Review of *Acacia retinodes* and closely related species, *A. uncfolia* and *A. provincialis* (Leguminosae: Mimosoideae: sect. Phyllodineae)

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Abstract

Since the description of *Acacia retinodes* Schltdl. in 1847, there has been confusion about its identity. Extensive fieldwork has been conducted on this species and related taxa, material and literature examined, and the taxa delimited. Three species are recognised here which previous authors have confounded with varying interpretations under *A. retinodes* Schltdl., and they are described, illustrated and discussed in full. *Acacia retinodes* Schltdl. is now considered to be endemic to the Mt Lofty Ranges of South Australia. *Acacia provincialis* A.Camus, which is here lectotypified, has a discontinuous distribution in south-eastern Australia from the Mt Lofty Ranges and Kangaroo Island, South Australia, the Grampians and Glenelg River to near Melbourne, Victoria; it has become naturalised in Southern Europe and North America. *Acacia uncfolia* O’Leary is raised for the first time to species level; treated previously as a variety of *A. retinodes* Schltdl., it has a disjunct distribution in coastal areas from Kangaroo Island and southern Fleurieu Peninsula in South Australia, King and Flinders Islands in Bass Strait and from Torquay to Wilsons Promontory in Victoria.

Introduction

This paper presents morphological and habitat characters that warrant the recognition of *A. retinodes*, *A. uncfolia* and *A. provincialis* as distinct and separate species, these three species having hitherto been confounded under *A. retinodes*.

Taxonomic history

*Acacia retinodes* was published by Schlechtendal in *Linnaea* in 1847, based on material collected in January 1845 by Dr Herman Behr, likely to be from the Barossa Valley, South Australia. The holotype and isotype are flowering branches with linear phyllodes, representing the phyllode shape found on mature trees. Pods were not described in the protologue. From the field notes provided by Behr, Schlechtendal recorded that the species occurred in “rich soils near water in the valleys”.

During his four-year stay from late 1847 in South Australia (Willis 1949) Mueller made several collections that he identified as *A. retinodes* (see later), but many of these were from slightly wetter habitats with different species associations than those found at the type locality. The “rich soils near water in the valleys” that occur south of the Barossa Valley near Adelaide are a habitat for what, in this paper, is recognised as *A. provincialis*, a species closely related to *A. retinodes* but which does not occur in the Barossa Valley. While *A. retinodes* can occur in rich soils near water, it also extends to relatively dry plains and hillsides, a habitat that does not support *A. provincialis*.

The first collections of *A. uncfolia* appear to have been made by Robert Brown from Port Phillip in 1802, although it is likely that this coastal species was also encountered on Kangaroo Island. Bentham included this collection in his account of *A. retinodes* in 1864, but it was only in 1932 that Black recognised this taxon as a variety of *A. retinodes*.

Judging from information on herbarium labels, Mueller appears to have distinguished between the two taxa (*A. provincialis* and *A. retinodes*) he collected from near Adelaide. His National Herbarium of Victoria specimen Mueller MEL2082743 has labels from three localities, Onkaparinga River, Morialta Gully and Brown Hill Creek, accompanied by specimens of *A. provincialis*. Details from these labels indicate that Mueller was questioning the identity of the plants he had collected as *A. retinodes*. On his Brown Hill Creek and Onkaparinga River labels Mueller provided the distinguishing characters of *A. provincialis*: namely, restricted damp riverbank habitats, slender growth form, golden-yellow flowers with a long flowering period and a character which is very obvious in the field, “Truncus laevis! Nei rugosus ut A. retinodes!” (its smooth trunk, not rough like *A. retinodes*!).

Bentham saw the Onkaparinga River and Brown Hill Creek specimens (which represent *A. provincialis*) on Mueller MEL2082743, together with a specimen of *A. retinodes* from the Torrens River, (mixed with
A. provincialis) on Mueller MEL2082778. However, Mueller’s apparent distinction between the two species appears not to have been recognised by Bentham. It also appears that Mueller and Bentham were confounded by the phyllode variation on some of the other specimens of these and other related taxa that they saw. Habitat, habit, flowering period and bark are characters that most obviously separate these two species in the field. However, these and other closeely related species can be confused on herbarium specimens because of similar phyllodes, inflorescences and pods.

In 1855 Mueller (now residing in Melbourne) included Victoria in the distribution for A. retinodes (Bentham 1855), and in 1858 he provided a description of pods and seeds. However, it is now known that the pod and seed description refers to A. provincialis, while the information for the distribution in Victoria relates to both A. provincialis and A. uncifolia, not A. retinodes. His data was published in Mueller (1859).

The Flora Australiensis account of A. retinodes by Bentham (1864) contains elements of A. retinodes and A. provincialis, as well as A. uncifolia and other species, namely, A. alcoccki (“Memory Cove, R. Brown”), and probably A. rivalis (“Finders Range, Mueller”). The collections from Kangaroo Island by Waterhouse relate to A. provincialis and A. uncifolia, the collection from Port Phillip (R. Brown) relates to A. uncifolia, while the Victorian collections from “grassy ridges and open valleys throughout the greater part of the colony” (Mueller) relate to A. provincialis. Behr’s original observation of “very frequent in rich soils near water in the valleys” was also included, and represents both A. retinodes and A. provincialis.

