

A Genus Treatment for *Acacia* from Legumes of Arizona: An Illustrated Flora and Reference

Editor's Note: This treatment of the genus *Acacia* is from the upcoming book *Legumes of Arizona: An Illustrated Flora and Reference*, scheduled to be published in 2015. The final typeface, page layout, and accompanying illustrations are not yet finalized; however, the information contained within this treatment is complete. Please refer to the back page of this issue of *Desert Plants* for additional information about this new volume.

ACACIA Miller, *Garden Dictionary*, ed. 4, 1754. * [from the Greek, *ake*, a point, referring to the spiny stipules of some early described species]

John E. Ebinger and David S. Seigler

Shrubs or trees, rarely vines. **Stems** lightly to highly branched; twigs rounded to angulate or ridged, glabrous to pubescent; short shoots usually absent; stipular spines and prickles rarely present. **Leaves** alternate; bipinnate or more commonly modified to polymorphic phyllodes (enlarged, flattened petiole lacking a blade or leaflets); foliar glands normally present along the phyllode margins and/or apex; stipules normally present, commonly early deciduous, rarely spinose. **Inflorescences** loosely- to densely-flowered globose heads to cylindrical spikes, solitary to clustered in the leaf axis or in pseudo-racemes or pseudo-panicles; peduncles usually short, glabrous to pubescent, mostly not elongating in fruit. **Flowers** with bracts, usually sessile, radially symmetric, [4- or] 5-merous; calyx cup-shaped, lobes triangular, glabrous to pubescent; corolla cup-shaped, membranous, lobes triangular, glabrous to pubescent; stamens 20–50, 2–10 mm, usually exserted, mostly yellow to gold or creamy white; anthers attached dorsally, mostly lacking anther glands; ovary 1, sessile to short-stalked; style thread-like; stigma thread-like. **Fruits** erect to pendulous, usually dehiscent along both sutures, linear to oblong, straight to curved, mostly flat, dry, papery to leathery, glabrous to pubescent; stipe mostly short; apex sometimes beaked. **Seeds** mostly arranged in a single row, usually with a pulpy, arillate funiculus, pleurogram usually present. x = 13.

Species 987 (10 cultivated in the flora, 3 of these rarely adventive): 982 in Australia and Pacific, 2 in Indian Ocean area and 10 in Asia (7 of these also in Australia).

Acacia is the second largest genus in the Fabaceae and has been widely exploited for many purposes. The seeds of several Australian species were an important food resource for the Aboriginal peoples and some of these have potential for development as tree food crops for dry regions. A few species also produce an edible gum. The foliage of some species is suitable as livestock fodder. Wood has been used for construction, carpentry, turnery, weapons, as fuel and to make charcoal. The bark of some species has been used for tanning leather. Various medicinal uses are known from *Acacia* species. Still others are planted for erosion control, as windbreaks, and as landscape and ornamental plants.

SELECTED REFERENCES: Nielsen, I.G. 1992. Orchard, A.E. and A.J.G. Wilson. 2001. Orchard, A.E. and A.J.G. Wilson. 2001.

1. Flowers in elongated, cylindrical spikes.
 2. Leaves (phyllodes) deltoid to triangular, one margin nearly straight the other angled to curved.**A. cultriformis**
 2. Leaves (phyllodes) linear to obovate to oblong, margins similar.
 3. Leaves (phyllodes) round in cross section, linear to narrowly elliptic, 25–110 mm.**A. aneura**
 3. Leaves (phyllodes) flat in cross section, usually obovate to oblong, 15–25 mm.**A. craspedocarpa**
1. Flowers in globose heads.
 4. Leaves (phyllodes) deltoid to triangular, one margin nearly straight the other rounded or angled.**A. cultriformis**
 4. Leaves (phyllodes) various shapes but not deltoid or triangular, margins similar.
 5. Globose heads small, commonly 3–5 mm across.
 6. Leaves (phyllodes) pinnately veined, midvein obvious.**A. jennerae**
 6. Leaves (phyllodes) with numerous parallel veins.
 7. Stems pendulous; leaves (phyllodes) with numerous close parallel veins.**A. pendula**
 7. Stems erect to spreading; leaves (phyllodes) with 5–12 obvious, parallel veins.**A. redolens**
 5. Globose heads larger, 6–13 mm across.
 8. Leaves (phyllodes) pinnately veined, midvein obvious.
 9. Twigs ridged; fruits constricted between the seeds, stipe 8–15 mm.**A. saligna**
 9. Twigs not ridged; fruits not constricted between the seeds, stipe 1–3 mm.**A. salicina**
 8. Leaves with parallel veins.
 10. Leaves less than 60 mm**A. tetragonophylla**
 10. Leaves more than 100 mm.
 11. Leaves flat in cross section, linear; veins 8–22, obvious.**A. stenophylla**
 11. Leaves round in cross section, narrowly linear with closely spaced veins.**A. coriacea**

Acacia aneura F. Mueller ex Bentham, *Linnaea* 26:627. 1855. * Mulga [From Greek meaning without nerves, in reference to the obscure veins of the phyllodes] Cultivated

