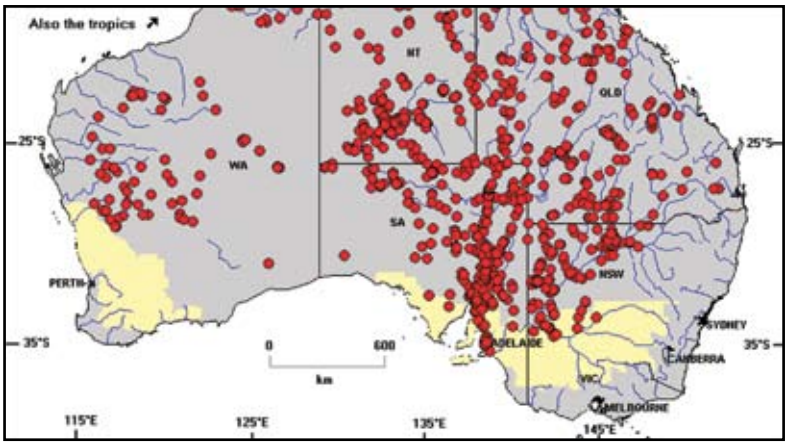
Acacia victoriae Benth.

Common Names

Elegant Wattle, Gundabluey, Prickly Wattle, Bramble Wattle and more, see Cunningham *et al.* (1981).



Map 72. Distribution of *A. victoriae*.

Habit

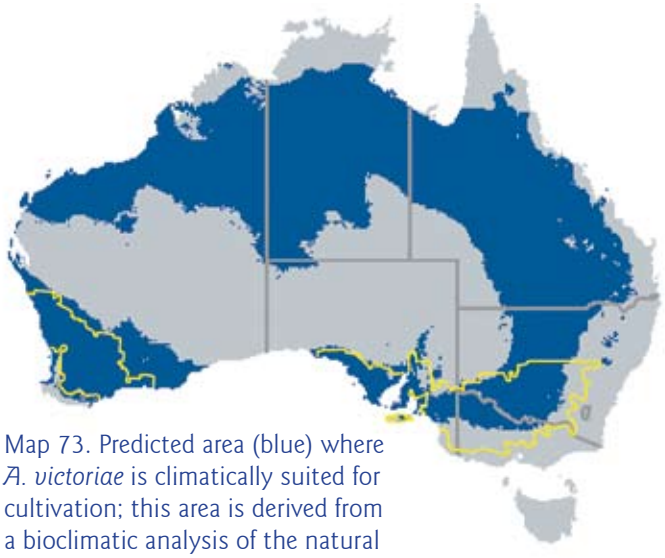
Spreading, often straggly or brambly shrubs or trees 2–5 (–9) m tall, with a short single trunk or sparingly divided at ground level, main stems rather crooked and commonly about 6 cm dbh but can reach 12–14 (–21) cm, branches often invested with spiny stipules (especially evident when young, commonly absent from mature plants), readily root suckering and sometimes forming thickets. Bark thin, smooth or (towards base of main stems) finely fissured. Root system reported by Maiden (1889) to be extremely deep, estimated to exceed 20 m (but this would need verification).

Botanical descriptions and illustrations/photographs are provided by Cunningham *et al.* (1981), Costermans (1981), Simmons (1987), Turnbull (1986), Whibley & Symon (1992), Tame (1992), Bonney (1994), Doran & Turnbull (1997), Maslin (2001 & 2001a) and Kodela (2002).

Taxonomy

Acacia victoriae is referable to *Acacia* section *Phyllodineae*, a diverse, and probably artificial, group of about 408 species (Maslin 2001) which are characterized by having '1-nerved' phyllodes and flowers arranged in globular heads (see Maslin & Stirton 1998 and Maslin 2001 for discussion).

Acacia victoriae along with nine close relatives comprise the '*Acacia victoriae* group' whose centre of diversity is located in Western Australia (Maslin 1992); only *A. victoriae* itself is included in the report. *Acacia victoriae* is not far removed taxonomically from *A. murrayana* (see above). Over its considerable geographic range *A. victoriae* is somewhat variable, especially in phyllode shape and size (Maslin 1992). The taxonomic status of a hairy variant, described as *A. victoriae* subsp. *arida*, requires further investigation: this variant occurs in a somewhat restricted geographic area in southern Northern Territory, northern South Australia, western New South Wales and southwest Queensland.



Map 73. Predicted area (blue) where *A. victoriae* is climatically suited for cultivation; this area is derived from a bioclimatic analysis of the natural distribution (red circles, Map 72), see also Table 5. Target area shown in yellow.