Confusion over the identity of A. retinodes continued for many years. Mueller’s (1887) illustration of A. retinodes is of A. provincialis. Collections from South Australia, where all three taxa exist, tended to be placed under the name A. retinodes, but often have questioning field comments. In 1882, Tepper (AD6920224) mounted several specimens on a single sheet, where A. provincialis is named as A. retinodes, and A. retinodes is annotated as Acacia var? sp?. Another Tepper collection (MEL2082736) of A. retinodes notes; “This Acacia is quite different in habit from A. retinodes, as in some localities it ascends dry rocky hills, while the other is restricted to moist localities and creeks etc.” Collections of A. retinodes by Black note “Narrow-leaved form of A. retinodes” (Black AD9672804), and “grows on the dry hillsides & drifts downwards: bark very dark & rough on trunk, taller than retinodes, 20-25 feet sometimes, flowers xmas till beginning Feb.!” (Black AD96728025). Numerous other collections record the distinct habitats of the three taxa, “near water”, “away from water”, “dry hillsides” and “coastal dunes”.

In 1932 Black published A. retinodes (as rhetinodes) var. uncifolia, from near Watipina Beach, with a concise habitat description of “growing in sand and limestone, away from water”. The accompanying observation that “The small phyllodes, terminating in a curved, almost hooked mucro, give this variety a very different appearance from the type, which is usually found in gullies or near creeks”, seems in part a legacy from the misapplication of the name, as it appears that Black considered the A. provincialis taxon to represent A. retinodes. Earlier collections of the coastal taxon with narrow phyllodes, were often either identified as A. retinodes, “Acacia sp.”, or had accompanying field notes of “small form of A. gillii” (Cleland AD96546076), “away from water” (Cleland AD96728029), “near A. retinodes” (“White AD96728027”).

In describing A. provincialis Camus (1927) thought it represented a hybrid between A. retinodes and A. saligna. However, he was describing for the first time the taxon from near Adelaide that Mueller had noted some 80 years earlier as having a long flowering period and smooth trunk. What Camus presumed to be the A. retinodes parent was also A. provincialis. This species had been in cultivation in the south of France since the 1870s, and was popular in the cut flower trade as noted by Vilmorin (1894), Anon. (1919), and Stapf & Ballard (1929).

Acacia retinodes and A. provincialis have remained confounded to recent times. For example, Whibley (1980) includes a photograph and illustrations representing these two species and A. uncifolia. He did consider however that these three taxa required further study (Whibley pers. comm.). Later Whibley & Symon (1992) and Maslin (2001a, b) identified the three taxa but did not afford them species status. Recent publications have referred to A. provincialis informally as A. retinodes Schltdl. var. retinodes “Swamp Wattle” in Maslin (2001b), A. retinodes Schltdl. var. retinodes “swamp variant” in Maslin (2001a) and Maslin & McDonald (2004), “Acacia sp. Swamp (N.M.Smith 3022) O’Leary” in Barker et al (2005), and “Acacia sp. Swamp (N.M.Smith 3022) SA Herbarium” in CHAH (2006).

Maslin (1995, 2001b) treated A. retinodes as a member of the ‘A. microbotrya group’, noting that it is perhaps most closely allied to A. confluentus, A. leiophylla, A. rivalis and A. gillii. Acacia retinodes, A. uncifolia and A. provincialis can also be confused with forms of A. penninervis, A. rubida, A. quornensis, A. euthycarpa, A. nerifolia and A. alcoccki. Acacia saligna also can bear a superficial resemblance to A. retinodes, but can be distinguished by its plate glands, floral bracts and larger flowers. Distinctions between these species can be found in (Maslin 2001a, b) and on the website World Wide Wattle (2006).

**Taxonomy**

The distinctions between A. retinodes, A. uncifolia and A. provincialis are summarised in Table 1.

1. **Acacia retinodes Schltdl.**

Linn.aae 20:664 (1847). — *Racosperma retinodes* (Schltdl) Pedley, Austrobaileyana 6(3): 484 (2003). **Type citation:** “Sehr verbreitet auf fruchtbarem Boden in der Nähe des Wassers in den Thälern, Januar.” [Barossa Valley, S.A., perhaps from Schlindens Ck]. **Holotype:** H. H. Behr s.n., without locality or date; HAL, n.v.; (photo: PERTH), **isotype:** MEL616152.


Illustrations and photographs.
Whibley (1980), 113 (photograph); Whibley & Symon (1992), 143 & 145 (photographs); Maslin et al. (1998), 43 (photographs); Maslin (2001a), “(A. retinodes var. retinodes ‘typical variant’);” Maslin & McDonald (2004), 171, “(typical’variant) & 183, “(‘Normanville’ variant)” (photographs).

Upright tree to 10 m tall, with an erect branching habit, outer branches occasionally pendulous on mature plants, limited suckering present. Branchlets reddish, flattened, 3-angular and ribbed at first but soon terete, glabrous. Bark rough, furrowed, dark brown to black. New shoots glabrous, not pruinose. Stipules narrowly to shallowly triangular, smooth to finely ribbed, often resinous, drying reddish brown, 0.5–1 mm long, minutely ciliate. Phyllodes variable (corresponding to growth phase of plants and seasonal conditions), ob lanceolate to narrowly ob lanceolate to linear, gradually narrowed towards the base, (50–)60–160 mm long, (2–)3–12 (–16) mm wide, ascending to spreading, straight or more usually shallowly recurved, glabrous, green to grey-green, often with a silver-satin sheen in sunlight in drier months, crowded on stems, 4–10 mm apart; midrib central; lateral nerves obscure, marginal nerves narrow and yellow to light brown; apices acuminate, normally uncinate, with innocuous micro; gland single on upper margin of phylloide 0–3 (–7) mm above pulvinus. In flo rences racemose, fragrant, 20–40 (–50) mm long, with 5–10 (–12) heads; peduncles 3–6 mm long, slender, glabrous; heads globular, 8 mm diam. (when fresh, drying 4–5 mm diam.), (16–)18–30 (–34) flowered, cream to pale yellow. Flowers 5-merous; sepal clearly united, ½–½ petal length, oblong-ob lanceolate to spatulate, with silver-cream hairs; petals 1.2 mm long, coated with short white hairs and papillose hairs lining edge and at summit, 1-nerved. Ovary glabrous. Pods linear, to 160 mm long, 8–11 mm wide, Seeds longitudinal in pods, oblong to oblong-elliptic, 4–6 mm long, dull to slightly shiny, dark brown to black; funicle ¾ or more encircling seed in double fold, reddish brown to blackish; aril clavate. Fig. 1.

