

The Minister's delegate approved this conservation advice on 01/10/2015

Conservation Advice

Acacia ataxiphylla subsp. *magna*

large-fruited Tammin wattle

Conservation Status

Acacia ataxiphylla subsp. *magna* (large-fruited Tammin wattle) is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing as Endangered as, prior to the commencement of the EPBC Act, it was listed as Endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth). The main factor that is the cause of the species being eligible for listing in the Endangered category is a very low number of mature individuals (<250) (Harris and Brown, 2003).

The subspecies is declared as Rare Flora and Endangered in Western Australia (*Wildlife Conservation Act 1950*).

Description

The large-fruited Tammin wattle is a ground-hugging, sprawling semi-prostrate or ascending leafless shrub to 30-60 cm high and 50 cm wide shrub, with weak, ascending to erect stems. Branches are flattened or angled at their extremities. Phyllodes (flattened leaf stalks that resemble the stems), mostly 4 to 6 cm long by 1.6 to 2 mm wide, are somewhat rough. The globular to slightly ovoid yellow flower heads are borne from June to September in heads 7 to 9 mm in diameter and are held on stalks 4 to 7 mm long (Brown et al., 1998; Maslin 1999; Paczkowska and Chapman 2000; Orchard and Wilson 2001; Harris and Brown, 2003).

The epithet *magna* refers to the characteristically large flower heads (Maslin, 1999)

Distribution

The species is endemic to the Cunderdin-Tammin area in the wheatbelt of south-western Western Australia (WA) where it occurs over a range of approximately 15 km (Brown et al., 1998; Maslin 1999; Orchard and Wilson 2001; Harris and Brown, 2003). The Interim Recovery Plan (Harris and Brown, 2003) notes that there are fourteen populations and three subpopulations (without defining the difference between these). All populations are restricted to narrow road reserves (Brown et al., 1998). The habitat of the large-fruited Tammin wattle comprises heath to shrub mallee or low woodland on predominantly shallow grey-brown gravelly sands over laterite (Brown et al., 1998; Maslin 1999; Paczkowska and Chapman 2000; Orchard and Wilson 2001; Harris and Brown, 2003). Associated species include *Allocasuarina campestris*, *Xanthorrhoea preissii*, *Eucalyptus macrocarpa*, *Dryandra*, *Hakea* and *Acacia*. Two species of Declared Rare Flora in WA – *Hakea aculeata* and *Acacia subflexuosa* subsp. *capillata* – ranked Endangered and Critically Endangered in WA respectively, are found in the same habitat as several populations of the large-fruited Tammin wattle (Harris and Brown, 2003).

Threats

The Interim Recovery Plan (Harris and Brown, 2003) listed the main threats to the large-fruited Tammin wattle are road maintenance; weed invasion; restricted habitat; poor recruitment; inappropriate fire regimes and grazing.

- **Road maintenance** threatens all road reserve populations. Threats include grading, chemical spraying, construction of drainage channels and the mowing of roadside vegetation. Several of these actions also encourage weed invasion.

- **Weed invasion** has been recorded as a threat to the majority of the large-fruited Tammin wattle populations. Weeds suppress early plant growth by competing for soil moisture, nutrients, space and light. They also exacerbate grazing pressure and increase the fire hazard due to the easy ignition of high fuel loads, which are produced annually by many grass weed species.
- **Restricted habitat** threatens populations occurring on narrow road reserves and in highly disturbed remnant bushland on private property. The lack of associated native vegetation makes it more likely that pollinators will be infrequent or absent and that extant plants will be subjected to increased edge effects such as those associated with chemical drift and weed invasion. In addition, the lack of available habitat for recruitment and spread is of concern.
- **Poor recruitment** threatens most populations with few seedlings being observed.
- **Inappropriate fire regimes** may affect the viability of populations. As seeds of the large-fruited Tammin wattle are thought to germinate following fire, the soil seed bank would be rapidly depleted if fires recurred before regenerating or before juvenile plants reached maturity. Conversely, it is likely that occasional fires are needed for reproduction of this species.
- **Grazing** by rabbits, kangaroos and stock has been noted as threatening four large-fruited Tammin wattle populations. Rabbits and kangaroos also impact on populations through digging (hence soil erosion), the addition of nutrients to soil and introduction of weed seeds. The high levels of palatable weeds near these populations and in adjacent farming properties attract herbivorous animals that may not distinguish between introduced and native species when grazing.

Conservation Actions

The Interim Recovery Plan (Harris and Brown, 2003) notes that the Shires of Cunderdin and Tammin and property owners of land adjoining road reserves have been notified of the presence of large-fruited tammin wattle with notifications that detail the Declared Rare status of the species and associated legal obligations. The Shire of Cunderdin has nominated Mills Road as a 'Flora Road'. This informs visitors in relation to flora conservation.

Surveys undertaken by CALM (WA Department of Conservation and Land Management, now the WA Department of Parks and Wildlife DPaW) officers between 1997 and 2003 located 14 populations and three subpopulations and have installed Declared Rare Flora (DRF) markers at all road reserve populations. Seed collection has also taken place and these are stored in the DPaW Threatened Flora Seed Centre (TFSC) at -18°C with initial germination rates of 100% (Crawford cited in Harris in Brown, 2003).

