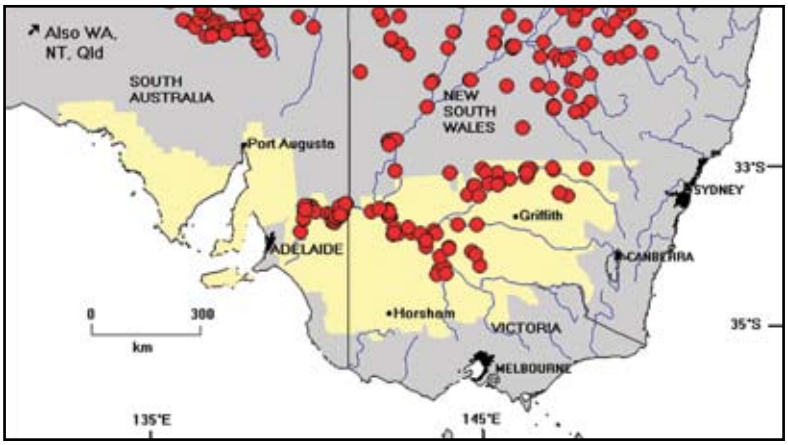
# *Acacia stenophylla* A. Cunn. ex Benth.

## Common Names

River Cooba (Standard Trade Name), River Myall, Eumong, Gurley, and many more (see Cunningham *et al.* 1981).




Map 70. Distribution of *A. stenophylla*.

## Habit

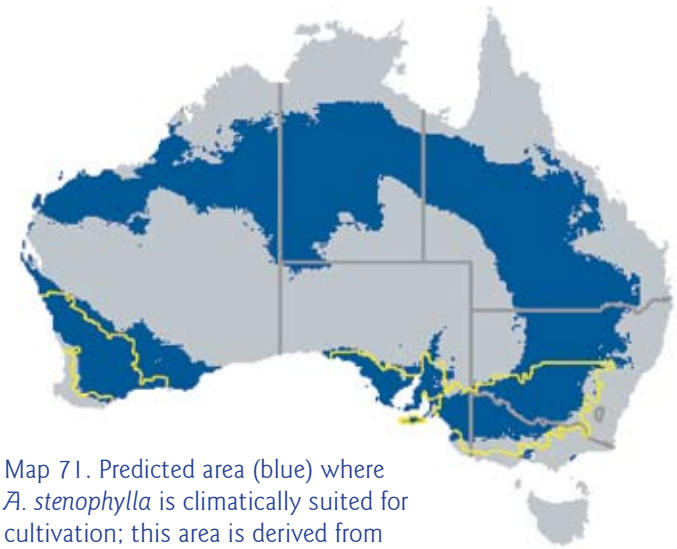
Somewhat bushy tall shrubs or trees mostly 4–12 m tall but can reach 20 m on very favourable sites (fide Hall *et al.* 1972), single-stemmed or divided into several stems about 1 m or more above the ground, the trunks may become mis-shapen (Cunningham *et al.* 1981), often with a weeping habit due to pendulous branches, freely root suckering. Bark dark grey-brown, rough and fissured.

Botanical descriptions and illustrations/photographs are provided by Cunningham *et al.* (1981), Simmons (1988), Whibley & Symon (1992), Tame (1992), Doran & Turnbull (1997), Cowan & Maslin (2001 & 2001a) and Kodela (2002).

## Taxonomy

*Acacia stenophylla* is referable to *Acacia* section *Plurinerves* a diverse, and probably artificial, group of about 212 species (Maslin 2001) which are characterized by having plurinerved phyllodes and flowers arranged in globular heads (see Maslin & Stirton 1998 and Maslin 2001 for discussion). Species of section *Plurinerves* are widespread in Australia with the main centres of richness located in the inland areas of the southwest and southeast of the continent (Hnatiuk & Maslin 1988, Maslin & Pedley 1988). Five species of section *Plurinerves* are detailed in this report, namely, *A. cyclops*, *A. implexa*, *A. melanoxylon*, *A. stenophylla* and *A.* aff. *redolens*

Close relatives unknown, however, *A. stenophylla* is frequently confused with and bears a superficial resemblance to the widespread arid zone species *A. coriacea* (Cowan & Maslin 1993).



Map 71. Predicted area (blue) where *A. stenophylla* is climatically suited for cultivation; this area is derived from a bioclimatic analysis of the natural distribution (red circles, Map 70), see also Table 5. Target area shown in yellow.