Distribution (Fig. 2).
Endemic to the Mount Lofty Ranges in South Australia, from near Mt Bryan and Clare, south to Normanville and Delamere on the southern Fleurieu Peninsula. Plantings in the southeast region of South Australia have become naturalised to a limited extent.
Fig. 1. *Acacia retinodes*. A – Flowering branch with mature phyllodes. B – D Phyllodes showing range of variation. E – Bark. F – Unopened inflorescence. G – Opened inflorescence. H – Bract. I – Flower showing fused sepals, free petals and stamens. J – Fused sepals with fringing hairs. K – Petals showing central rib and terminal hairs. L – Glabrous ovary. M – Pods. N – Seed showing terminal aril and funicle encircling in double fold. O – Seed in plain view showing pleurogram (left) and side view (right). (A composite from Kraehenbuehl 725; B from O’Leary 2518 (left hand phyllode); C from Bates 35891 (central phyllode); D from Donner 1287 (right hand phyllode); E from O’Leary 2729; F – L from Kraehenbuehl 275; M – O from Bates 35891. A&D x1; B x1/2; C x16; E x8; F x7; G&H x27; I&K x50; L & M x9; N-Q x9.

(e.g. the Millicent to Mt Gambier road). The species distribution is mapped by Maslin (2001a), as var. *retinodes* (typical variant) and Maslin & McDonald (2004, map 53).

Habitat.

Occurs in developed soils on low hills and ranges, in South Australian blue gum, peppermint box, and red gum woodlands, with an annual rainfall of 350–1000 mm. Associated species include *Eucalyptus leucoxylon*, *E. odorata*, *E. microcarpa*, *E. camaldulensis*, *E. obliqua*, *Bursaria spinosa*, *Allocasuarina verticillata*, *Acacia pycnantha*, *A. melanoxylon*, *A. paradoxa* and *A. euthycarpa*.

Conservation status.

Only remnants of the original habitat of *A. retinodes* remain, as much has been cleared for farming. *A.*
Acacia retinodes is palatable to stock and as early as the mid 1840s Behr noted the destructive effects grazing had caused to the habitat of the species. Many of the remaining populations appear to be confined to road verges, this in part due to its limited ability to sucker. Populations occur in Spring Gully Conservation Park, Kaiserstuhl Conservation Park, Anstey Hill Recreation Park, Black Hill Conservation Park, Morialta Conservation Park, Cleland Conservation Park, Mount Crawford Forest Reserve and Mt Bold Reservoir Reserve. However, most of these populations are small remnants, with the long-term viability of these being of some concern. Using the criteria of Briggs & Leigh (1996), a code of 3RCA is recommended for A. retinodes.

Flowering and fruiting period.

Flowering occurs in a distinct season from late December to February. Legumes with mature seeds have been collected from December to early February, these developing over winter from the previous seasons flowers.

Typification

The species was described by Schlechtendal (1847). Although the holotype is without locality or date, it was collected by Behr and annotated by Schlechtendal as “Acacia retinodes Schldl. Linn. xx. p. 664” (B.R. Maslin, pers. comm.). An interpretation of the type citation by Kraehenbuehl (pers. comm.) is that Behr collected this species in the Barossa Valley, South Australia, perhaps from Schlinckens Creek (where it still occurs). Behr’s collecting localities are discussed in Kraehenbuehl (1981).

Variation

A variant of A. retinodes occurs at Yankalilla Bay over a 5 km area between Carrickalinga, Normanville and Lady Bay. It grows on sandy loams that run from behind coastal dunes to low hills about 2 km inland, and is restricted to a few remnant patches of vegetation and scattered individual plants. This variant is now considered to be a coastal form of A. retinodes, although previously it was thought to be a possible stable hybrid with A. unciifolia; see Maslin & McDonald (2004, as A. retinodes, ‘Normanville’ variant) for discussion.

Morphological characters of the Yankalilla Bay plants differ little from A. retinodes plants that occur elsewhere, apart from a more branched growth habit and having a few flowers in spring (i.e. September to November). Flowering is still largely restricted to a single season from December to February; the sporadic spring flowering of the Yankalilla plants may be due to the influence of the maritime environment in which it occurs. Young plants in sheltered sites have a single erect stem similar to typical A. retinodes from inland areas, so the bushy form may well be a response to physical pruning from coastal winds. Bark is predominantly rough in the population, although the photo in Maslin & McDonald (2004) is of a smooth bark specimen. The Yankalilla population lies within the original distribution of A. retinodes, and these were probably one of the only places where the species reached the coast. The closest population of A. unciifolia occurs 25 km away on sands overlying limestone, and where there are close associations with the vegetation of Kangaroo Island (where A. retinodes is absent). The Yankalilla Bay area has been largely cleared for farming and more recently housing subdivisions. Sections were also subjected to sand mining in the past with subsequent limited revegetation with exotic and local Australian species. No formal taxonomic rank is required for the Yankalilla Bay populations, although local revegetation and conservation measures are recommended to preserve this rare localised variant. These plants are readily distinguished from A. unciifolia by their longer phyllodes and glabrous ovaries.

Affinities

As noted by Maslin (2001a, b) A. retinodes is a member of the informal, Australia-wide ‘Acacia microbotrya group’, of species. Its closest affinities are with A. provincialis and A. unciifolia (see Table 1) but it is also closely related to A. confluens, A. leiophylla, and A. rivalis.

