SAVING OUR SPECIES

Acacia dangarensis

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	Mount Dangar
Action implementation	5 (of 5) management actions were fully or partially implemented as planned for the financial year.
Total expenditure	$31,307 ($30,645 cash; $662 in-kind)
Partners	Environment, Energy and Science

Photo: Heidi Zimmer

Scientific name:
Acacia dangarensis

NSW status:
Critically Endangered

Commonwealth status:
Not listed

Management stream:
Site-managed species

Priority management site: Mount Dangar

Local government area:
Muswellbrook; Upper Hunter

Partners:
Environment, Energy and Science

Population outcome

On track

On track (inferred)

Not on track (inferred)

Not on track

The species population is inferred to be on track based on threat management being on track. The population trend is unknown at this time.

Monitoring

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

Baseline monitoring conducted.

Monitoring metric	Reproductive success/recruitment
Monitoring result	Five monitoring plots have been established in stands of *Acacia dangarensis*, a fifth added at Worondi Creek in 2020. Most individuals within plots were observed to be healthy, with some successful fruiting occurring over 2020 spring to summer. Comparisons of live versus dead adult plants showed stability within 3 plots but increased mortality at 2 plots due to senescence. On average, dead trees comprised 40% of all standing trees measured. Seedlings have been recorded in all plots since May 2020. However, only those in one out of the 5 plots have persisted. Analysis was undertaken across 8 rainfall periods (1, 2, 3, 6, 9, 12, 18 and 24 months) from the commencement of monitoring in May 2017 to May 2021 to determine correlations with germination. There was a very strong and significant ($p<0.01$) relationship between seedling abundance and the previous month's rainfall.
Scientific rigour of monitoring method	Moderate
Conducted by	Environment, Energy and Science

Investment

Participant	Cash	In-kind
Environment, Energy and Science	$30,645	$662

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?
Due to access difficulties, little information exists on the distribution of the species and population sizes	Undertake ground surveys on selected basalt hills in Goulburn River National Park.	Yes
Goats known to browse the species, removing individuals and degrading habitat.	Aerial shoot of pest herbivores.	Yes
Risk of too frequent or too intense fires inhibiting growth or reproduction.	Monitor species response to wildfire and/or hazard reduction burning to determine appropriate fire regime.	Yes
Weed infestation, particularly from prickly pear, *Opuntia stricta*, may reduce seedling recruitment and threaten the future persistence.	Monitor *Opuntia stricta* population changes within permanent monitoring plots.	Yes
Lack of fire resulting in senescence of population.	Final inspection of exclusion experiment sites and removal of cages.	Yes

Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Risk of too frequent or too intense fires inhibiting growth or reproduction.	Maintain or reduce level of threat.	On track
Weed infestation, particularly from prickly pear, *Opuntia stricta*, may reduce seedling recruitment and threaten the future persistence.	*Opuntia stricta* cladode count is less than 50% of baseline records within monitoring plots.	On track
Goats known to browse the species, removing individuals and degrading habitat.	Nil evidence of browsing/habitat degradation due to pest herbivores within monitoring plots.	On track
Due to access difficulties, little information exists on the distribution of the species and population sizes	Increase knowledge on species distribution and population size.	On track
Lack of fire resulting in senescence of population.	Maintain or reduce level of threat.	On track

Site summary

After 5 years of *Saving our Species* funding, several positive outcomes have been achieved, incorporating actions on the extent of occurrence, targeted survey, weed control, fire management and ecological research. Site inspections across Mount Dangar throughout the 2020–21 financial year generally revealed the condition of most *Acacia dangarensis* individuals to be healthy, with some successful fruiting occurring over 2020 spring to summer. Ground surveys on selected basalt hills in Goulburn River National Park were undertaken; however, no new populations were detected. Therefore, the extent of occurrence of this species remains at 112 ha. Sporadic germination has been observed across all 5 monitoring plots since May 2020. However, tracking individual germinants shows that these new plants soon die off despite good rainfall. A university student research proposal has been prepared to investigate the potential role of shading and allelopathy on seedlings.

It has long been hypothesised that wildfire is the main driver of population regeneration for *Acacia dangarensis*. During the 2020–21 financial year, progress has been made on further understanding the ecological history of this species habitat on Mount Dangar. Dendrochronology and radiocarbon dating have been used to determine the age of *Acacia dangarensis* trees. Results from both techniques indicated that these trees germinated in the early 1960s, corroborating the hypothesis that a major fire event in the late 1950s likely caused the death of most *Callitris glaucophylla* trees on Mount Dangar and stimulated the germination of the current cohort of *Acacia dangarensis* trees.

Cochineal, introduced to Mount Dangar in 2017, continues to be an effective biocontrol agent for prickly pear (*Opuntia* Stricta). This weed is now unlikely to be significantly impacting *Acacia* danagrensis stands. Aerial shooting of pest herbivores was also undertaken as a threat abatement measure. Several recommendations have been made to assist with the management of this species, including additional targeted searches in priority areas, completion of an experimental burn, revision of the vegetation mapping for Mount Dangar and pursuing ongoing research opportunities related to life history and fire ecology.

Future tasks for this project include delineating the boundary of the population on the north western mid-slopes of Mount Dangar and continuing to investigate the fire ecology of this species.