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A revision of *Lasiopetalum* (Malvaceae: Byttnerioideae) from the northern sandplains of Western Australia, including two new species

Kelly A. Shepherd[1] and Carolyn F. Wilkins

Western Australian Herbarium, Biodiversity and Conservation Science,
Department of Biodiversity, Conservation and Attractions,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
School of Biological Sciences, Faculty of Science, The University of Western Australia,
35 Stirling Highway, Crawley, Western Australia 6009
[1]Corresponding author, email: Kelly.Shepherd@dbca.wa.gov.au

Abstract

Shepherd, K.A. & Wilkins, C.F. A revision of *Lasiopetalum* (Malvaceae: Byttnerioideae) from the northern sandplains of Western Australia, including two new species. *Nuytsia* 32: 121–149 (2021). Taxonomic descriptions are provided for eight species of *Lasiopetalum* Sm. with a centre of diversity in the Geraldton Sandplains bioregion. Circumscriptions are updated for six species, namely *L. angustifolium* W.Fitzg., *L. drummondii* Benth., *L. lineare* Paust, *L. ogilvieanum* F.Muell., *L. oldfieldii* F.Muell., and *L. oppositifolium* F.Muell. Lectotypes are designated for *L. angustifolium*, *L. ogilvieanum*, *L. oldfieldii*, and *L. oppositifolium*, while the holotype for *L. drummondii* is clarified. In addition, two new species from the region are recognised and named here as *L. biloculatum* K.A.Sheph. & C.F.Wilkins and *L. erectifolium* K.A.Sheph. & C.F.Wilkins. Images and distribution maps are provided for all species.

Introduction

In Western Australia the genus *Lasiopetalum* Sm. (Malvaceae Juss.) is largely confined to the South-West Botanical Province with the distribution of the northern-most species *L. angustifolium* extending to Shark Bay in the Geraldton Sandplains bioregion (Department of the Environment 2013). The Geraldton Sandplains are notable for high levels of vascular plant endemism, particularly within the 'Lesueur' and 'Nanda' districts as recognised by Gioa and Hopper (2017). This paper revises a small group of *Lasiopetalum* centred around this region, which have not already been treated in our ongoing revision of this genus. These species have non-petaloid epicalyx bracts (e.g. Figure 1C), scale-like petals (e.g. Figure 1E), and non-rostrate anthers. Other species that may occur in the Geraldton Sandplains, or near the Swan Coastal Plain bioregion to the south or the Avon Wheatbelt and Yalgoo boundaries to the east, have been included with allied species in previous treatments along that focused on shared morphology, such as the presence of rostrate anthers (e.g. *L. glutinosum* subsp. *latifolium* (Benth.) K.A.Sheph. & C.F.Wilkins in Shepherd & Wilkins 2015), petaloid epicalyx bracts (e.g. *L. decoratum* K.A.Sheph. & C.F.Wilkins and *L. rupicola* K.A.Sheph. & C.F.Wilkins in Shepherd & Wilkins 2018) or an absence of scale-like petals (e.g. *L. rutilans* K.A.Sheph. & C.F.Wilkins in Shepherd & Wilkins 2017).

Updated descriptions are provided for *Lasiopetalum angustifolium* W.Fitzg., *L. drummondii* Benth., *L. lineare* Paust, *L. ogilvieanum* F.Muell., *L. oldfieldii* F.Muell., and *L. oppositifolium* F.Muell., the latter three being currently recognised as species of conservation concern (Smith & Jones 2018). All

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but *L. lineare* and *L. drummondii* are also lectotypified. The phrase-named taxon *Lasiopetalum* sp. Coorow (E. Ried 101) is supported as distinct and recognised here as *L. biloculatum* K.A.Sheph. & C.F.Wilkins *sp. nov.*, while *L.* sp. Watheroo (K. Shepherd & C. Wilkins KS 220) is similarly recognised and named as *L. erectifolium* K.A.Sheph. & C.F.Wilkins *sp. nov.*

Methods

This study was based on the examination of field collections and herbarium specimens held at AD, BM, CANB, CGE, K, LD, MEL, NSW, PERTH, P and W (viewed on loan or while visiting institutions). Supplementary material including types were also viewed via JSTOR *Global Plants* (https:// plants.jstor.org/) or the Museum National d'Histoire Naturelle (P) online database (https://science.mnhn.fr/institution/mnhn/search).

The description of the indumentum and density of hairs follows Shepherd and Wilkins (2017). Leaf descriptions and measurements are based on mature leaves unless otherwise stated. Flower measurements were drawn from spirit material or from specimen fragments rehydrated in hot water and detergent.

Maps for species that are not currently conservation listed were created using QGIS version 2.18.16 based on all specimens lodged at PERTH and include Interim Biogeographic Regionalisation for Australia (IBRA) version 7 bioregions (Department of the Environment 2013).

Taxonomy

Key to northern sandplains species of *Lasiopetalum* with non-petaloid epicalyx bracts, scale-like petals, and non-rostrate anthers

*occurs more than once in the key

1. Style with stalked reflexed fan-like hairs scattered in the upper half or forming a dense cone along most of the length

2. Leaves appearing opposite near the first four nodes from the apex, then alternate; style < 3 mm long and consistently *c*. 0.15 mm wide.

3. Calyx lobes narrow (< 2 mm wide); flowers 2.3–3.5 mm long; ovary with antrorse fan-shaped silky hairs to 1.1 mm long; epicalyx bracts narrowly ovate ..... **L. oppositifolium***

3: Calyx lobes broad (> 3 mm wide); flowers (4–)5.4–6 mm long; ovary with multi-angulate stellate hairs 0.3–0.6 mm long; epicalyx bracts narrowly obovate ..... **L. angustifolium**

2: Leaves alternate throughout; style > 3 mm long and thickening to *c*. 0.5 mm wide at the middle of its length.

4. Mature leaves linear, 1.3–2 (–3) mm wide, with revolute to strongly recurved margins; peduncles *c.* 0.5 mm wide at base ..... **L. lineare**

4: Mature leaves narrowly elliptic, narrowly ovate to ovate or oblong, (2–)3–18 mm wide, with scarcely to strongly recurved margins; peduncles *c.* 1 mm wide at base

5. Mature apical leaves spreading and usually ovate to narrowly ovate or oblong; adaxial surface with stellate hairs with *c*. 6 arms, each to 0.15 mm long, early glabrescent; outer calyx lobes with an indumentum of short-stalked (to 0.3 mm long) stellate hairs with arms to 0.2 mm long..... **L. drummondii**

5: Mature apical leaves erect and usually narrowly ovate to narrowly elliptic; adaxial surface with stellate hairs with 12–16 arms, each to 0.3 mm long, late glabrescent; outer calyx lobes with a woolly indumentum of long-stalked (to 1 mm long) stellate hairs with arms to 0.8 mm long ..... **L. erectifolium**

1: Style glabrous or with sessile stellate hairs at the base only

6. Apical leaves appearing opposite near the first four nodes from the apex then alternate; flowers with narrow calyx lobes (0.7–1.3 mm wide); inflorescence a compact, capitulum-like dichasium ..... **L. oppositifolium***

6: Apical leaves alternate throughout; flowers with broad calyx lobes (2.3–4.3 mm wide); inflorescence a loosely-branched dichasium

7. Reduced petals glabrous or with occasional stellate hairs; leaves narrowly elliptic or narrowly ovate; calyx 7–8.1 mm long ..... **L. ogilvieanum**

7: Reduced petals densely hairy; leaves usually ovate or narrowly ovate; calyx 4.5–6 mm long

8. Ovary with 3 locules; inflorescence 21–53 mm long with 6–18 flowers; epicalyx bracts 3.1–6.6 mm long; outer calyx stellate hairs with stalks up to 0.3 mm long, and usually with 9–12 arms, each 0.5–0.8 mm long..... **L. oldfieldii**

8: Ovary with 2 locules; inflorescence 43–71 mm long with 9–29(–34) flowers; epicalyx bracts (3)4–9 mm long; outer calyx stellate hairs with stalks up to 0.8 mm long, and usually with 12–20 arms, each up to 1.3 mm long ..... **L. biloculatum**

Lasiopetalum angustifolium W.Fitzg., *W. Austral. Naturalist* 2(1): 3–4 (1904). *Type citation*: 'Geraldton, Sept. 1903. – W.V.F.' *Type specimen*: Geraldton, [Western Australia], September 1903, *W.V. Fitzgerald s.n.* (*lecto*, here designated: PERTH 01625497!; *isolecto*: NSW 366860!, NSW 366864!).

Dense, spreading *shrub* 0.15–1.5 m high, 0.4–1.5 m wide. *Young stems* with a close tomentum of ferruginous-centred white, sessile or stalked (to 0.15 mm long), appressed-stellate hairs with *c*. 12 arms, each to 0.2 mm long, over dense, smaller, white stellate hairs, glandular hairs absent; glabrescent. *Petioles* 2–8 mm long. *Leaves* with apical nodes opposite then shortly alternate, spreading, narrowly ovate, narrowly elliptic to linear (if revolute), 22–100 mm long, 2–10 mm wide, base scarcely cordate, apex obtuse or sub-acute; margins entire, flat, strongly recurved or revolute; abaxial surface with a close tomentum of ferruginous-centred white or white and occasionally ferruginous, sessile or stalked (to 0.2 mm long), multi-angulate and appressed-stellate hairs, with 12–18 arms, each to 0.25 mm long, over dense, smaller, white stellate hairs; adaxial surface dull, not mucilaginous, with dense, ferruginous-centred white, sessile, appressed-stellate hairs with *c.* 12 arms, each to 0.25 mm long; early glabrescent. *Inflorescence* a compact, simple or compound dichasium, 22–37 mm long, with 5–18 flowers. *Peduncles* 11–28 mm long with a tomentose indumentum of scattered, ferruginous or ferruginous-centred white, sessile or stalked (to 0.15 mm long), multi-angulate or appressed-stellate hairs with 12–14 arms, each to 0.2 mm long, over dense smaller, white, stellate hairs. *Pedicels* 1.8–3.2 mm long, indumentum as for peduncles but with fewer ferruginous stellate hairs. *Bract* narrowly ovate, 0.9–2.5 mm long, 0.3–0.5 mm wide. *Epicalyx bracts* 3, directly below the calyx, narrowly obovate, 4.7–9.8 mm long, 0.8–1.5 mm wide. *Calyx* outer surface pale brown, internally pink with a green base, (*c.* 4–)5.4–6 mm long, with a tube 0.7–1.2 mm long; lobes ovate, 4.4–5.3 mm long, 3.4–3.5 mm wide; outer surface of multi-layered hairs, with a moderately dense to dense indumentum of ferruginous-centred white, sessile or stalked (to 0.2 mm long), multi-angulate, stellate hairs with *c*. 12 arms, each to 0.4 mm long (longest at base and ferruginous at apex), over smaller white stellate

hairs, glandular hairs absent; inner surface base glabrous, remainder with scattered, white, mostly simple hairs to 0.15 mm long. *Petals* dark red, obovate, flat, 1.2–1.9 mm long, 1.2–1.5 mm wide, glabrous or outer surface with occasional to moderately dense stellate hairs. *Staminal filaments* 1.1–1.7 mm long, 0.1–0.3 mm wide. *Anthers* dark red, ovate, 1.8–2.5 mm long, 0.7–1.1 mm wide, glabrous. *Ovary* 3- or 4-locular (with 2 ovules per locule), 1.2–1.5 mm long, 1.4–1.5 mm wide; outer surface with a tomentum of white, multi-angulate stellate hairs, each arm to 0.3–0.6 mm long. *Style* 1.5–2.7 mm long, consistently *c*. 0.15 mm wide, basal third with sessile, appressed-stellate hairs, apical 2/3 with dense, white, stalked, reflexed fan-like stellate hairs. *Fruit* ovoid, 2.5–3 mm long, 3–3.3 mm wide, outer surface with scattered, white, multi-angulate stellate hairs. *Seed* ellipsoid, dark brown, *c.* 2 mm long, 1.4 mm wide, glabrous or with scattered stellate hairs; aril a cap with 3 long and 2 short lobes, *c*. 0.7 mm long, *c*. 0.7 mm wide. (Figure 1)

Diagnostic features. *Lasiopetalum angustifolium* can be distinguished from other members of the genus by the combination of narrowly ovate to linear leaves 2–10 mm wide, which appear opposite rather than alternate at the apical nodes, and flowers (4–)5.4–6 mm long, subtended by three narrowly obovate epicalyx bracts 4.7–9.8 mm long, a style with reflexed, fan-like hairs in the upper two thirds and dense stellate hairs at the base, and multi-angulate stellate hairs covering the ovary.