Distribution and habitat

Widespread in arid and sub-tropical areas of all mainland States of Australia except Victoria (where it is confined to the extreme northwest of that State, near Mildura and in The Sunset Country). This species only just reaches the target area in the northern wheatbelt of Western

Figure 36. *Acacia victoriae*

A – Mature plant near Mildura (one of the largest specimens seen of this species). (Photo: B.R. Maslin)

B – Young pruinose stems with persistent stipular spines. (Photo: B.R. Maslin)

C – Section of stem. (Photo: B.R. Maslin)

D – Multi-stemmed shrub. (Photo: B.R. Maslin)

E – Fruiting branches (pods prolific & papery). (Photo: J. Morse)

F – 2 year old plants in trial at Morawa; juvenile plants brambly & spiny. (Photo: J. Carslake)

G – Flowering branch (heads pale-coloured & in racemes). (Photo: B.R. Maslin)

Australia but it is more common (in inland areas) of the region in the east. *Acacia victoriae* is one of only four species in this report that occur in both the eastern and westen target areas (the other three are *A. cyclops, A. hakeoides* and *A. murrayana*). Over its extensive range *A. victoriae* occurs in a variety of habitats but is commonly found in clay or loam on alluvial flats (subsp. *arida* occurs on sand, see Pedley 1980). Soils range from acid to alkaline or subsaline, and shallow to deep (Turnbull 1986). A comprehensive summary of its habitat characteristics is given in Hall *et al.* (1981a), Turnbull (1986) and Fowler & Fox (1995).

Flowering and fruiting

Phenology is variable. Flowering occurs from August to December (late winter to early summer) and appears to vary depending upon where the plants occur (Fowler & Fox 1995). Although flowering is sometimes irregular it does not appear to be dependent upon the incidence of rain (Askew & Mitchell 1978). Most sources record mature seeds occurring between about October and December, however, Pedley (1980) gives August to October and Bonney (1994) gives November to March. Pods are produced in great profusion and are easily collected by hand (shaking/threshing); they may be shed unopened or may open on the plant with the seeds remaining attached by the funicle.

Biological features

As summarised by Turnbull (1986) *A. victoriae* is an adaptable species that is moderately fast-growing, relatively short-lived (probably has a life-span of about 10–15 years) and moderately frost and salt tolerant. It is moderately drought tolerant but is killed by severe droughts, it recovers well after light grazing and is moderately fire tolerant when young (Askew & Mitchell 1978). It readily root suckers and has a large root system (Hall *et al.* 1981a); Maiden (1889) reported roots extend to more than 20 m. Its coppicing ability requires further investigation; according to L. Thomson (pers. comm.) coppicing may possibly be related to the age of the plant (with older plants not coppicing well) or varies with provenance. The report by Thomson (1991) that *A. victoriae* coppices may possibly include observations from plants that are now referred to *A. synchronicia*. Further details on the biology of the species are given in Fowler & Fox (1995).

Cultivation

There are few reliable growth data for this species. However, in Iran it is reported to have attained 1.5 m in one year, a similar growth rate to that of *A. stenophylla* (Webb 1973 unpublished, cited in Turnbull 1986). It has shown good survival and growth in Israel and India, but has been less successful in dry tropical West Africa (CTFT 1983 unpublished, cited in Turnbull 1986).

Trials

Assessment trials of this species were recently established in plots on farmland at various locations in south-western Australia by the "Search" project (see Acknowledgements). At age 22 months plants of the best performing provenance of *A. victoriae* showed an average survival of 53% and an average height of 64 cm. The 'best' plot was located on a downslope site with heavy soil in northern Avon Wheatbelt IBRA region, with plants averaging 110 cm high. This growth performance for *A. victoriae* was not as good as that achieved by *A. murrayana* and compared poorly with that of *A. saligna*.

Pests and diseases

Arboretum plants may be susceptible to root rot (Fowler and Fox 1995). Six species of Mistletoe have been recorded from this species in South Australia (Whibley & Symon 1992) and in central Australia there appears to be a relationship between mistletoe numbers and tree mortality (Reid *et al.* 1992).

Weed potential

In some areas plant numbers may increase markedly during a succession of wet seasons and the species can become a nuisance, especially around watering points (Everist 1969).

Wood

Basic density values range from 739 kg/m^3 to 890 kg/m^3 (mean 814 kg/m^3) based on analyses of 2 wood samples by CALM's NHT-supported 'Search' project (unpublished data). Note: This study preferentially sampled young and adolescent plants. Ilic *et al.* (2000) gives the air-dry density before reconditioning as 804 kg/m^3, based on 7 samples tested (note: this value was erroneously listed in the basic density column in this work). Based on our limited field sample this species produces a fair amount of sapwood relative to its dark brown heartwood and the wood is reasonably light relative to its volume; very minor end splitting occurred upon drying due to shrinkage in our wood sample.

