Lake Buloke in 2002. The large number reflects the diverse range of habitats that the lake offers, even though it has remained dry for many years.

Groundwater and Salinity

Bore pressures recorded close to the lake suggest that the deep drainage capacity in the area is seriously diminished and all recorded very high salinity readings. Water tables have continued to drop since Lake Buloke dried up in 1998 in response to dry seasonal conditions. Saline groundwater intrusion into the Richardson River can have downstream effects when river flows can extend from the site of intrusion to Lake Buloke.

Water Quality and Macroinvertebrates

Lake Buloke has remained dry since 1998 therefore no new data was recorded in 2002-03.

Site Threats

- Possible changes to natural flooding regime
- Rising salinity levels from entire catchment
- Extensive grazing and cropping, reducing the site's potential for natural regeneration
- Continued tree health decline

Surrounding land use

Outside the wetland is cropping and some grazing. Many paddocks appeared to contain failed crops probably caused by the impacts of drought.

Site 2 Reseigh's Red Gums Summary

The site appears to be in environmental decline and the Richardson River is in extremely poor condition.

Vegetation Description and Composition

The site comprises areas of grassland and open woodland dominated by Black Box and Red Gum. Native grasses dominate the grassland section, with species from the Asteraceae and Chenopodiaceae (saltbush) families present. Understorey of the open woodland adjacent to the Richardson River is predominantly Tangled Lignum and Cane Grass. The 1997 survey indicated that about 30 percent of the species present were introduced. The number of total plant species present (introduced and native) has dropped between 10-20 percent in 2002. Species composition is changing from introduced species to more drought tolerant species such as those from the Chenopodiaceae family. Three salt indicator species were present in1997; this had increased to four in 1999, however some of these species also indicate arid conditions and are more likely a result of the drought. Spiny Lignum a listed rare species under the FFG (1988) Act was still present. There appears to be minimal change in vegetation survey results when compared with previous survey data.

Tree Health

The four Red Gum trees have declined in health since 1997 with reduced canopy densities, dead branches and epicormic growth. They appear to be suffering greater amounts of insect attack and epicormic growth than the four Black Box trees monitored at the site because they cannot withstand long periods without inundation. It is highly likely that saline groundwater is also contributing to decline in vegetation health.

Birds

Eight birds were recorded in 2002 and all were common to wooded farm habitats.

Groundwater and Salinity

The two bores respond to seasonal fluctuations and have dropped in response to dry seasonal conditions. They are demonstrating a high rising pressure trend above the water table, meaning the deep drainage capacity around the site is limited (similar to the situation found at Lake Buloke). The Richardson River is currently dry at present but has experienced saline groundwater intrusion that has downstream effects when it flows from the site of intrusion to Lake Buloke.

Water Quality and Macroinvertebrates

These tests do not apply to this remnant vegetation site.

Site Threats

- Possible grazing
- Weed invasion
- Increasing salinity levels in the Richardson River from groundwater intrusion

Surrounding Land use

Land use was a mixture of cropping and grazing. The impact of drought was highly visible, as many paddocks hadn't been sown in 2002.

Site 3 Lake Cope Cope Summary

The site is in environmental decline and is visibly salt affected.

Vegetation Description and Composition:

This wetland is circled by open woodland dominated by Black Box and Red Gum. The understorey is predominantly Tangled Lignum and Cane Grass and species from the Cyperaceace (sedge) and Juncaceae (rush) Families. The total number of species present has decreased. In particular, Quadrat A had decreased 50 percent when compared with 2001 vegetation data. Most of the decrease has been the loss of introduced species from the Asteraceae Family. Three salt indicator plants were present in 1997; eight in 2001 and this has reduced to six in 2002. These results are more likely due to dry seasonal conditions than any sudden favourable change in groundwater salinity. However it does need to be stated that the site is visibly salt affected.

Tree Health

Three of the eight monitored trees have experienced declining health due to reduced canopy densities, dead branches and epicormic growth. The Red Gum trees appear to be suffering greater amounts of insect attack and epicormic growth than the Black Box trees because they cannot stand long periods without inundation. Highly saline groundwater may also be contributing to declining tree health.

Birds

Ten bird species were recorded in 2002. It is expected that many more species will be recorded at the lake when it fills with water again.

Groundwater and Salinity

The three bores respond to seasonal variations, which corresponds well with water levels in the lake. Therefore the dry lake and continued seasonal conditions of low rainfall have caused water tables to drop. The regional groundwater system is very saline and is contributing to the declining health of River Red Gum trees around the lake.