Shrubs or trees, erect, to 18 m. **Stems** slender, spreading; bark dark gray and smooth, becoming fissured with age; twigs round, not zig-zagged, glabrous, dark purple, resinous; prickles absent. **Leaves** (phyllodes) alternate; round in cross section to flat, linear to narrowly elliptic, margins similar, straight to slightly curved, puberulent, 25–110 × 0.7–8 mm; striate with obvious parallel veins; apex narrowly acute to acuminate, apiculate, usually not hooked; gland solitary, small, just above the 1–2 mm pulvinus. **Inflorescences** densely flowered cylindrical spikes, 7–30 mm, solitary in upper leaf axis; peduncles 3–10 mm. **Flowers** sessile, yellow; calyx 0.5–1.1 mm, usually glabrous; corolla 0.9–1.8 mm, glabrous; filaments 3–4 mm. **Fruits** 25–100 × 6–16 mm, straight, flattened, usually not constricted between the seeds, stiffly papery, glabrous, usually resinous, light brown; stipe 2–7 mm; apex acute. **Seeds** oblong to oval, flattened, 3–6 × 2–4.5 mm; aril creamy white, small, forming a cap on the seed.

Flowering Apr–Jun. Native across c Australia.

Acacia aneura is widespread in dry areas of all Australian mainland states except Victoria and is found on a variety of soil types in various habitats from plains to mountains. It is common and often a dominant element of some plant communities including mulga woodland. *Acacia aneura* occupies over 150 million hectares in Australia (Miller 1994). Annual rainfall across its range is 150–550 mm (Thomson 1991). *Acacia aneura* is reported to nodulate (Allen & Allen 1981). Ten varieties are described in Orchard and Wilson (2001) and additional varieties will likely be described in the future. These are distinguished mainly on differences in the phyllodes and fruits. At least two of these appear to be present in Arizona horticulture. However, because the species is wide-ranging and highly variable, the varieties are not easily separated. For this reason they are not formally treated here.

Mulga is increasingly being planted in Arizona landscapes. Its size and growth habit make it ideal for planting in street medians and patios. It can also be planted as a screen and as an accent plant (Jones & Sacamano 2000). Plants with silver and gray green foliage are available. Canopy shape varies from conical to rounded. Established plants are highly drought tolerant but growth rate is improved with irrigation. Cultivated plants in Tucson have been observed to flower from June–February. Most plants in Arizona horticulture appear to be hardy to at least -9°C. The trees are evergreen, produce minimal litter, and require little maintenance. Mulga is readily propagated by scarified seeds.

Acacia aneura is a long-lived, drought-tolerant tree. Due to its abundance and extensive distribution, it has been heavily utilized. It is a desirable fodder tree, especially during drought, though quality varies and plants have been overexploited in some areas (NAS 1979; Cunningham et al 1992). Miller (1994) discusses the role of *Acacia aneura* as a maintenance forage during drought including the presence of tannins in the leaves that can exacerbate mineral deficiencies in livestock. The plants are useful for erosion control (Cunningham et al 1992). Seeds were gathered and ground for food by Aboriginal peoples (Urban

1990) and have potential as a food crop in dry regions (Thomson 1991). An apple-sized insect gall called the mulga apple is also eaten (Urban 1990). Devitt (1991) indicates that the seeds, insect galls and root grubs were eaten, and that burnt leaves and twigs were employed as chewing tobacco. The wood is hard, heavy and durable, and is used for fuel, fence posts and by Aboriginal peoples to make a variety of tools, weapons, and musical instruments (Simmons 1981; Cunningham et al 1992). The sapwood is pale yellow and the heartwood is dark brown to black, and is widely used to make souvenirs (NAS 1979).

Acacia coriacea de Candolle, Prodr. 2:451. 1825. * Wirewood, desert oak, dogwood [From Latin meaning leathery] Cultivated

Shrubs or trees, erect to spreading, to 10 m. **Stems** slender, erect to spreading [or sometimes pendulous]; bark gray, corky and becoming furrowed with age; twigs round to slightly ridged, not zig-zagged, glabrous to lightly sericeous, dark purple, not resinous; prickles absent. **Leaves** (phyllodes) alternate; round in cross section to flat, linear, margins similar, straight, puberulent, 110–330 × 1.2–8 mm; striate with obvious close parallel veins; apex acute, apiculate, not hooked; gland solitary, 2–6 mm above the 1–2 mm pulvinus. **Inflorescences** densely flowered globose heads 6–9 mm across, solitary or short pseudo-racemes in upper leaf axils; peduncles 5–15 mm. **Flowers** sessile, yellow; calyx 0.9–1.6 mm, lobes puberulent; corolla 2.3–3.1 mm, lobes puberulent; filaments 3–4 mm. **Fruits** 80–340 × 7–12 mm, straight to occasionally twisted and coiled, somewhat flattened, constricted between the seeds, leathery, appressed puberulent, not resinous, reddish brown; stipe 10–25 mm; apex acuminate. **Seeds** broadly elliptic to oblong, flattened, 4–8 × 3–5.5 mm; aril bright orange, large, forming a cap on the seed.

