

Acacia lespedleyi P.I.Forst. (Mimosaceae), a new and geographically restricted species from south-east Queensland

Paul I. Forster

Summary

Forster, P.I. (2020). *Acacia lespedleyi* P.I.Forst. (Mimosaceae), a new and geographically restricted species from south-east Queensland. *Austrobaileya* 10(4): 558–563. The new species *Acacia lespedleyi*, with distinctive minni-ritchi bark, is described and illustrated. It is postulated to be allied to *Acacia curranii* Maiden and *A. rhodoxylon* Maiden. *Acacia lespedleyi* is known from two small subpopulations on an unusual substrate derived from duricrust and granite, west of Eidsvold in south-east Queensland and is considered to be Critically Endangered.

Key Words: Leguminosae; Mimosaceae; *Acacia*; *Acacia lespedleyi*; Australia flora; Queensland flora; taxonomy; new species; conservation status; critically endangered; duricrust

P.I. Forster, Queensland Herbarium, Department of Environment and Science, Brisbane Botanic Gardens, Mt Coot-tha Road, Toowong, Queensland 4066, Australia. Email: paul.forster@des.qld.gov.au

Introduction

The genus *Acacia* Mill. is the most speciose genus in the Queensland vascular flora with over 300 species known, another ten having been recently described (Pedley 2019). As alluded to in that paper much taxonomic work remains, this relates not only to species circumscriptions, but to the testing of species groupings and the elucidation of the component taxa within.

The new species of wattle described in this paper (Figs. 1–4) was first collected during a botanical assessment of the property ‘Telemark’ west of Eidsvold in south-east Queensland in 2006. Although Les Pedley recognised the material as representing an undescribed species, it did not result in formal publication, so this is undertaken here with the species named in honour of Les.

The close affinities of *Acacia lespedleyi* P.I.Forst. are obscure, although it is clearly part of *Acacia* section *Juliflorae* (Benth.) C.Moore & Betche as applied by Pedley (1978) due to the plurinerved phyllodes and

the flowers in spikes, and within the more broadly circumscribed *A.* section *Plurinerves* (Benth.) C.Moore & Betche (Pedley 1986). From a morphological perspective *A. lespedleyi* shows some similarities to particularly *A. curranii* Maiden and to a much lesser extent *A. rhodoxylon* Maiden, with all three species possessing ‘minni-ritchi’ bark to some degree (Fig. 3). This bark type (thin longitudinal pieces of bark that irregularly abscise from the stems and hang in untidy strips) is rarely encountered in wattle species outside of the arid zone in Queensland. In the *Flora of Australia* account *A. curranii* was included in Group 5, Subgroup 12 (Tindale & Kodala 2001) and *A. rhodoxylon* in Group 5, Subgroup 9 (Maslin 2001); although these groups have not been rigorously tested using molecular methods.

Materials and methods

The plant description in this paper is based on specimen collections at the Queensland Herbarium (BRI) and field observations by the author in 2006. Dimensions of measurements are inclusive, i.e. 1.0–1.7 is given as 1–1.7.

Taxonomy

Acacia lespedleyi P.I.Forst., **sp. nov.** Similar to *A. curranii* but differing in the flattened phyllodes (versus linear and subterete) that are glabrous (versus pubescent), the basal gland being poorly developed and just above the pulvinus (versus well developed and well above the pulvinus), the glabrous flowers and pods (versus pubescent). **Typus:** Queensland. BURNETT DISTRICT: Telemark, 38 km W of Eidsvold, 9 February 2006, *P.I. Forster PIF31234* (holo: BRI [2 sheets]; iso: MEL).

