



SAVING OUR SPECIES

Narrabarba Wattle

2020-2021 annual report card

Overall status*

- **Populations at all sites are known to be on track.**
- Threat management is known to be on track at all sites, and population status is unknown at one or more sites.
- Threat management is known to be off track at one or more sites, and population status is unknown at one or more sites.
- Populations at one or more sites are known to be off track.

* For SoS priority management sites (may not include all locations where the species occurs in NSW)

Summary

Management sites	Narrabarba Hill Flora Reserve
Action implementation	2 (of 2) management actions were fully or partially implemented as planned for the financial year.
Total expenditure	\$5,000 (\$5,000 cash; \$0 in-kind)
Partners	Environment, Energy and Science



Scientific name:
Acacia constablei

NSW status:
Vulnerable

Commonwealth status:
Vulnerable

Management stream:
Site-managed species





Photo: Gavin Phillips

Priority management site: Narrabarba Hill Flora Reserve

Local government area:
Bega Valley

Partners:
Environment, Energy and
Science

Population outcome

-  **On track**
-  **On track (inferred)**
-  **Not on track (inferred)**
-  **Not on track**

Monitoring

Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.

Monitoring metric	Species abundance
Annual target	Count of all plants on the 17 monitoring plots is not less than 85% of the 2020 count of 3029.
Long term target	The current population size and soil-stored seed bank is maintained into the foreseeable future.
Monitoring result	Seedling count of 1,819. This is significantly less than the number of seedlings estimated in 2020 (3029 seedlings using quadrat sampling for denser patches). However, the contractor has noted that the 2021 count was a more accurate number. It seems the sampling method used on 2 of the plots with dense clusters of seedlings in 2020 gave a significant overestimate in seedling numbers, as there was no evidence of significant seedling death over the last 12 months.
Scientific rigour of monitoring method	High
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Environment, Energy and Science	\$5,000	\$0

Management actions

The following actions are those identified as being required in financial year 2020-2021 to secure the species in the wild.

Threat	Management action	Implemented as planned?
Competition from native shrubs.	Count and measure all plants on the unburnt monitoring plots that were established for the purpose of determining the response of the Narrabarba wattle to a reduction in shrub competition.	Yes
Controlled and uncontrolled fires are the most serious threat to populations. In particular, high-frequency fires hinder regeneration, seed production, and successful recruitment.	Count and measure all plants on those monitoring plots that were burnt in the 2019–20 summer bushfires. Count and measure the heights of seedlings in the cages and controls that were established in 2020 to determine whether there is a significant ongoing post-fire browsing impact.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Controlled and uncontrolled fires are the most serious threat to populations. In particular, high-frequency fires hinder regeneration, seed production, and successful recruitment.	The number of plants on the plots burnt in the 2019–20 wildfires is not less than 80% of the 2020 count of 3029.	On track
Competition from native shrubs.	The treated plot survivorship of Narrabarba wattle is equal to or greater than control plots.	On track
Drought is potentially a significant factor in Narrabarba wattle mortality. Effects of drought on this species may be exacerbated by other factors such as changes to vegetation structure caused by fire or competition from black she-oak and other native shrubs.	No more than a 15% reduction in plant numbers due to drought.	On track
The highly restricted distribution of this species and the current low population size make this species highly vulnerable to stochastic events such as drought and fire.	There is no more than a 15% loss of plants due to stochastic events such as drought or post-fire browsing of seedling recruitment.	On track

Site summary

As reported in the 2019–20 site summary, the Narrabarba wattle *Saving our Species* (SoS) site was only partly affected by the 2019–20 bushfires. The fire did not encroach onto the main rocky outcrop of Narrabarba Hill that supports the main population of the Narrabarba wattle and thus, did not impact the main Narrabarba wattle population.

Some of the smaller outlying populations of Narrabarba wattle on the adjoining lower rock outcrops were burnt, including part of the outcrop 500 m west of Narrabarba Hill on which the effects of shrub competition and the role of fire research plots were established in 2017. Four of the 17 plots were entirely and intensely burnt, and another 2 plots were partly burnt. Three burnt plots were scheduled to be burn treatments, as was one of the partly burnt plots. Only 3 other plots were burnt. It is estimated that only about 10% of the total Narrabarba wattle habitat was burnt.

In 2021, a contractor was engaged to undertake a census of all the known Narrabarba wattle sub-populations and the annual monitoring on the 17 research plots. Across the whole site, the number of plants that pre-dated the 2019–20 wildfires has declined further to just 88 plants. Annual monitoring had recorded a steady decline in the adult population since 2017 when there were 356 plants recorded. Plant death appears to have been largely attributable to the severe droughts experienced over that time. In contrast, and in response to the 2019–20 wildfires and the subsequent plentiful rainfall, the total seedling count for the whole site in 2021 has risen to 3,400.

The 2019–20 wildfires assisted in applying the burn treatment to the research plots. The monitoring of these plots has continued as planned, albeit with some re-allocation of the fire treatment to those plots that were burnt by the wildfire but were previously assigned as controls or to the shrub competition treatment. In 2020, it was reported that a total of 3,029 seedlings had been recorded on the burnt plots. A more accurate count of the seedlings on the plots in May 2021 has revised this count to 1,819. The contractor who undertook the monitoring advised that it seems the sampling method used on 2 of the plots with dense clusters of seedlings in 2020 gave a significant overestimate in seedling numbers, as there was no evidence of significant seedling death over the last 12 months. The revised seedling count is still dramatically higher than the 2021 total seedling count of 27 across the 10 other unburnt plots. This high level of recruitment on the burnt plots (and elsewhere on the burnt parts of the site) clearly demonstrates the expected positive response of the Narrabarba wattle to fire and that there is a plentiful supply of soil-stored seed.

Although statistical analysis of the data has not yet been undertaken, there appears to be no significant difference after 7 years between the survivorship of Narrabarba wattle plants on those plots where competing shrubs have been removed and the control plots. Drought impacts have negated an initial positive response to competing shrub removal by killing most of the cohort of seedlings that first appeared in response to shrub removal. Death rates for existing mature Narrabarba wattle plants were no different on the treated plots compared to the controls.

In June 2020, post-fire browsing appeared to be having a strongly deleterious effect on the Narrabarba wattle seedlings that had been recruited following the January 2020 fire. Most unprotected seedlings were no more than 2–3 cm high compared to protected seedlings that had reached 20–30 cm in height. To measure the impact of browsing, 10 1 x 1 m exclosures (constructed using stainless steel mesh panels) and 10 adjoining controls were established in June 2020. The exclosures were sited to pick up the larger concentrations of wattle seedlings. Seedlings were counted within each exclosure and control plot. Seedling height was not measured at the start as all seedlings were only 1–3 cm high. In May 2021, the browsing exclosures and controls were re-measured, although only the height of the tallest seedling in each exclosure was recorded. The numbers of seedlings did not change significantly over the past 12 months in either the exclosures or the controls. In general, seedlings appeared equally vigorous in both the exclosures and controls. Due to time constraints, only the tallest seedling in each exclosure and control plot was measured. The results are that the average seedling height in the exclosures was only slightly taller (125.6 cm in exclosures compared to 101.3 cm in the control plots). The tallest seedling recorded was 180 cm, and notably, this was in a control plot. These results demonstrate that, fortunately, the high browsing pressure had not persisted much after the exclosures were established in June 2020.

Saving our Species 2020-2021 annual report card for Narrabarba Wattle (*Acacia constablei*). For more information refer to the specific strategy in the Saving our Species program.