Selected specimens. WESTERN AUSTRALIA: Goat Gulch, Kalbarri coastal gorges, 26 Aug. 1995, *D. & B. Bellairs* 2067 (PERTH); E of Grey Rd, SW of Ajana Rd on southern boundary of Kalbarri NP, 23 Oct. 2004, *G. Cassis, M. Wall, C. Symonds & C. Weirauch* 5-47 (PERTH); Quoin Bluff, Dorre Is, Shark Bay, 30 Aug. 1998, *S.J. Claymore & A.S. Weston* 262 (PERTH); S along Management Access track to Eagle Rock, Kalbarri, 29 Aug. 2001, *R. Davis* 9978 (PERTH); Yerina Springs NR, 3 Nov. 2005, *A. Franks, S. Branigan & B. Smith* BS 134 (PERTH); S of Bottom Ten Mile Well, Dirk Hartog Is, 3 Sep. 1972, *A.S. George* 114546 (CANB, K, MEL, PERTH); W end of State Barrier fence near Zuytdorp Cliffs, 30 July 1996, *G.J. Keighery & N. Gibson* 2039 (BRI, PERTH); Mt Fairfax, Moresby Range, 25 Aug. 1983, *C.M. Lynch* 124 (PERTH); northern end of Mt Tarcoola plateau, Geraldton, 17 Oct. 1997, *M.H. O'Connor* MOC 0068 (PERTH); T junction 0.3 km along Cliff Head Rd from Indian Ocean Drive, S of Dongara, 18 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS 1718 (PERTH); East Walabi [Wallabi] Island, 8 Sep. 1959, *G.M. Storr s.n.* (PERTH 02759381); N of Ranger Cottage, Garden Island, 12 Aug. 1994, *C. Wilkins, K. Shepherd & W. MacArthur* CW 684 (CANB, MEL, NSW, PERTH); SE of Tamala Homestead, Shark Bay, 29 Sep. 1989, *M.E. Trudgen* 7289 (PERTH); N of Knobby Head North, 1 Aug. 2003, *C.F. Wilkins, M. Trudgen, & B. Moyle* CW 1693 (PERTH).

Phenology. Recorded as flowering from July to October and fruiting from October.

Distribution and habitat. *Lasiopetalum angustifolium* is generally found near the Western Australian coast, extending from Shark Bay to south of Perth, with some populations occurring near Eneabba in the Geraldton Sandplains and Yalgoo bioregions. It is also found on several offshore islands such as Dorre, Dirk Hartog, and East Wallabi of the Abrolhos (Figure 2). One population has also been recorded from the Swan Coastal Plain on Garden Island. This species can be found in yellow-grey, grey-brown or brown (rarely black) sand over limestone or sandstone, in tall open shrubland, scrub or coastal heath with *Acacia rostellifera* and *Melaleuca cardiophylla*.

Conservation status. This species is not considered to be under conservation threat as it has a relatively widespread distribution.

Figure 1. *Lasiopetalum angustifolium*. A – coastal habitat showing large greyish green shrubs of this species in the foreground; B – flowering branchlet with narrow leaves that become dark green and glabrescent with age; C – compact dichasial inflorescence showing three greyish, narrow epicalyx bracts subtending each flower; D – leaves opposite at the apical node; E – pink flowers with a green base and small, deep burgundy, glabrous petals (yellow arrow) below each anther. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1718. Images: K.A. Shepherd.

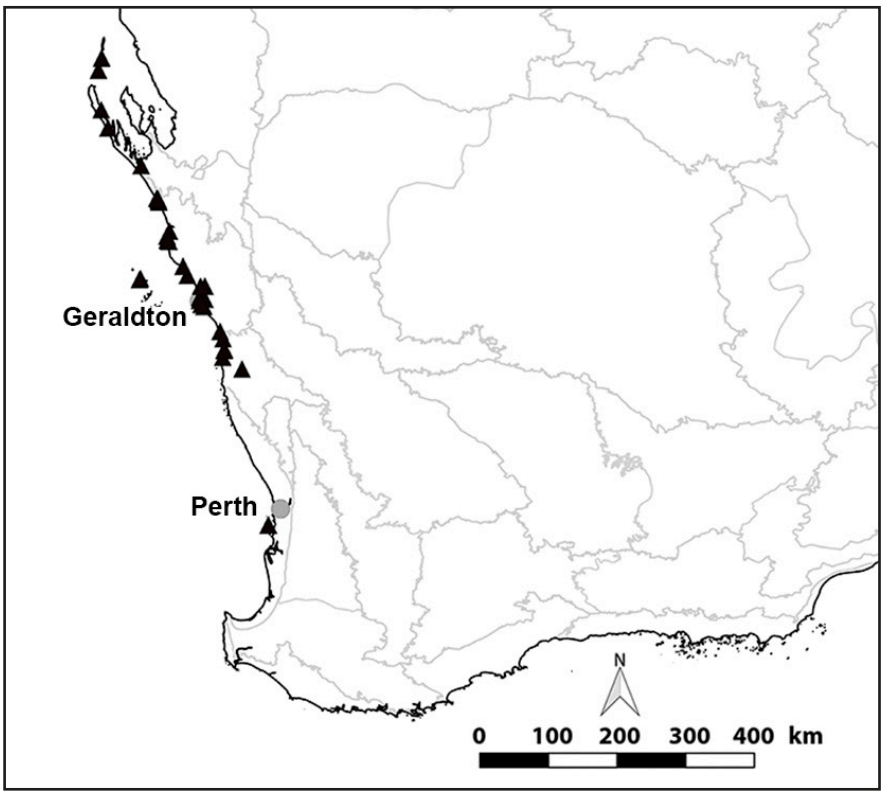

Figure 2. Distribution of *Lasiopetalum angustifolium* with IBRA subregions (Department of the Environment 2013) in pale grey.

Affinities. *Lasiopetalum angustifolium* is morphologically most similar to *L. oppositifolium* in having narrow to linear leaves (appearing opposite at apical nodes) only 2–10 mm wide, and appressed, disc-like stellate hairs on stems. However, it differs from *L. oppositifolium* in having larger flowers with a calyx (4–)5.4–6 mm long (vs 2.3–3.5 mm long) and *c*. 3.5 mm wide (vs 0.7–1.3 mm wide) with narrowly obovate epicalyx bracts (vs narrowly ovate epicalyx bracts), cream-coloured multi-angulate stellate hairs with arms 0.3–0.6 mm long covering the ovary (vs white, silky upwardly appressed fan hairs to 1.1 mm long), and the style with dense, white, stalked and reflexed hairs for apical 2/3 and sessile, appressed-stellate hairs in the basal third (vs the style being glabrous or with occasional to dense, reflexed, fan-like hairs in the apical 2/3 and glabrous at the base). Finally, the epicalyx bracts and pedicels in *L. oppositifolium* mainly have conspicuous long red clavate glandular hairs (intermixed with the stellate hairs) that are absent in *L. angustifolium*.

Typification. The PERTH 01625497 sheet is a match for Fitzgerald's (1904) description of this Western Australian species and so is designated as the lectotype, and the two sheets at the National Herbarium of New South Wales (NSW 366860, NSW 366864) are recognised as isolectotypes. The flowers on material housed at PERTH and elsewhere, are slightly larger than that observed on the type, being 5.4–6 mm long rather than *c.* 4 mm long; however, in all other respects specimens are consistent with the type.

Lasiopetalum biloculatum K.A.Sheph. & C.F.Wilkins, *sp. nov.*

Type: 4.1 km E of Coalara Road on Watheroo Road, NW of Moora, Western Australia, 22 August 2016, *K.A. Shepherd & C.F. Wilkins* KS 1599 (*holo*: PERTH 09101802; *iso*: AD, BRI, CANB, K, MEL, NSW).

Lasiopetalum sp. Coorow (E. Ried 101), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 3 June 2021].

Lasiopetalum oldfieldii subsp. *biloculatum* E.M.Benn. & K.Shepherd ms, in Paczk. & A.R.Chapm., *West. Austral. Fl.: Descr. Cat.* p. 544 (2000), *nom. inval.*

Low spreading *shrub* 0.2–1.5 m high, 0.5–1.5(–3) m wide. *Young stems* with a ferruginous, tomentose indumentum of ferruginous or ferruginous-centred white, sessile or stalked (to 0.5 mm long), multi-angulate stellate hairs with 10–16 arms, each to 0.7 mm long, over smaller, white stellate hairs, glandular hairs absent; glabrescent. *Petioles* 6–24 mm long. *Leaves* alternate, apical leaves spreading, ovate, 11–52 mm long, 6–33 mm wide, base cordate, apex obtuse or sub-acute; margins entire, moderately recurved; abaxial surface with dense ferruginous stellate hairs on the midrib, becoming scattered on blade, these sessile or shortly stalked (to 0.6 mm long), with 6–16 arms, each to 0.4 mm long, over moderately dense, smaller, white stellate hairs; adaxial surface glossy, mucilaginous, with scattered sessile or shortly stalked (to 0.2 mm long), stellate hairs with *c*. 6 arms, each to 0.5 mm long, with or without scattered glandular hairs to 0.1 mm long; early glabrescent. *Inflorescence* a loose, simple or compound dichasium, 43–71 mm long, with 9–29(–34) flowers. *Peduncles* 11–44 mm long with dense, ferruginous, sessile and stalked (to 0.3 mm long), multi-angulate stellate hairs with *c*. 16 arms, each to 0.9 mm long, over dense smaller, white, stellate hairs. *Pedicels* 1.7–3.8 mm long, indumentum as for peduncles. *Bract* narrowly ovate to filiform, 2.1–4 mm long, 0.15–0.7 mm wide. *Epicalyx bracts* 3, attached directly below the calyx, narrowly ovate to filiform, (3–)4.5–9 mm long, 0.15–0.4 mm wide. *Calyx* white externally sometimes with brown tips in bud, internally bright pink, pale pink or white with a green or darker pink base, 4.8–6 mm long, with a tube 0.8–1 mm long; lobes ovate, 4.3–5 mm long, 2.3–2.6 mm wide; outer surface with a multi-layered woolly indumentum of white, stalked (to 0.8 mm long), multi-angulate, stellate hairs with 12–20 arms, each to 1.3 mm long, over smaller, white stellate hairs, glandular hairs absent; inner surface base glabrous, remainder with dense to moderately dense, white, stellate hairs with 1–6 arms, each to 0.15 mm long, mainly towards the apex and margins, sometimes with scattered larger hairs centrally. *Petals* dark red, obovate, cupped, 0.5–1.3 mm long, 0.4–1.5 mm wide, outer surface densely stellate hairy. *Staminal filaments* 0.8–1.6 mm long, 0.2–0.5 mm wide. *Anthers* dark red, ovate, 1.5–2.5 mm long, 0.7–1 mm wide, glabrous. *Ovary* 2-locular (with 2 ovules per locule), 0.8–1.2 mm long, 0.8–1 mm wide; outer surface with a tomentum of white, multi-angulate, stellate hairs, each arm 0.6–1 mm long. *Style* 1.5–2.4 mm long, consistently *c*. 0.15 mm wide, glabrous. *Fruit* ellipsoid, 3.5–4.5 mm long, 3–4.5 mm wide, outer surface with moderately dense stellate hairs. *Seed* ellipsoid, brown, 2.5–3.3 mm long, 1–1.4 mm wide, stellate hairy; aril a cream cap with two long lobes, 2–2.7 mm long, 1–1.3 mm wide. (Figure 3)

Diagnostic features. *Lasiopetalum biloculatum* can be distinguished from all other members of the genus by its two-locular ovary in combination with its densely hairy petals, a glabrous style, three narrowly ovate to filiform epicalyx bracts, ovate leaves with new growth having a glossy and mucilaginous upper surface, and a loose, dichasial inflorescence with 9–29(–34) flowers.