Shrubs to 3 m tall; bark minni-ritchi, in short irregularly abscising longitudinal strips, red-brown, aging grey. Branchlets weakly angular towards apices, red-tan, waxy; young shoots resinous, glabrous. Phyllodes erect, linear and somewhat inequilateral with the upper margin weakly convex, coriaceous, flattened, 32–138 mm long, 2.5–5 mm wide; longitudinally striate with 24–28 non-anastomising veins including a weakly prominent midrib and 2 other equidistant veins (one per side of midrib), grey-green, waxy, glabrous; gland single, rudimentary, immediately above pulvinus; tip shortly apiculate, base attenuate; pulvinus 2–3 mm long, somewhat twisted, red-tan. Inflorescence spike a single continuous raceme, 12–15 mm long, 3–4 mm diameter; peduncles 2–3 mm long, glabrous, waxy. Flowers 5-merous, golden yellow; calyx \pm continuous and truncate, slightly dissected for *c.* $\frac{1}{4}$ of length, papillose, glabrous; corolla 0.8–1 mm long, dissected for *c.* $\frac{1}{2}$ of length with the lobes lanceolate-acute, 0.5–0.7 mm long and *c.* 0.05 mm wide, glabrous, glandular papillose on the margins and particularly at the apex; filaments 1–1.2 mm long, anthers *c.* 0.1 mm long; ovary papillose, glabrous. Pods linear, coriaceous, 1–5-seeded, 12–42 mm long, 1–2 mm wide, curved and often irregularly twisted, \pm straight sided and slightly constricted between seeds, glabrous. Seeds not seen. **Figs. 1–3.**

Additional specimens examined: Queensland. BURNETT DISTRICT: Telemark, 34 km W of Eidsvold, Mar 2006, *Forster PIF31360* (BRI); Telemark, 37 km W of Eidsvold, Mar 2006, *Forster PIF31353* (BRI); *ibid.*, Mar 2006, *Forster PIF31357* (BRI); *ibid.*, Sep 2006,

Rogers s.n. (BRI [AQ814938]); 40 km W of Eidsvold, Telemark, Apr 2006, *Ritchie & Houschildt s.n.* (BRI [AQ614778]).

Distribution and habitat: *Acacia lespedleyi* is known from a single location comprising two subpopulations about 2 km apart on the pastoral property ‘Telemark’, west of Eidsvold in the north Burnett district of south-east Queensland. The habitat is an open low forest (**Fig. 4**) dominated variously by *Allocasuarina inophloia* (F.Muell. & F.M.Bailey) L.A.S.Johnson, *Corymbia citriodora* (Hook.) K.D.Hill & L.A.S.Johnson, *C. trachyphloia* (F.Muell.) K.D.Hill & L.A.S.Johnson, *Eucalyptus cloeziana* F.Muell., *E. crebra* F.Muell., *E. exserta* F.Muell., *E. fibrosa* F.Muell. subsp. *fibrosa* and *Lysicarpus angustifolius* (Hook.) Druce on the unusual substrate of gravelly soil derived from a mixture of decomposing duricrust (Woolnough 1927, 1930; Dixon & McLaren 2009) and granite. These woodlands have a very sparse midstorey and understorey, mainly of perennial woody legumes and grasses.

Phenology: *Acacia lespedleyi* has been collected in flower in September with old pods persisting at least until March. The pods collected to date all showed evidence of vertebrate predation, probably by parrots that are known to eat wattle seeds (Cameron 2007).

Affinities: *Acacia lespedleyi* is postulated to be most closely allied to *A. curranii* with the nearest recorded populations for that species in shrubland on red sand, a good 160 km to the southwest. *Acacia curranii* is immediately distinct from *A. lespedleyi* by its strongly resinous and generally pubescent foliage, the linear, subterete (rarely flattened) phyllodes, the basal gland being well above the pulvinus and the heavily pubescent, \pm straight pods. *Acacia lespedleyi* is not noticeably resinous (or only weakly so on the young shoots) nor with pubescent foliage and flowers, the phyllodes are flattened and the pods are curved and glabrous.

