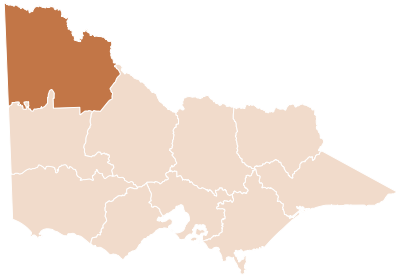
Mallee

REGIONAL CONTEXT

Area
3.9 million
hectares approx.

Population
61,000



AGRICULTURE: 62% of catchment, mostly dryland cropping, areas of irrigation extend from Nyah to South Australia border adjacent to the Murray River corridor and a small groundwater district around Murrayville.

NATURAL FEATURES: Murray-Sunset, Wyperfeld and Hattah-Kulkyne National Parks, and Big Desert Wilderness Park.

MAJOR WATERWAYS: Hattah Lakes (Ramsar listed), Lindsay-Mulcra-Wallpolla Islands.

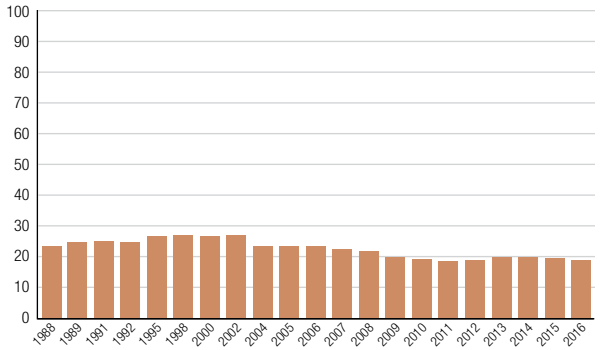
INDIGENOUS HERITAGE: Traditional custodians are the Latji Latji, Wotjobaluk (Wergaiai), Wadi Wadi, Wamba Wamba, and Yupagalk peoples.

Source: MCMA, 2013

Paddling in a canoe is the best way to explore Lake Carpul. Photo: MCMA

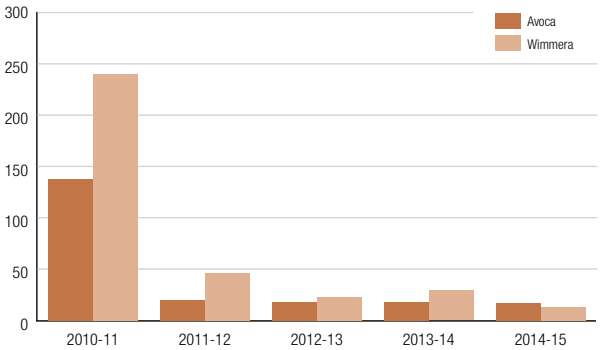
REPORT CARD

BIODIVERSITY Tree cover



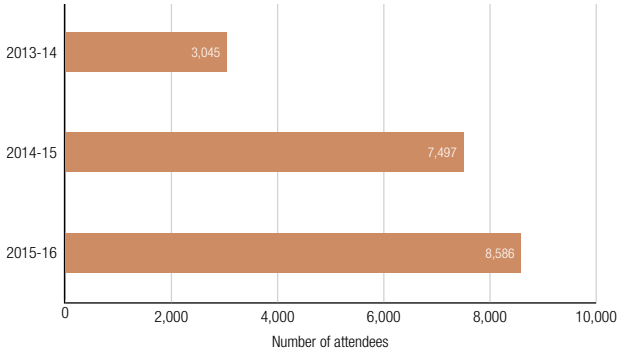
Average annual percentage (%) tree cover for the Mallee region 1988-2016. Source: Van Dijk and Summers, 2016

WATER Streamflow



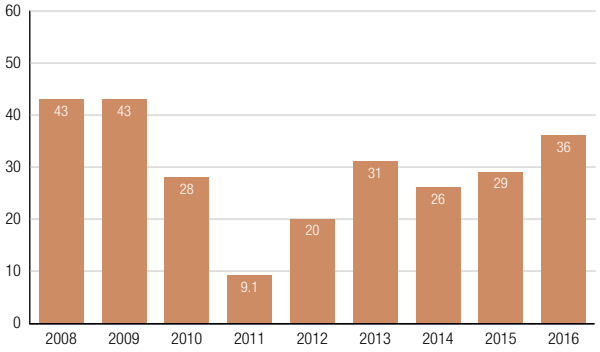
Basin streamflow (%) compared to long-term average.
Source: Victorian Water Accounts

COMMUNITY Participation



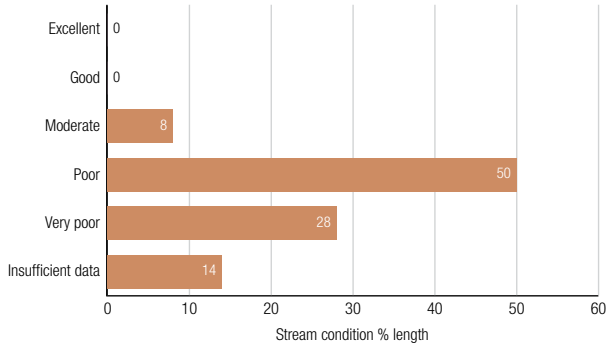
Community participation in CMA engagement events.
Source: Victorian Catchment Management Authorities, 2014, 2015, 2017

LAND Exposed soil



Percentage (%) Dryland area with 50–100% bare soils (higher risk of erosion) in March, 2008-16. Sources: DEDJTR, 2017a; EnSym; Guerschman et al., 2015

WATERWAYS Stream condition



Index of Stream Condition 2013 summary for the Mallee region.
Source: DEPI, 2013b, p. 52

ASSESSMENT OF CATCHMENT CONDITION

LAND

- The Mallee region has an elevated risk of erosion from bare soils in dryland production areas, particularly since 2011. Mallee is assessed differently to other regions, due to its natural aridity, with a 50% groundcover threshold for best practice used instead of 70% for the rest of the state. Levels of bare soil are lower than those experienced at the end of the Millennium drought, possibly indicated greater risk management and changes in land management practices, such as reductions in the use of conventional fallow (MCMA, 2016).