Hybrids

No hybrids involving A. retinodes have been seen by the author. Maslin (2001a, b) noted that A. semiaurea is possibly a hybrid between A. retinodes and A. argyrophylla or A. brachybotrya (apressed haired variant). Although the author has not seen type material of A. semiaurea, the description for this species matches specimens of A. argyrophylla from Yorke Peninsula that are possible intergrades between that species and A. brachybotrya (apressed-haired variant). It is also possible that A. semiaurea is a hybrid between A. euthycarpa (wide-phyllode variant) and A. argyrophylla; specimens of this putative hybrid are lodged in the State Herbarium of South Australia (AD). Further study of A. semiaurea is needed to resolve its taxonomic status

Ethnobotany

A. retinodes was mentioned in the diary of Wilkinson (1848), as “A. affinis” or “Silver Wattle”, and together with A. pycnantha, called “Wattle”, was noted as being “esteemed for their bark, which is used in tanning, and for the gum that exudes from them plentifully in hot weather”. The export of gum became an early commercial enterprise in Adelaide. Wilkinson also noted...
that “The natives roast the gum in the fire, and then eat it, seemingly with a great relish, and I suppose it is very nutritious. They were quite astonished when first they saw the white men collecting it all over the country, and feared that when it was all gone they would starve”.

Fitzpatrick (1991) listed the Kaurna name “telleelya” for A. saligna, a Western Australian species, this name possibly refers to the superficially similar looking A. retinodes.

Utilisation

A. retinodes is rarely cultivated although there has recently been limited use of it in revegetation plantings in the Adelaide Hills. Maslin & McDonald (2004) noted that A. retinodes has good prospects for future cultivation and development, for wood, tannin, fodder, seed and gum products.

Etymology

The specific epithet is from Greek for resinous, in reference to the gum yielding properties of this species, as noted in the original description.

Stapf & Ballard (1929) and Black (1924) used the specific name rhetinodes reflecting the correct Greek spelling. However retinodes, the spelling Schlechtendal used in the protologue, has remained in common usage and, as the original spelling, is here retained.

Common names

Silver wattle, wirilda. Behr recorded that the common name “Silver Wattle” was in use in the 1840s, together with “Willow”, by the German colonists. Today, “Silver Wattle” is a common name that is used for several other Acacia species, so would be a confusing name for A. retinodes. “Hills Wirilda” is suggested as a possible common name.

Selected specimens examined. (ca 90 specimens total).

South Australia: Morialta Gully, 7 Feb.1922, J.M. Black s.n. (AD96728025); Normanville, 17 Jan. 1924, J.B. Cleland s.n. (AD96418265); c. 16 km SW of Eudunda, B. Copley 3300 (AD, MEL, n.v. L, LE, M); NE of Tanunda, D.N. Kraehenbuehl 1848 (AD; n.v. L, NY, PRE, W); Tamma Creek, Tothill Range, D.N. Kraehenbuehl 5386 (AD); Ca 2 km due NNE of Normanville Fleurieu Peninsula, B.R. Maslin 8335 (AD; n.v. PERTH, CANB); 0.3 km NW of Bull Creek hamlet on the Meadows - Ashbourne road, B.R. Maslin 8358 (AD; n.v. PERTH, CANB); Torrens River, 1847, F. Mueller s.n. (right hand side of MEL2082778); Onkaparinga River, 1848, F. Mueller s.n. (MEL2082753); Kaiser Stuhl Conservation Park, D.E. Muir 912 (AD); Cape Jarvis to Delamere Rd., 2 km SW of Delamere, M.C. O’Leary 2641 (AD); Mt Bryan, M.C. O’Leary 2729 (AD); Mt Barker–Wistow Rd., N.M. Smith 2637 (AD; n.v. PRE, PTFBG); Anstey Hill Recreation Park, A.G. Spooner 10577 (AD); Mt. Bold hillsides, J.G.O. Tepper 364 (bottom centre of AD6920224D); Angaston, 3/1/1882, J.G.O. Tepper 502/363 (bottom left hand side of AD692022C); Rockleigh, J.J.E. Whibley 3654 (AD); Carrickalinga, near sand work, D.J.E. Whibley 9987 (AD).


Illustrations and photographs

Whibley (1980), 113, Fig B; Costermans (1981), 319, Fig b; Whibley (1986), 2, 557, Fig 288 (single phylloide, right hand side); Simmons (1988), 2, 177, (small central phylloides); Prescott (1988), 90, Fig 2 (left hand side ‘coastal’); Whibley & Symon (1992), 143, Fig B; Lynch (1993), 42, (small central phylloides); Prescott (1995), 151 (top centre ‘coastal’); Entwisle et al. (1996), 3, 636, Fig i; Maslin et al. (1998), 44 & 45, (photographs, and upper central Fig (excluding lower left hand side); Maslin (2001b), 11A: 280, Fig J; Maslin (2001a), (as A. retinodes var. unciifolia); Maslin & McDonald (2004), 187, (photographs).