Water Quality and Macroinvertebrates

Lake Cope Cope has remained dry since 1999 therefore no new data was recorded in 2002-03.

Site Threats

- Stock grazing
- Increased salinity from groundwater intrusion
- Weed invasion
- Possible future change to flooding regime
- Continued decline in tree health
- Build up of wind blown lakebed sediments on western side of lake

Surrounding land use

Land use was a mixture of cropping and sheep grazing. Many paddocks hadn't been sown due to the effects of drought.

Site 4 Bryce's Buloke Summary

The site is of uncertain environmental stability and is within the Avon-Richardson Targeted Salinity Project sub-catchment.

Vegetation Description and Composition:

This site contains Plains Grassy Woodland (PGW) dominated by Buloke trees and native grass understorey. Almost 50 percent of species present are introduced, being mainly pasture weeds. Three salt indicator plants are still present but do not necessarily indicate saline conditions for they are commonly found in PGW. There appears to be a slight change in vegetation survey results when compared with previous survey data. In 2002, the total number of species present was similar but the species composition is changing to more drought tolerant species. The level of abundance of introduced grasses and members of the Asteraceae Family have again decreased due to the continued dry conditions. Dwarf Bluebush classified as a rare species under the FFG (1998) Act was still present.

Tree Health

The methodology used to assess tree health does not correspond very well to Bulokes because it was originally designed to assess the health of Red Gum and Black Box trees. The eight Bulokes are reasonably healthy however there is minimal regeneration occurring at the site. This is concerning given that Bulokes are classified as a vulnerable species under the FFG (1998) Act, due to their very slow growing properties. They may die out at this site if new regeneration does not occur soon.

Birds

Twelve bird species were recorded in 2002; a good result given that the site is surrounded by cleared agricultural land.

Groundwater and Salinity

The one bore is showing a steady rising trend with some minor fluctuations in response to seasonal rainfall. The water table is still deeper than nine metres below natural surface so it is unlikely that this site is at future risk from salinity. The deep drainage capacity of the catchment is low and the upward pressure of the regional water table may have negative implications for low-lying areas further down the catchment.

Water Quality and Macroinvertebrates

These tests do not apply to this remnant vegetation site.

Site Threats

- Weed invasion from adjacent farmland and roadside, in particular *Phalaris sp*.
- Potential loss of Buloke due to limited regeneration

Surrounding land use

Grazing and cropping activities were occurring. The cereal crops were getting close to harvesting stage.

Site 5 Box Swamp Summary

The site is of uncertain environmental stability and is within the Avon-Richardson Targeted Salinity Project sub-catchment.

Vegetation Description and Composition:

This area is open woodland dominated by Black Box. The understorey is predominantly Tangled Lignum, Cane Grass and species from the Cyperaceace (sedge) and Juncaceae (rush) Families. The 1997 survey indicated that almost 50 percent of the species present were introduced and mostly from the Asteraceae and Poaceae (Grass) Families. This had increased to between 60 percent and 70 percent of the species present in the 1998 to 2001 surveys. However the number of introduced species recorded in 2002 has dropped between 10 to20 percent due to the dry seasonal conditions. The site still contained only one salt indicator species. This does not necessarily indicate saline conditions because there are no other indicator species present and it is a common agricultural weed.

Tree Health

All but one of the monitored Black Box trees has increased in health since 1997. This tree is covered in dead branches, epicormic growth and contained a very low canopy density. Insect attack of trees at this site was minimal.

Birds

Fourteen birds were recorded at the site. Good habitat and shelter in the form of mixed age classed trees and thick lignum cover would encourage birds to the site. The Avon River is also located nearby.

Groundwater and Salinity

Two bores near Box Swamp recorded the water table as deeper than 16 metres below natural surface. The hydrograph records indicate that one bore is displaying a very slight rising trend and the other has dropped in response to dry seasonal conditions. This site is not under threat in the near future due to the depth of the water table but an upward trend in regional groundwater could have wider salinity implications for areas downstream, particularly the lower Avon River floodplain area and its margins.

Water Quality and Macroinvertebrates

Although this site is a swamp, it is treated as a remnant vegetation site because it is very rarely inundated.

Site Threats

- Weed invasion
- Spillage of gravel and blue metal from adjacent gravel dump
- Possible long term pooling of water
- Dumping of rubbish

Surrounding Land use

Land use was cereal cropping and they were getting close to harvesting stage.