WATER

- Stream reaches assessed under the Index of Stream Condition occur in the Mallee, Avoca and Wimmera Basins, generally in poor condition at the end of the Millennium drought when most stream reaches were experiencing stress (DEPI, 2013b).
- Streamflow for the Avoca and Wimmera basins were as low as 17% of the long-term average from 2011-12 to 2014-15. No long-term data exists for streamflow in the Mallee basin. According to the Mallee CMA, groundwater levels declined from 2014-15 to 2015-16 in 81% of bores sampled (MCMA, 2016).

BIODIVERSITY

- In the Mallee region tree cover is approximately 20%, mostly contained in Big Desert Wilderness Park, and Wyperfield, Murray-Sunset and Hattah-Kulkyne National Parks. A decline in tree cover is evident over the last 20-30 years. The Mallee CMA reports that terrestrial habitat in the region is 'stable' to 'improving', though fragmented vegetation in cleared agricultural landscapes are declining in condition (MCMA, 2016).

COMMUNITY

- Community participation has increased over three years. The Mallee CMA has a strong focus on improving community capacity for natural resource management, with baseline data from 2012-13 demonstrating 'medium' levels of capacity in the region (MCMA, 2016).
- The top three community concerns about environmental health relate to invasive weeds (95% of respondents), pest fish species (87%), and declining numbers of native fish (84%); all considered a problem by respondents (Schirmer et al., 2016).

Photo: MCMA

CASE STUDY

To fence or not to fence? Changes in vegetation condition on private land in the Mallee

LOCATION: Mallee

PARTICIPANTS: Mallee CMA, Arthur Rylah Institute, private land managers.

OBJECTIVE: To determine the long-term impact of stock exclusion fencing on vegetation condition on private land across the Mallee.

Much of the native vegetation in Victoria's Mallee region is highly fragmented, particularly on private land. Those areas of native vegetation that remain are thus considered important to retain, and are managed accordingly.

Uncontrolled stock grazing is considered a serious threat to remnants of native vegetation in the region. Uncontrolled grazing by domestic livestock can change the structure of remnants (e.g. remove grasses and small woody shrubs), lead to increased soil erosion and compaction, encourage the spread of weeds and affect processes such as litter decomposition and nutrient cycling.

The Mallee CMA carries out a range of on-ground works to improve native vegetation condition. Fencing to exclude stock grazing is considered a cost-effective means to improve vegetation condition. Fencing can be used to protect areas of native vegetation from domestic stock grazing. It promotes natural regeneration and woody plant recruitment in degraded remnants.

The Mallee CMA began a long-term monitoring program in 2009 to determine whether the installation of stock exclusion fences on private land would lead to an improvement in vegetation condition. Figure 49 shows the predicted relationship between grazing removal and vegetation condition.

The monitoring program will allow the CMA to determine the effectiveness of its on-ground activities, and help indicate where it can get the most management "bang for buck" (i.e. fencing native vegetation patches or linear areas of vegetation). It will also allow the CMA to determine native vegetation management priorities in the region.

Twenty five patches of privately owned and publicly managed remnant vegetation were monitored in Spring 2009/10, 2012 and 2015 to determine if there was an improvement in vegetation condition as a result of stock exclusion fencing, with another 38 linear remnant vegetation sites (see Photo) monitored during Spring 2011 and 2016. Public land monitoring sites were used as the reference (or control) site to determine the effectiveness of stock exclusion fencing on private 'investment' sites.

The monitoring program showed that native vegetation condition improved in patches of privately owned, fenced remnant vegetation. This is likely to be a result of the stock exclusion fencing, as these changes did not occur in un-grazed public land monitoring sites.

The results were less clear-cut in privately owned, fenced, linear native vegetation sites: while woody plant recruitment was higher than in the un-grazed public land monitoring sites, overall vegetation condition declined due to an increase in weed cover. Linear remnants are more prone to edge effects, which are changes in biotic and abiotic conditions that occur at an ecosystem boundary (VEAC, 2010), than larger patches of native vegetation. Any improvements in vegetation condition may therefore be slower (e.g. >10 years) than in larger connected remnants (<10 years).

This information can be used to prioritise investment in vegetation management in the region. For example, if the goal is to improve vegetation condition, fencing large and medium-sized remnants may be the first investment priority, as recovery can occur over shorter time scales than in linear remnants.

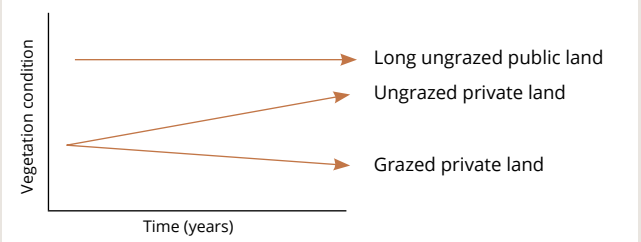


Figure 49. Anticipated changes in vegetation condition associated with the removal of livestock grazing.