Large rounded shrub to small tree, 5–10 m tall, stems twisted, single stemmed or with several main stems from near ground level, crowns bushy, limited suckering present. Branchlets reddish, angular at first but soon terete, glabrous, marked with rather prominent raised leaf bases where phylloides have fallen. Bark smooth, becoming longitudinally fissured with age, grey to dark brown. New shoots glabrous, not pruinose. Stipules shallowly triangular, with wide central rib (rarely 3) and thickened base, often with a dark resinous coating, 0.7–1.3 mm long, fringed with short white to red/brown hairs. Phylloides oblongoellipticate to narrowly oblongoellipticate, rather abruptly narrowed at
apex into a delicate recurved-uncinate point, (25–) 30–75 (–80) mm long, (2–) 3–10 (–15) mm wide, ascending to spreading, straight or shallowly recurved, glabrous, green to grey-green, crowded on stems, 4–10 mm apart; midrib central to slightly eccentric, not pronounced; lateral nerves inconspicuous, marginal nerves narrow, yellow to light brown when dry; gland single on upper margin of phyllode 0–8 mm above pulvinus. Inflorescences 1 per node, racemose, fragrant, racemes 20–40 (–50) mm long, with 5–10 (–12) heads; peduncles 2–5 mm long, slender, glabrous, yellowish or brown when dry; heads globular, 8 mm diam. (when fresh, drying 4–5 mm diam.), (16–) 18–30 (–32) flowered, cream to pale yellow. Flowers 5-merous; sepals clearly united, ⅓–½ petal length, obtusely 5 lobed, oblong-oblancoate to spatulate, fringed with silver-golden hairs; petals 1.7 mm long, easily separating, glabrous, but thickened and papillose at summit. Ovary covered with scattered to dense short white hairs. Pods linear, often slightly constricted between the seeds, with occasional random deep constrictions, to 160 mm long, 5–7 (–8) mm wide, firmly chartaceous, straight to slightly curved, glabrous. Seeds longitudinal in pods, oblong to

Fig. 3. Acacia uncifolia. A – Flowering branch with mature phyllodes. B – D – Phyllodes showing range of variation. E – Bark. F – Unopened inflorescence. G – Opened inflorescence. H – Bract and sepal. I – Flower showing bract, fused sepals, petals and stamens. J – Bract. K – Petals showing thickened glandular lobes. L – Sepals. M – Hairy Ovary. N – Pods showing longitudinal seeds. O – Seed showing terminal, aril and funicle encircling in double fold. P – Seed in plain view showing pleurogram (left) and side view (right). (A from Alcock 3945; B from Fagg 395 (left hand phyllode); C from Whibley 10173 (central phyllode); D from Lothian 1260 (right hand phyllode); E from O'Leary 2362; F – L from Alcock 3945; M – O from Bates AD99318f55). A & D x1; B x1/2; C x18; E x8; F x7; G & H x27; I, J & K x86; L x2; M x6; N-G x9.
oblong-elliptic, 4–6 mm long, dull to slightly shiny, dark brown to black; funicle ¼ or more encircling seed in double fold, reddish brown to blackish; aril white, clavate. Fig. 3.

Distribution (Fig. 4).

*A. unci-folia* has a disjunct distribution in coastal and near coastal areas of south-eastern Australia, from Kangaroo Island and the southern Fleurieu Peninsula in South Australia, Point Impossible near Torquay to Wilsons Promontory in Victoria, and King and Flinders Islands in Bass Straight, Tasmania. The distribution is mapped by Maslin (2001a), and Maslin & McDonald (2004), but their records of *A. unci-folia* on the southern Eyre Peninsula are now known to represent *A. alcoccii*.

**Habitat**


**Conservation status**

Populations of *A. unci-folia* are well conserved in South Australia in the Newland Head Conservation Park on Fleurieu Peninsula, Cape Gantheaume Conservation Park, Kelly Hill Caves Conservation Park and Flinders Chase National Park on Kangaroo Island. Those in Victoria are conserved in the Point Nepean and Wilsons Promontory National Parks, while those on Flinders Island are reserved in the Wybalenna Historic Site and several small coastal reserves. This species is given a rare status in Tasmania under the Threatened Species Protection Act, Lynch (1993) (Threatened Flora of Tasmania 2006). This publication and website record the occurrence of *A. unci-folia* for only Flinders Island, however a small population of this species is now known to occur on King Island.

**Flowering and fruiting period**

Flowering is reported by Maslin & McDonald (2004), to be variable over its discontinuous distribution. Peaks in flowering for South Australia have been recorded from October to December (Whibley & Symon 1992), and November to January for Kangaroo Island (Jackson 1988), December to February in Victoria (Bernhardt et al. 1984), and December to April in Tasmania (Lynch 1993). However, sporadic flowering occurs in all populations throughout the year. Legumes with mature seeds have been collected from December to January, and develop over winter from the previous season’s flowers.

**Variation**

There appears to be little significant variation between the disjunct populations of *A. unci-folia*, although Maslin & McDonald (2004) noted that plants from Cape Schanck in Victoria are taller and possessed straighter stems than those from Waitpinga Beach in South Australia. The extensive areas of natural vegetation on Kangaroo Island and populations of *A. unci-folia* that occur there enable a more comprehensive understanding of the natural variation within this species. Plants growing on deeper sands in sheltered locations can form trees 5–10 m tall, and often tend to have longer narrower phylloides, while plants in exposed locations on shallow sand grow as dense shrubs with shorter leathery phylloides. This phylloide variation is illustrated in Fig. 3 (B, C, & D).

**Affinities**

*A. unci-folia* is closely related to *A. retinodes*, and was until recently treated as a variety of that species. However, significant differences exist between these two taxa and these justify recognition of them as distinct species.

*A. unci-folia* superficially resembles some specimens of *A. alcoccii*, and until recently occurrences attributed to *A. unci-folia* on lower Eyre Peninsula were misidentifications of *A. alcoccii*. However, its larger number of flowers per head, wider phylloides, and pods with seeds transversely aligned distinguish *A. alcoccii* from *A. unci-folia*. Phylloides of *A. unci-folia* may also resemble some specimens of *A. euthycarpa*, and *A. flocktoniae* Maslin & McDonald (2004) and although these two species are in the same general group as *A. unci-folia* they are not especially closely related to the new species.

