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Notes on *Acacia adunca* and *A. linearifolia*, and the description of a new subspecies of *A. juncifolia* (Leguminosae: Mimosoideae) from eastern Australia

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Abstract

Maslin, B.R. (Western Australian Herbarium, Department of Conservation and Land Management, PO Box 104, Como, Western Australia, Australia 6152) 1994. Notes on Acacia adunca *and* A. linearifolia, *and the description of a new subspecies of* A. juncifolia *(Leguminosae: Mimosoideae) from eastern Australia.* Telopea *6(1) 43–49.* The complexity surrounding the names *A. linearifolia* Maiden & Blakely and *A. adunca* A. Cunn. ex Don is re-assessed. *Acacia linearifolia* (syn. *A. murrumboensis* Maiden & Blakely) is now regarded as being validly published and applicable to populations in east-central New South Wales. The name *A. adunca* A. Cunn. ex Don (syn. *A. accola* Maiden & Betche, here lectotypified) applies to a species restricted to the New South Wales/Queensland border area in the vicinity of Stanthorpe and Tenterfield; the species is here neotypified by *A. Cunningham 79*. A new subspecies, *A. juncifolia* subsp. **serpentinicola** Maslin, from the North Coast and Northern Tablelands regions of New South Wales is described; it is restricted to serpentinite ridges in a small area between Bralga Tops and Mount George.

1. *Acacia adunca* and *A. linearifolia*

The nomenclatural history surrounding the application of the names *A. adunca* A. Cunn. ex Don and *A. linearifolia* Maiden & Blakely is very complex and is discussed in detail by Pedley (1980: 285–287). My intention here is to present in greater detail parts of this history and to re-interpret some of the data. The most significant departure from Pedley's interpretation is that the name *A. linearifolia* (syn. *A. murrumboensis* Maiden & Blakely) is considered to be validly published and applicable to populations in east-central New South Wales. It will also be shown that *A. adunca* (syn. *A. accola* Maiden & Betche) is a distinct species restricted to the New South Wales/Queensland border area in the vicinity of Stanthorpe and Tenterfield.

When G. Don (1832: 406) originally described *A. adunca* he referred to Cunningham's manuscript but did not cite any specimens. It seems probable that Don's description was based, in part at least, on a cultivated plant; however, no authentic material known to have been seen by him has been located and accordingly a neotype has been selected from among Cunningham's gatherings (see below). Cunningham's manuscripts (located at BM and K) show that in a list of specimens collected in the winter months of 1827 between Liverpool Plains (New South Wales) and Moreton Bay (Queensland) *A. adunca* is given as number 79. Unlike most other species appearing in this list, *A. adunca* lacks Cunningham's characteristic Latin field description of the plant. He does, however, give the following details '*Acacia adunca* allied to *A. suaveolens* and *angustifolia*. A large shrub in barren rocky situations on Hunter's River. fl. July.' Of relevance also is Cunningham's entry in the same list under no. 81: '*Acacia sp.* [given as "*A. Dangieri*" in the margin] closely allied to no. 79 from which it appears to differ in having a more prominent gland on the upper or inner margin of the petiole and a hoary furfur covering the branches. A large shrub frequently noticed in the broken country investing Mount Dangar on the

westernmost branch of Hunter's River. August.' Thus, during his 1827 trip through northern New South Wales and south-eastern Queensland, Cunningham made two relevant gatherings, no. 79 in July (which he called *A. adunca* and which was said to have been collected from the Hunter River) and no. 81 in August (which he called *A. dangieri* and said was collected from Mt Dangar on the western branch of the Hunter River). According to McMinn (1970), from mid-June to early July 1827 Cunningham explored the country between the Condamine River (near Warwick, Queensland) and the MacIntyre River (northern New South Wales). This journey took him near Ballandean (between Stanthorpe and Wallangarra), an area where *A. adunca* is known to occur. By late July Cunningham had travelled south to Dart Brook (near Scone, New South Wales) and during August he explored the country in the extreme west of the Hunter Valley between Dart Brook and Bathurst. This August journey would almost certainly have enabled Cunningham to visit Mt Dangar (from where his no. 81 was collected). It therefore seems most probable that the plant Cunningham called *A. adunca* (i.e. no. 79) was erroneously labelled as having been collected on the Hunter River, it most likely having been collected in the Stanthorpe–Wallangarra region in early July 1827. The Mt Dangar specimen (i.e. *Cunningham 81/Aug. 1827*) will be shown below to be *A. linearifolia*.

