

Acacia siculiformis

dagger wattle

TASMANIAN THREATENED SPECIES NOTESHEET



Image by S. Wood

Scientific name: *Acacia siculiformis* A.Cunn. ex Benth., *Lond. J. Bot.* 1: 337 (1842)

Common Name: dagger wattle (Wapstra et al. 2005)

Group: vascular plant, monocotyledon, family **Mimosaceae**

Status: *Threatened Species Protection Act 1995:* **rare**

Environment Protection and Biodiversity Conservation Act 1999: **Not listed**

Distribution: Endemic status: **not endemic to Tasmania**

Natural Resource Management region: **North, South**

SUMMARY: *Acacia siculiformis* (dagger wattle) is a shrub which in Tasmania occurs near watercourses and in dry, rocky situations within sclerophyll forest. It mostly occurs in a band from the centre of the State to the East Coast but unvouchered records from the north east require verification. About 30 subpopulations have been recorded though fewer than 20 are supported by herbarium specimens. Available data suggests that subpopulations are small, with the total number of plants likely to be considerably fewer than 5,000 with an area of occupancy less than 5 ha, putting the species at risk from inadvertent or chance events. Other threats include dam construction, and while forestry operations may result in minor losses, the associated disturbance may trigger recruitment from soil-stored seed. The species would benefit from management of cumulative losses, and a disturbance regime that allows recruitment leading to supplementation of the soil seed store.



Plate 1. Flowers of *Acacia siculiformis*
(image by S. Wood)

IDENTIFICATION AND ECOLOGY

Acacia siculiformis is a shrub that is often associated with open areas such as those fringing rocky areas or open areas created through disturbance such as occasional fires, track clearing or logging. It recruits from seed, presumably from a long-lived soil stored seed bank as with many other *Acacia* species. Bees are the most likely pollination vector (A. Hingston pers. comm.). The species is not known to be susceptible to root rot (*Phytophthora cinnamomi*). This may be due to the dry habitats from which most occurrences are known (P. Barker pers. comm.).

As one of 27 species and infraspecies in the *Acacia* genus as well as in the family Mimosaceae in Tasmania (Baker and de Salas 2013), *Acacia siculiformis* represents a relatively low proportion of its genetic lineage in the state. Being a shrub that can be locally common (albeit in small areas), the species is likely to have biodiversity benefits as a foundation species by providing habitat particularly for invertebrates and being a legume for nitrogen fixing bacteria, biomass for foraging fauna particularly invertebrates, and nutrition from breakdown material for soil microorganisms.

Survey techniques

This shrub flowers in spring and early summer. Most herbarium specimens were collected from September to December. While flowers are necessary to confirm identification, the species can be distinguished by its leaves and colour.

Description

An erect or spreading, rigid shrub between 1-2 m tall. The branches are brown, somewhat scaly and circular in cross section. **Leaves:** The adult foliage consists of flattened leaf stalks (petioles), which function as leaves and are known as phyllodes. These are long and narrow, widest about the middle, often slightly sickle-shaped and tapering to a sharp point. They are 1.0-2.5 cm long and 1.5-4 mm wide with a prominent central vein and thickened margins. **Flowers:** This species produces yellow, ball shaped flowers on stalks up to 12 mm long, in the phyllode axil. **Fruit:** The fruit is a long and narrow pod between 20-70 mm long and 4-7 mm wide, each containing 6-10 black shiny seeds.

[description based on Curtis & Morris 1975, Tamre 1992]

Confusing species

Figure 1 (from Lynch 1993) shows the differentiation of four Tasmanian *Acacia* species based on bud characteristics. The similarities between these species mean a certain level of doubt as to the identity of unvouchered records, particularly if located some distance away from vouchered records.

HABITAT

In Tasmania, *Acacia siculiformis* is found near watercourses and in dry, rocky situations within sclerophyll forest.

