



Two new species of Styphelieae (Ericaceae) from southern Queensland and northern New South Wales

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Abstract

Two new species of Ericaceae tribe Styphelieae are described; *Leucopogon excelsus* A.R.Bean and *Styphelia oxyphylla* A.R.Bean. Both species are confined to far south-eastern Queensland and far north-eastern New South Wales. They are illustrated and mapped and compared with related species.

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Introduction

The McPherson Range forms part of the border between Queensland and New South Wales. It runs west to east from Wilsons Peak almost to the Pacific Ocean and includes the Lamington National Park and township of Springbrook. The whole of this mountain range is a biodiversity hotspot and numerous endemic or geographically restricted species have been discovered from the area. *Leucopogon excelsus* sp. nov., named herein, is another example.

As a result of the taxonomic realignment of the Tribe Styphelieae of Ericaceae (Puente-Lelièvre et al. 2015; Crayn et al. 2020), many species formerly included in *Leucopogon* R.Br. were transferred to *Styphelia* Sm. The species remaining in *Leucopogon* are characterised by the pale, entire, sterile anther tips, the included style, the terminal and upper-axillary inflorescences and the sepals at least as long as the corolla tube (Hislop & Chapman 2007). *L. excelsus* displays all of these features.

An uncommon species from the coastal hills and ranges in far north-eastern New South Wales, first collected in

1973, is described here as *Styphelia oxyphylla*. Its anthers lack a sterile tip, it has an exerted style, and the inflorescences occur in many leaf axils, hence it conforms to the new circumscription of *Styphelia*. It is morphologically similar to *S. setigera* (R.Br.) Spreng. and *S. sparsa* (A.Cunn. ex DC.) A.R.Bean (formerly known as *S. biflora*, see Bean (2024b)).

Methods

This paper is based on a study of herbarium specimens at BRI, and images of specimens held at NSW, and supplemented by field observations. Measurements given herein are taken from dried material, except for those of the flower parts, which are based on material preserved in spirit or reconstituted with boiling water. In the 'Specimens examined', National Park is abbreviated as N.P.

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Taxonomy

Leucopogon excelsus A.R.Bean sp. nov.

Type: Queensland. Moreton district: Lyrebird Lookout, Lamington National Park, S of Canungra, 4 September 2024, A.R. Bean 35520 (holo: BRI; iso: A, BR, CANB, K, MEL, NSW, NY, P, PRE).

Leucopogon sp. (Lamington G.Leiper AQ633386) in Bean (2024a).

Fig. 1, Fig. 2E–H, Fig. 3.

Shrub or small tree 2–7 m high. Branchlets white, grey or brown, glabrous. New leaves borne on cylindrical, long-lasting spear-like shoots 5–11 cm long, protected

by scale leaves; scale leaves 20–40 per shoot, broadly obovate to orbicular when flattened out, ranging from 1.5 × 1.5 mm (proximally) to 30 × 6 mm (distally), glabrous except for ciliate margins, apex obtuse, all deciduous. Mature leaves on fertile plants spirally arranged, antrorse, narrowly elliptic, 42–82 × 5.5–12 mm, 6.6–9.5 times longer than wide, flat, green, discoloured, glabrous, margins entire, apex acute (without a prickly acumen), base truncate; petiole absent. Leaves on juvenile plants of similar shape but larger, up to 110 mm long. Upper surface with 7–9 longitudinal veins, lower surface with 12–17 longitudinal veins, midrib not differentiated. Inflorescences spicate, 12–37-flowered, terminal or upper-axillary; rachis 17–48 mm long, glabrous. Flowers +/- evenly spaced, sessile, average spacing between flowers 1.3–1.5 mm. Outer bract per-

