

# Victorian Semi-arid Woodlands

## Total Grazing Management Plan progress

Monitoring program update January 2025

### Key Messages

- Ongoing browser control is important for the recovery of grazing-sensitive, slow-growing Semi-arid Woodlands.
- Semi-arid Woodland Condition Monitoring shows that there is little evidence of browsing impacts, and enhanced tree recruitment is occurring at 12% of sites (mainly Slender Cypress Pine and Sugarwood).
- This highlights positive progress towards the Total Grazing Management Plan's goals, and woodland recovery.
- However, most tree populations are still in poor condition. Ongoing browser control in combination with targeted revegetation will enable enhanced recruitment opportunities and long-term population viability.

### Semi-arid Woodlands

Semi-arid woodlands are characterised by one or more canopy species – Belah (*Casuarina pauper*), Buloke (*Allocasuarina luehmannii*), Slender Cypress Pine (*Callitris gracilis*), and Sugarwood (*Myoporum platycarpum*) – over a diverse ground layer of saltbushes, herbs, grasses and biological soil crust.

### Management and monitoring long-term recovery

Victoria's Semi-arid Woodlands are severely degraded due to historical land use. They are slow-growing and reliant on high rainfall events to enhance regeneration. Woodland recovery is slow and impeded by browsing. Thus, historical and current ecological impacts (e.g. grazing, altered fire regimes) have long-lasting impacts on condition. To improve woodland condition, a long-term restoration program (The Total Grazing Management Plan) has been running for over 10 years. In addition to this, the Semi-arid Woodland Condition Monitoring Program is being implemented to enhance management effectiveness, measure recovery success and improve our knowledge base.

### Progress towards long-term recovery

#### Progress towards recovery outcomes

This monitoring program update provides a quick snapshot of progress towards the Total Grazing Management Plan intermediate outcomes, using the Semi-arid Woodland Condition Monitoring Program data. That is, have the impacts of browsing decreased over the last five to seven years?





## Browsing impacts

Semi-arid Woodland tree populations are slow-growing, with recruitment often only occurring following several years of above-average rainfall (an infrequent event). Woodland recovery is dependent on these rare recruitment events. However, browsing of the highly palatable juveniles reduces population viability.

Because Semi-arid Woodland trees are long-lived (i.e. > 100 years), the threat that browsing damage poses may not be immediately apparent, as long-lived mature trees remain in the landscape giving the illusion of viable populations. Thus, the removal of an entire recruitment event by browsers will negatively impact long-term population viability and may eventually result in local extinction.

This risk of local extinction is particularly problematic in woodlands with senescent trees (i.e. unhealthy old trees) which produce a limited amount of seed each year. Indeed, most Semi-arid Woodland tree populations are in poor condition and are largely composed of sparsely distributed veteran individuals.

Hence, one of the main management actions to facilitate the recovery of Semi-arid Woodlands is the management of browsing to enable successful recruitment of woody plants.

## Findings

Progress towards the intermediate outcomes of reducing browsing impacts for Semi-arid Woodlands were evident through the two management objectives and associated key evaluation questions:

### 1. Reduced impacts of browsing – Has evidence of browsing decreased?

#### Progress: 'on track'

- At sites where tree recruitment was present, 62% of recruits showed no evidence of browsing.
- At most sites there was no evidence of browsing in any monitoring period.

#### Management implications:

The limited evidence of herbivore browsing and the presence of tree recruitment is due to over 35 years of ongoing control that maintains low browse levels. Current management practices within the Total Grazing Management Plan should be continued to control browser numbers to enable survival of woody seedlings and juveniles.

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*Browsing control enables enhanced survival of tree recruits.*

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**Slender Cypress Pine juveniles with browsing damage.**





## 2. Reduced impacts of browsing – Has the life stage distribution of Semi-arid Woodland trees improved?

Progress: 'attention needed'

### What do Semi-arid Woodland tree populations (in a hectare) look like?

In theory a viable Semi-arid Woodland tree population should:

- Have all tree life stages present.
- Have (on average) a high number of seedlings and juveniles (~24 individuals) and healthy mature adults (~55 individuals) present.
- Have few unhealthy mature trees (two individuals) and dead trees present (four individuals).