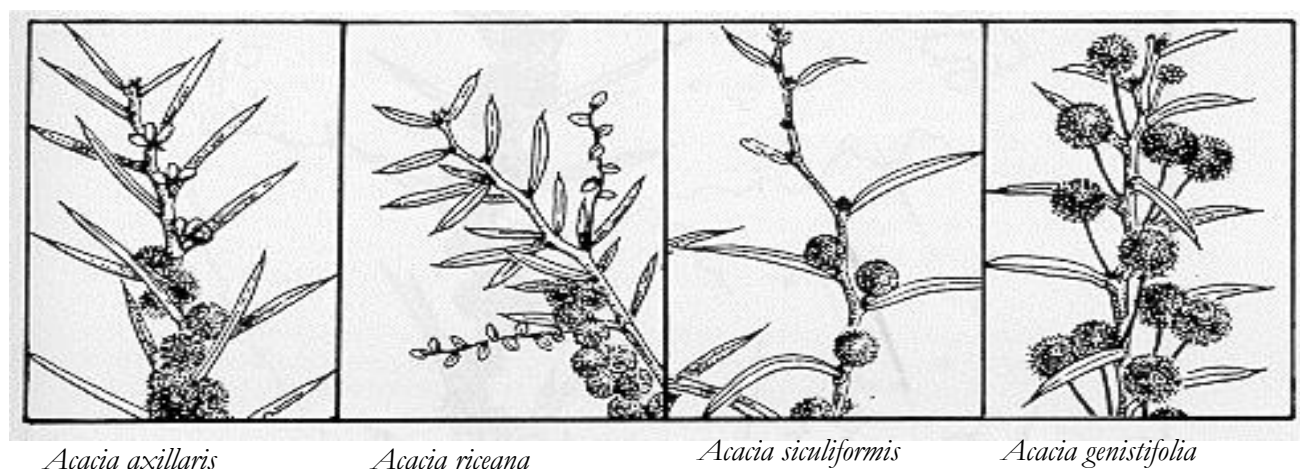


Figure 1. The differentiation of four Tasmanian *Acacia* species based on bud characteristics (from Lynch 1993)

DISTRIBUTION, POPULATION PARAMETERS, AND DATA ISSUES

The Australian distribution of *Acacia siculiformis* is shown in Figure 2. The Tasmanian distribution is shown in Figure 3 with a comparison with Figure 4 demonstrating the increase in the occurrence records since 2003. The majority of the new observations have resulted from impact assessment surveys. The linear extent of the species in Tasmania is estimated to be about 230 km with an extent of occurrence of about 16,700 km². However, this is reduced to a linear extent of about 100 km and extent of occurrence of 7,000 km² using only records that are supported by herbarium specimens (Figure 5). Doubt exists as to the identity of plants recorded outside of this reduced range, given that *Acacia siculiformis* can be confused with a number of similar species (see Figure 1). A record from Beaconsfield is tagged as questionable in the Natural Values Atlas and is not mapped in Figure 3. The Atlas of Living Australia holds details for Tasmanian specimens held in herbaria on mainland Australia that would extend the recorded range westward (historical record) and eastward (Figure 6), though the identity of these specimens requires checking.

Approximately 30 subpopulations have been recorded in Tasmania though fewer than 20 of these are supported by herbarium specimens (Figure 5). Only 45% of the 76 observations of *Acacia siculiformis* held in the Natural Values Atlas have associated data on population size, totalling about 580 plants and occupying 0.8 ha. The distribution of these observations is shown in Figure 7. From these numbers, it is estimated that there are far fewer than 5,000 plants of *Acacia siculiformis* in Tasmania, occupying less than 5 ha in total. The three largest recorded subpopulations have an estimated 200, 123 and 70 plants respectively, though the second of these is outside of the range of vouchered records. Given an approximate doubling of the number of known subpopulations since 2003, it is considered likely that further subpopulations will be found with further survey.

Important occurrences for *Acacia siculiformis* include

- verified subpopulations at the edge of the range of the species, and those that are disjunct, occurring more than 10 to 20 km away from other verified subpopulations;
- larger subpopulations (>50 plants and 0.25 ha);
- subpopulations that represent a significant proportion of the occurrence in a bioregion;
- subpopulations in secure reserves;
- subpopulations that are associated with threatened ecological communities or other threatened non-mobile species.

RESERVATION STATUS

Figure 8 shows that the distribution of reserves is patchy across the confirmed distribution of *Acacia siculiformis*.

CONSERVATION ASSESSMENT

Acacia siculiformis was listed as rare on the original schedules of the Tasmanian *Threatened Species Protection Act 1995* when it was known from 20 or less 10 x 10 km Australian Map Grid Squares in Tasmania (Flora Advisory Committee 1994). It qualifies as rare, meeting criterion B: total population small or restricted and at risk;

- having fewer than 10,000 mature individuals with no more than 2,500 occurring on land that is in an area free from sudden processes capable of causing largely irreversible loss of individuals or habitat.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Acacia siculiformis is at risk of losses from inadvertent or chance events due to the generally small size of subpopulations. Some subpopulations are at risk of local extinctions or major losses from the construction of dams. Despite a number of occurrences occurring on State forest (Figure 8 Permanent Timber Production Zones), forestry is not likely to be a