Selected specimens. WESTERN AUSTRALIA: N of Eneabba, 17 Oct. 2000, *J.A. Cochrane* JAC 3705 (PERTH); N along Brand Mudge Rd (39) from the intersection of Carnamah–Eneabba Rd, SW of Carnamah, 4 Oct. 1990, *R.J. Cranfield & P.J. Spencer* 7964 (CANB, PERTH); Crown Land S of

Figure 3. *Lasiopetalum biloculatum*. A – habit; B – shrub with ovate and dark green glossy leaves (on the adaxial surface) with white, woolly inflorescences; C – flowering branchlet showing the tomentose indumentum of mainly white stellate hairs on the abaxial surface of the leaf; D – a loosely-branched, compound dichasial inflorescence showing linear epicalyx bracts exceeding the length of each flower (yellow arrow); E – inflorescence highlighting the contrast in flower colour showing a deep pink flower form; F – variant with pale pink flowers with a green base and small, hairy, petals (yellow arrow) at the base of each anther and a glabrous style. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1599 (A, B, D, F) and *C. Wilkins & J.A. Wege* CW 2374 (C, E). Images: K.A. Shepherd (A, B, D, F) and J.A. Wege (C, E).

Arrowsmith River on Brand Hwy, 11 Oct. 1989, *E.A. Griffin* 5543 (PERTH); Quadrat WMA53, Watheroo NP, A 24491, Shire of Dandaragan, 24 Sep. 1999, *M.A. Langley & P.M. Smith* MAL 2114 (PERTH); N of Eneabba–Carnamah Rd on Brand Mudge Rd, WSW of Winchester, 22 Oct. 2000, *B.J. Lepschi, L.A. Craven & A. Tinker* 4317 (CANB, PERTH); S of Winchester West Rd on the Carnamah–Eneabba

Rd, 18 Aug. 1995, *K. Shepherd, C. Wilkins & E. Bennett* KS 194 (PERTH); E of Coalara Rd on Watheroo West Rd, 11 Oct. 1998, *C.F. Wilkins, J. Chappill & R. Butcher* CW 1417 (PERTH); N of Coalara Rd on Watheroo Rd, 23 Sep. 2002, *C.F. Wilkins & J.A. Wege* CW 1573 (PERTH); on Station Valentine Rd, NE of Durawah, 31 July 2003, *C. Wilkins, M. Trudgen & B. Moyle* CW 1678 (PERTH); N of Eneabba–Carnamah Rd on Lucas Rd, 17 Sep. 2003, *C. Wilkins & J. Wege* CW 1762 (PERTH).

Phenology. Recorded as flowering from mid-winter in July through to late spring in November. Fruits observed on specimens collected in October.

Distribution and habitat. *Lasiopetalum biloculatum* is largely confined to the Geraldton Sandplains bioregion from north-east of Eneabba to the Watheroo National Park near Badgingarra; however, there is a single November 1985 collection from '[b]etween Wickepin and Jitarning' (*D.B. Foreman* 1106) that is also a match for this species (Figure 4). There have been no other collections of *L. biloculatum* from this area, so it is uncertain if the given locality is a label error, specimen mix up, or there is a disjunct population to the south, which seems unlikely given no further collections have been made of this distinct species in this vicinity. It should be noted that the next six herbarium specimens by the same collector (*D.B. Foreman* 1107–1112) give the same locality statement, while the preceding collection is from the same region near the Dryandra State Forest (*D.B. Foreman* 1105). In the Geraldton Sandplains, *L. biloculatum* is generally found in low open mallee, wandoo or *Banksia* woodland or in scrub over heath with *Allocasuarina*, *Acacia*, *Xylomelum* or *Hakea* in white, grey, yellow or orange-brown sand or sandy clay, with or without lateritic gravel.

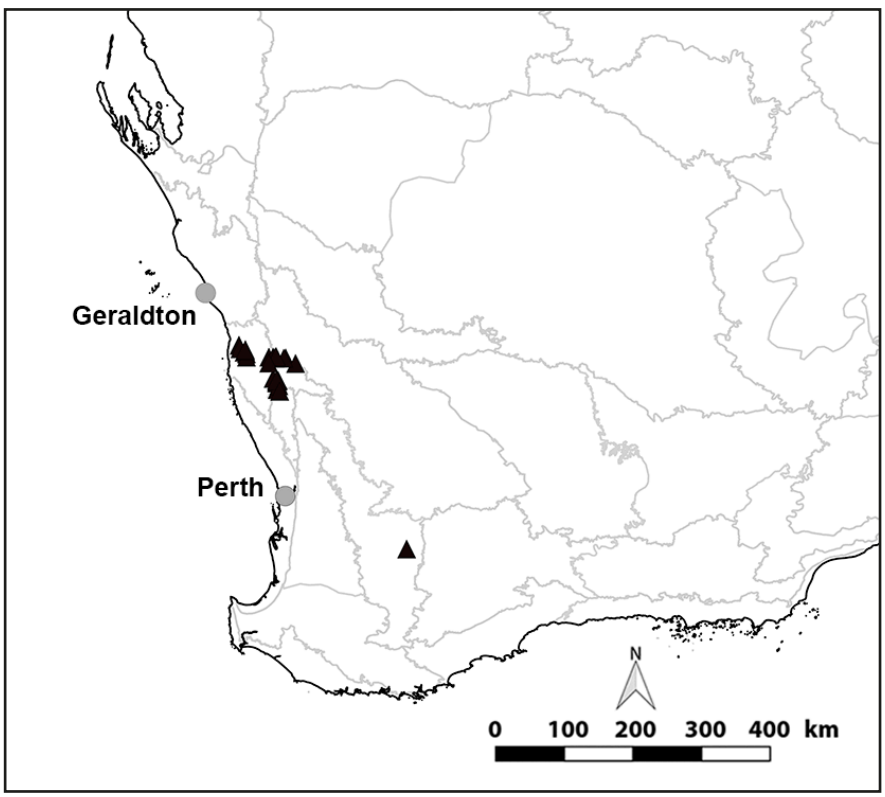

Figure 4. Distribution of *Lasiopetalum biloculatum* with IBRA subregions (Department of the Environment 2013) in pale grey.

Conservation status. This species is relatively widespread and not currently considered to be under any conservation threat.

Etymology. From the Latin *bi* (two) -*loculatus* (having locules), in reference to the ovary which is unique in the genus for having two rather than the more typical three locules.

Affinities. *Lasiopetalum biloculatum* is morphologically most similar to *L. oldfieldii*, which also has ovate leaves (where the new growth appears glossy and mucilaginous on the adaxial surface), a glabrous style, and densely hairy petals. It is distinguished from that species by its 2- rather than 3-locular ovary and having generally longer inflorescences (43–71 mm vs 21–53 mm long) with longer peduncles (11–44 mm vs 13–26(–38) mm) and usually more flowers (9–29(–34) vs 6–18), with longer stalked stellate hairs on the outer calyx (1.3 mm long vs 0.5–0.8 mm long).

Lasiopetalum biloculatum also somewhat resembles *L. ogilvieanum* in having a glabrous style, three linear epicalyx bracts, and a loose inflorescence with pink flowers but differs in having densely hairy rather than glabrous petals (rarely with a few stellate hairs), smaller flowers 4.8–6 mm long (vs > 7–8.1 mm long), and ovate rather than narrowly ovate or narrowly elliptic leaves.

Lasiopetalum drummondii Benth., *Fl. Austral.* 1: 264 (1863). *Type citation*: 'W. Australia, *Drummond*, a single specimen.' *Type specimen*: Swan River, [Western Australia], 1851, *J. Drummond s.n.* (*holo*: K 000686572!).

Erect multi-stemmed or slender *shrub* 0.1–1 m high, 0.1–1 m wide. *Young stems* with a close tomentum of ferruginous or ferruginous-centred beige, sessile or stalked (to 0.3 mm long), multi-angulate, stellate hairs with *c*. 12 arms, each to 0.3 mm long, over smaller, dense tan stellate hairs, sometimes also with moderately dense golden, clavate glandular hairs to 0.2 mm long, glabrescent. *Petioles* 4–21 mm long. *Leaves* alternate, apical leaves spreading, narrowly ovate to ovate, or oblong, 15–37 mm long, 6–18 mm wide, base slightly to strongly cordate, apex obtuse to sub-acute; margins entire, moderately to strongly recurved; abaxial surface with a close tomentum of dense ferruginous hairs on midrib scattered on blade, with dense ferruginous-centred white, sessile or shortly stalked (to 0.2 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 0.2 mm long, over dense, smaller, white stellate hairs; adaxial surface dull, not mucilaginous, with moderately dense, brown-centred white, stellate hairs with *c*. 6 arms, each to 0.15 mm long, early glabrescent. *Inflorescence* a compact, simple or compound dichasium, 19–47 mm long with 13–31 flowers. *Peduncles* 9–21 mm long with tomentose indumentum of white or ferruginous, sessile and stalked (to 0.3 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 0.3 mm long, over dense, smaller, white stellate hairs. *Pedicels* 0.7–2.5 mm long, indumentum as for peduncles. *Bract* narrowly ovate, 2.5–6.5 mm long, 0.3–1 mm wide. *Epicalyx bracts* 1–3, attached directly below the calyx, narrowly ovate to filiform, (3–)5–8.5 mm long, 0.3–0.7 mm wide. *Calyx* outer surface white, inner surface pink with a green base 6.6–10.4 mm long, with a tube 0.3–1 mm long; lobes narrowly ovate, 6.3–10.3 mm long, 1–2 mm wide; outer surface with a multi-layered woolly indumentum of white, stalked (to 0.3 mm long), multi-angulate, stellate hairs with 10–24 arms, each to 0.2 mm long, over dense smaller, white stellate hairs, glandular hairs absent; inner surface base glabrous, remainder with scattered to moderately dense white stellate hairs with 1–6 arms, each to 0.2 mm long. *Petals* red, obovate, flat, 0.7–1.7 mm long, 0.4–1.3 mm wide, glabrous. *Staminal filaments* 0.5–1.5 mm long, 0.15–0.3 mm wide. *Anthers* dark red throughout or apex white, oblong, 1.8–2.7 mm long, 0.6–1 mm wide, glabrous. *Ovary* 3-locular (with 2 ovules per locule), 0.7–1.4 mm long, 0.7–1.4 mm wide; outer surface with a tomentum of white, multi-angulate, stellate hairs, with each arm to 0.4 mm long. *Style* 3.6–4.5 mm long, centrally thickened to 0.5 mm wide, with dense reflexed, stalked fan-like hairs along most of length. *Fruit* ellipsoid, 3.7–4.3 mm

long, 3–3.8 mm wide, outer surface with dense, white, stellate hairs. *Seed* ellipsoid, brown, *c*. 3.3 mm long *c*. 1.4 mm wide, densely stellate hairy; aril a cream cap with two long lobes *c*. 2.7 mm long, *c*. 1 mm wide. (Figure 5)

Diagnostic features. *Lasiopetalum drummondii* can be distinguished from all other members of the genus that have 1–3 very narrow to filiform epicalyx bracts and stalked reflexed fan-like hairs along the style by the following combination of characters: leaves mainly ovate or narrowly ovate; inflorescence a compact head; flowers with narrow calyx lobes < 2 mm wide; petals glabrous and ovary with three locules.

Selected specimens. WESTERN AUSTRALIA: ENE of Jurien, along Jurien Rd from Brand Hwy, 8 Sep. 2004, *R.K. Brummitt, A.S. George & E.G.H. Oliver* 21175 (PERTH); near Arrowsmith River towards Three Springs on Dongara–Three Springs Rd, 22 Sep. 1968, *E.M. Canning* 037283 (CANB, PERTH); near Diamond of the Desert Spring, 16 Oct. 1946, *C.A. Gardner* 8472 (CANB, PERTH); N of Lake Indoon, W of Eneabba, 26 Feb. 1981, *E.A. Griffin & M.I. Blackwell* EAG 2983 (CANB, PERTH); Hi Vallee property (D. & J. Williams) Warradarge, W slopes towards southern end of main valley, 15 Sep. 1999, *M. Hislop* 1576 (PERTH); S side of Jurien Rd East, W of junction with Brand Hwy, 9 Sep. 1999, *J.W. Horn* 2324 (DUKE, P, PERTH); S of Cataby on W side of the road opposite a

Figure 5. *Lasiopetalum drummondii*. A – habit; B – ovate to narrowly ovate, spreading leaves that are early glabrescent; C – compact dichasial inflorescence with narrowly ovate to filiform epicalyx bracts subtending each flower; D – pale pink flowers with a greenish pink base and dark red, glabrous, scale-like petals (yellow arrow) and a cone of white, reflexed, fan-like stellate hairs on the style. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1605. Images: K.A. Shepherd.

gravel track, 16 Aug. 1995, *K. Shepherd, C. Wilkins & E. Bennett* KS 157 (MEL, PERTH); Mt Lesueur NP, along Blackbutt buffer road from the Coorow–Green Head Rd, 23 Aug. 2016, *K.A. Shepherd & C.F. Wilkins* KS 1605 (PERTH); Three Springs Rd, NE of Cockleshell Gully Farm turnoff, NNE of Jurien Bay, 1 Sep.1966, *R.V. Smith* 66/194 (AD, CANB, HO, MEL, PERTH); Mt Lesueur NP, 14 Sep. 2011, *K.R. Thiele* 4247 (PERTH); S of Allanooka Springs Rd on Tabletop Rd, 1 Aug. 2003 , *C. Wilkins, M. Trudgen & B. Moyle* CW1683 (PERTH); NW of Badgingarra which is 175 km N of Perth, 1 Nov. 1965, *P.G. Wilson* 3892 (K, PERTH).