Flowering Apr–Jun. Native across c Australia.

Acacia coriacea is found in the Australian states of New South Wales, Northern Territory, Queensland, South Australia, and Western Australia. It is widely distributed on alluvial plains and on sand dunes in arid regions and is also found in semiarid woodlands and along drainageways. Thomson (1991) indicates that the species grows in areas that receive 100–800 mm of yearly rainfall. Orchard and Wilson (2001) describe three varieties of *Acacia coriacea*. The variety present in Arizona horticulture is var. *sericophylla* (F Mueller) R.S. Cowan & Maslin and is the widespread inland variety. The other varieties, var. *coriacea* and var. *pendens* R.S. Cowan & Maslin, are of restricted distribution in Western Australia. Wirewood is suitable as an informal screen and for planting in street medians. The plants are long-lived and drought tolerant once established. This species will grow in a variety of soil types from sandy to clay. Moderate growth rates can be achieved with irrigation. Cultivated plants in Arizona are damaged below ca. -6°C. Wirewood produces some leaf litter but otherwise requires little maintenance other than removal of freeze-damaged stems. Propagation is by scarified seeds.

Acacia coriacea is browsed by sheep and to some extent by cattle though it is not considered to be nutritious (Cunningham et al 1992). Aboriginal people ate the green seeds as a vegetable and ground ripe seeds to make flour (Urban 1990). The plants produce large quantities of easily harvested seeds (Thomson 1991). Thomson considers var. *pendens* to have potential as a food crop for dry tropical regions. Both green and ripe seeds have been used for food, the arils are used to make a sweet beverage and also a medicinal wash, and ashes from the burnt leaves are used for chewing tobacco (Devitt 1991).

Acacia craspedocarpa F. Mueller, Australas. Chem. Druggist 2. 1887. * Leather-leaf acacia [From Greek *craspedo*, a border and *carpus*, fruit] Cultivated

Shrubs or trees, rounded, branched from base, to 4 m. **Stems** slender, spreading; bark gray and smooth, becoming rough and slightly fissured; twigs round, not zig-zagged, glabrous, dark purple, resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, broadly obovate to oblong, margins similar, straight, glabrous, 15–25 × 8–12 mm; usually with 3 major parallel veins, minor veins not obvious; apex obtuse to broadly acute, apiculate, not hooked; gland not obvious; pulvinus 1–2 mm. **Inflorescences** densely flowered cylindrical spikes 12–20 mm, solitary in upper leaf axils; peduncles 12–20 mm. **Flowers** sessile, yellow; calyx 0.8–1.5 mm, glabrous; corolla 1.6–2.4 mm, glabrous; filaments 3–4 mm. **Fruits** 30–60 × 18–25 mm, straight, flattened, not constricted between the seeds, stiffly papery, glabrous, resinous, light brown, with prominent wings; stipe very short; apex obtuse. **Seeds** oval to orbicular, flattened, 7–9 × 5–7 mm; aril yellow, forming a small cap on the seed.

Flowering May–Jul. Native to wc Australia.

Acacia craspedocarpa is found on plains and rocky hills, and along watercourses in desert habitats in Western Australia. The thick, reticulate-veined fruits are distinctive among cultivated acacias in Arizona.

Leather-leaf acacia is planted as a hedge or screen, and makes an interesting specimen plant. It is ideally suited for street



Acacia craspedocarpa Illustration: Ardys Lurtsema

medians. With its rounded form and gray green foliage, the plants make ideal background shrubs and contrast well with a variety of other desert landscape plants. This species is long-lived and drought tolerant. Plants seem to tolerate a range of soils including clay. Growth rates are generally slow. The flowers are dull yellow and not particularly attractive. Flowering on cultivated plants in Tucson has been recorded from April–January. Cultivated plants have survived -9°C without damage. Litter and maintenance are minimal. Scarified seeds germinate readily.

Acacia cultriformis A. Cunningham ex G. Don, Gen. Hist. 2:406. 1832. * Knife-leaf wattle [From Latin meaning knife-shaped] Cultivated

Shrubs, erect, to 4 m. **Stems** slender, spreading; bark yellow to orange, becoming gray on older stems, smooth; twigs ridged, not zig-zagged, glabrous, bluish to purplish, not resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, inequilateral and often deltoid to triangular, one margin nearly straight, the other angled to curved, glabrous, 10–30 × 5–15 mm; midvein obvious, minor veins not obvious; apex acute, apiculate; gland prominent, near widest part of the leaf; pulvinus 0.3–1.0 mm. **Inflorescences** densely flowered globose to slightly elongated heads 3–7 mm, in pseudo-racemes of 5–20 heads, 25–100 mm, usually solitary in upper leaf axils, glabrous; peduncles 20–50 mm. **Flowers** sessile, golden; calyx 0.5–0.9 mm, glabrous; corolla 1.3–1.8 mm, glabrous; filaments 2.7–3.5 mm. **Fruits** 40–90 × 5–8 mm, straight, flattened, slightly constricted between some seeds, stiffly papery, glabrous, not resinous, purplish; stipe 6–10 mm; apex long acuminate. **Seeds** oblong, flattened, 3.5–4.5 mm; aril white, club-shaped.