A specimen of *Cunningham 79/1827* at herb. Kew is selected below as the neotype of *A. adunca*. Erroneously attached to this sheet is a transcription of Cunningham's manuscript entry for the plant labelled no. 81, which, as noted above, was probably collected from Mt Dangar. However, the number '81' was not included on the transcription. This error and omission have been important factors contributing to the confusion surrounding the name *A. adunca*.

Maiden & Betche (1907: 734) described *A. accola*, but their description was based on discordant elements. The lectotype selected below is Maiden and Boorman's December 1903 collection from Wallangarra; this plant is *A. adunca*. The other Wallangarra syntypes, as well as those from Stanthorpe, are also *A. adunca*. The Mt Dangar syntype is *A. linearifolia* and as is explained below, this specimen has had an interesting (nomenclatural) history.

Maiden (1912: 113–118) discussed *A. adunca* in detail. He had received from Kew two fragments of '*A. adunca*', one labelled *79/1827* (Hunter River) and the other labelled *84/1825* (Blue Mountains). The *79/1827* fragment is now regarded as an iso-neotype of *A. adunca*; it was received at NSW accompanied by a second label, namely, a copy of Cunningham's manuscript entry for *81/1827* which, as already explained, refers to *A. linearifolia* from Mt Dangar. This erroneous coupling at both herb. K and NSW of the *81/1827* label with the *79/1827* specimen misled Maiden (1912), Maiden & Blakely (1927: 178) and Pedley (1980: 285) into believing that *A. adunca* occurred at Mt Dangar. Maiden (1912) consequently referred his Mt Dangar syntype of *A. accola* to *A. adunca*. The specimen received at herb. NSW by Maiden as *Cunningham 84/1825* is actually a fragment of *Cunningham 81/1827* (i.e. *A. linearifolia* from Mt Dangar). However, as correctly interpreted by Pedley (1980: 287), the label accompanying this specimen refers to *A. hamiltoniana*, the species to which Cunningham had actually applied the manuscript name *A. linearifolia*. Had Pedley examined the herb. NSW sheet labelled *84/1825* he would have realised that the specimen mounted thereon was not *A. hamiltoniana*. It is clear from the specimens I have seen that Maiden included many species under his 1912 interpretation of *A. adunca*, namely:

(1) *A. adunca* A.Cunn. ex Don (*A. Cunningham 79/1827*).

(2) *A. betchei* Maiden & Blakely (Wallangarra, Dec 1891, *E. Betche*; Wallangarra, Nov 1904 and Jan 1906, *J.L. Boorman*; Torrington, *R.H. Cambage 1622*).

(3) *A. flocktoniae* Maiden (Byrne's Gap, Yerranderie, *R.H. Cambage*).

(4) *A. forsythii* Maiden & Blakely (Warrumbungle Ranges, Oct 1901, *W. Forsyth*).

(5) *A. linearifolia* Maiden & Blakely (Mt Dangar, Oct 1904 and Dec 1908, *J.L. Boorman*; Murrumbo, Sep 1895, *R.T. Baker* – type of *A. murrumboensis* Maiden & Blakely).

Likewise, Maiden's illustrations of '*A. adunca*' on plate 173 in this 1912 publication represented a number of different taxa, namely:

Figure A. This seems to be *A. hamiltoniana*. It is a tracing, done by M. Smith, of a herb. Kew specimen.

Figure B. This may be either *A. linearifolia* or *A. adunca* (see Maiden & Blakely 1927: 177 & 178).

Figures C, H and J represent *A. linearifolia* (taken from Boorman's Mt Dangar specimens).

Figures D–G, K–M represent *A. adunca* (taken from Boorman's Stanthorpe collection).