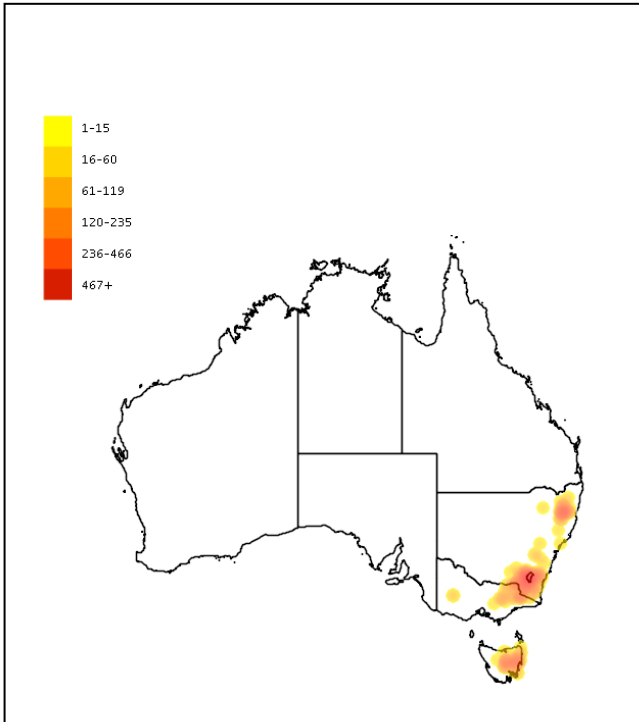


Figure 2. Occurrence records map of *Acacia siculiformis* in Australia (Atlas of Living Australia March 2014)

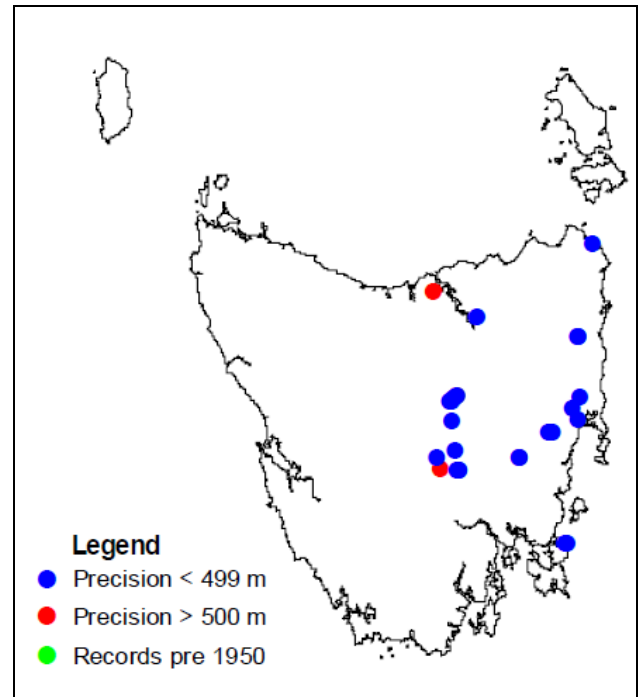


Figure 4. Distribution of *Acacia siculiformis* in Tasmania as per Threatened Species Unit records May 2003

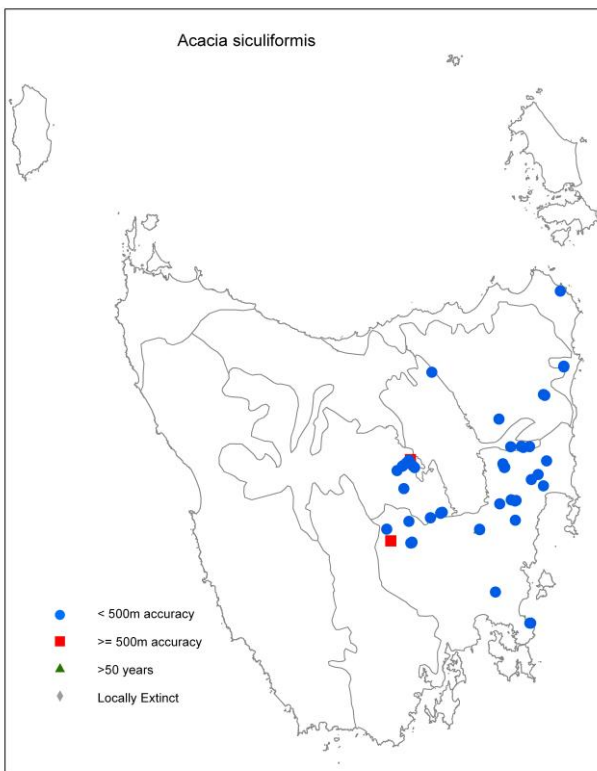


Figure 3. Distribution of *Acacia siculiformis* in Tasmania showing IBRA bioregions (Natural Values Atlas April 2012)