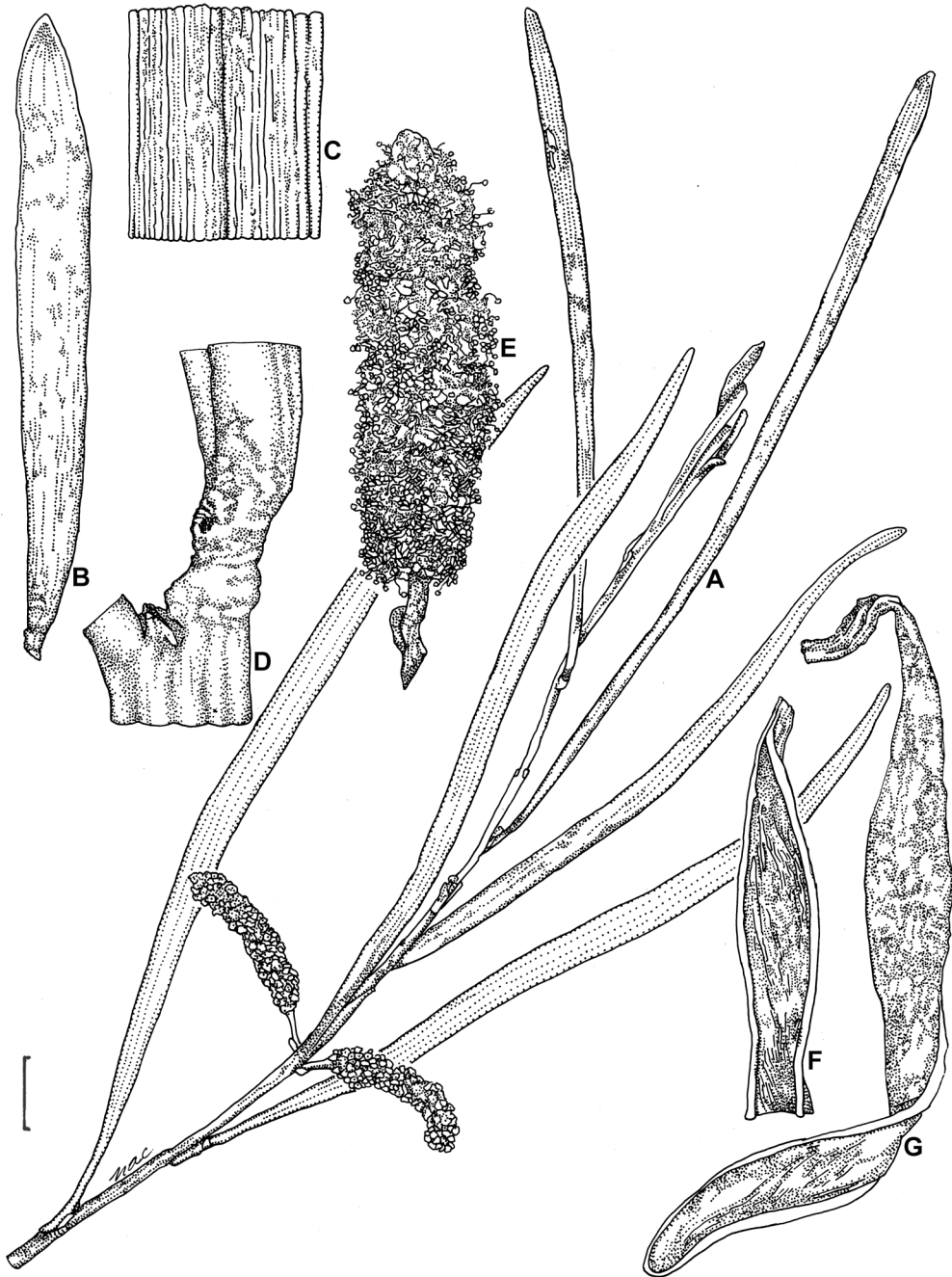


Fig. 1. *Acacia lespedeyi*. A. habit of flowering branchlet $\times 2$. B. single phyllode showing most obvious venation $\times 5$. C. detail of phyllode venation $\times 10$. D. base of phyllode at attachment to stem showing reduced pulvinus and poorly developed gland $\times 15$. E. inflorescence $\times 5$. F & G. views of dehiscent pod $\times 5$. A & E from Rogers s.n. (BRI [AQ814938]); B–D, F & G from Forster PIF31353 (BRI). Scale bar = 10 mm at $\times 1$ magnification. Del. N. Crosswell.