**Hybrids**

No specimens of *A. unci-folia* are known to show any morphological evidence of hybridity. The population of *A. retinodes* from Carrickalinga (Normanville Beach), south of Adelaide, discussed in Maslin & McDonald (2004, as ‘Normanville’ variant) and previously postulated to be a stable hybrid with *A. unci-folia*, is now considered to be a coastal form of *A. retinodes* (see discussion above).

**Etymology**

The specific epithet is derived from Latin, *unci-folia*, and refers to the characteristically hooked mucro found on the phylloides.
Selected specimens examined. (ca 110 specimens total).

**Acacia retinodes** (MEL); Point Lonsdale, 1 km inland, B.R. Maslin 6005 (AD); road into Hanson Bay, M.C. O’Leary 1937 (AD); D’Estrees Bay, Point Tinline, M.C. O’Leary 2368 (AD); roadside beside Parson’s Beach and Willow Creek, J.G. Spooner 7672 (AD); Kangaroo Island, in the swales between dunes at Pennington Bay, D.E. Symon 8488 (AD); scrub, Mt Tisbury, [sic] 13 Mar. 1884, J.G.O. Peper s.n. (AD97303206); Waitpinga, behind dunes, D.J.E. Whibley 9988 (AD).

**Acacia provincialis**

3. **Acacia provincialis** A. Camus


**Lectotype (here selected by B. R. Maslin, pers. comm.):** A. Camus s.n., Mar. 1927, cultivated at Var, Pampelonne, commune de Ramatuelle; P n.v. (photo: PERTH 06315410).


**A. fragrans** Hort. ex Pottier, Jardin 22: t. 72, fig. 2 (1908), nom. nud., non Ten. (1845), fide O.Stapf & F.Ballard, loc. cit.

**A. semeniferum** Hort. ex A. Berger, Hort. Mortol. 7 (1912), pro syn. sub A. retinodes.


**A. retinodes** Schltdl. var. “swamp variant” in Maslin, WATTLE Ac. Australia. (2001)


**Illustrations and photographs**

(All as *A. retinodes* unless otherwise named); De Mole (1861), pl. 13 (right hand side, as “Silver Wattle”); Mueller (1887), dec. 5 [pl. 9]; Vilmorin (1893), 14: 84, Fig. 2; Anon. (1919), ser. 3, 65: 163, Fig. 68; Campbell (1921), 51 (photograph); Stapf & Ballard (1929), 153: Tab. 9177 (excluding pod & seed, which is *A. neriifolia*); Black (1948), 2 411; Gailbraith (1960), 77: 73 (photograph); Boomsma (1981), 76 (left hand side); Whibley (1980), 113, Figs A, L, S; Costermans (1981), 319, Fig a; Elliot & Jones (1982), 2: 106 (photograph); Elliot (1984), 15, (lower right hand side), 18, (lower right hand side photograph); Whibley (1986), 2: 557, Fig 288A (excluding single phylloide, right hand side); Simmons (1988), 2: 177, (excluding small central phyllodes); Prescott (1988), 90, Fig 2 (right hand side); Dashorst & Jessop (1990), pl XXXII Fig 9; Tate (1992), 134, Fig 141, pl. 141; Whibley & Symon (1992), 143 Figs A, L, S; McCann (1994), 80 (lower left hand side photograph); Prescott (1995), 151, Fig 2; Entwisle et al. (1996), 3: 636, Fig h; Maslin et al. (1998), 44 (lower photograph), 45 (lower illustration); Maslin (2001b), 11A: 280, Fig G-I; Maslin (2001a), (as *A. retinodes* var. *retinodes* ’swamp variant’); Spencer (2002), 244; Bonney (2003), 51; Maslin & McDonald (2004), 177 (photographs).

Slender, erect to medium-spraying tree, 5–10 m tall, trunk solitary, often dividing near ground level into several ascending stems, crowns open to bushy. *Branchlets* reddish-brown, often lightly (rarely strongly) pruinose, prominently flattened and angular, ribbed (often continuous below
phyllode) at first but soon terete, glabrous. Bark smooth, grey. New shoots glabrous, ribbed, often lightly pruinose. Stipules triangular, 1–1.2 mm, with a fine central rib that is often continuous with rib on the peduncle, fringed with fine white hairs. Phyllodes variable (corresponding to growth phase of plants, habitat and seasonal conditions), linear, erect, 100–200 mm long, 4–10 mm wide, (juvenile growth phase); to oblong-elliptic, erect or spreading, 100–150 mm long, 15–25 (–35) mm wide, to narrowly oblong-elliptic or narrowly elliptic, erect to spreading, 90–140 mm long, 5–10 mm wide, (adult phase); straight or shallowly recurved, glabrous, blue-green to grey-green, glaucous, often lightly pruinose, uncrowded on stems, commonly 10–20 mm apart, midrib central to slightly offset; lateral nerves

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**Fig. 5. Acacia provincialis.**

A – Flowering branch with mature phyllodes. B – Phyllodes, erect to spreading on branch. C – Bark. D – Unopened inflorescence. E – Opened inflorescence. F – Flower showing bract, sepals, petals and anthers. G – Bract. H – Sepal showing rib, thickened summit and fringing hairs. I – Petals showing central rib, terminal glands and papillose hairs. J – Glabrous ovary. K – Pods showing longitudinal seeds. L – Seed showing terminal aril and funicle encircling in double fold. M – Seed in plain view showing pleurogram (left) and side view (right). (A – K from O’Leary 1984, 2630, 2721 & 2723; K – M from O’Leary 2281. A&D x1; B x1/2; C x16; E x8; F x7; G&H x27; I, J & K x38; L x2; M x6; N-Q x9.)
A. retinodes at P has a discontinuous distribution in high rainfall areas. Associated species include Eucalyptus camaldulensis, E. leucoxylon, E. ovata, E. viminalis, Leptospermum lanigerum, L. continentale, Viminaria juncea, Acacia melanoxylon, A. verticillata, Gahnia sieberiana, Blechnum minus, Phragmites australis.