In 1927 Maiden & Blakely adopted Cunningham's manuscript name *A. linearifolia* for a taxon occurring in east-central New South Wales (including Mt Dangar). Cunningham had applied this manuscript name to his Blue Mountains collection *84/1825* (i.e. *A. hamiltoniana*) but, as already noted, at herb. NSW the Cunningham label of *84/1825* had became erroneously coupled with a specimen of *Cunningham 81/1827* (i.e. *A. linearifolia* from Mt Dangar). Even though Maiden & Blakely had misapplied Cunningham's name, their intention was clearly to distinguish the east-central New South Wales species from the more northerly *A. adunca*. Since they referred to Maiden's 1912: 116 description of what was then thought to be *A. adunca* and cited a number of specimens, their name *A. linearifolia* is considered to have been validly published, not a *nomen nudum* as Pedley (1980: 286) regarded it. As Maiden & Blakely (1927) cited a number of herb. NSW specimens under *A. linearifolia* (e.g. *Cunningham 81/1827* which was erroneously labelled *84/1825, J.L. Boorman* collections, and others) it is appropriate to select a lectotype from among these in order to unequivocally fix the name. Accordingly one of Boorman's Mt. Dangar specimens has been chosen (below). Because Maiden & Blakely (erroneously) believed this was the plant to which Cunningham applied the manuscript name *A. linearifolia* the author citation is here regarded as Maiden & Blakely, not A. Cunn. ex Maiden & Blakely.

Acacia murrumboensis Maiden & Blakely was described in the same publication as *A. linearifolia*. Having compared the types of these two names it is clear that they are synonymous.

Finally, the following point should be noted concerning Pedley's (1980) discussion of this very complex group. In 1906 Maiden described *A. lunata* var. *crassiuscula* based on a specimen he had received from herb. MEL, namely, Nepean River, *R. Brown*. Ten years later, Maiden (1916: 477) synonymised this name under *A. flocktoniae*. After examining specimens at herb. BM and K which were considered to be isotypes of *A. lunata* var. *crassiuscula*, Pedley (1980: 286) regarded this name as a synonym of *A. hamiltoniana*. I have not seen these specimens, but I have examined the holotype of *var. crassiuscula* at herb. NSW and it is *A. flocktoniae*, even though the phyllodes are the broadest I have seen for this species, i.e. 5 mm wide.

The above lengthy discussion is summarised in the following way.

Acacia adunca A.Cunn. ex Don, *Gen. Syst.* 2: 406 (1832)

A. crassiuscula var. *adunca* (A. Cunn. ex Don) Benth., London J. Bot. 1: 356 (1842).

Neotype (here selected): *A. Cunningham 79*, July 1827 (K, labelled Hunter River, New South Wales, but was probably collected from the Stanthorpe–Wallangarra area, Queensland, see discussion above; iso A, BM, K, NSW).

A. accola Maiden & Betche, *Proc. Linn. Soc. New South Wales* ser. 2, 3l: 734 (1907).

Lectotype (here selected): Jennings [now Wallangarra], Queensland, Dec 1903, *J.H. Maiden* and *J.L. Boorman s.n.* (NSW 178678; iso PERTH). **Paralectotypes** (vide Hansen & Seberg 1984 for definition of this term): (1) Wallangarra, Queensland, July 1904, *J.L. Boorman s.n.* (B, BRI, C, K, MEL, MO, NSW 178679, PERTH). (2) Stanthorpe, Queensland, Nov 1904, *J.L. Boorman s.n.* (NSW 178681 and 178682). (3) Mt Dangar, Gungal, New South Wales, Sep 1904, *J.L. Boorman s.n.* (NSW 168897: this specimen is *A. linearifolia*); **Possible paralectotypes:** (1) Stanthorpe, Queensland, July 1904, *J.L. Boorman s.n.* (NSW 178677: see Maiden & Blakely 1927: 178). (2). Wallangarra, Queensland, Nov 1904, *J.L. Boorman s.n.* (MEL, NSW 178680: see Maiden & Blakely, loc. cit.).

Acacia flocktoniae Maiden, *J. and Proc. Roy. Soc. New South Wales* 49: 476 (1916)

SYNTYPES: Byrne's Gap, Yerranderie, New South Wales, 7 June 1909, *R.H. Cambage* 2188 & 2189 (both NSW); Byrne's Gap, Yerranderie, New South Wales, 2 Dec 1911, *R.H. Cambage* 3126 (CANB, K, NSW); Yerranderie, New South Wales, 27 July 1915, *J.L. Boorman s.n.* (K, NSW 166407).

A. lunata var. *crassiuscula* Maiden & Betche ex Maiden, *Wattles and Wattle-barks*, edn 3: 60, 68, 82 (1906).

Holotype: banks of Nepean River, R. Brown (NSW 166373 and 167353; iso BM & K but n.v., see Pedley, Austrobaileya 1: 286, 1980).

[*A. adunca* auct. non A. Cunn. ex Don: J.H. Maiden, *The Forest Flora of New South Wales* 5(6): 116 (1912), as to Byrnes' Gap, Yerranderie, *R.H. Cambage*.]