Utilisation

Wood

Acacia victoriae is listed as highly suitable for the production of fuel wood and charcoal abroad by Thomson *et al.* (1994).

Land use and environmental

Useful as a low windbreak and for soil stabilisation in dry country (Turnbull 1986), especially as it can readily regenerate from suckers and sometimes forms thickets; however, as already noted, in some areas numbers may increase markedly during a succession of wet seasons and can become a nuisance, especially around watering points. Because of its moderate to fast growth rate and moderate salt tolerance *A. victoriae* has been used in land reclamation and mine site rehabilitation work in arid areas of Western Australia (Fowler & Fox 1995). Native stands of this species provide good protection for small mammals and birds; its seeds are a source of food for many birds (Bonney 1994), including emus (Davies 1976, 1978).

Fodder

Acacia victoriae is a useful species for providing valuable food supplement for stock in arid and semi-arid areas. However, it is killed by severe drought and, according to Petheram & Kok (1983), also by severe browsing, but recovers well following light browsing. The phyllodes have moderate palatability and digestibility (although foliage is usually not produced in particularly large amounts), and the seeds are a good source of protein for cattle. For further fodder details see Chippendale & Jephcott (1963), Askew & Mitchell (1978), Turnbull (1986) and Mitchell & Wilcox (1994).

Human food

The seeds of *A. victoriae* have good nutritional characteristics and they were commonly used as a food by aborigines; this is also the most important species in the emerging 'bush tucker' industry (see Maslin *et al.* 1998 for details). The branches exude a clear, tasteless gum which seems to have qualities for use in foods and industry (National Academy of Sciences 1979), however, under natural conditions the quantity of gum produced is not especially large. An analysis of gum characteristics is given in Anderson & McDougal (1988).

Medicinal

Results of studies by Mujoo *et al.* (2001) suggest that triterpenoid saponins from *A. victoriae* have potential as novel anticancer agents.

Other uses

It is a good source of pollen for bees, especially at Alice Springs (Boomsma 1972).

Potential for crop development

Acacia victoriae is regarded as having only moderate prospects as a crop plant for high volume wood production. However, in the drier inland areas where it grows naturally there are not that many options available. It is ranked as a priority 3 species and its growth characteristics suggest that it may have some potential for development as a phase crop (Table 6), although its vigorous suckering propensity may present difficulties for its management. *Acacia victoriae* is an adaptable, primary colonizer species characterized by having a fast to moderately fast growth rate, an extensive and deep root system and a fair degree of edaphic adaptability (including alkaline and subsaline soils). Its moderate fodder value and its importance as a source of seed for human consumption adds to its attraction as a potential crop plant. The main disadvantages of *A. victoriae* are its spiny nature (particularly the young plants), poor stem form (rather crooked) and the small dimensions of its wood (although some provenances, plants from near Mildura for example, do produce reasonable quantities of woody biomass, see Fig. 36A). Wood density values are moderately high which lowers the species attraction for use in reconstituted wood products. Because *A. victoriae* produces large quantities of seed (presumably at an early age) this would result in the creation of a soil seed bank that may lead to weed problems in adjacent or subsequent annual crops. (Alternatively young seedlings may possibly be treated as a form of green manure.) One strategy for avoiding soil seed build up is to harvest plants before they flower or fruit; however, for this to be a viable strategy the plants will need to have produced suitable quantities of wood by then. Under natural conditions *A. victoriae* relies on wet conditions for growth and it remains to be seen how well it will grow as water becomes limiting in cultivation (limited experience from dry area silviculture abroad has produced variable results). The propensity for *A. victoriae* to vigorously root-sucker in nature may or may not be advantageous in cultivation, it depends whether or not this attribute is required (or expressed) for the system in which it is placed. As noted by Everist (1969) if rainfall is high this species may regenerate rapidly and form undesirable thickets.

The area predicted to be climatically suitable for the cultivation of *A. victoriae*, based on its natural climatic parameters but excluding areas with <250mm mean annual rainfall, is shown in Map 73. This analysis indicates that *A. victoriae* is well suited to climatic conditions throughout large areas of both the eastern and western target areas. The prediction suggests cultivation is possible throughout the 250–500 mm rainfall zone. Within this zone the species would be probably be expected to perform best on heavy calcareous soils where its roots can access the watertable.