Flowering throughout year. Native to e Australia.

Acacia cultriformis grows as an understory plant in semiarid woodland communities in New South Wales and Queensland, Australia. It grows in sand to clay loam soils (Orchard & Wilson 2001). This species is reported to nodulate (Allen & Allen 1981).

Knife-leaf wattle can be grown as an accent plant. With pruning, it will make a sculptural specimen (Jones & Sacamano 2000). The unusual phyllodes provide interest. The plants are typically open and somewhat rangy. Established plants should receive occasional irrigation to maintain optimum growth and appearance. Well-drained soil is preferred. Flowering is in the winter and spring, and occasionally in other seasons. Cultivated plants are hardy to -6°C. Knife-leaf wattle requires little maintenance and produces negligible litter. Propagation is by scarified seeds.

Acacia jennerae Maiden in A.J. Ewart & O.B. Davies, Fl. N. Terr. 333, t. 26. 1917. * Coonavittra wattle [Named for A.M. Jenner, former librarian at the Royal Botanic Gardens, Sydney] Cultivated

Shrubs or small trees, erect, to 5 m. **Stems** slender, spreading; bark orange to dull reddish, smooth, turning brown and becoming rough and fissured at base of trunk; twigs round, zig-zagged, glabrous, bluish to dark purple, resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, narrowly elliptic to narrowly oblanceolate, margins similar, slightly curved, glabrous, 50–110 × 5–15(–20) mm; pinnately veined, midvein obvious, lateral veins faint; apex acute, apiculate, sometimes hooked; gland 1–3, the lowest 4–10 mm above the 1–2 mm pulvinus. **Inflorescences** densely flowered globose heads 3–5 mm across, in pseudo-racemes of 3–15 heads, 13–40 mm, solitary from the upper leaf axils; peduncles 2–5 mm. **Flowers** sessile, yellow; calyx 0.7–1.1 mm, glabrous; corolla 1.2–1.9 mm, glabrous; filaments 2.5–3.5 mm. **Fruits** 80–150 × 5–8 mm, straight, flattened, constricted between the seeds, leathery, glabrous, not resinous, black; stipe 3–7 mm; apex acute. **Seeds** oblong, slightly flattened, 6–8 × 3–6 mm; aril light yellow, club-shaped.

Flowering Sep—Nov. Native to w Australia.

Acacia jennerae is of sporadic distribution in arid and semiarid habitats in New South Wales, Northern Territory, Queensland and Western Australia (Orchard & Wilson 2001). Annual rainfall across its range varies from 200–350 mm (Thomson 1991).

Coonavittra wattle resembles a small *Eucalyptus*, and when not in flower or fruit is not readily identified as a legume. It is being increasingly planted in Arizona. With its upright growth habit, it is well-suited for small spaces and patios. The contrasting bark and foliage are particularly attractive. In some situations, plants will profusely sucker from the roots, forming thickets if not controlled. This can be useful for screening. The suckering habit may be useful in erosion control (Jones & Sacamano 2000). The plants are tolerant of a variety of soils. This species is drought resistant, but appearance and performance

are improved with occasional irrigation during drought. Flowering has been observed on cultivated plants in Tucson from July–February. Cultivated plants have survived temperatures to ca. -9°C without damage. The biggest maintenance issue with Coonavitra wattle is the tendency to form masses of root suckers. The plants produce a modest amount of leaf litter. Scarified seeds germinate easily.

The seeds of *A. jennerae* have been used for food by Aboriginal people and gum was also utilized (Devitt 1991). The seeds may have some potential as a food crop (Thomson 1991).

Acacia pendula A. Cunningham ex. G. Don, Gen. Hist. 2:404. 1823. * Weeping myall, boree [From Latin *pendul*, hanging] Cultivated

Trees, erect, to 12 m. **Stems** slender, pendulous; bark gray, smooth, becoming gray brown, rough and fissured; twigs ridged, not zig-zagged, glabrous to lightly appressed puberulent, brown, resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, narrowly elliptic, margins similar, straight to curved, glabrous, 40–140 × 3–10 mm; striate with numerous closely parallel veins with 1–3 more obvious; apex acuminate, apiculate, sometimes hooked; gland solitary, just above the 1–3 mm pulvinus. **Inflorescences** densely flowered globose heads 3–5 mm across, in pseudo-racemes of 2–7 heads, 2–9 mm, solitary in upper leaf axils; peduncles 2–8 mm. **Flowers** sessile, light yellow; calyx 0.4–1.1 mm, glabrous; corolla 1.2–1.9 mm, glabrous; filaments 2.5–3.5 mm. **Fruits** 80–130 × 9–12 mm, straight to curved, flattened, slightly constricted between the seeds, leathery, appressed puberulent, not resinous, dark brown; stipe 2–5 mm; apex acute. **Seeds** orbicular, somewhat flattened, 5–9 × 4–6 mm; aril cream, forming a small cap on the seed.