Conservation status

A. provincialis is well conserved in South Australia in parks in the Mt Lofty Ranges and Kangaroo Island, and in western Victoria in the Lower Glenelg and Grampians National Parks.

Flowering and fruiting period

Flowering peaks occur from September till January, with scattered flowering throughout the year. Flowering peaks appear to occur roughly 5–6 months after winter rains. April rains produce a peak in September to October, June rains producing a peak in December to January. Legumes with mature seeds have been collected from December to January.

Typification

A. provincialis was described in 1927 by Camus from cultivated material at Pampelonne, commune de Ramatuelle, in the south of France. Camus thought he was describing a hybrid between A. retinodes and A. cyanophylla (=A. saligna), after finding a single distinct plant growing amongst 30 year old plantings of these two species. It appears from the protologue that Camus considered the variable phyllode states to be a sign of hybridity; however this is a normal characteristic of this species in Australia related to environmental conditions and the biological age of the plant.

The lectotype specimen of A. provincialis at P consists of a mounted specimen (together with a loose specimen), and accompanying label.


together with a signature of A. Camus. The loose overlying specimen from the sheet represents an isolecotype. The three remaining type sheets of A. provincialis at P bear identical labels; they represent syntypes and are specimens of A. saligna and A. pycnantha (B.R. Maslin pers. comm.).

Camus’s view that the phyllodes of A. retinodes should be erect, narrow and linear (normally a juvenile state for the species he was describing), could possibly relate to local climatic conditions, or a silvicultural response related to pruning (to regulate flowering times), or possibly cultivar selection.

The other possibility could be a familiarity with the protologue for A. retinodes and the description of linear phyllodes written by Schlechtendal. Without an examination of the type material housed at HAL, Camus probably was unaware that what had been called A. retinodes in France for the forty years of its cultivation was in fact another species.

Examination of the lectotype of A. provincialis shows no evidence of hybridity, or presence of the
characteristic plate glands or floral bracts of *A. saligna* (Maslin 2001b, and pers. comm.).

**Variation**

*A. provincialis* is a variable species whose appearance and morphology is influenced by the age of the plants and by habitat conditions. Habit can vary from erect slender trees in open wet swamps, to slender pendulous trees in shaded forests, or dense rounded trees to 10 metres tall in fertile soils alongside permanent water. Differing phyllode states often occur together on a single plant or branch, or conversely a plant may be dominated by one state (Fig. 6.). Specimens from Black Swamp south of Adelaide have erect linear phyllodes that appear to be a response to permanently waterlogged growing conditions, whereas plants 20 metres away on better-drained soil have more typical wider phyllodes. Plants from western Kangaroo Island growing on the

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exposed lateritic plateau often possess wide leathery phyllodes, with strongly pruinose branchlets and pods. Phyllodes on plants elsewhere are normally thinly textured and often lightly pruinose. Occasional plants can be strongly glaucous, this appears to have occurred in France, with the selection of the “var glauca” cultivar, which is grafted for the cut flower trade.

Several collections from central Victoria, near Ballarat and Bendigo (Willis MEL1501102), (Beauglehole MEL2039793) and (Smith MEL572771), have pale yellow flowers with 18–20 flowers per head, and small glaucous phyllodes, which infrequently have more than one gland per phylloide. This variant may be worthy of further study, but this may prove difficult, as this area has been extensively cleared, and recent plantings of unknown provenance are becoming naturalised.

**Affinities**

*A. provincialis* is considered by Maslin (1995, 2001a, b), and Maslin & McDonald (2004) as being a South Australian member of the Australia wide 'A. microbotrya group', perhaps most closely related to *A. confluens*, *A. leizophylla*, *A. ritalis*, and *A. gilli*. Distinguishing characters between *A. provincialis*, *A. retinodes* and *A. unifolia* are summarised in Table 1.

**Hybrids**

No hybrids involving *A. provincialis* have been seen by the author.

**Ethnobotany**

The name “Wirrildar” was first recorded from the Ramindjeri Clan of the Narriyneri People, from the southern Fleurieu Peninsula. This was a name for a gum-producing wattle tree. The “Ngaiye” or Totem of the Ramindjeri was “Wattle gum” Taplin (1879). Several other similar words from the Ramindjeri language have been recorded, including; “wurrulde”, for *Acacia* or wattle tree (Meyer 1843), and “wuruli” for golden wattle totem (Tindale 1934–37), (P. Clarke, pers.comm. Sept. 2006). Clarke also notes that the word “wirilda” was almost solely used by non-Aboriginal people by the 1980s (P. Clarke, in prep.).

The “country” of the Ramindjeri occurs from near the present town of Victor Harbor to near Cape Jervis. In this area *A. provincialis* is relatively common, and was probably abundant along the numerous creeks, rivers and valleys. *A. unifolia* is locally common near Waipinga Beach, while *A. retinodes* appears to have been rare or absent, though it occurs nearby. *A. pycnantha* is the other gum-producing species from this area, but it was normally distinguished by early settlers, and known as “wattle”. Further study would be required to determine how specifically this name was applied to these species.

**Utilization**

*A. provincialis* is sold in Australian nurseries as a quick growing, long flowering small tree with edible seed. It is often used in revegetation projects, but because it has been confused with *A. retinodes* and *A. unifolia*, plantings have been made in inappropriate sites with habitats that better suit these other species. This has resulted in the underperformance of plantings, or the unintentional introduction of non local species to an area. Some publications note that this species is resistant to saline conditions, but these references may in part relate to the coastal species *A. unifolia*. Interestingly, Wallace (1986) found *A. retinodes* (presumably referring to *A. provincialis*) to be resistant to salinity due to its ability to withstand waterlogging.