## Distribution and habitat

Very widely distributed in inland arid areas of Australia where it ranges from north-eastern Western Australia (with a disjunct occurrence in the Pilbara region), east through Northern Territory to Queenlsand (west of the Great Divide) and south to the Murray-Lachlan-Darling River system in New South Wales, Victoria and South Australia; it is disjunct in S.A. between Lake Eyre and the Murray River. *Acacia stenophylla* reaches the drier regions of the target area (along water courses) in South Australia, Victoria and New South Wales. It has not been widely introduced into countries abroad: CAB International

Figure 35. *Acacia stenophylla*


**A** – Suckering, roadside stand (sub-mature plants) near Condobolin, N.S.W.; insert showing mature stem base. (Photos: B.R. Maslin)


**B** – Adolescent plant in open site, Tambo-Barcoo River, Queensland. (Photo: Anonymous)

**D** – Large spreading plant, Oodnadatta Track, S.A. (Photo: M. McDonald)


**C** – Adolescent stand (probably suckering), Wallamundry, N.S.W. (Photo: P. Macdonell)


**E** – Stem core. (Photo: P. Macdonell)

(2000) lists those countries where it is grown. Usually grows in heavy alcaline clays along watercourses subject to periodic flooding. Comprehensive summaries of its habitat characteristics are given in Doran & Turnbull (1997) and CAB International (2000); see also Pedley (1978), Cunningham *et al.* (1981) and Whibley & Symon (1992).

## Flowering and fruiting

Mostly reported to flower irregularly throughout the year, or from March to July. Pods mature from September to about December in Queensland (Pedley 1978) and February to May in South Australia (Bonney 1994). This species is capable of producing very large seed crops (Turnbull 1986) but because pods are indehiscent or tardily dehiscent this is one of the most difficult *Acacia* species from which to collect and process seeds. Parrots and galahs are known to eat seeds out of pods (Bonney 1994).

## Biological features

*Acacia stenophylla* is highly salt-tolerant (expect significant growth reduction at $EC_e$ about 10–15 dS/m with reduced survival above 15 dS/m) and tolerant of alkalinity and periodic flooding. It is adapted to a wide climatic range, is moderately drought tolerant and will tolerate moderate frosts. It has a moderate to fast growth rate. Coppicing and vigorous root suckering have been noted in natural stands (Searle 1989, Bonney 1994) and planted trees coppice well (Marcar *et al.* in prep.). The above information is taken from Turnbull (1986), Marcar *et al.* (1995), Doran & Turnbull (1997) and CAB International (2000).

## Cultivation

The following information is taken from Doran & Turnbull ((1997) and CAB International (2000).

### Establishment

Propagation is by seed that has been immersed in near-boiling water (90°C) for 1 minute. Manual and acid scarification are also effective seed pretreatments, but the standard boiling water treatment at 100°C is too severe (Doran & Gunn 1987). Germination rate averages 73% and there are 10 600 viable seeds/kg. *Acacia stenophylla* is typically planted as a seedling but can also be direct seeded. Planting should be done with tubed stock when the ground is moist, in late summer or early autumn (Brown & Hall 1968). The species may be amenable to micropropagation (Crawford & Hartney 1987).

### Yield

*Acacia stenophylla* has given variable performance in trials, often surviving only poorly when planted on acid, freely draining sites to which it is poorly adapted (e.g. Chege & Stewart 1991, Kimondo 1991, Ryan & Bell 1991). Where survival has been good (about 80%), mean annual increments for height growth are in the range 0.8–1.7 m. The best growth reported was on a sodic site in Pakistan where trees averaged 2.3 m tall and individual trees were as high as 4.2 m at 16 months (Marcar *et al.* 1991). Ansari *et al.* (1998) report a mean (of two provenances) survival and growth of 45% and 3.75 m at 36 months on a highly saline site ($EC_e$ range 5–40 dS/m) in Pakistan subject to seasonal flooding. On a degraded pasture site in south-east Queensland, Wilson (1998) reported that *A. stenophylla* grew only 2.9 m in 8 years. In a trial established on the northwest coast of Egypt, above-ground biomass of 3 year old *A. stenophylla* trees was amongst the highest of 17 tree species tested, with 13–28 kg/tree (El Osta & Megahed 1992).

### Provenance variation

Marked variation in form of provenances has been noted (Marcar *et al.* 1995 and in prep.), indicating the need to test a range of provenances in introductory trials.

### Pests and diseases

No major insect pests have been reported for *A. stenophylla* in Australia and susceptibility of foliage and stems to insect damage is considered low (Marcar *et al.* 1995), but seeds are sometimes heavily attacked by insects Doran &.Turnbull (1997). Symptoms of bunchy top (loss of apical dominance and development of a large number of side shoots from the axils of the condensed stem) due to the strawberry thrip (*Scirtothrips dorsalis*) were found in glasshouse-grown *A. stenophylla* (Ashwath & Houston 1990, cited in CAB International 2000). Whibley & Symon (1992) report a few records of mistletoes (*Lysiana exocarpi* and *Amyema preissii*) from this species.

## Weed potential

*Acacia stenophylla* is considered a woody weed in parts of the Channel country in north-western Queensland. The best method of control has been by use of 2,4,5-T, however, the most practical is burning (Pressland *et al.* 1989).

## Wood

According to Maiden (1889) the wood is very hard, heavy, close-grained, dark coloured, beautifully marked and takes a fine polish; it planes excellently and shows a very smooth surface. The basic density is given as 690–750 kg/m$^3$ by Ilic *et al.* (2000)*; Davis (1994) gives its air-dry density as 900 kg/m$^3$.

## Utilisation

### Wood

*Acacia stenophylla* produces an excellent fuel (Hall *et al.* 1972) and its timber is suitable for furniture and fenceposts (Marcar *et al.* 1995).

### Land use and environmental

This attractive willow-like tree is useful for planting in inland areas as an ornamental, and because of its bushy crowns, for shade and as a windbreak. It is useful for soil stabilization, where its suckering propensity is an advantage (Stelling 1998). As noted in CAB International (2000) *A. stenophylla* has the potential to be grown in agroforestry combinations with pastures. Wilson (1998) reported that growth of green panic grass was not reduced by planting *A. stenophylla* trees at 5 m spacing, in contrast to *Eucalyptus argophloia*, and this was related to lower shading and water use.

### Fodder

Rarely grazed by stock in western New South Wales (Cunningham *et al.* 1981), however, Everist (1969) reports that it is eaten fairly readily although it is not cut to any extend for drought feed. Vercoe (1987) estimated an *in vivo* dry matter digestibility of 43% and crude protein level of 11% for phyllodes in one trial, however, a second study on different material was less promising, suggesting variation between provenances (Vercoe 1989).

### Other uses

Seeds and pods were roasted and used by Australian Aboriginal people as a food source (Cribb & Cribb 1976), however, it is not one of the species recommended by Maslin *et al.* (1998) for widescale planting as a source of human food. CAB International (2000) provides further details on the utilisation of this species.

## Potential for crop development

*Acacia stenophylla* is regarded as having only moderate prospects as a crop plant for high volume wood production within the target area. Nevertheless, this hardy, long-lived, highly salt tolerant species has

* The density range cited here represents a compilation of the Basic Density and the Estimated Basic Density from Air-dry (12%) MC values that are cited in Ilic et al. (2000).

a number of desirable attributes. It is ranked a category 3 species and has potential for development as both a phase and long cycle crop (Table 6). Although the species is reported to coppice well it remains to be seen if this growth is sufficiently vigorous to sustain it as a coppice crop. In the drier inland areas where the species grows naturally there are not that many crop options available. *Acacia stenophylla* has a moderate to fast growth rate but is only moderately drought-tolerant and plantings in arid areas should be limited to sites where supplementary water is available. It is capable of producing good quantities of woody biomass, however, there is much variation in stem form and stems with poor form are not uncommon. The wood is moderately dense which lowers its attraction for use in reconstituted wood products. However, the wood is attractively marked and takes a fine polish therefore it may have value in specialty applications such as furniture production; such uses increase the species appeal as a long cycle crop plant. *Acacia stenophylla* is capable of producing large quantities of seed and these 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.) A strategy for avoiding soil seed build up would be to harvest plants before they set pods, but for this to be a viable option it would require that the plants will have produced acceptable quantities of wood by then. The propensity for *A. stenophylla* 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.

*Acacia stenophylla* has given variable performance in trials. Furthermore, there is variation in stem and growth form and in its fodder value. This indicates the need to test a range of provenances for this species in selecting those suitable for introductory crop trials. Although *A. stenophylla* produces large seed crops the pods are somewhat indehiscent so this may pose difficulties in collection of the germplasm.

The area predicted to be climatically suitable for the cultivation of *A. stenophylla,* based on its natural climatic parameters but excluding areas with <250mm mean annual rainfall, is shown in Map 71. This analysis indicates that climatic conditions exist throughout large parts of both the eastern and western target areas that are suitable for the cultivation of *A. stenophylla*. However, in its natural habitat the species has a strong preference for heavy clay soils, high watertables and it invariably grows in close proximity to water courses. If this habitat specificity is demonstrated in performance trials this may mitigate against its widespread use in cultivation.

This very widespread species is considered a woody weed in parts of Queensland. Therefore, any wide-scale use of *A. stenophylla* should be accompanied by a weed risk assessment.

Because *A. stenophylla* has been tested and used abroad there exists a reasonable body of knowledge which should greatly facilitate any attempt to develop it as a crop plant in Australia.