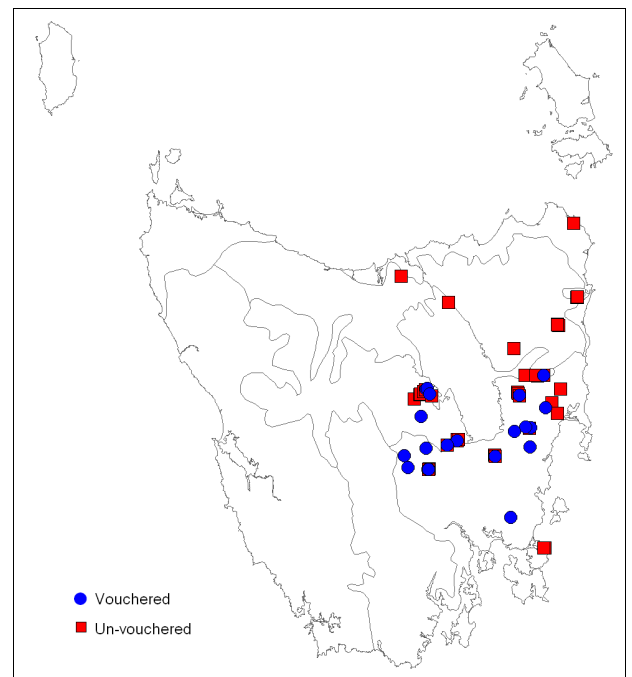


Figure 5. Observations of *Acacia siculiformis* in Tasmania with and without herbarium specimens showing IBRA bioregions (Natural Values Atlas March 2014)

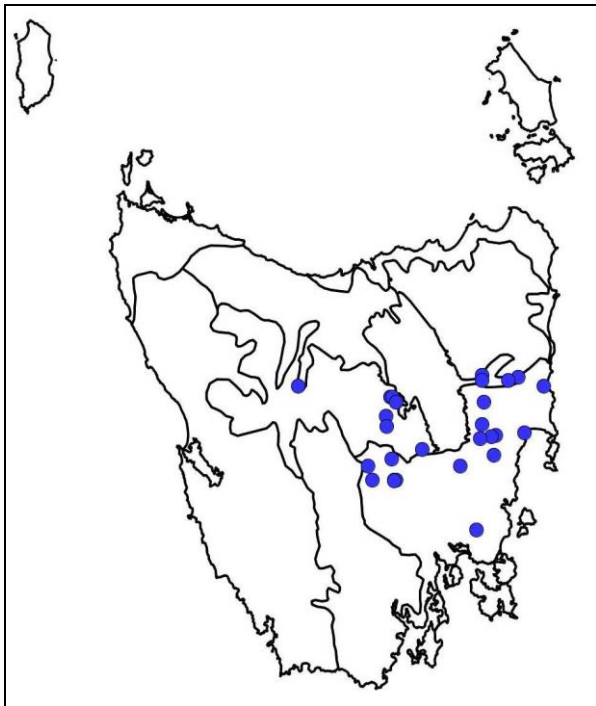
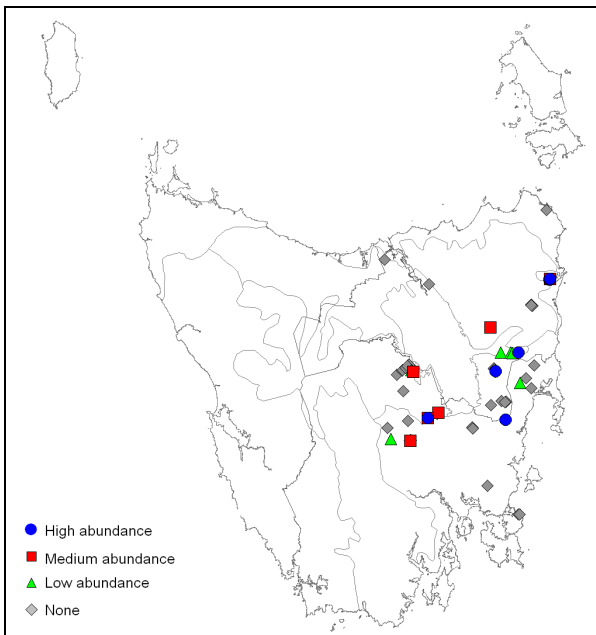
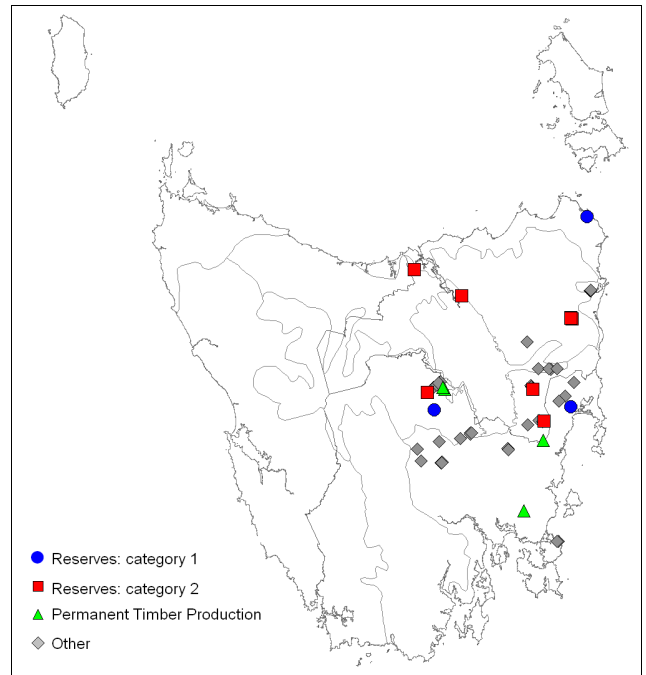