Phenology. Recorded as flowering from May to November. Fruiting from October.

Distribution and habitat. *Lasiopetalum drummondii* extends southwards from near Dongara and Mount Lesueur National Park to south of Cataby in the Geraldton Sandplains and northern part of the Avon Wheatbelt bioregions (Figure 6). This species grows in white or yellow sand, or brown sand with laterite, rarely over limestone, in low open eucalypt woodlands, low shrublands or open heath with *Hakea*, *Banksia*, *Allocasuarina* and *Acacia*.

Conservation status. This species is currently not considered to be under conservation threat.

Affinities. Lasiopetalum drummondii is morphologically most similar to *L. erectifolium* and *L. lineare* in having a compact inflorescence, flowers with 1–3 filiform epicalyx bracts, a style with reflexed fan-like hairs, and narrow calyx lobes < 2 mm wide. This species is distinct from *L. lineare* in having

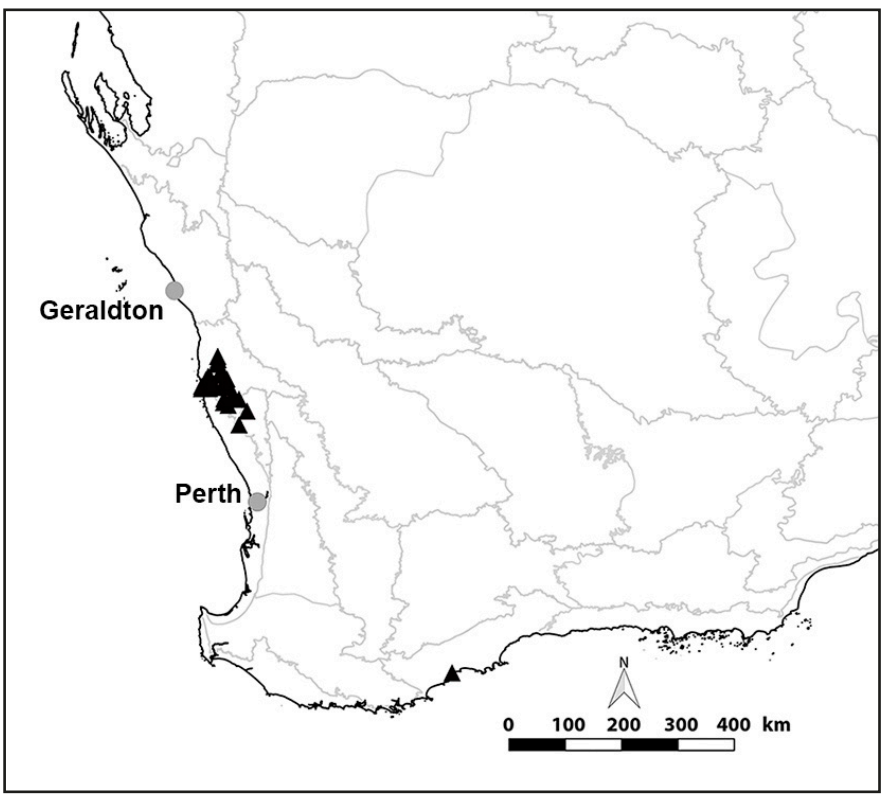

Figure 6. Distribution of *Lasiopetalum drummondii* with IBRA subregions (Department of the Environment 2013) in pale grey.

narrowly ovate to ovate leaves (6–18 mm wide) rather than linear leaves (1.5–2(–3) mm wide) and broader peduncles to 1 mm at the base (vs 0.5 mm at the base).

In contrast to *L. erectifolium*, *L. drummondii* has apical leaves that are ovate and spreading (vs narrowly ovate to narrowly elliptic and erect) initially with shorter pale brown to ferruginous stellate hairs to 0.15 mm long on the adaxial surface that are soon lost (vs late glabrescent ferruginous -coloured hairs to 0.3 mm long). The outer surface of the calyx has shorter stellate hairs with stalks *c*. 0.3 mm long and arms *c*. 0.5 mm long, whereas *L. erectifolium* has stellate hairs with stalks to 1 mm long and arms to 0.8 mm long, and as a result, appears more woolly than the calyx of *L. drummondii* (Figure 7D). *Lasiopetalum drummondii* also generally has more flowers than *L. erectifolium* (13–31 vs 7–18).

Typification. To date only one sheet at Kew (K 000686572) stamped 'Herbarium Hookerianum 1867' with a label in Bentham's hand 'Swan River Drummond 1857' has been located. As Bentham (1863) noted that his description of *L. drummondii* was based on a single collection by James Drummond this specimen is designated as the holotype.

Lasiopetalum erectifolium K.A.Sheph. & C.F.Wilkins, *sp. nov.*

Type: Boothendarra Nature Reserve, W along track from Wilcocks Road, NE of Badgingarra, Western Australia, 22 August 2016, *K.A. Shepherd & C.F. Wilkins* KS 1600 (*holo*: PERTH 09101810; *iso*: AD, CANB, K, MEL, NSW).

Lasiopetalum sp. Watheroo (K. Shepherd & C. Wilkins KS 220), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 3 June 2021].

Lasiopetalum erectifolium E.M.Benn. & K.Shepherd ms in Paczk. & A.R.Chapm., *West. Austral. Fl.: Descr. Cat.* p. 543 (2000), *nom. inval.*

Erect spreading or slender *shrub* 0.1–1 m high, 0.1–1 m wide. *Young stems* with a close tomentum of dense orange-brown, sessile or stalked (to 0.8 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 0.7 mm long, over smaller, stellate orange-brown hairs, and rarely with moderately dense golden, clavate glandular hairs to 0.25 mm long; glabrescent. *Petioles* 2–7 mm long. *Leaves* alternate, apical leaves are erect, then spreading below, narrowly ovate, narrowly elliptic to narrowly oblong, (14–)22–53 mm long, 2–10 mm wide, base petiolate to slightly cordate, apex obtuse to sub-acute; margins entire, moderately to strongly recurved; abaxial surface with a multi-layered tomentum of dense orange-brown hairs on the midrib becoming scattered on the blade, or with dense orange-brown-centred white, sessile or shortly stalked (to 0.4 mm long), multi-angulate, stellate hairs throughout, with 12–24 arms, each to 0.6 mm long, over dense, smaller, white stellate hairs; adaxial surface, dull not mucilaginous, with moderately dense, orange-brown-centred white, stellate hairs with 12–16 arms, each to 0.3 mm long, late glabrescent. *Inflorescence* a compact, compound dichasium, 12–35 mm long with 7–18 flowers. *Peduncles* 6–25 mm long with tomentose white, orange-brown or ferruginous, sessile and stalked (to 0.5 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 0.9 mm long, over smaller, white stellate hairs, sometimes with occasional, white, clavate, glandular hairs to 0.1 mm long. *Pedicels* 1.1–5 mm long, indumentum as for peduncles. *Bract* narrowly ovate, 4.3–6.3 mm long, 0.4–1 mm wide. *Epicalyx bracts* 1–3 below the calyx, narrowly ovate to filiform, 3.8–7.5 mm long, 0.15–0.6(–1.6) mm wide. *Calyx* outer surface white, inner surface bright to pale pink with a base green, 4.8–9 mm long, tube 0.3–1.3 mm long; lobes narrowly ovate, 5–8.8 mm long, 0.3–1.3 mm wide; outer surface with a woolly indumentum of white, stalked (to 1 mm long), multi-angulate, stellate hairs with 10–24 arms, each to 0.8 mm long, over smaller, white stellate hairs, glandular hairs

absent; inner surface base glabrous, remainder with scattered to moderately dense white stellate hairs with 1–6 arms, each to 0.2 mm long. *Petals* red, obovate, flat, 0.7–1.4 mm long, 0.4–1.3 mm wide, glabrous. *Staminal filaments* 0.8–1.8 mm long, 0.15–0.3 mm wide. *Anthers* dark red throughout or apex white, oblong, 1.7–2.1 mm long, 0.6–0.8 mm wide, glabrous. *Ovary* 3-locular (with 2 ovules per locule), 0.7–1.4 mm long, 0.7–1.4 mm wide; outer surface with a tomentum of white, multi-angulate, stellate hairs, with each arm to 0.7 mm long. *Style* 2.8–5 mm long, centrally thickened to 0.5 mm wide, with reflexed, stalked fan-like hairs along most of length. *Fruit* ellipsoid, 3.7–4.3 mm long, 3–3.8 mm wide, outer surface with dense, white, stellate hairs. *Seed* ellipsoid, brown, *c*. 3.3 mm long, *c*. 1.4 mm wide, densely stellate hairy; aril a cream-coloured cap with two long lobes *c*. 2.7 mm long, *c*. 1 mm wide. (Figure 7, 8)

Diagnostic features. *Lasiopetalum erectifolium* can be distinguished from other members of the genus that have reflexed fan-like hairs along the centrally thickened style, 1–3 filiform epicalyx bracts, and narrow calyx lobes < 2 mm wide, by the following combination of characters: narrowly ovate to narrowly elliptic, late glabrescent, apical leaves that are erect and covered in a woolly tomentum of orange-brown stellate hairs, with each inflorescence being a compact, compound dichasium of 7–18 flowers, 12–35 mm long.

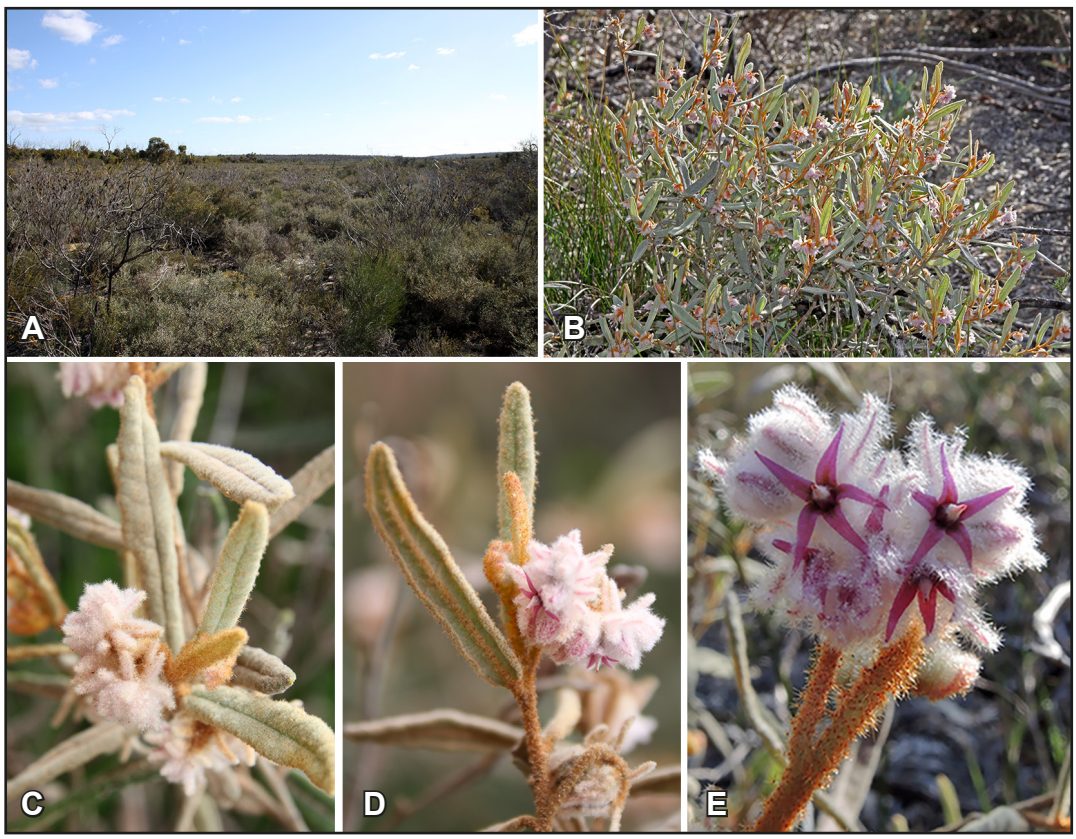

Figure 7. *Lasiopetalum erectifolium*. A – habitat; B – habit; C – branchlet showing late glabrescent, narrowly elliptic leaves and compact dichasial inflorescences; D – apically erect leaves and orange-brown stems; E – compact dichasial inflorescence showing narrow, bright pink calyx lobes with a woolly indumentum of white stellate hairs on the outer surface, and styles with a cone of white, dense fan-like, reflexed stellate hairs. Vouchers: *K.A. Shepherd & C.F. Wilkins* KS 1720 (C, D); *K.A. Shepherd & C.F. Wilkins* KS 1600 (A, B, E). Images: K.A. Shepherd.