### However, the typical Semi-arid Woodland tree population currently looks like:

- Not all tree life stages are present.
- On average populations have no seedlings present and few juveniles (1-5 individuals), healthy mature trees vary from 1-25 individuals, few unhealthy mature trees (0-5 individuals) and a varying number of dead trees (0-25 individuals)

### Are tree populations changing over time?

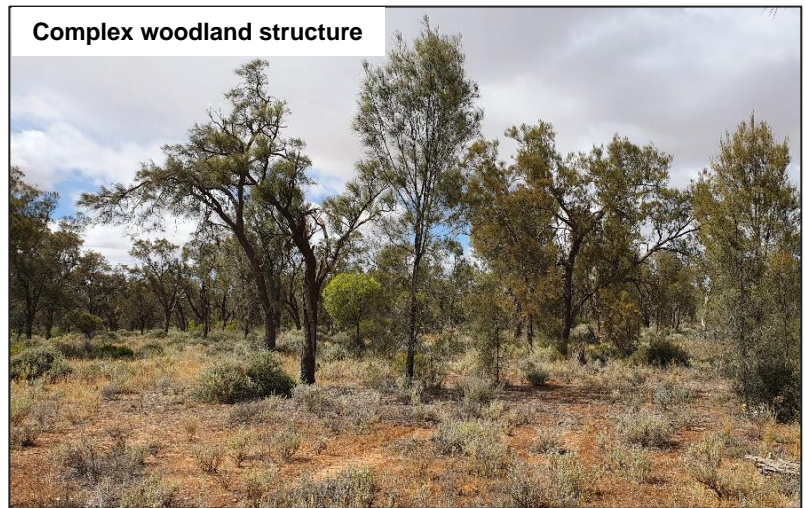
- An increase in juveniles over five to seven years was detected at 12% of sites.
- However, no change in mature (either healthy or unhealthy) or dead trees was recorded.

At finer scales, changes in the tree life stage distribution of Semi-arid Woodlands varied across management units and individual tree species populations:

- In north-western Murray-Sunset National Park, positive changes in Sugarwood woodlands included an increase in juvenile and healthy mature trees over time.
- At Hattah-Kulkyne National Park an increase in seedlings was detected (likely Slender Cypress Pine).
- At eastern Murray-Sunset National Park no changes in tree populations were detected.
- At southern Murray-Sunset and southern Wyperfeld National Parks an increase in unhealthy mature trees occurred over time.

## Management implications:

Findings indicate that woodland structure is becoming more simplified over time through the loss of large shrubs and multiple tree life stages. Tree populations predominantly appear to be unviable in the long-term due to the lack of recruitment (i.e. representation across all life stages) and, in some instances, a growing number of unhealthy and dead trees. This highlights the need for ongoing restoration actions such as revegetation, browser control, and fire prevention.



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*These slow-growing woodlands need assistance for long-term recovery.*

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## Where to next?

Overall, some of the Total Grazing Management Plan intermediate outcomes have been met. Positive changes include an increase in juvenile trees and limited evidence of herbivore browsing on seedlings and juveniles. However, change in Semi-arid Woodland condition is slow and most sites remain in poor condition with declining tree populations. The limited positive change observed since monitoring began in 2012 emphasizes the need for ongoing and enhanced management in these slow-growing woodland assets of the mallee.

Recommendations include:

- Ongoing implementation of the Semi-arid Woodland Monitoring Program to inform recovery.
- Continue browser control to reduce negative impacts on regenerating woody plants, particularly tree recruits.
- Determine priority Semi-arid Woodland sites for enhanced management to ensure that good-quality examples of these communities remain in the landscape.
- Prioritise revegetation works at woodland sites where the best return on investment can be confidently expected. For example, sites where inter-planting of tube stock will result in increased large shrub species richness in the short-medium term (3-5 years) and increased healthy mature trees in the long-term (>10 years).
- Determine revegetation success – without revegetation, particularly interplanting of woody species, many woodlands may continue to decline and be lost in the landscape. There have been revegetation works undertaken in some woodlands (e.g. Pine Plains, north-west Murray-Sunset); however, we do not know if these works have been successful in maintaining or improving condition, nor if tube stock have survived. To inform future works an investigation to determine the success of existing revegetation and the characteristics that made works successful should be undertaken.



## Further Reading

Parks Victoria (2017) The total grazing management plan for the restoration of semi-arid woodland and floodplain vegetation communities in the north-western (Mallee) parks 2016-2010. Internal Parks Victoria report, Mildura, Victoria.

Moxham C., Kenny, S. and Moloney, P. (2023). Semi-arid Woodland Condition Monitoring Program five-year evaluation: progress towards the Total Grazing Management Plans' key evaluation questions. Unpublished Report for Parks Victoria. Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, Heidelberg, Victoria.

Moxham C., Kenny S. and Moloney P. (2024) Semi-arid Woodland Condition Monitoring Program: five-year evaluation: defining vegetation condition. Unpublished Report. Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, Heidelberg, Victoria.

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We acknowledge Victorian Traditional Owners and their Elders past and present as the original custodians of Victoria's land and waters and commit to genuinely partnering with them and Victoria's Aboriginal community to progress their aspirations.



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