Five populations and two subpopulations are within areas of private property. All are fenced except for Population 5, which does not have a roadside boundary fence. Regular communication between DPaW and land managers was ongoing (at the time of writing the Interim Recovery Plan) to ensure that existing fences are maintained to provide a more secure habitat for the species. Information on covenants for private property conservation was provided to property owners that have populations of large-fruited Tammin wattle on their land.

The Interim Recovery Plan also identified 16 future recovery actions and prioritised them as follows:

1. Coordinate recovery actions
2. Map critical habitat
3. Notify land owners of new populations
4. Liaise with relevant land managers
5. Maintain fences around Populations 5 and 7
6. Install bollards to protect Subpopulation 2a
7. Collect seed and cutting material
8. Develop and implement a rabbit control strategy
9. Develop and implement a weed control strategy
10. Develop and implement a fire management strategy

11. Investigate purchase of land to extend habitat
12. Obtain biological and ecological information
13. Promote community awareness
14. Monitor populations
15. Conduct further surveys
16. Review the need for a full Recovery Plan

These recovery actions are expanded upon and grouped below:

Conservation and Management Actions

Habitat loss disturbance and modifications

- Notify relevant land managers and liaise with them to prevent accidental damage or destruction of the species' habitat.
- Fences around populations of the species on private land (particularly around populations 5 and 7) must be maintained to prevent grazing by stock and damage to remnant vegetation by vehicles
- Subpopulation 2a is located on a road reserve that is used as a vehicle lay-by. Bollards should be installed as a barrier between the lay-by and the area containing the species.
- DPaW officers should investigate purchasing corridors of private property to increase area of habitat and decrease the edge effect on populations that occur on degraded road reserves.
- For populations that occur within areas of remnant vegetation on private property close to a Conservation Reserve, the possibility of purchasing these areas for inclusion into the Reserve should be investigated.

Invasive species

- A rabbit control strategy should be developed and implemented in consultation with relevant land managers. The Commonwealth *Threat Abatement Plan for Competition and Land Degradation by Rabbits* (DEWHA, 2008) can provide important information in the development of the strategy.
- The development of a weed control strategy should involve accurate mapping and assessment of weeds present; selection of appropriate herbicide or other control methods; and be followed by a report on the success of the program and the effect on the species and other native plants in the area. Weed control should be undertaken in consultation with the land managers. This could be by hand weeding or localised application of herbicide.

Fire

- A fire management strategy should be developed in consultation with relevant authorities and land managers to determine fire control measures, and fire intensity, timing and frequency. This strategy should consider other priority and threatened flora species in the district wherever possible.

Stakeholder Management

- The coordination of recovery actions is important and relevant stakeholders including DPaW; the Shires of Tammin and Cunderdin; managers and owners of land on which populations of the species occur, and with managers of adjacent land; should be involved in this process. In addition, the possibility of conservation covenants should be discussed with interested land owners as a method of improving the security of populations and their habitat.
- Awareness of the importance of biodiversity conservation and the need for the long-term protection of wild populations of this species can be promoted throughout the community using poster displays, local print and electronic media. Formal links with local naturalist groups and interested individuals will be encouraged. An information sheet should be produced that includes a description of the plant, its habitat, threats, recovery actions and photos. This could be distributed to the public through DPaW District Offices and at the offices and libraries of the Shires of Tammin, Cunderdin and Quairading.

Survey and Monitoring priorities

- More precisely assess population size and distribution and map critical habitat. If additional populations are identified, these should be mapped and relevant stakeholders advised to include the areas when any recovery actions are undertaken.
- Annual monitoring of factors such as habitat degradation (including weed invasion, salinity and plant diseases), population stability (expansion or decline), pollination activity, seed production, recruitment, longevity and predation is essential.
- Volunteers from the local community, wildflower societies, naturalist clubs and other community-based groups will be encouraged to participate in surveys for the species and be supervised by DPaW staff (to be undertaken during the species' flowering period June to September).

Information and research priorities

- Preservation of germplasm is essential to prevent extinction if the wild population is lost. Seed and cuttings will be collected for storage and for use in propagating plants for future translocations (Vallee et al., 2004). A quantity of large-fruited Tammin wattle seeds is currently held in the DPaW TFSC. Though initial germination rates were very high, further collections from a variety of plants is essential to maximise the genetic diversity of *ex situ* material and to establish a living collection at the Botanic Garden and Parks Authority.
- An understanding of the following is particularly necessary for effective management:
 - soil seed bank dynamics and the role of various disturbances (including fire), competition, rainfall and grazing on germination and recruitment
 - the pollination biology of the species
 - the requirements of pollinators
 - the reproductive strategies, phenology and seasonal growth of the species
 - the population genetic structure, levels of genetic diversity and minimum viable population size
 - the impact of herbicide treatments on the large-fruited Tammin wattle and its habitat.

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