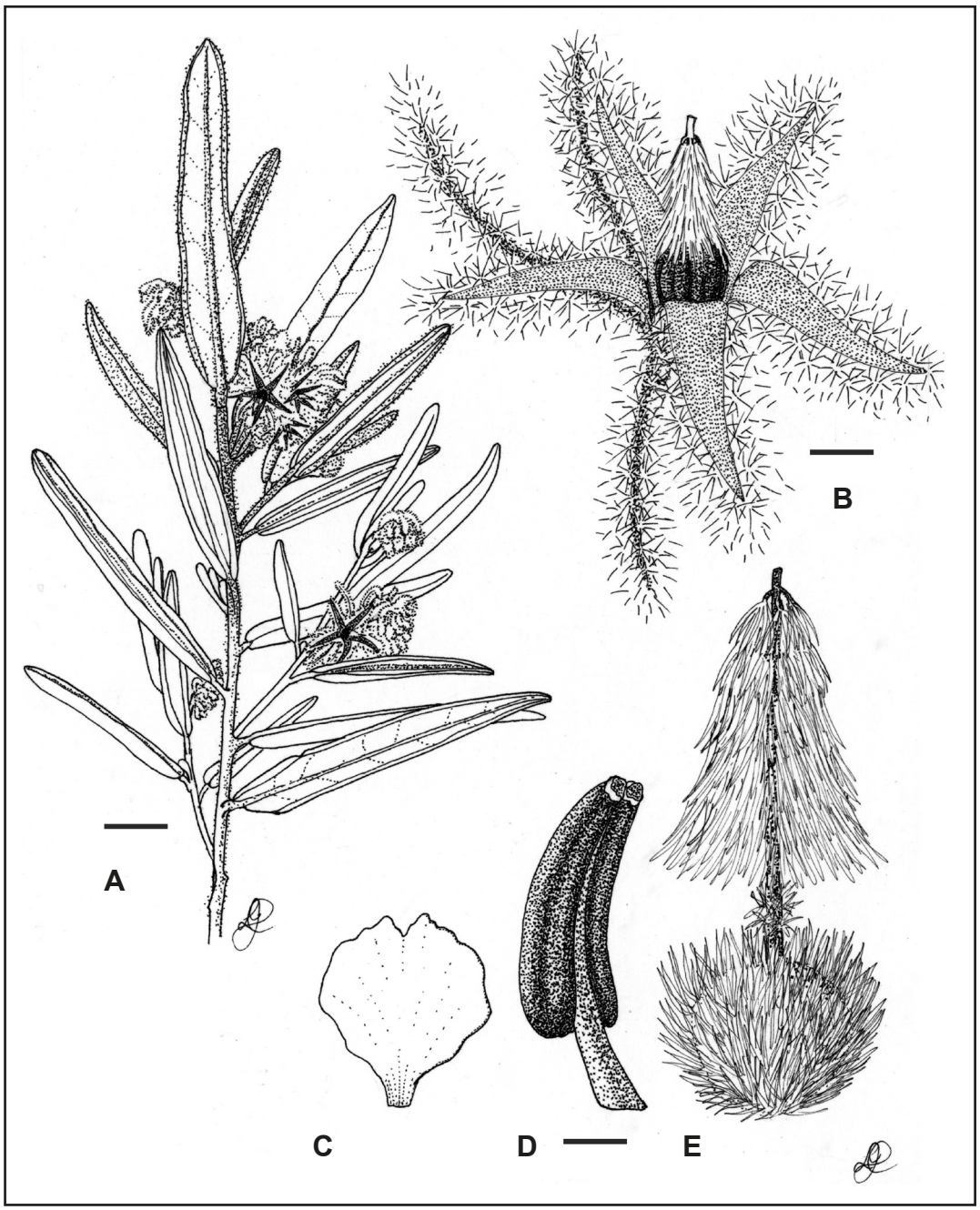

Figure 8. *Lasiopetalum erectifolium*. A – branchlet showing leaves with revolute margins and inflorescences; B – flower highlighting the outer calyx lobes and pedicel covered in a woolly indumentum of stellate hairs; C – glabrous scale-like petal; D – anther showing apical pores; E – ovary with stellate hairs and style with dense fan-like, reflexed stellate hairs along most of the length. Scale bars = 1 cm (A), 0.125 cm (B) and 0.05 cm (C–E). Voucher: *K.A. Shepherd & C.F. Wilkins* KS 220 (C, D). Illustration: Lorraine Cobb.

Selected specimens. WESTERN AUSTRALIA: N on Brand Mudge Rd, from intersection of Carnamah-Eneabba Rd, SW of Carnamah, 4 Oct. 1990, *R.J. Cranfield & P.J. Spencer* 7967 (PERTH); AMG-Zone 50 378336mE 6657792mN; E side of Coalara Rd, Watheroo NP (Reserve 24491), NE of Badgingarra, 6 Dec. 1992, *E.A. Griffin* 8268 (PERTH); Watheroo NP, 4 Oct. 1971, *R.D. Royce* 9573 (PERTH); S of Geraldton–Mullewa Rd on the Casuarinas Rd, 22 Aug. 1995, *K. Shepherd & C. Wilkins* KS 220 (PERTH); S of the Geraldton–Mt Magnet Rd, on Casuarinas Rd, SW of Mullewa, 19 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS 1720 (PERTH); E of Tompkins Rd on Yandanooka Rd, N side of road, 26 Sep. 2002, *C.F. Wilkins & J.A. Wege* CW 1603 (PERTH); On Casuarina Rd, S of Mullewa–Geraldton Rd, 10 Oct. 2004, *C.F. Wilkins & J.A. Wilkins* CW 1982 (PERTH); Track N of Skipper Rd, Eneabba, 12 Oct. 2004, *C.F. Wilkins, J. Wilkins & A. Tinker* CW 1997 (PERTH); S of Dongara, E of Brand Hwy. In central section of the Yardanogo NR, 25 Aug. 2004, *G. Woodman, C. Godden, A. Harris & F. Obbens* ARC 159.11 (PERTH).

Phenology. Recorded as flowering from August to October. Fruiting from October.

Distribution and habitat. This species is distributed northwards from Badgingarra towards Geraldton in the Geraldton Sandplain bioregion (Figure 9), growing in tall *Acacia* shrubland, *Banksia* woodland, open mallee woodland or rarely in seasonally damp claypans in white, yellow, grey or brown sand and gravel.

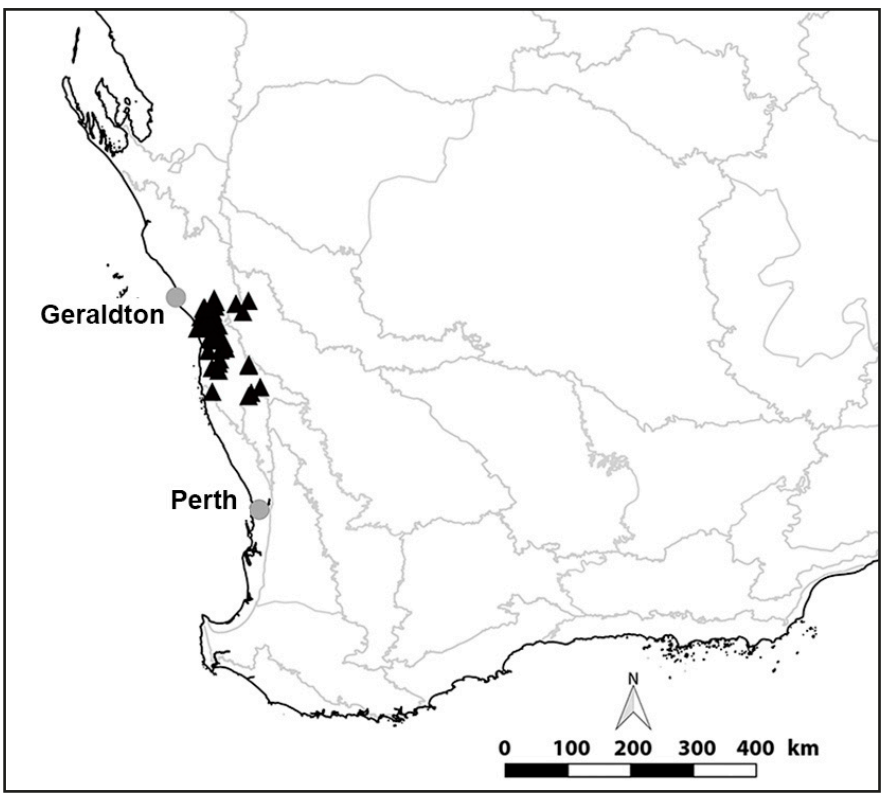

Figure 9. Distribution of *Lasiopetalum erectifolium* with IBRA subregions (Department of the Environment 2013) in pale grey.

Conservation status. Currently this species is relatively widespread and not considered to be under any current conservation threat; however, as recent road widening and verge clearing has removed some populations, this species should continue to be monitored for changes in threat levels.

Etymology. From the Latin *erecti* (erect) -*folium* (leaved), in reference to the distinctive upright orientation of the leaves.

Affinities. Refer to this section under *Lasiopetalum drummondii.*

Lasiopetalum lineare Paust, *Nuytsia* 1(4): 353, 356 figs 5, 12 (1974). *Type*: Watheroo West, Western Australia, 4 November 1954, *R.D. Royce* 4965 (*holo*: PERTH 01625535!; *iso*: K 000686563!).