Acacia hamiltoniana Maiden, *J. and Proc. Roy. Soc. New South Wales* 53: 199 (1920)

Syntypes: Leura, New South Wales, *A.A. Hamilton s.n.*, Dec 1907 (NSW 167286), Sep 1908 (NSW 167287; iso BM (n.v.) — see Pedley 1980: 286, PERTH) and Dec 1910 (NSW 2831 & 141320; iso AD, B, E, K, MEL, MO, NY, PERTH, TL, US, Z). **? Syntypes:** Leura, New South Wales, *A.A. Hamilton s.n.*, 2 Oct 1911 (NSW 167281, as 'J.G. Hamilton'; iso PERTH) and Sep 1912 (K & MEL, ? specimens seen by Maiden).

A. obtusata var. *hamiltonii* Maiden (as 'Hamiltoni'), *The Forest Flora of New South Wales* 5(8): 153, pl. 181 (1912).

Syntypes: Leura, New South Wales, *A.A. Hamilton s.n.*, Dec 1907 (NSW 167286) and Sep 1908 (NSW 167287; iso BM (n.v.) — see Pedley 1980: 286, PERTH) and Fl. Novae Holl. [New South Wales], *F. Sieber 464* (NSW; iso FI, G, G-DC, K, P).

[*A. sieberiana* Tausch, *Flora* 19: 420 (1836), non DC (1825) nec Scheele (1843), nom. nud. Tausch provided a new name for '*A. crassiuscula* Sieb.', represented by *Sieber 464*, but did not provide a description.]

[*A. linearifolia* A. Cunn., non Maiden & Blakely: in sched., as to Blue Mountains, Oct 1825, *A. Cunningham* 84 (BM & K but n.v., see Pedley 1980: 286].

[*A. crassiuscula* auct. non H.L. Wendl.: e.g. G. Bentham, *Fl. Austral.* 2: 372 (1864), pro parte, as to *F. Sieber 464*.]

Acacia linearifolia Maiden & Blakely, *J. and Proc. Roy. Soc. New South Wales* 60: 177 (1927)

Lectotype: Gungal, Mt Dangar, Dec 1908, *J.L. Boorman* s.n. (NSW 168896). **Paralectotypes:** Gungal, New South Wales, *J.L. Boorman*, Sep 1904 (NSW 168898–racemes unusually long), Dec 1908 (NSW 168901, PERTH), Nov 1914 (NSW 168899 and Dec 1914 (NSW 168893 & 168895); Mt Dangar, Gungal, New South Wales, Sep 1904, *J.L. Boorman s.n.* (NSW 168897– this specimen is also a paralectotype of *A. accola*); Mt Dangar, New South Wales, Aug. 1827, *A. Cunningham 81* (BM, K, NSW 166377–erroneously labelled as Blue Mts, *A. Cunningham 84/1825*); Mudgee-Cassilis Road, 35 mi out, 13 Mar 1922, *Sabina Helms s.n* (NSW 168894); The Rock, Corowa, New South Wales, Dec 1921, *G. Wiburd s.n.* (NSW 178676: phyllodes unusually narrow).

A. murrumboensis Maiden & Blakely, *J. and Proc. Roy. Soc. New South Wales* 60: 180 t.14, figs 6–13 (1927).

Holotype: Murrumbo, Goulburn River, New South Wales, Sep 1895, *R.T. Baker s.n.* (NSW 166401 and 166402).

[*A. adunca* auct. non A. Cunn. ex Don: e.g. J.H. Maiden, *The Forest Flora of New South Wales* 5(6): 116 (1912), as to Mount Dangar, *J.L. Boorman*, NSW 168897, paralectotype of *A. accola*.]

2. Acacia juncifolia subsp. **serpentinicola** Maslin, **subsp. nov.**

Frutex expansus 1–1.5 m altus; a subsp. juncifolia phyllodiis linearibus, versus basem angustatis, obtuso-mucronatis (mucro plus minusve pungente), 5–10 cm longis, 2–3 mm latis, planis, costa in sicco leviter impressa, capitulis atro-luteis, legumina marginibus rectis usque ad inter semina leviter constrictis, seminibus circa 3 mm longis differt.

Type: New South Wales: North Coast: 3 miles [4.8 km] north of Curricabark, c. 25 miles [40.2 km] northwest of Barrington, *E.L. Hyem s.n.*, 27 Sep 1946 (holo NSW 53318; iso K, PERTH).

[*A. juncifolia* var. *planifolia* auct. non Benth.: S.W.L. Jacobs & J. Pickard, *Plants of New South Wales* 149 (1981)]

Spreading shrub 1–1.5 m tall, differing from subsp. juncifolia in the following ways: Phyllodes linear, narrowed towards base, obtuse-mucronate, mucro ± pungent, 5–10 cm long, 2–3 mm wide, flat, midrib slightly impressed when dry. Heads deep yellow. Legumes straight-edged to slightly constricted between the seeds. Seeds c. 3 mm long.

Other specimens examined: New South Wales: Watchimbark Creek, 4 miles [6.4 km] NW of Myra homestead, 40 miles [64 km] by road NW of Gloucester, *D. Blaxell & R. Coveny 573* (K, NSW, also MEL, P, RSA, TNS, but n.v.); Curricabark Creek, 9 Oct 1945, *E.L. Hyem s.n.* (NSW 53321); Curricabark Creek, 15 Oct 1953, *L.A.S. Johnson s.n.* (NSW 53320, PERTH); Bralga Tops, Glenrock Station, Upper Barnard River, 4 Sep 1980, *J.C. Turner s.n.* (NSW 167264); Mt George, 13 Oct 1973, *A. Vinnicombe s.n.* (NSW 167262).

Distribution and habitat: Occurs in the North Coast and Northern Tablelands regions of New South Wales, inland from Taree. The new subspecies is restricted to serpentinite ridges in rugged country of the Great Dividing Range from Bralga Tops (31° 40′ S, 151° 28′ E) on the upper Barnard River to Mount George (31° 53′ S, 152° 11′ E), some 70 km to the southeast. A recently described species of *Eucalyptus*, *E. serpentinicola* L. Johnson & Blaxell (in Hill & Johnson 1991: 262), is also restricted to the serpentinite hills in this same area.

Flowering and fruiting period: Flowers in September and October. Legumes with mature seeds have been collected in March.

Discussion: This taxon is included in *A. juncifolia* primarily on account of its non-racemose inflorescences with the peduncles subtended by a single, persistent basal bract, free sepals, and exarillate, mottled seeds. The characters given in the above diagnosis and the following key serve to distinguish it from the typical subspecies.

1 Phyllodes all or most above 10 cm long (i.e. 7–20 cm long), c. 1 mm wide, terete to sub-quadrangular or flat, acute, not pungent, midrib slightly raised when dry; seeds 3.5–4.5 mm long ..... subsp. **juncifolia**

1* Phyllodes 5–10 cm long, 2–3 mm wide, flat, obtuse-mucronate, the mucro ± pungent, midrib slightly impressed when dry; seeds to 3 mm long ..... subsp. **serpentinicola**

Subspecies *juncifolia* is widespread in Queensland and New South Wales but is nowhere commmon. It ranges southwards from Port Clinton, Queensland, to the Glenbrook area, about 50 km west of Sydney, and extends inland for a maximum of 500 km. It grows on sand, usually derived from sandstone, and does not seem to occur in the same region as subsp. *serpentinicola.*

Specimens of this new subspecies had until now been called *A. juncifolia* var. *planifolia* Benth. However, this name is synonymous with *A. dietrichiana* F. Muell. (see Pedley 1980: 260), a central Queensland endemic species. *Acacia dietrichiana* is closely allied to *A. juncifolia* and, although it has flat phyllodes, they are much longer than those of subsp. *serpentinicola*, i.e. 13–23 cm.

From records available to me the new subspecies was first collected in 1945 by Mr E.L. Hyem. According to Johnson & Blaxell (in Hill & Johnson 1991) Hyem was a grazier from near Curricabark who took a particular interest in the 'serpentine country'. Hyem's note accompanying the type collection is very informative regarding the habit of this new taxon: 'Plentiful; in places [it] grows in dense thickets about 6 ft high. With plenty of room individual plants send out branches along ground and form shapely bushes broader than high. Colour of foliage varies considerably. In the thickets, which are usually on the poorer ridges, [the] foliage is a dull yellowish green or even brown. In the gullies or on heavy black soil [the] colour is bright yellowish green, sometimes dark green.'

Etymology: The epithet is from the Latin *serpentinus*, relating to a serpent, and the suffix *-cola*, -dweller, referring to the apparent restriction of the subspecies to soils derived from serpentinite rocks.

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