Figure 6. Observations of *Acacia siculiformis* in Tasmania with herbarium specimens showing IBRA bioregions (Atlas of Living Australia March 2014)



High = 70 to 200 plants or locally common
Medium = 10 to 45 plants
Low = 1 to 7 plants or rare

Figure 7. Abundance information for occurrences of *Acacia siculiformis* in Tasmania showing IBRA bioregions (Atlas of Living Australia March 2014). [the grey diamonds are for observations lacking abundance data]



Reserve	Obs.	Category
Mount William National Park	1*	1
Conservation Covenant (2)	1, 1	1
Bouchers Creek Conservation Area	1*	2
Dans Hill Conservation Area	1?	2
Elizabeth River Conservation Area	1	2
Great Lake Conservation Area	1	2
Avenue River Regional Reserve*	3*	2

* unvouchered record requiring verification;
 ? questionable observation

Figure 8. Tenure and reservation status of observations of *Acacia siculiformis* in Tasmania (Natural Values Atlas March 2014)

key threat to the species as plants are likely to be excluded from harvest operations due to the unsuitability of their habitat for harvesting. Some forest associated disturbance risks localised losses if not managed appropriately. However, the disturbance created by forest roading and selective logging operations is likely to trigger recruitment from any disturbed soil-stored seed. Occurrences may decline with the absence of fire for long intervals due to competition and senescence, though local extinctions are unlikely with the operation of current factors given the likely long-lived nature of soil stored seed. Frequent fires may result in depletion of the soil seed bank if the interval between fires does not allow plants to mature and seed. Cumulative losses may lead to the species qualifying as vulnerable if not managed.

MANAGEMENT STRATEGY***Management objectives***

The main objectives to decrease the extinction risk faced by *Acacia siculiformis* are to prevent the inadvertent destruction of occurrences, prevent a decline in the verified range of the species, stem cumulative losses, and promote conditions for recruitment.

What has been done?

Seed has been collected for long term storage at the Tasmania Seed Conservation Centre based at the Royal Tasmanian Botanical Gardens.

What is needed?

Agencies, groups or individuals may assist with some or all of the following recovery actions. Coordinated efforts may achieve the best and most efficient results.

- provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat;
- develop management agreements with private landowners and public land managers, and ensure that current priorities for the species are incorporated into the Private Land Conservation Program's (DPIPWE) reservation strategies.
- verify observations of the species that fall outside the range of vouchered occurrences;
- verify the identity of specimens held in mainland herbaria that would constitute an increase in the range of the species over that recorded in the Natural Values Atlas;
- improve knowledge of the size and extent of subpopulations across the range of the species;
- track cumulative losses to inform the assessment of applications of permits to take the species;

- investigate reasons for the small size of subpopulations e.g. low seed output.

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View:

www.dpipwe.tas.gov.au/threatenedspecieslists
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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.