Open or domed, multi- or single-stemmed *shrub* 0.1–0.5 m high, 0.2–0.35 m wide. *Young stems* with an indumentum of tomentose ferruginous-centred white, sessile or sessile and stalked (to 0.3 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 0.35 mm long, over dense smaller, brown-centred white stellate hairs, glandular hairs absent; glabrescent. *Petioles* 1–3 mm long. *Leaves* alternate, apical leaves spreading, linear, 24–78 mm long, 1.3–2(–3) mm wide, base petiolate, apex obtuse; margins entire, mainly revolute to strongly recurved; abaxial surface with scattered to dense ferruginous-centred white, sessile or stalked (to 0.2 mm long), multi-angulate, stellate hairs with 12–16 arms, each to 0.3 mm long, over dense, smaller white stellate hairs; adaxial surface dull not mucilaginous, with moderately dense to dense white brown-centred stellate hairs with *c*. 12 arms, each to 0.4 mm long, early glabrescent. *Inflorescence* a compact compound or simple dichasium, 25–53 mm long, with 7–15 flowers. *Peduncles* 15–32 mm long with a tomentose ferruginous-centred white, sessile or sessile and stalked (to 0.35 mm long), multi-angulate, stellate hairs with *c*. 12 arms, each to 0.4 mm long, over smaller, white stellate hairs. *Pedicels* 1–4.5 mm long, indumentum as for peduncles but with more numerous white stellate hairs. *Bract* narrowly ovate to filiform, 2.5–5.3 mm long, 0.15–0.3 mm wide. *Epicalyx bracts* 1–3, directly below or to 1.3 mm below the calyx, narrowly ovate to filiform, 3.5–7.2 mm long, 0.2–0.4 mm wide. *Calyx* outer surface white, inner surface bright pink with a slightly darker pink base, (4.5–)5–9.1 mm long, with a tube 0.3–0.4 mm long; lobes narrowly ovate, 6.1–8.6 mm long, 0.7–1 mm wide; outer surface with a dense to tomentose woolly indumentum of white, stalked (to 0.3 mm long), multi-angulate, stellate hairs with *c*. 12 arms, each to 0.6 mm long, over smaller, white stellate hairs, glandular hairs absent; inner surface base sometime glabrous, or with moderately dense to dense, white, stellate hairs with 1–6 arms, each to 0.3 mm long throughout. *Petals* dark red, obovate, flat, 0.4–0.6 mm long, 0.35–0.6 mm wide, glabrous. *Staminal filaments* 0.7–1 mm long, 0.25–0.3 mm wide. *Anthers* dark red, oblong, 1.1–1.5 mm long, *c*. 0.6 mm wide, glabrous. *Ovary* 3-locular (with 2 ovules per locule), 0.7–1 mm long, 0.7–1 mm wide; outer surface with a tomentum of white, multi-angulate, stellate hairs, each arm 0.4–0.6 mm long. *Style* 3–4.1 mm long, centrally thickened to 0.5 mm wide, with stalked reflexed, fan-like hairs throughout. *Fruit* ovoid to ellipsoid, 3.8–4.5 mm long, 3.4–4 mm wide, with scattered to dense, white, multi-angulate, stellate hairs. *Seed* ellipsoid, brown, *c*. 2.5 mm long, *c*. 1.3 mm wide, densely stellate hairy; aril a multilobed (two long, four short) cream-coloured cap, *c.* 1.8 mm long, *c*. 0.9 mm wide. (Figure 10)

Diagnostic features. *Lasiopetalum lineare* can be distinguished from all other members of the genus that have reflexed, fan-like hairs along a centrally thickened style and 1–3 narrowly ovate to filiform epicalyx bracts, by its revolute linear leaves (1.5–2 mm wide), a compact, woolly inflorescence 25–53 mm long, narrow peduncles (*c*. 0.5 mm wide at base), and narrowly ovate calyx lobes < 1 mm wide.

Selected specimens. WESTERN AUSTRALIA: SSE of Yeal Swamp in Wanneroo Forestry Reserve, 28 Oct.1964, *Y. Chadwick* 2554 (PERTH); W of Brand Mudge Rd, Alexander Morrison NP, 5 Nov. 1992,

Figure 10. *Lasiopetalum lineare*. A – habitat; B – habit; C – branchlet showing erect, glabrescent and narrowly elliptic leaves and pendulous flower heads; D – compact, compound dichasial inflorescence showing the long bracts and narrow epicalyx bracts subtending the flowers; E – pale pink flowers that have a greenish base, with glabrous scale-like dark red petals subtending each anther, and a cone of white, dense, fan-like reflexed hairs on the style. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1713. Images: K.A. Shepherd.

R. Cranfield & P. Spencer 8403 (PERTH); Wongonderrah Rd, E of Yerramullah Rd (SE of Cervantes), 9 Jan. 2008, *A. Crawford* 1749 (PERTH); S along Reserve Rd from junction Yalyal Rd, 8 Nov. 2015, *R. Davis, K. Thiele & T. Hammer* RD 12567 (DNA, MEL, PERTH); W margin Badgingarra NP where Bibby Creek meets road, 14 Oct. 1978, *J. Dodd* 25 (CANB, PERTH); S of Badgingarra, Brand Hwy

[Near Mt Hamersley], 17 Oct. 1969, *A.S. George* 9799 (BRI, PERTH); Barracca NR, Great Northern Hwy, Muchea, on edge of firebreak at NW corner of reserve, 23 Oct. 2004, *F. & J. Hort* 2386 (PERTH); W of Chatfield Clarke Rd, N of Coorow–Greenhead Rd, 19 Nov. 1997, *S. Patrick* 2998 (PERTH); S of Eneabba Drive on the Brand Hwy, E side of road, S of Eneabba, 17 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS 1714 (PERTH); W of Midlands Rd on the Marchagee track, 4 Nov. 1993, *C. Wilkins*, *K.A. Shepherd, J.A. Wege & J.A. Chappill* CW 325 (PERTH); NW corner of Cadda and Yerramullah Rd in Badgingarra NP, 11 Oct. 1998, *C.F. Wilkins, J. Chappill & R. Butcher* CW 1416 (PERTH), Corner Tootbardie and Coorow–Greenhead Rds, 8 Nov. 1999, *C.F. Wilkins & J. Chappill* CW 1448 (PERTH).

Phenology. Recorded as flowering from October to December with one record in January. Fruiting specimens collected in November.

Distribution and habitat. Found around Gingin and northwards towards Eneabba in the Swan Coastal Plain and Geraldton Sandplains bioregions (Figure 11). This species grows in white, yellow or brown sand and laterite in low *Banksia* or *Eucalyptus todtiana* open woodlands, or in heath associated with *Allocasuarina*, *Adenanthos, Jacksonia* and *Conospermum*.

Conservation status. *Lasiopetalum lineare* is currently not considered to be a species of conservation concern as it is known from numerous locations and is not under imminent threat, although it is never found in high numbers, with populations tending to consist of a few scattered plants.

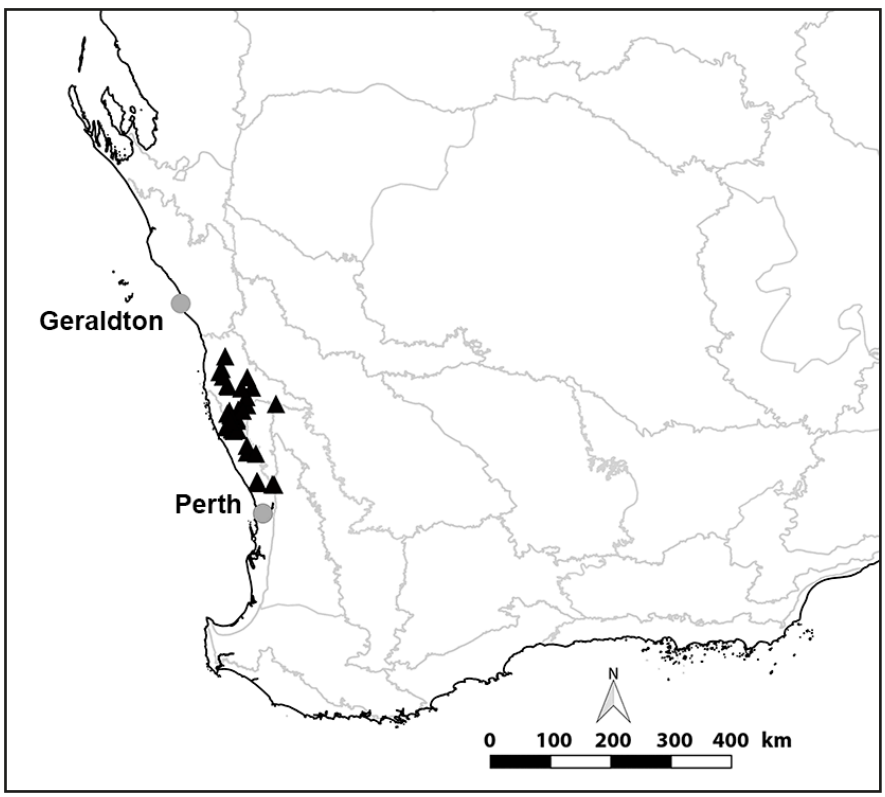

Figure 11. Distribution of *Lasiopetalum lineare* with IBRA subregions (Department of the Environment 2013) in pale grey.

Affinities. *Lasiopetalum lineare* is morphologically most similar to *L. drummondii* (refer to the affinities section under that species) and *L. erectifolium*. It is distinguished from the latter by its early glabrescent, linear leaves 1.3–2 (–3) mm wide (vs late glabrescent, narrowly ovate, narrowly elliptic to narrowly oblong leaves 2–10 mm wide), shorter stellate hairs with 12–16 arms, each to 0.3 mm long on the adaxial surface of leaves (vs stellate hairs with 12–24 arms, each to 0.6 mm long), and outer calyx with short stellate hairs each with *c*. 12 arms to 0.6 mm long (vs stellate hairs each with 10–24 arms to 0.8 mm long).

While *L. angustifolium* and *L. oppositifolium* also have narrow leaves like *L. lineare*, the apical leaves in these two species are alternate rather than opposite and the stellate stem hairs of the latter are multi-angulate rather than disc-like. Moreover, the styles in *L. angustifolium* and *L. oppositifolium* are shorter (< 3 mm long vs > 3 mm long) and narrow throughout (*c*. 0.15 mm wide) rather than thickened at their midpoint (to *c*. 0.5 mm wide) as observed in *L. lineare*.

Lasiopetalum fitzgibbonii F.Muell, a species with a more southern distribution centred around the Esperance Plains and Mallee bioregions, also has relatively linear leaves. However, it can readily be distinguished from *L. lineare* by its shorter leaves (8–17(–40) mm long vs 24–78 mm long), loose inflorescences (vs compact) and flowers subtended by only one epicalyx bract (vs 1–3).

Lasiopetalum ogilvieanum F.Muell., *Fragm.* 11(93): 107–108 (1881). *Type citation*: 'In locis sabulosis inter fluvios Greenough– et Irwin-River; F.M.' *Type specimen*: Irwin's [= Irwin] and Greenough's [= Greenough] River, [Western Australia], November 1877, *F. Mueller s.n.* (*lecto*, here designated: MEL 52370!; *isolecto*: MEL 52369!; *possible isolecto*: K 000686566!).

Open spindly or rounded *shrub* 0.5–1.5 m high, *c*. 0.8 m wide. *Young stems* with an indumentum of tomentose ferruginous, sessile and stalked (to 0.6 mm long), multi-angulate, stellate hairs with 6–16 arms, each to 0.6 mm long, over smaller, white or ferruginous stellate hairs, glandular hairs absent; glabrescent. *Petioles* 3–12 mm long. *Leaves* alternate, apical leaves spreading, narrowly ovate to narrowly elliptic, (11–)31–68 mm long, 4–18 mm wide, base petiolate or rarely slightly cordate, apex obtuse or sub-acute; margins entire to slightly irregular, moderately recurved; abaxial surface with dense ferruginous hairs on midrib becoming scattered on blade with dense ferruginous -centred white stalked (to 0.3 mm long), multi-angulate, stellate hairs with 6–12 arms, each to 0.5 mm long, over smaller dense white stellate hairs; adaxial surface can be glossy but not viscid, with scattered to dense white or ferruginous -centred white stellate hairs with *c*. 6–12 arms, each to 0.8 mm long, early glabrescent. *Inflorescence* a loose, simple or compound dichasium, 52–98 mm long, with (4–)8–21 flowers. *Peduncles* 18–39 mm long with an indumentum of scattered ferruginous-centred white, sessile and stalked (to 0.5 mm long), multi-angulate, stellate hairs with 8–14 arms, each to 0.8 mm long, over smaller, dense white stellate hairs. *Pedicels* 3–6.5 mm long, indumentum as for peduncles but without scattered ferruginous stellate hairs. *Bract* narrowly ovate to linear, 1.6–4 mm long, 0.2–0.4 mm wide. *Epicalyx bracts* 3, directly below the calyx, narrowly ovate to filiform, 4–8 mm long, 0.2–0.9 mm wide. *Calyx* outer surface white or pale pink, with ferruginous hairs towards apex in bud (and on lobe margin near Three Springs), inner surface bright pink with a dark pink base, 7–8.1 mm long, with a tube 1.1–2.8 mm long; lobes ovate, 4.8–6.2 mm long, 3.3–4.3 mm wide; outer surface with dense to tomentose white, stalked (to 0.2 mm long), multi-angulate, stellate hairs with 12–24 arms, each to 1 mm long (with ferruginous hairs at apex), over smaller, white stellate hairs, glandular hairs absent; inner surface base glabrous, remainder with scattered to moderately dense, white, stellate hairs with 1–2(6) arms, each to 0.2 mm long. *Petals* dark red, obovate, cupped, 0.7–0.9 mm long, 0.45–0.9 mm wide, glabrous or with occasional stellate hairs. *Staminal filaments* 1.3–2.2 mm long, 0.3–0.4 mm wide. *Anthers* dark red, narrowly ovate to ovate, 2.3–3.5 mm long, 0.6–1.1 mm wide,

glabrous. *Ovary* 3-locular (with 2 ovules per locule), 1.2–2 mm long, 1.4–2.3 mm wide; outer surface with a tomentum of white, multi-angulate, stellate hairs, each arm to 0.5 mm long. *Style* 2.5–2.8 mm long, consistently *c*. 0.15 mm wide, glabrous or with a few basal hairs. *Fruit* ovoid, 3.8–4.1 mm long, 3.4–3.5 mm wide, with scattered to moderately dense, white multi-angulate stellate hairs. *Seed* brown, ellipsoid, *c*. 2.5 mm long, 1.4 mm wide, with occasional stellate hairs; aril a cream-coloured cap with two short lobes *c*. 0.8 mm wide, *c*. 1 mm long. (Figure 12)

Diagnostic features. *Lasiopetalum ogilvieanum* can be distinguished from all other members of the genus that have a glabrous style, by the following combination of characters: a loose inflorescence

Figure 12. *Lasiopetalum ogilvieanum*. A – habitat; B – habit; C – early glabrescent narrowly ovate to elliptic leaves; D – a loose dichasial inflorescence; E – abaxial surface of leaf showing scattered ferruginous hairs over dense white stellate hairs, and bright pink flowers with a deep reddish-pink base; F – flowers showing the three filiform epicalyx bracts at the base of each petaloid calyx, broader calyx lobes, deep red scale-like petals (yellow arrow) subtending each anther, and glabrous style. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1606. Images: K.A. Shepherd.