Flowering throughout year. Native to se Australia.

Acacia pendula is found on clay soils and often on floodplains in semiarid woodlands in New South Wales, Queensland, South Australia and Victoria. Annual rainfall across its range varies from 400–650 mm (NAS 1979).

Weeping myall makes a beautiful shade or specimen tree for larger spaces. The rounded canopy with weeping branches and silvery gray or yellow green foliage is particularly attractive. The plants tolerate a variety of soils. Occasional irrigation is desirable during hot dry weather. Flowering in Tucson has been observed in December and January. Jones and Sacamano (2000) report that flowering on plants in dry landscapes is rare. Cultivated plants are hardy to ca. -6°C. Leaf litter is modest. Jones and Sacamano (2000) report that weeping myall is subject to Texas root rot and damage from high winds. Propagation is by scarified seeds.

Acacia pendula is suited for planting to form windbreaks, and is used for fuelwood and fence posts (Simmons 1981). Livestock browse the foliage, especially during drought, and it has been eliminated from portions of its range (NAS 1979; Cunningham et al 1992). The wood is hard, heavy and aromatic (Simmons 1981; Cunningham et al 1992) and has been used for small wooden articles and by Aboriginal people to make boomerangs (Cunningham et al 1992).

Acacia redolens Maslin, Nuytsia 1:327. 1974. * Vanilla-scented wattle, Ongerup wattle [From Latin *redol*, emit a scent] Cultivated and rarely adventive

Shrubs to 2m [or small trees, erect, to 5 m]. **Stems** slender, erect to spreading; bark gray, smooth, becoming rough and shallowly fissured on old stems; twigs round, not zig-zagged, glabrous, brown to purple brown, resinous-ribbed, fragrant when crushed (vanilla scented); prickles absent. **Leaves** (phyllodes) alternate; flat, oblanceolate, margins similar, straight, glabrous, 20–70 × 5–15 mm; striate with mostly 5–12 prominent, parallel veins; apex obtuse, apiculate, not hooked; gland solitary, at edge of 1–3 mm pulvinus. **Inflorescences** densely flowered globose heads 3–5 mm across, solitary or in short pseudo-racemes of 2–6 heads, 5–10 mm, clustered in upper leaf axils; peduncles 2–6 mm. **Flowers** sessile, light yellow; calyx 0.5–0.8 mm, glabrous; corolla 1.0–1.6 mm, glabrous; filaments 2–3 mm. **Fruits** 30–60 × 2–4 mm, curved, flattened, constricted between the seeds, leathery, glabrous, resinous, brown; stipe 4–8 mm; apex acuminate. **Seeds** ellipsoid to ovoid, flattened, 4.9–6.5 × 3.5–4.5 mm; aril cream-white, thickened, forming a cap on seed.

Flowering Aug–Sep. Native to coastal sw Australia. Cultivated and rarely established in the sw United States.

Acacia redolens is often found in somewhat saline or alkaline loam or clay soils in woodlands and around salt lakes (Orchard & Wilson 2001). The shrubby form is present in Arizona horticulture.

Vanilla-scented wattle forms low dome-shaped mounds, and is widely planted on freeway embankments and street medi-

ans in Arizona as a tall ground cover. It can also be used for erosion control. The plants will grow in a variety of soils including saline soils. The plants tolerate drought well but appearance is improved with occasional irrigation. Flowering in Tucson has been observed from February–June. Cultivated plants are hardy to ca. -7°C. Litter is minimal. Cultivated plants sometimes suffer extensive die out of stems, particularly during the summer. This may be reduced by planting in well-drained soil or reducing irrigation frequency. Selections with specific traits have been trademarked by commercial nurseries. Scarified seeds are easily germinated.

Acacia salicina Lindley in T.L. Mitchell. Three Exped. Australia 2:20. 1838. * Willow wattle, cooba. [From Latin *salix*, willow, meaning willow-like] Cultivated and rarely adventive

Shrubs or small trees, bushy, erect, to 13 m. **Stems** slender, pendulous; bark gray and smooth, on older stems becoming gray brown, rough and fissured; twigs not ridged, slightly zig-zagged, glabrous, gray to purplish, not resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, linear to narrowly elliptic, margins similar, straight to slightly curved, glabrous, 60–200 × 4–30 mm; pinnately veined, midvein obvious, lateral veins faint; apex acuminate, apiculate, sometimes hooked; glands 2–5, lowermost 0–5 mm above the 0.5–1.3 mm pulvinus. **Inflorescences** loosely flowered globose heads 8–13 mm across, in pseudo-racemes of 2–8 heads, 10–80 mm, solitary in upper leaf axils; peduncles 5–12 mm. **Flowers** sessile, cream to pale yellow; calyx 1.1–1.8 mm, glabrous; corolla 2.4–3.1 mm, glabrous; filaments 5–6 mm. **Fruits** 50–120 × 7–13 mm, straight, flattened, not constricted between the seeds, woody, glabrous, not resinous, gray-green; stipe 1–3 mm; apex acute. **Seeds** oblong to elliptic, flattened, 4–6.5 × 3–5 mm; aril scarlet, forming a cap on the seed.