Fig. 2. Foliage of *Acacia lespedleyi* (Forster PIF31234, BRI). Photo: P.I. Forster.



Fig. 3. Bark of *Acacia lespedleyi* (Forster PIF31234, BRI). Photo: P.I. Forster.



Fig. 4. Habitat of *Acacia lespedleyi* (locality of Forster PIF31234, BRI). Photo: P.I. Forster.

Les Pedley suggested this species was also possibly allied to *Acacia rhodoxylon*; however, that species is very noticeably distinct in the elliptic to oblanceolate phyllodes and the narrowly oblong pods.

A further comparison can be made to *Acacia shirleyi* Maiden that is often found in similar environments further to the north and west; however, that species doesn't have minni-ritchi bark (being more stringy), has dissimilar phyllode venation (with only a primary midrib and no other prominent parallel side nerves), the inflorescence spikes are interrupted and much longer (15–60 mm long), and the calyx and ovary are noticeably pubescent.

Notes: The occurrence of duricrust (a precipitated surface crust) is sporadic throughout the north Burnett and is sometimes associated with local speciation, examples being *Acacia forsteri* Pedley, *Boronia grimshawii* Duretto and *Zieria inexpectata* Duretto & P.I.Forst. Those three species are also known from single or few populations.

Conservation status: Using the IUCN (2012) categories of conservation status, *Acacia lespedleyi* can be listed as **Critically Endangered** under the criteria **B1, B2 a, biii**. The species is known from one location with two subpopulations about 2 km apart that occupy less than 2 km² and was estimated to number less than 500 mature individuals

in 2006. The number of individuals varies depending on fire history in the habitat, although it is not known whether the species is able to withstand low intensity burns. While parts of the property ‘Telemark’ have been placed in a Nature Refuge, this does not include the two subpopulations of this *Acacia* with the habitat being managed for cattle production.

Etymology: *Acacia lespedleyi* is named for Les Pedley (1930–2018), wattle specialist for many years at the Queensland Herbarium.

Acknowledgements

Thanks to Trevor Ritchie for facilitating visits to the localities, the late Les Pedley for discussion of this plant and to Nicole Crosswell for the illustrations.

References

- CAMERON, M. (2007). *Cockatoos*. CSIRO Publishing: Collingwood.
- DIXON, J.C. & McLAREN, S.J. (2009). Duricrusts. In A.D. Abrahams & A.J. Parsons (eds.), *Geomorphology of Desert Environments*, pp. 123–151. Springer: Dordrecht.
- IUCN (2012). International Union for the Conservation of Nature. *IUCN Red List Categories and Criteria, version 3.1*, 2nd ed. <https://portals.iucn.org/library/efiles/documents/RL-2001-001-2nd.pdf>, accessed 20 February 2018.
- MASLIN, B.R. (2001). *Acacia rhodoxylon*. In A.E. Orchard & A.J.G. Wilson (eds.), *Flora of Australia* 11B Mimosaceae *Acacia* Part 2: 268. ABR/CSIRO Publishing: Melbourne.
- PEDLEY, L. (1978). A revision of *Acacia* Mill. In Queensland (part 1). *Austrobaileya* 1: 75–235.
- (1986). Derivation and dispersal of *Acacia* (Leguminosae), with particular reference to Australia, and the recognition of *Senegalia* and *Racosperma*. *Botanical Journal of the Linnean Society* 92: 219–254.
- (2019). Notes on *Acacia* Mill. (Leguminosae: *Mimosoideae*), chiefly from Queensland, 6. *Austrobaileya* 10: 297–320.
- TINDALE, M.D. & KODELA, P.G. (2001). *Acacia curranii*. In A.E. Orchard & A.J.G. Wilson (eds.), *Flora of Australia* 11B Mimosaceae *Acacia* Part 2: 287. ABR/CSIRO Publishing: Melbourne.
- WOOLNOUGH, W.G. (1927). The duricrust of Australia. *Journal and Proceedings of the Royal Society of New South Wales* 61: 24–53.
- (1930). Influence of climate and topography in the formation and distribution of products of weathering. *Geological Magazine* 67: 123–132.