52–98 mm long, 3 filiform epicalyx bracts, flowers 7–8.1 mm long with ovate calyx lobes 3.3–4.3 mm wide, glabrous petals (rarely with occasional stellate hairs), and 3-locular ovary.

Selected specimens. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 25 Oct. 2006, *C. Anderson* D18 5 (PERTH); 20 Aug. 1993, *B. & B. Backhouse* NS 101 (PERTH); 30 Sep.1966, *E.M. Bennett* 1411 (PERTH); 24 Sep. 1931, *W.E. Blackall* 4904 (PERTH); 25 Oct. 1993, *R. Cranfield & D. Kabay* 8950 (PERTH); 1976, *Hj. Eichler* 22000 (CANB, PERTH); 15 Nov. 2011, *L. Guja* LKG 073 (PERTH); 22 July 1980, *R. Hnatiuk* 800005 (PERTH); 28 Sep. 1976, *R.W. Johnson* 3358 (BRI, PERTH); 24 Aug. 2016, *K.A. Shepherd & C.F. Wilkins* KS 1606 (CANB, MEL, NSW, PERTH); 10 Nov. 2011, *B. Taylor & L. McFarlane* BT 10 (PERTH); 11 Oct. 2004, *C.F. Wilkins & J.A. Wilkins* CW 1987 (CANB, PERTH).

Phenology. Flowering recorded from September to November. Fruiting material was collected in November.

Distribution and habitat. This species has a relatively narrow range centred in the Geraldton Sandplains bioregion southeast of Dongara to north of Eneabba, with a few populations also occurring on the boundary with the Avon Wheatbelt bioregion (Figure 13). Associated with low open *Eucalyptus todtiana* woodland over heath with *Hakea*, *Allocasuarina*, or *Melaleuca* and *Beaufortia* growing in white, grey, yellow or yellow-brown sand over granite or with laterite. Often recorded as occurring under isolated trees in heathland.

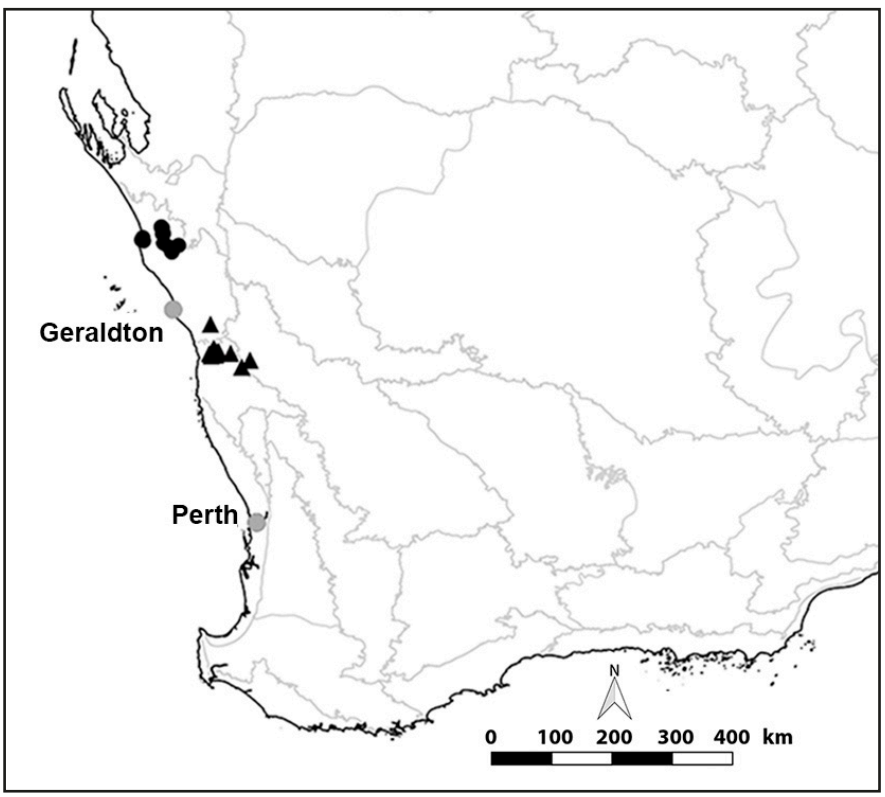

Figure 13. Distribution of *Lasiopetalum ogilvieanum* (▲) and *L. oppositifolium* (●) with IBRA subregions (Department of the Environment 2013) in pale grey.

Conservation status. *Lasiopetalum ogilvieanum* is uncommon and is currently listed as a Priority One species under the Conservation Codes for Western Australian Flora (Smith & Jones 2018).

Affinities. *Lasiopetalum ogilvieanum* is morphologically most similar *L. biloculatum* and *L. oldfieldii* in having a glabrous style, three filiform epicalyx bracts and a loose inflorescence but has glabrous petals (rarely with occasional stellate hairs) rather than densely hairy petals, and larger flowers (calyx 7–8.1 mm long vs 4–6 mm long).

Typification. There are two sheets of *L. ogilvieanum* collected by Mueller and housed at the National Herbarium of Victoria that could equally serve as the lectotype, but MEL 52370 is selected over MEL 52369 (which is designated as an isolectotype), as it better shows the diagnostic features for this species. The Kew specimen (K 000686566) is only tentatively designated as an isolectotype, as even though it has Mueller's distinctive blue label, the writing is not in his hand. The location is given as 'Irwin and Greenoughs R., Western Australia' but there is no collection date (only the date received 7/1884).

Lasiopetalum oldfieldii F.Muell., *Fragm.* 2(11): 6 (1860); *Lasiopetalum acutiflorum* var. *oldfieldii* (F.Muell.) Benth., *Fl. Austral.* 1: 264 (1863). *Type citation*: 'In planitiebus arenosis ad flumen Murchison. Walcott et Oldfield.' *Type specimen*: 'Murchison R[iver]. W.A.', [*P. Walcott* &] *A.F. Oldfield s.n.* (*lecto*, here designated: MEL 52368!; *isolecto*: K 000686570!, G 00358437 image!, MEL 52367!; W!).

Low, spreading *shrub* 0.3–1.5 m high, 0.3–1.5 m wide. *Young stems* with tomentose ferruginous, sessile or stalked (to 0.4 mm long), multi-angulate, stellate hairs with 12–16 arms, each to 0.5 mm long, over smaller, dense white or brown-centred white, stellate hairs, glandular hairs absent; glabrescent. *Petioles* 5–17 mm long. *Leaves* alternate, apical leaves spreading, mainly ovate or narrowly ovate, 15–52 mm long, 8–21 mm wide, base cordate, apex obtuse to sub-acute; margins entire, moderately recurved; abaxial surface with an indumentum of dense ferruginous hairs on midrib becoming scattered on blade with dense ferruginous-centred white sessile or stalked (to 0.3 mm long), multi-angulate, stellate hairs with 6–16 arms, each to 0.4 mm long, over smaller, dense white stellate hairs; adaxial surface new growth glossy mucilaginous, with scattered, sessile or shortly stalked (to 0.1 mm long), stellate hairs with *c*. 6 arms, each to 0.8 mm long, early glabrescent. *Inflorescence* a loose, simple or compound dichasium, 21–53 mm long, with 6–18 flowers. *Peduncles* 13–26(–38) mm long with tomentose indumentum of dense, ferruginous or ferruginous-centred white, sessile and stalked (to 0.3 mm long), multi-angulate, stellate hairs with *c*. 12 arms, each to 0.9 mm long, over smaller, dense white stellate hairs. *Pedicels* 0.8–2.3 mm long, indumentum as for peduncles but with less ferruginous hairs. *Bract* narrowly ovate, 1.1–5 mm long, 0.25–0.7 mm wide. *Epicalyx bracts* 3, below the calyx, narrowly ovate to filiform, 3.1–9.5 mm long, 0.2–1 mm wide. *Calyx* outer surface white or with brown tips in bud, inner surface bright pink throughout, or with a green base, 4.5–5.5 mm long, with a tube 0.8–1.2 mm long; lobes ovate, 3.3–4.9 mm long, 2.5–3.3 mm wide; outer surface with a woolly indumentum of scattered ferruginous and white, sessile and stalked (to 0.3 mm long), stellate hairs with 9–12 arms, each 0.5–0.8 mm long, over smaller, dense white stellate hairs, glandular hairs absent; inner surface base glabrous, remainder with scattered to moderately dense, white, stellate hairs with 1–6 arms, each to 0.2 mm long. *Petals* dark red, obovate, cupped, 0.7–1 mm long, 0.7–1.1 mm wide, outer surface densely stellate hairy. *Staminal filaments* 0.8–1.4 mm long, 0.15–0.3 mm wide. *Anthers* dark red with white apices, narrowly ovate, 2–2.8 mm long, 0.6–0.9 mm wide, glabrous. *Ovary* 3-locular (with 2 ovules per locule), 0.7–1.1 mm long, 0.7–1 mm wide; outer surface with a tomentum of white, appressed-stellate hairs, each arm to 0.3 mm long. *Style* 2–2.4 mm long, consistently 0.15 mm wide, glabrous or base with few multi-angulate stellate hairs. *Fruit* ellipsoid, 4–4.2 mm long, *c.* 3.1 mm wide, outer surface with scattered, multi-angulate, stellate hairs. *Seed* ellipsoid, brown, *c*. 1.8 mm long, *c*. 0.8 mm wide (immature), hair presence unknown; *aril* a cream cap with two long lobes *c*. 1.7 mm long, *c*. 0.8 mm wide. (Figure 14)

Figure 14. *Lasiopetalum oldfieldii*. A – habit; B – young leaves with scattered stellate hairs on the adaxial surface and a loose compound dichasial inflorescence; C – leaves with scattered hairs on the glossy adaxial surface and flowers with three linear epicalyx bracts generally shorter than the length of the calyx (yellow arrow); D – bright pink flowers with a deep reddish-pink base, scale-like petals covered in stellate hairs (yellow arrow) subtending each anther, and glabrous style. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1724. Images: K.A. Shepherd.

Diagnostic features. *Lasiopetalum oldfieldii* can be distinguished from all other members of the genus with three non-petaloid epicalyx bracts and a glabrous style by the following combination of characters: inflorescence a loose dichasium 21–53 mm long with long peduncles (13–26(–38)) mm long) and 6–18 flowers, each with densely hairy petals and an ovary with three locules.