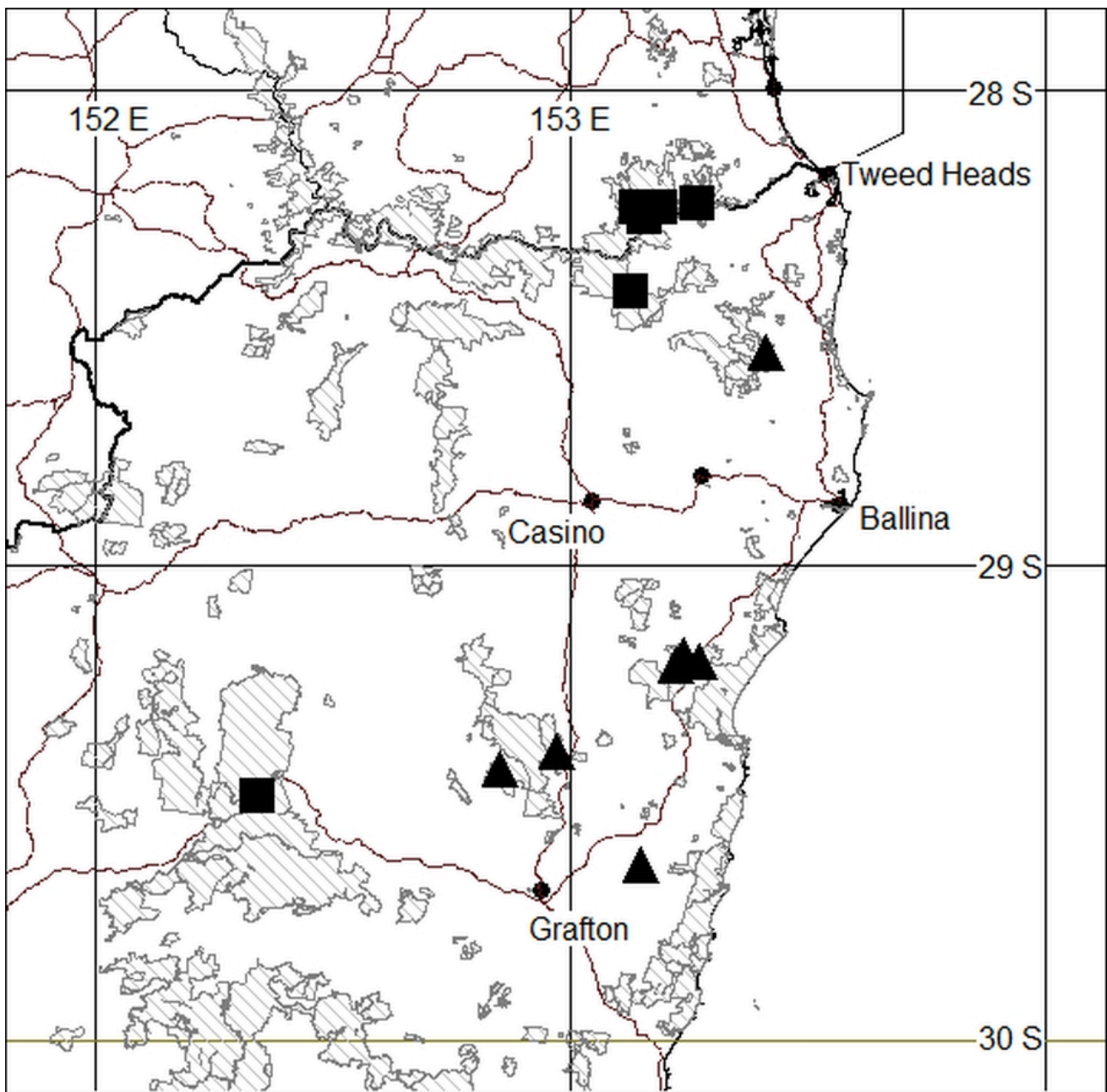


Figure 1. Distribution map for *Leucopogon excelsus* (squares) and *Styphelia oxyphylla* (triangles).

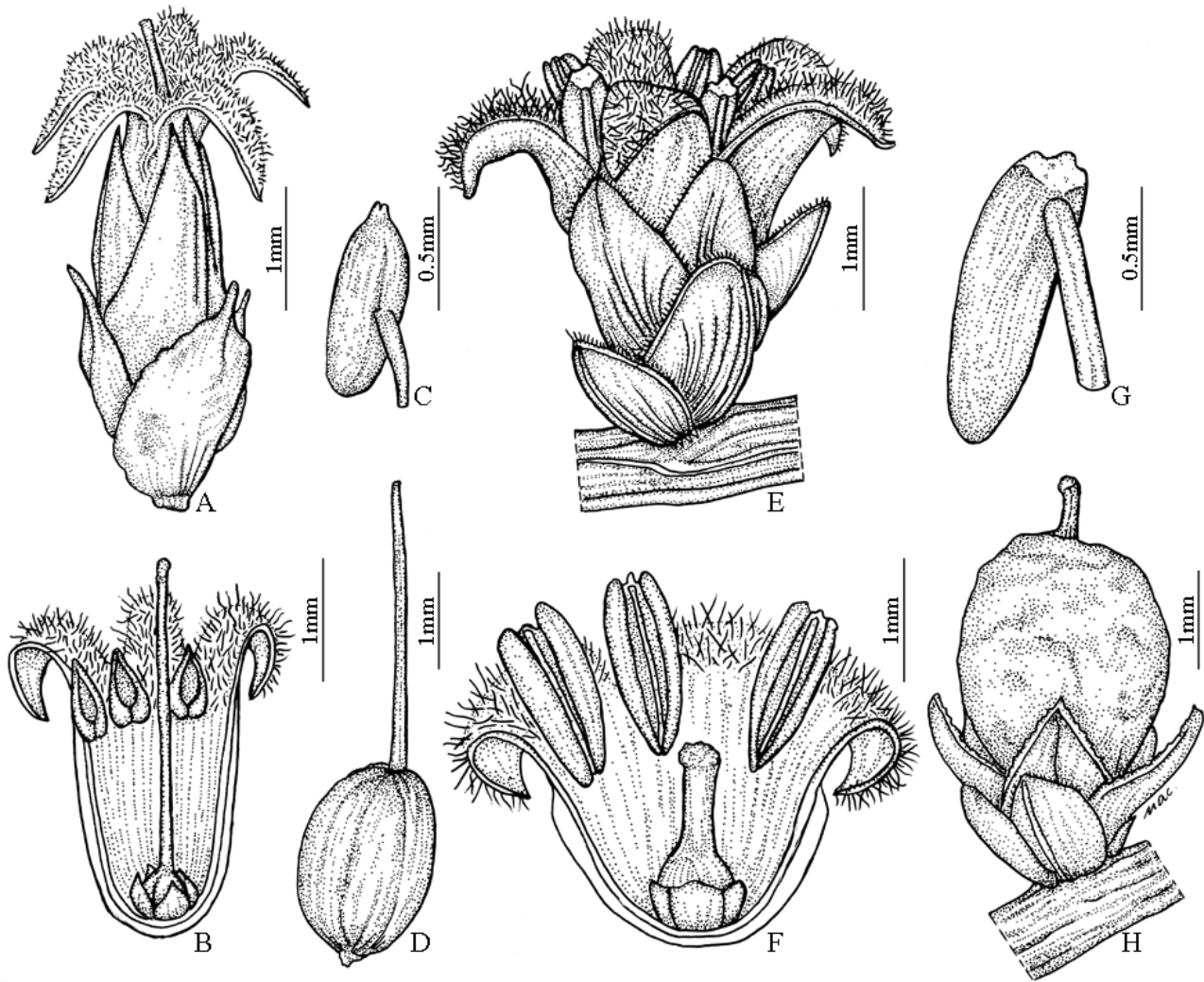


Figure 2. A–D *Styphelia oxyphylla*. A. lateral view of flower, B. longitudinal section of flower, C. anther and filament attachment, D. fruit and style. E–H *Leucopogon excelsus*. E. lateral view of flower, F. longitudinal section of flower, G. anther and filament attachment, H. fruit and style. A–C from Bean 6202, D from Bean 7973, E–G from Leiper 9a, H from Forster 18326 et al. (all BRI).

sistent, broadly ovate to ovate, cymbiform, with several longitudinal veins, 0.9–2.4 mm long, the largest ones at the base of the spike, reducing in size distally; apex obtuse, both surfaces glabrous, margin ciliolate. Bracteoles 2, broadly ovate, cymbiform, 0.8–1.1 mm long, surfaces glabrous, margin ciliolate, venation longitudinal, apex obtuse. Sepals 5, imbricate, ovate, 1.3–1.6 mm long, 0.7–0.9 mm wide, about same length as corolla tube, pale brown, apex obtuse, glabrous except for ciliolate margin. Corolla tube cylindrical, 1.3–1.5 mm long, 1.0–1.4 mm diameter, white, outer surface glabrous, inner surface glabrous. Corolla lobes 5, deltate, recurved at anthesis, 1.3–1.5 mm long, outer surface glabrous, inner surface with moderately dense hairs 0.25–0.4 mm long. Stamens 5; anthers pale brown, glabrous, 1.3–1.5 mm long, partially exerted from corolla tube, sterile tips present, white, c. 0.1 mm long; filaments straight, attached to upper half of anther, inserted near top of corolla tube. Nectary annular, lobed, 0.3–0.4 mm high, glabrous. Ovary glabrous, c. 0.7 mm long, 2-locular, with one ovule per loculus. Style

straight, glabrous, 0.5–0.7 mm long, enclosed within corolla, stigma not expanded. Fruits fleshy, indehiscent, c. 3.0 × 2.5 mm when fresh, glabrous, red at maturity; endocarp ellipsoidal, 2.4–2.8 mm long, 1.6–1.8 mm diameter, 2-locular.

Queensland. National Park, Macpherson Range, Jan 1919, *C.T. White s.n.* (BRI); Lyrebird Lookout, Green Mountains, Lamington N.P., 9 Nov 1994, *W.J. McDonald 6166* (BRI, NSW); Top of Lightning Falls, Lamington N.P., 18 Jun 1977, *A.G. Floyd 450* (BRI, NSW); Best of all lookout, Qld/NSW border, near Springbrook, 11 Oct 1997, *A.R. Bean 12503* (BRI); Lyrebird Lookout, O'Reillys, S of Canungra, 9 Jul 1994, *A.R. Bean 7729* (BRI); Lyrebird Lookout, 2 km west of O'Reillys, Lamington N.P., 26 Sep 1994, *G. Leiper s.n.* (BRI, AQ633386; NSW); Lamington N.P., Mt Merino summit area, 9 Oct 2013, *P.I. Forster & G. Leiper PIF40535* (BRI, US); Mt Hobwee, Lamington N.P., 18 Apr 1994, *P.I. Forster & G. Leiper PIF15131* (BRI, NSW); Mt Merino, Lamington N.P., 23 Jan 1996, *P.I. Forster PIF18330 et al.* (BRI, CNS, NSW); Wanungara lookout, Border track, Lamington N.P., 23 Jan 1996, *P.I. Forster*



Figure 3. *Leucopogon excelsus* a, b, flowering branches; c, inflorescence; d, spear-like vegetative shoots.

PIF18326 et al. (BRI, MEL, NSW); Springbrook, Best of All lookout, 8 Sep 2011, G. Leiper 9a (BRI, NSW); Springbrook N.P., Best of All Lookout, 29 Apr 2021, J.J. Halford JJH1031 (BRI); Springbrook, Mt Thillinman-Bilborough Lookout area, 18 Jun 2021, J.J. Halford & M.J. Woodhouse JJH1110 (BRI); Mount Merino, 10 Sep 2005, G. Leiper 6 (BRI); Valley of Echoes, Lamington, 1 Nov 1999, G. Leiper s.n.(BRI, AQ668179); Lamington Plateau, track from 'Moonlight Crag', near Lyrebird Lookout, 1 May 1994, G. Leiper s.n.(BRI, AQ627908). **New South Wales.** Durigan Lookout, Limpinwood Nature Reserve, 28° 18'S 153°11'E, 22 Jun 1977, A.G. Floyd 468 (NSW); Summit Mtn, Gibraltar Range N.P., E of Glen Innes, 8 Sep 2000, A.R. Bean 16845 (BRI); Gibraltar Range N.P., on summit of peak above tick gate, 12 Sep 1970, C. Bell 63 (BRI); 4.5 km N of Blackbutts Lookout in Border Ranges National Forest, undated, A. May s.n. (BRI); 2.6 km S of The Pinnacle carpark in Border Ranges N.P., along Tweed Range Scenic Drive on eastern side of road, undated, A. May s.n. (BRI); Tweed Range scenic drive, head of Warrazambil Creek, up on escarpment edge, 28°25' 28"S 153° 07' 34'E, 5 Sep 2002, D.M. Crayn 439 et al. (BRI, NSW).

Diagnostic features. *Leucopogon excelsus* is similar to *L. affinis* R.Br., but differs by its larger (2–7 m) stature (1–2.5 m for *L. affinis*), the long-lasting spear-like vegetative shoots 5–11 cm long (shoots 2.5–3.5 cm long, ephemeral in *L. affinis*), the glabrous inflorescence rachis (rachis with sparse to dense patent hairs 0.03–0.1 mm long for *L. affinis*), leaves 7–9-veined on upper surface (3–5(–7)-veined for *L. affinis*), inflorescences 12–37-flowered (9–17-flowered for *L. affinis*); and the style only 0.5–0.7 mm long (0.9–1.5 mm long for *L. affinis*).