Flowering Oct–Feb. Native to eastern half of Australia. Cultivated and rarely adventive in the sw United States.

Acacia salicina is found in parts of all Australian mainland states except for Western Australia. It prefers clay soils of low-lying areas in arid and semi-arid habitats receiving 125–500 mm annual of rainfall, where it is a component of open woodlands and riparian communities (Whibley 1980). *Acacia salicina* has become naturalized and is increasing in abundance on disturbed sites around Tucson and Phoenix. It should be considered invasive in areas beyond its native distribution. The arils of many acacias, especially those that are brightly colored, serve to attract birds that disperse the seeds. *Acacia salicina* has been observed to nodulate (Allen & Allen 1981).

Willow wattle has graceful willow-like foliage and weeping branches. It is suitable as a shade tree and for planting in patios, street medians and against buildings. Root suckers frequently develop around the parent tree. Willow wattle tolerates a wide variety of soil types. Established plants are drought tolerant. Flowering in Tucson has been recorded from September–March. The plants are hardy to -7°C. Willow wattle is subject to wind throw if improperly irrigated (Jones & Sacamano 2000). The plants produce a moderate amount of leaf and fruit litter. Root suckers can become a maintenance issue. Scarified seeds germinate readily.

Acacia salicina can be planted to form windbreaks (Cunningham et al 1992). The root-suckering habit can be useful in reducing soil erosion and stabilizing river banks (Whibley 1980; Cunningham et al 1992). This species is reported to tolerate saline conditions (Simmons 1981). The foliage is reported to be browsed by livestock, but is suspected of causing poisoning under some conditions (Cunningham et al 1992). Sheep readily eat the green pods (Cunningham et al 1992). Wood of willow wattle is dark brown and strong (Simmons 1981; Cunningham et al 1992) and has been used to make furniture, yokes and other articles (Cunningham et al 1992). The bark was used by Aboriginal people to poison fish (Simmons 1981; Cunningham et al 1992).

Acacia saligna (Labillardiere) H.L. Wendland, Comm. Acac. Aphyll. 4:26. 1820. * Golden wreath wattle [From Latin *salignus*, of willow] Cultivated

Acacia cyanophylla Lindley

Shrubs or small trees, bushy, erect, to 6 m. **Stems** slender, usually pedulous; bark gray or red brown, smooth or becoming rough and shallowly fissured on old limbs; twigs slightly ridged, slightly zig-zagged, glabrous, bluish to purplish, not resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, linear to narrowly elliptic, margins similar, straight to slightly curved, glabrous, 70–250 × 6–30 mm; pinnately veined, midvein obvious, lateral veins faint; apex narrowly acuminate, apiculate, some-

times hooked; gland solitary, 0–3 mm above the 1–4 mm pulvinus. **Inflorescences** densely flowered globose heads 8–13 mm across, in pseudo-racemes of 2–10 heads, 5–40 mm, solitary in upper leaf axils; peduncles 5–15 mm. **Flowers** sessile, golden; calyx 1–2 mm, glabrous; corolla 2.6–3.4 mm, glabrous; filaments 5–6 mm. **Fruits** 80–140 × 5–8 mm, straight, flattened, constricted between the seeds, stiffly papery, glabrous, not resinous, dark brown; stipe 8–15 mm; apex acuminate. **Seeds** oblong, flattened, 4–6 × 2.5–4 mm; aril yellow, club-shaped, 2–3 mm.

Flowering Nov–Mar. Native to sw Australia.

Acacia saligna is native to southwestern Western Australia but has been introduced elsewhere in the country and has become adventive. Also naturalized in other parts of the world including South Africa and California. It is found on various soil types in a variety of habitats, in areas receiving 300–700 mm yearly rainfall (Whibley 1980). *Acacia saligna* is reported to nodulate (Allen & Allen 1981).

Golden wreath wattle has a fast growth rate, but in Arizona has been short-lived and subject to considerable wind damage due to the dense canopy. It is suitable as a patio tree or screen. The plants provide shade and have dark green leaves that resemble those of some species of Eucalyptus. Golden wreath wattle is tolerant of a variety of soils. Periodic irrigation is desirable during hot dry weather. This species is spectacular when in flower with masses of yellow flower heads. Flowering takes place in winter and spring. Cultivated plants in Tucson have been severely damaged below -6°C. Maintenance considerations include damage from high winds, leaf litter and the potential for root suckers. Propagation is by scarified seeds.

Acacia saligna is known to be invasive but not recorded as adventive in Arizona. This species is useful for soil stabilization and does well in coastal areas (Whibley 1980). The plants are effective in stabilizing sand and for windbreaks (NAS 1980). It is fast growing and in plantations can yield 1.5–10 m³/ha per year though the wood is of low quality (NAS 1980). The plants coppice readily. The foliage is suitable for livestock fodder. NAS (1980) reports that fresh and dried foliage of *A. saligna* is used as supplementary feed for goats and sheep, and that crushed seeds have been fed to sheep without problems. An acidic gum (27% uronic acid) is exuded from damaged stems and may have potential as an ingredient in acidic foods (NAS 1979; NAS 1980).

Acacia stenophylla A. Cunningham ex Bentham, London J. Bot. 1:366. 1842. * Black wattle, river cooba, shoestring acacia
[From Greek *steno*, narrow and *phyllum*, leaf] Cultivated and rarely adventive

Trees, bushy, to 20 m. **Stems** slender, mostly pendulous; bark dark gray or black, rough and furrowed; twigs round, not zigzagged, glabrous to puberulent, dark purple, slightly resinous; prickles absent. **Leaves** (phyllodes) alternate; flat, linear, margins similar, straight to curved, usually glabrous, 150–400 × 2–10 mm; striate with 8–22 obvious parallel veins; apex narrowly acuminate, apiculate, rarely hooked; gland solitary, 0–2 mm above the 1–4 mm pulvinus. **Inflorescences** densely flowered globose head 6–10 mm across, in pseudo-racemes of 2–6 heads, 3–10 mm, solitary in upper leaf axils; peduncles 6–14 mm. **Flowers** sessile, creamy white to pale yellow; calyx 0.9–1.6 mm, puberulent; corolla 2–3 mm, puberulent; filaments 3.5–5.0 mm. **Fruits** 100–260 × 8–12 mm, straight, flattened, constricted between the seeds, leathery, glabrous, not resinous, dark brown; stipe 8–14 mm; apex acute. **Seeds** broadly elliptic, slightly flattened, 7–9 × 4–6 mm; aril yellow, very small.

Flowering throughout year. Native to e Australia and rarely adventive in the United States including Arizona.

Acacia stenophylla is frequently found along water courses as an understory plant beneath *Eucalyptus camaldulensis* and other species, and in seasonal swamps, typically in clay soils. It is recorded from all mainland states in Australia. This species has become weakly naturalized in disturbed sites in urban areas of Arizona and should be considered potentially invasive. Annual rainfall is 100–800 mm across its range (Thomson 1991).

Despite its preference for wet areas in habitat, shoestring acacia is well-adapted to dry landscapes. It can be used as a background tree or planted against larger buildings where it is effective when planted in groups. The open canopy produces light, filtered shade. Shoestring acacia is long-lived. It tolerates a wide range of soils including saline soils. Flowering on cultivated plants in Tucson has been observed in April and from July–December. Hardiness varies from -6°– -9°C among plants grown in Tucson, though most material is hardy to -9°C. The trees produce some leaf litter and may produce root suckers. Scarified seeds germinate easily.

The foliage of *A. stenophylla* is palatable to livestock (Cunningham et al 1992). The wood is hard, heavy and polishes well (Cunningham et al 1992). Thomson (1991) indicates that the seeds may have some potential as a source for human food.

Acacia tetragonophylla F Mueller, *Fragm.* 4:3. 1863. * Dead finish, prickly wattle [From Greek *tetra*, four, *gonia*, an angle, and *phyllum*, leaf] Cultivated

Straggly **shrubs** or small **trees**, erect to spreading, to 5 m. **Stems** slender, spreading; bark gray, smooth or becoming rough and slightly fissured at base of large trunks; twigs round, not zig-zagged, glabrous, dark purple, not resinous; prickles absent. **Leaves** (phyllodes) clustered on short spur branches, alternate on new growth; round and 5–7 ridged in cross section, linear-subulate, margins similar, straight, glabrous, 10–60 × 0.8–1.2 mm; parallel veins; apex acuminate, sharp-pointed; gland usually absent. **Inflorescences** densely flowered globose heads 6–9 mm across, 1–5 in leaf axil; peduncles 8–25 mm. **Flowers** sessile, yellow; calyx of separate sepals, 0.6–1.3 mm, glabrous; corolla 1.5–2.2 mm, lobes glabrous; filaments 3–4 mm. **Fruits** 50–110 × 4–5 mm, twisted and coiled, flattened, constricted between the seeds, leathery, glabrous, not resinous, dark reddish brown; stipe 2–6 mm; apex acuminate. **Seeds** elliptic to oblong, flattened, 4–6 × 2–4 mm; aril bright yellow, encircling the seed.

Flowering Apr–Jun. Native to southern half of Australia.

Acacia tetragonophylla is widespread in arid habitats on a variety of soil types in Australia where it has been recorded from all mainland states except Victoria. It grows in regions that receive 125–300 mm of yearly rainfall (Whibley 1980). The fascicled phyllodes of older stems are unique among species of *Acacia* cultivated in Arizona. Nodulation is reported for *A. tetragonophylla* (Allen & Allen 1981).

With its stiff, sharp-tipped phyllodes and shrubby habit, dead finish makes an effective barrier. It can also be planted as an informal screen and makes a distinctive specimen plant. The dark green foliage contrasts nicely with the yellow flowers. Established plants are drought tolerant but grow slowly without supplemental irrigation. The plants require well-drained soil. Cultivated plants in Tucson have been observed to flower from January–May and in November. Dead finish is hardy to ca. -6°C. Freeze-damaged plants recover slowly. This species is moderately salt-tolerant (Simmons 1981). The sharp-tipped phyllodes are a limitation when selecting a planting site. Litter is minimal. Dead finish is easily grown from scarified seeds.