Although sold as *A. retinodes*, *A. provincialis* has been an important component of the cut flower industry in Europe for more than one hundred years (see Vilmorin 1894, Stapf & Ballard 1929, Sedgley et al. 2006). Today the species is sold in numerous nurseries around the world as a cut flower and potted plant.

**Etymology**

The specific epithet *provincialis* relates to the description from cultivated specimens grown in France from the Provence Region.

**Common Names**

Wirrildar, wirrildar, swamp wattle, water wattle, perennial wattle, ever flowering wattle, ever blooming wattle, bold wattle, mimosa of four seasons.

**Selected specimens examined (ca 200 specimens total).**

**South Australia**: Rocky River, Flinders Chase, C.R. Alcock 10734 (AD); Black Swamp, 2 Mar. 1946, J.M. Black s.n. (AD96728008); Cox’s Scrub, B.C. Crisp 60 (AD; n.v. PERTH); Mylor, N.N. Donner 110 (AD); Kangaroo Island, Church Rd., 2 km W of West End Highway, D.J. Duval & M.K. Jones 52 (AD; CANB, K, STU); Waterfall Gully, Hj. Eichler 14589 (AD; n.v. CANB, P, PRE, NY); Callawonga Creek, 59 F.M. Hilton (AD); Comaun East, D.N. Krachenbuehl 3142 (AD; n.v. MCT, F); Mount Lofty Range, southern boundary of Kyecma Conservation Park, B.R. Maslin 8354 (AD; n.v. PERTH); Torrens River, 1847, F. Mueller s.n. (left hand side of MEL2082778); Onkaparinga River & Brown Hill Creek, F. Mueller s.n. (MEL2082743); Flinders Chase, M.C. O’Leary 2595 (AD); Boat Harbor Creek, N.M. Smith 3022 (AD); Peters Creek Rd., adjacent to Kuitpo Forest, D. Symon 13716 (AD; n.v. AAU, DRI, F, MO); Yankealilla Creek, R. Taplin 471 (AD); Clarendon, 30 Dec. 1881, J.G.O. Tepper s.n. (top left hand side of AD09692022A); Karatta, near river only, 5 Mar. 1889, J.G.O. Tepper s.n. (AD96920214); Aldgate, D.J.E. Whibley 37 (AD; n.v. B, SI); Finniss R., D.J.E. Whibley 10435 (AD; n.v. MEL). *Victoria*: foot of Mt. William along creek, R. Bates 14089. (AD); Grampians, near Silverband Falls, N.N. Donner 1976 (AD); Victoria Ra., L. Haegi 636 (AD; MEL; n.v. CANB, NSW, A, AAU, H, SI); Grampians, S.T. Parfett 13 (AD; MEL; n.v. PERTH); Yarrowee River, 3 km S of Ballarat CBD, V. Stajsic 4307 (AD; MEL; n.v. CANB); Victoria Valley near Halls Gap, Grampians, D.J.E. Whibley 3378 (AD); Banks of Glenelg R. at junction of Moleside Creek, 10 Nov. 1963, J.H. Willis s.n. (MEL1501100).

**Tasmania**: Henry Street, edge of Camp Creek, Mar. 2006, M. & G. Batley 1 (AD; n.v. HO, MEL); Distillery Creek, Launceston, P. Hannaford (MEL2081138).
Doubtful Name

*Acacia semperflorens* Jacques

Ann. Fl. Pomone 1837–38: 40 (1837); Courtois, Magasins d'Horticulture 1: 12 (1833), pro syn. — *A. impressa* Lindl. [=*A. penninervis*]. **Type citation:** "Cultivated in 1830 at the home of M. Boursault": (specimen uncertain).

Later, Jacques (1847) did not include *A. semperflorens* in the *Manuel Des Plantes*, which described the species of *Acacia* in cultivation at that time.

**Typification**

In the protologue of *A. semperflorens* Jacques says that he saw the plant growing at the home of M. Boursault in 1830 (near Paris). No type has been located but there is a specimen in the Florence Herbarium (Fl, photo seen), which possibly originates from the type plant. This is the lower specimen on Herbarium Webbia sheet N055426, and has the accompanying label; “*Acacia semperflorens* M. Boursault, N. Holl. Temp 5. 1828”.

**Identity**

Salient characters of the the Boursault specimen are: phyllodes 75–100 mm long, 15–20 mm wide, acute; gland appears to be 10–20 mm above the pulvinus and seems to be connected to the midrib by a fine oblique nerve; inflorescence racemose; heads globular; peduncles 5–7 (7–10) mm long, rather slender, heads about 20 or more flowered (B.R. Maslin, pers. comm.). While the identity of this specimen is uncertain (fide Maslin 2001c), the combination of the Boursault specimen characters, and most notably, the phyllodes that possess a vein running to the gland, are characters that are not found in *A. retinodes*, *A. provincialis* or *A. uncifolia*. The protologue of *A. semperflorens* describes the branches as “slightly angled” at the apex, while *A. retinodes*, *A. uncifolia* and *A. provincialis* are conspicuously angled at their branch apices.

Courtois (1833) gives the name *A. semperflorens* in synonymy under *A. impressa* Lindl. (=*A. penninervis*), four years before it was published (Maslin 2001c). The characters described in the protologue of *A. semperflorens* can be found in forms of the species *A. penninervis* or *A. rubida*. While the epithet “semperflorens” (“ever flowering”) is poorly descriptive of these two species, the protologue for *A. semperflorens* indicates that flowering occurs only in “one part of the year”. It is the view of the author that *A. semperflorens* is likely to refer to either of these species.

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