Selected specimens. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 18 Nov. 2003, *G. Byrne* 783 (PERTH); 10 Oct. 1996, *M.G. Corrick & B.A. Fuhrer* MGC 11357 (AD, CANB, MEL PERTH); 18 Aug. 1993, *R. Cranfield & D. Kabay* 8758 (PERTH); 29 Nov. 2007, *A. Crawford* 1617 (PERTH); 9 July 1997, *R. Davis* 3670 (PERTH); 28 Nov. 1901, *L. Diels* 5680 (BM, PERTH); 27 Aug. 2000, *H. & B. Henderson* 7 (PERTH); 21 Mar. 2001, *S. Patrick* 3770A (PERTH); 6 Oct. 1972, *S. Paust* 1271 (BRI, CANB, K, PERTH); 6 Oct. 1972, *S. Paust* 1272 (AD, NY, PERTH); 21 Aug. 1995, *K. Shepherd, C. Wilkins & E. Bennett* KS 217 (PERTH); 22 Aug. 1995, *K. Shepherd & C. Wilkins* KS 221 (PERTH); 20 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS1724 (PERTH); 16 Oct. 2011, *R. Simkin* RS 006 (PERTH); 26 Sep. 2002, *C. Wilkins & J. Wege* CW 1595 (MEL, PERTH); 10 Oct. 2004, *C.F. & J.A. Wilkins* CW 1980 (NSW, PERTH).

Phenology. Flowering recorded from August to November. Fruits appear from October.

Distribution and habitat. This species is confined to the northern part of the Geraldton Sandplains bioregion extending from northeast of Port Gregory to south of Mullewa (Figure 15). It is found growing in white, yellow or grey sand, or red brown clayey sand and laterite, in open mallee woodland, tall scrub, or dense shrubland with *Acacia*, *Banksia*, *Grevillea*, or *Allocasuarina*.

Conservation status. Currently listed as a Priority Three species under the Conservation Codes for Western Australian Flora (Smith & Jones 2018). Plant numbers in populations are recorded as being either occasional or abundant, the latter most likely post-fire.

Affinities. Refer to this section under *Lasiopetalum biloculatum* and *L. ogilvieanum*.

Typification. While Mueller cites ‘Walcott et Oldfield’ in the protologue, it is not evident if he is referencing two collectors working together or two different collections. No Walcott or Walcott and Oldfield material representing a type gathering has been found for this species to date, but we here assume it was a joint collection based on the account of their trip together by Henderson and Henderson (2018). The MEL 52368 sheet has multiple mounted branchlets and two packets of fragments with two separate labels (in the same hand), stating they are Oldfield collections. This material is treated as the same gathering and designated here as the lectotype. The left-hand label gives the identification as ‘*Lasiopetalum oldfieldii* F. Muell.’ while the right-hand label has the updated name (with a slightly different coloured ink) ‘*Lasiopetalum* [*acutiflorum* Tz. var] *oldfieldii* F.Muell.’ reflecting Bentham’s (1863) later concept of this species. Remaining material held at the National Herbarium of Victoria (MEL 52367), Kew (K 000686570) and Genève (G 00358437) all have a similar label and are designated as isolectotypes.

Notes. Due to the inclusion of the informal name *Lasiopetalum oldfieldii* subsp. *biloculatum* E.M.Benn. & K.Shepherd ms in Paczkowska and Chapman (2000), the autonym *L. oldfieldii* F.Muell. var. *oldfieldii* was generated and subsequently listed in that publication and on *FloraBase* (Western Australian Herbarium 1988–). However, since the subspecies had not been validly published at that time, the autonym in effect was not established and so should not be formally recognised in the listed synonyms.

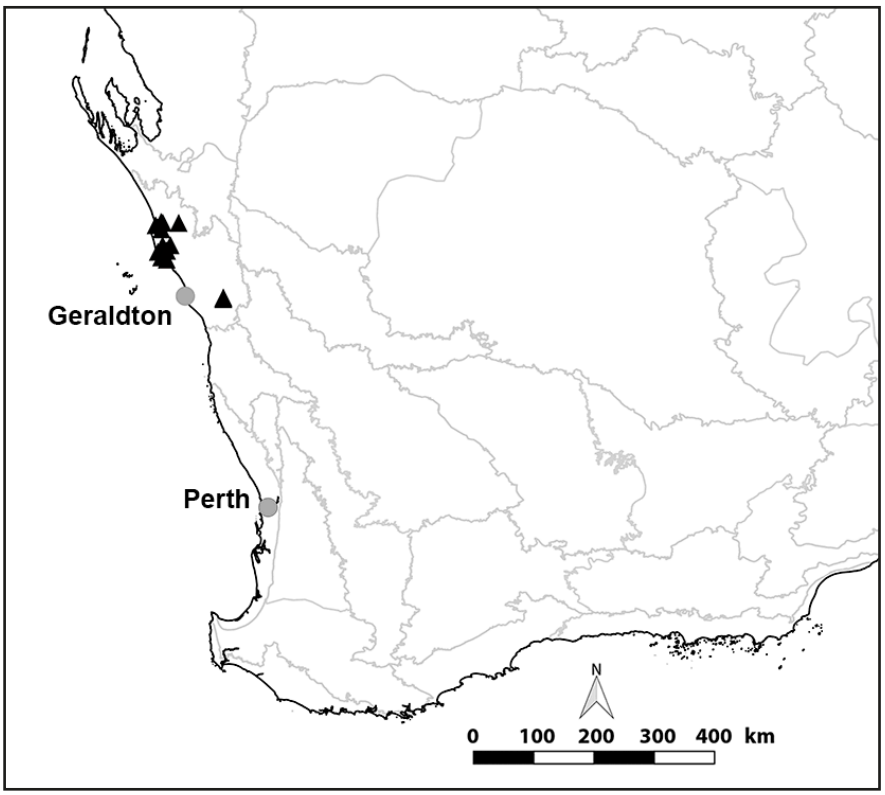

Figure 15. Distribution of *Lasiopetalum oldfieldii* with IBRA subregions (Department of the Environment 2013) in pale grey.

Lasiopetalum oppositifolium F.Muell., *Fragm.* 2(11): 5 (1860). *Type citation*: 'In locis rupestribus ad flumen Murchison. A. Oldfield'. *Type specimen*: Murchison R[iver], [Western Australia], *s. dat.*, *A.F. Oldfield s.n.* (*lecto*, here designated: MEL 52371!; *isolecto*: K 000686592!, K 000686593!).

Open erect multi-stemmed *shrub* 0.3–1 m high, 0.5–1 m wide. *Young stems* with a close tomentum of dense ferruginous-centred, pale-brown, sessile and stalked (to 0.1 mm long), appressed-stellate hairs with *c*. 12 arms, each to 0.1 mm long, over smaller, dense white stellate hairs, glandular hairs absent; early glabrescent. *Petioles* 1–4 mm long. *Leaves* opposite and spreading at apical nodes then alternating basipetally, linear or narrowly elliptic or narrowly ovate, (23–)41–80 mm long, 2.5–7(–9) mm wide, base petiolate, apex obtuse or rounded; margins entire, revolute to strongly recurved; abaxial surface with a tomentose indumentum of scattered ferruginous hairs on the blade becoming dense on the midrib, and stalked (to 0.1 mm long), appressed-stellate hairs with *c*. 12 arms, each to 0.15 mm long, over dense, smaller white stellate hairs; adaxial surface dull not mucilaginous, with dense, white, sessile, disc-like stellate hairs with *c*. 10 arms, each to 0.15 mm long, early glabrescent. *Inflorescence* a compact, simple or compound dichasium, 10–24 mm long, with 4–7(–12) flowers. *Peduncles* 5–15 mm long, indumentum as for stems, with or without red clavate glandular hairs to 0.4 mm long. *Pedicels* 0.8–1.6 mm long, indumentum as for stems but without scattered, ferruginous, stellate hairs. *Bract* narrowly ovate, 1.7–2.7 mm long, 0.3–0.5 mm wide. *Epicalyx bracts* 3, directly below the calyx, narrowly ovate, 2.7–4.7 mm long, 0.4–1.4 mm wide, with or without red clavate glandular hairs to 0.6 mm long. *Calyx* outer surface white, inner surface white or pale pink with a darker

pink base, 2.3–3.5 mm long, with a tube 0.3–0.7 mm long; lobes ovate, 2.1–3.1 mm long, 0.7–1.3 mm wide; outer surface with a dense indumentum of white, sessile, multi-angulate stellate hairs with *c*. 12 arms, each to 0.15 mm long, with or without occasional glandular hairs to 0.15 mm long; inner surface base glabrous, margin and apex of lobes with scattered to moderately dense, white, stellate hairs with 1–4 arms, each to 0.1 mm long. *Petals* dark red, obovate, flat, 0.4–0.8 mm long, 0.3–0.7 mm wide, glabrous or with occasional stellate hairs. *Staminal filaments* 0.5–0.9 mm long, 0.1–0.3 mm wide. *Anthers* dark red, oblong, 1–1.5 mm long, 0.6–0.8 mm wide, glabrous. *Ovary* 3-locular (with 2 ovules per locule), 1.1–1.3 mm long, 1.1–1.3 mm wide; outer surface with a tomentum of white, silky, upwardly appressed fan-like stellate hairs, to 1.1 mm long. *Style* 1.7–2.4 mm long, glabrous or with occasional to dense, reflexed, fan-like hairs, consistently 0.15 mm wide. *Fruit* ovoid, 3–3.8 mm long, 2.4–3.3 mm wide with dense, silky, white stellate hairs. *Seed* ellipsoid, brown, 2.1–2.5 mm long, 0.8–1.4 mm wide, glabrous or with moderately dense stellate hairs; aril a cream-coloured cap with two long lobes *c*. 2.7 mm long, *c*. 1 mm wide. (Figure 16)

Figure 16. *Lasiopetalum oppositifolium*. A – habitat; B – habit; C – young grey green leaves becoming glabrescent and dark green with age; D – compact dichasial inflorescence of young buds; E – apical opposite leaves. Voucher: *K.A. Shepherd & C.F. Wilkins* KS 1731 (A, B, E) and *K.A. Shepherd & C.F. Wilkins* KS 1740 (C, D). Images: K.A. Shepherd.

Diagnostic features. *Lasiopetalum oppositifolium* can be uniquely distinguished from other species in the genus in having leaves opposite at the apical nodes then alternate, a compact inflorescence, three non-petaloid epicalyx bracts, small flowers 2.3–3.5 mm long, glabrous petals, and the style glabrous or with scattered to dense reflexed fan hairs only in the apical two thirds.

Selected specimens. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 23 Oct. 2001, *P.G. Armstrong* PA 01/23G (PERTH); 28 Sep. 1995, *D. & B. Bellairs* 8 (PERTH); 10 Oct. 1995, *D.R. Bellairs s.n*. (PERTH 04367502); 5 Sep. 1963, *A.R. Fairall* 1243 (PERTH); 27 Sep. 1995, *S. Patrick* SP 2437 (PERTH); 21 Aug. 1995, *K. Shepherd, E. Bennett & C. Wilkins* KS 212 (PERTH); 13 Sep. 1996, *K. Shepherd & J. Wege* KS 387 (PERTH); 20 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS 1731 (PERTH); 22 Aug. 2020, *K.A. Shepherd & C.F. Wilkins* KS 1740 (PERTH); 27 Aug. 1981, *Wemm* 2067 B, (PERTH); 2 Oct. 2002, *C.F. & J.A. Wilkins* CW 1614 (PERTH); 5 Oct. 2002, *C.F. & J.A. Wilkins* CW 1617 (PERTH).

Phenology. Flowering material has been collected in spring from August to October and fruiting collections were made in November.

Distribution and habitat. *Lasiopetalum oppositifolium* is only known from a few populations around Kalbarri in the Geraldton Sandplains bioregion (Figure 13). It is found on hilltop cliffs, gorge slopes or rocky breakaway areas and exposed sandstone sheets, in red or white-grey sand or yellow sandy loam and is associated with shrubland or open scrub with *Acacia*, *Allocasuarina*, *Melaleuca*, *Grevillea* or *Callitris*.

Conservation status. This species is confined to breakaways and other rocky habitats and is usually not common in the landscape. It is currently listed as a Priority Three species under the Conservation Codes for Western Australian Flora (Smith & Jones 2018).

Affinities. Refer to this section under *L. angustifolium*.

Typification. The specimen collected by Oldfield from the Murchison River (MEL 52371), housed at Mueller's home institution at the National Herbarium of Victoria and annotated by him, is designated here as the lectotype. