

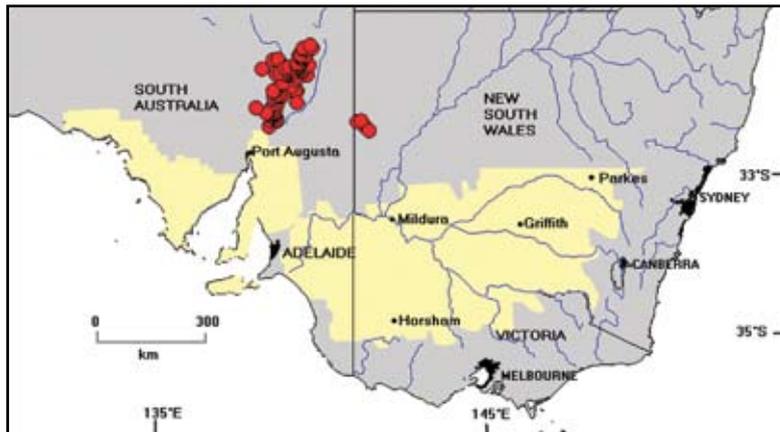
Acacia rivalis J.M. Black

Common Name

Creek Wattle.

Habit

Obconic shrubs or trees 3–5 m high, dividing at or near ground level into few to many stems, or with a single main stem for up to about 1 m before dividing into ascending branches; main stems more or less straight and 7–10 cm dbh (few plants measured); crowns dense and rounded with the ultimate branchlets often +/- pendulous. Bark smooth and thin.



Map 61. Distribution of *A. rivalis*.

Botanical descriptions and illustrations/photographs are provided by Costermans (1981), Tame (1992), Simmons (1987), Whibley & Symon (1992), Maslin *et al.* (1998), Maslin (2001 & 2001a) and Kodela (2002).

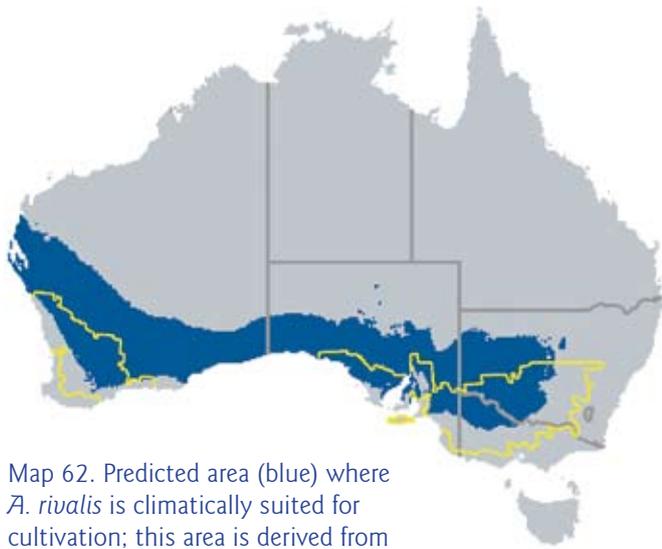
Taxonomy

Acacia rivalis 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). More specifically this species is a South Australian member of the Australia-wide '*Acacia microbotrya*' group' (Maslin 1995). A number of other species from this group are detailed in this report, namely, *A. euthycarpa*, *A. microbotrya*, *A. retinodes*, *A. bartleana* and *A. watsiana*. *Acacia rivalis* is closely related to *A. retinodes* and *A. calamifolia* (which is not considered a prospective species for development as a crop plant for wood production). Species of section *Phyllodineae* are widespread in Australia with the main centres of richness located in temperate and adjacent semiarid areas of eastern, southeastern and southwestern Australia; species number greatly decline in the arid zone and in northern tropical/subtropical areas (Hnatiuk & Maslin 1988 and Maslin & Pedley 1988).

This species appears to have limited genetic variation.

Distribution and habitat

Occurs in South Australia from Hawker (just outside the target area) north to near Mt Harris in the North Flinders Range. It is also recorded from near Broken Hill, New South Wales, but possibly is not native there (see Jacobs & Pickard 1981). Maslin (2001) records the species from near Lake Bring and Wilgena, about 500 km to the west of the Flinders Range, however, these records are now known to represent a taxon of uncertain identity (M. O'Leary,



Map 62. Predicted area (blue) where *A. rivalis* is climatically suited for cultivation; this area is derived from a bioclimatic analysis of the natural distribution (red circles, Map 61), see also Table 5. Target area shown in yellow.

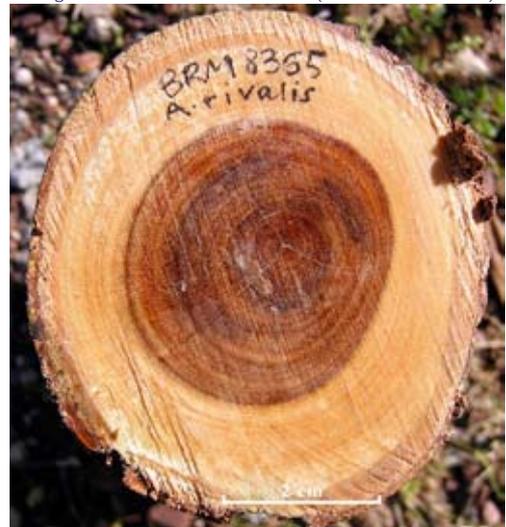
Figure 30. *Acacia rivalis*



A – Mature plant (left-hand stem broken at base due to crown weight) with insert showing much-branched main stem. (Photos: B.R. Maslin)



B – Slender coppice regrowth from root stock; insert showing gum on stem. (Photos: B.R. Maslin)



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



D – Flowering branch. (Photo: comm. M. O'Leary)

pers. comm.). Grows in tall shrubland on ridges and rocky shaly hills or along watercourses, in shallow calcareous loam.

Flowering and fruiting

Flowers between April and November, peaking in September to October. Pods ripen over about a year, maturing between mid-September and early November. Pods and flowers are often found together on the same plant (Whibley & Symon 1992). Large quantities of seed are produced by this species.

Biological features

Moderate to fast growth rate (Whibley & Symon 1992); when grown on heavy clay soil around Adelaide (where rainfall is higher than within the natural range of the species) plants can attain about 2 m in height in about 2 years (M. O'Leary, pers. comm.). It seemingly does not sucker but some plants produce thin coppice regrowth from around the base of the mains stems when cut at ground level. It regenerates abundantly from seed after fire. It is relatively short-lived with a life span of probably 15–20 years (D. Kraehenbuehl, pers. comm.) Moderate amounts of gum are exuded from the stems and branches on plants in the wild.

Genetics

Possibly hybridises with *A. araneosa* (which is not considered a prospective taxon for this project) in the northern part of Flinders Range.

Cultivation

Little known in cultivation. The species is readily established from seed (Martin O'Leary, pers. comm.).

Weed potential

There are no records of this species posing weed problems.

Wood

Based on our field observations of a single plant this species produces a heavy wood relative to its volume. Heartwood to sapwood ratio is similar. Minor end splitting occurred upon drying.

Utilisation

Land use and environmental

Because of its attractive growth form *A. rivalis* would be suited for cultivation as an ornamental or for amenity planting in dry inland areas.

Gum

This species formed the basis of a small commercial gum industry around Blinman, South Australia, in the early part of the twentieth century (Whibley & Symon 1992).

Human food

Regarded by Maslin *et al.* (1998) as a lesser known species that is worth considering as a source of seed for human consumption. At Umberatana (north-west of Arkaroola) seeds of this species are reported to have been ground into a flour and consumed by Aborigines (Johnston & Cleland 1943).

Fodder

It is not known to be browsed by stock (Cunningham *et al.* 1981).

Potential for crop development

Acacia rivalis is regarded as having moderate prospects as a crop plant for high volume wood production. It is ranked as a category 2–3 species and displays a number of growth characteristics that suggest it has potential for development as a phase crop (Table 6). This is a hardy species and despite occurring naturally in low rainfall areas is reported to have a moderate to fast growth rate; it seemingly neither coppices nor suckers (or these attributes are only weakly expressed). *Acacia rivalis* displays a good growth form, however, in cultivation at least it can develop a dense, heavy crown, the weight of which may cause stems to split at ground level as the plants age (see Fig. 30A). Stem splitting, however, may be less of a problem on single-stemmed plants and may be alleviated by crown thinning. The species produces a reasonable quantity of woody biomass but the wood appears reasonably dense (it may be similar to *A. microbotrya* which averages about 830 kg/m³, and if so it lowers the species attraction for use in reconstituted wood products). Because this species produces large quantities of seed it would be appropriate to harvest plants before they reach reproductive maturity to avoid creating a soil seed bank that may lead to weed problems in adjacent or subsequent annual crops. For this to be a viable strategy it would require that the plants had produced acceptable quantities of wood by then. It is not known, however, at what age flowering and fruiting commences. An alternative might be to treat the seedling recruitment as a form of green manure. Secondary products that might be derived from this species would include seed for human food and gum.

The area predicted to be climatically suitable for the cultivation of *A. rivalis*, based on its natural climatic parameters, is shown in Map 62. This analysis indicates that *A. rivalis* is suited to climatic conditions well beyond its natural range. All of the eastern and western target areas in the less than 400 mm rainfall zone are predicted to have climatic conditions suitable for its cultivation. This species is a good prospect for dry sites in these regions. Within these regions it has potential for cultivation on loamy calcareous soils. Note that although this species does not grow naturally within the target area it occurs very close to its northern boundary in South Australia.