Phenology. Flowers are recorded from September to November; fruits from November to January.

Distribution & habitat. *Leucopogon excelsus* is known from the MacPherson Range (along the Queensland–New South Wales border), the adjoining Tweed Range and on the highest parts of the Gibraltar Range east of Glen Innes (Fig. 1). It inhabits temperate rainforest on shallow soils in very rocky locations (often cliff-edges), at altitudes above about 1000 metres. Associated species include *Nothofagus moorei*, *Tasmannia insipida*, *Tristan-*

iopsis collina, *Trochocarpa laurina*, *Quintinia sieberi* and *Cuttsia viburnea*.

Etymology. The epithet is from the Latin *excelsus*, meaning 'high, lofty'. This species is perhaps the tallest in the genus.

Notes. *Leucopogon excelsus* and *L. affinis* both occur in the Lamington National Park and the Springbrook area. But the two species are geographically and ecologically separated; *L. excelsus* grows at high altitudes in temperate rainforest (e.g. at Mount Merino, Mount Hobwee, Best of All Lookout), while *L. affinis* grows at lower altitudes in eucalypt open forest or woodland (e.g. on Shipstern track, Daves Creek track).

***Styphelia oxyphylla* A.R.Bean sp. nov.**

Type: New South Wales. North Coast. Morgans Camp trail, Fortis Creek National Park, NNW of Grafton, 21 August 2024, A.R. Bean 35508 (holo: BRI; iso: BM, CANB, MEL, NSW).

Fig. 1, Fig. 2A–D, Fig. 4.

Shrub 0.4–0.8 m high. Young branchlets brown, with dense hispidulous patent hairs 0.2–0.3 mm long. Leaves

spirally arranged, divaricate, narrowly lanceolate, the larger ones 5.5–7.5 × 0.7–1.1 mm, apex acuminate (acumen pungent, 0.5–0.7 mm long), base truncate; petiole absent. Lamina convex above, glabrous, margins entire or denticulate, recurved; upper surface dark green, shiny, venation scarcely evident; lower surface pale green, somewhat shiny, with 5–7 slightly raised parallel veins, midrib not differentiated. Inflorescence comprising 1(2) flowers borne in upper and lower leaf axils of branchlet. Peduncle 0.9–1.6 mm long, flowers pendulous. Bracts 2 at base of peduncle, sometimes 1 midway along, 2 at distal end of peduncle, lanceolate to ovate, 0.6–1.1 × 0.2–0.6 mm, brown, apex acute, both surfaces glabrous, venation obscure, margins ciliolate. Bracteoles broadly elliptical, cymbiform, 1.5–1.7 × 0.9–1.0 mm, brown, surfaces glabrous, margin glabrous, venation obscure, apex apiculate. Sepals lanceolate, 3.0–3.4 mm long, 0.8–0.9 mm wide, longer than corolla tube, white or pale brown, apex acute to acuminate, glabrous, margins entire, venation obscure. Corolla tube cylindrical, 1.7–2.0 mm long, 0.9–1.0 mm diameter, white, outer surface glabrous, inner surface glabrous on proximal half, sparsely hairy on distal half with hairs to 0.6 mm



Figure 4. *Styphelia oxyphylla* a, habit; b-d, flowering branches.

long. Corolla lobes narrowly deltate, recurved at anthesis, 1.8–2.0 mm long, outer surface glabrous, inner surface hairy except on apical 0.2–0.3 mm, hairs 0.2–0.4 mm long, rather sparse and mainly along lateral margins. Stamens 5; anthers brown, glabrous, 0.5–0.8 mm long, partially exerted from corolla, sterile tips absent, filament dorsally attached halfway along anther; filaments straight, inserted near top of corolla tube. Nectary of 5 separate scales, c. 0.4 mm long, glabrous. Ovary glabrous, 0.6–0.7 mm long and c. 0.4 mm diameter, 5-locular. Style straight, glabrous throughout, 2.8–3.2 mm long, slightly exerted from corolla, stigma unexpanded. Fruits ellipsoidal, 2.0–2.3 mm long, 1.4–1.5 mm diameter, 5-locular, but often only 1 or 2 seeds developing; surface faintly longitudinally striate, glabrous, green at maturity, fleshy exocarp very thin.