Acacia tetragonophylla can be planted as a windbreak and for soil stabilization (Whibley 1980; Cunningham et al 1992). The foliage is considered an important livestock browse during drought in some regions (Cunningham et al 1992; Orchard and Wilson 2001). The seeds have been ground for food (Urban 1990). Devitt (1991) indicates that green and ripe seeds were used for food and that root grubs were eaten. Orchard and Wilson (2001) report that the phyllodes and root bark are used by Aboriginal people in Northern Territory to treat skin lesions and warts, and for bandaging fractured bones, and the bark is used to treat coughs in Western Australia. The wood is red brown, heavy and durable, and is aromatic when freshly cut (Simmons 1981), though the small diameter limits its use.

TAXA WITH POTENTIAL FOR CULTIVATION

Additional taxa of *Acacia* have been introduced into Arizona horticulture but are generally not available from commercial sources. New introductions are likely to become available over time. All of the following species have evergreen phyllodes and are native to Australia. They are rarely available in Arizona, though some are likely to become more widely planted in the future.

Acacia brachybotrya Bentham, gray mulga, forms a rounded shrub to 3 m tall, is unarmed, and has gray green oblanceolate to obovate phyllodes. The flowers are yellow, in rounded heads. Gray mulga is hardy to -7°C.

Acacia cyclops A. Cunningham ex G. Don, western coastal wattle, is an unarmed, rounded shrub or tree up to 6 m tall. The phyllodes are narrowly oblong to narrowly obovate. Yellow flowers are produced in globular heads. Hardy to ca. -6°C.

Acacia notabilis F Mueller, notable wattle, forms a rounded to spreading, unarmed shrub to 3 m tall. The gray green phyllodes are oblong-lanceolate, and yellow flowers are produced in rounded heads. Hardy to ca. -7°C.

Acacia papyrocarpa Bentham, western myall, typically forms an unarmed, multiple-stemmed, umbrella-shaped shrub or tree to 7 m tall. The phyllodes are linear and silver green. Yellow flowers are produced in round heads. Cultivated plants in Arizona appear to be hardy to at least -9°C.

Acacia pruinocarpa Tindale, gidgee, forms a tidy, unarmed, low-branched tree 5–10 m tall, or sometimes a multiple-stemmed shrub with relatively thick twigs. The gray bark and linear to oblong, blue green phyllodes are attractive. The rounded flower heads are bright yellow. Gidgee is hardy to ca. -6°C .

Acacia trachycarpa E. Pritzel, is an unarmed shrub or tree to 6 m tall with linear, sharp-tipped phyllodes. Yellow flowers are produced in cylindrical spikes. Hardy to ca. -5°C .

Acacia trineura F. Mueller, three-nerved wattle, forms a rounded, unarmed shrub or small tree to 5 m tall. The phyllodes are narrowly obovate or oblanceolate and dark gray green. Rounded flower heads are yellow. Hardy to -9°C .

Acacia victoriae Bentham, Victoria wattle, bramble wattle, is a shrub or small tree to 5 m tall, with blue green to yellow green linear to lanecolate or elliptical phyllodes and short, paired stipular spines at the nodes. The flowers are cream colored and are produced in masses of rounded heads. Victoria wattle is hardy to -7°C .

LITERATURE CITED

Allen O.N. and E.K. Allen. 1981. The Leguminosae – a source book of characteristics, uses, and nodulation. The University of Wisconsin Press.

Cunningham, G.M., W.E. Mulham, P.L. Milthorpe, and J.H. Leigh. 1992. Plants of western New South Wales. Inkata Press.

Devitt, J. 1991. Acacias: a traditional Aboriginal food source in central Australia. in House, A.P.N. and C.E. Harwood (eds.). 1992. Australian dry-zone acacias for human food. CSIRO Publications.

Jones, W. and C. Sacamano. 2000. Landscape plants for dry regions: more than 600 species from around the world. Fisher Books.

Miller, S.M. 1994. The role of *Acacia aneura* in animal production. in Gutteridge, R.C. and H.M. Shelton (eds). 1994. Forage tree legumes in tropical agriculture. CAB International.

National Academy of Sciences. 1979. Tropical legumes: resources for the future. National Academy of Sciences.

National Academy of Sciences. 1980. Firewood crops – shrub and tree species for energy production. National Academy of Sciences.

Simmons, M.H. 1981. Acacias of Australia, Volume 1. Nelson Publishers.

Thomson, L. 1991. Australia's subtropical dry-zone *Acacia* species with human food potential. in House, A.P.N. and C.E. Harwood (eds.). 1992. Australian dry-zone acacias for human food. CSIRO Publications.

Urban, A. 1990. Wildflowers and plants of central Australia. Southbank Editions.

Whibley, D.J.E. 1980. Acacias of South Australia. D.J. Woolman, Government Printer, South Australia.