New South Wales. North Coast. Koonyum Range, c. 4 miles [6.4 km] W of Mullumbimby, 25 Aug 1973, R.G. Coveny 5006 (BRI, K, NSW, PERTH); Rocky Creek, c. 3.2 km N of Coaldale-Grafton road, 30.6 km NNW of Grafton, 23 Aug 1973, R. Coveny 4970 (BRI, CANB, K, NSW); Koonyum Range, west of Mullumbimby, 16 Oct 1994, A.R. Bean 7973 (BRI); Koonyum Range, west of Mullumbimby, 17 Jul 1993, A.R. Bean 6202 (BRI, K, MEL, NSW); Koonyum Range, near Mullumbimby, Sep 1995, A. Benwell s.n. (NSW395190); Banyabba State Forest, S of Casino, 4 Sep 1997, A. Benwell s.n. (NSW428580); About 1 km NW of McCraes Knob (Portion 183), E of Grafton, 5 Sep 1997, P. Gilmour 7784a (NSW); Range Road, Tabbimoble S.F., N of Grafton, 15 Sep 2001, A.R. Bean 17938 (BRI, NSW); Mt Jerusalem N.P., off Koonyum Range road, 4 Sep 2002, D.M. Crayn 427 et al. (NSW); Koonyum Range Road, c. 4 km from junction with Wilsons Creek Road (W of Mullumbimby), 26 Feb 2004, D.M. Crayn 781 et al. (NSW); Koonyum Range Road, c. 4 km from junction with Wilsons Creek Road (W of Mullumbimby), 26 Feb 2004, D.M. Crayn 783 et al. (NSW); Tabbimoble, in road reserve beside Pacific Highway, 20 Feb 2006, A. Benwell s.n. (NSW738517); Devils Pulpit State Forest, 100m E of Pacific Highway, 2 km S of Tabbimoble overflow No. 2, Nov 2009, A. Benwell 159 (NSW).

Diagnostic features. *Styphelia oxyphylla* resembles both *S. setigera* and *S. sparsa*, as all three species have divaricate leaves with a pungent acumen, pendulous flowers scattered along the branchlets, and non-succulent ellipsoidal fruits.

S. oxyphylla differs from *S. setigera* by the predominantly 1-flowered inflorescences (mostly 2-flowered for *S. setigera*); the branchlet hairs 0.2–0.3 mm long (c. 0.05 mm long for *S. setigera*); the leaves 5.5–7.5 mm long (9–16 mm long for *S. setigera*), the peduncles 0.9–1.6 mm long (3.5–6.5 mm long for *S. setigera*); and the fruits 2.0–2.3 mm long (3.8–4.2 mm long for *S. setigera*).

S. oxyphylla differs from *S. sparsa* by the predominantly 1-flowered inflorescences (1- and 2-flowered for *S.*

sparsa); the branchlet hairs 0.2–0.3 mm long (c. 0.05 mm long for *S. sparsa*); the leaves 5.5–7.5 mm long (10–18 mm long for *S. sparsa*); the fruits 2.0–2.3 mm long (3.5–4.7 mm long for *S. sparsa*); and the style 2.8–3.2 mm long (4.5–5.7 mm long for *S. sparsa*).

Phenology. Flowers have been collected in July, August and September; fruits in October and November.

Distribution & habitat. *Styphelia oxyphylla* is endemic to New South Wales, and extends from the Koonyum Range west of Mullumbimby to McCraes Knob east of Grafton, a distance of about 120 kilometres (Fig. 1). It grows on coastal hills and ranges in eucalypt woodland with heathy understorey on sandy soils derived from sandstone or rhyolite, often in areas receiving water run-off from rocky outcrops. Associated species include *Eucalyptus racemosa*, *E. baileyana*, *Banksia oblongifolia*, *Casuarina littoralis*, *Corymbia gummifera*, and *Gaudium trinervium*.

Etymology. From the Greek *oxys-* meaning 'sharp' and *-phyllus* meaning 'leaf'. The leaves of this species possess a very pungent acumen.

Notes. Some specimens of this species at NSW were separated as a potentially new species by the late Dr Elizabeth Brown.

Disclosures

No conflict of interest

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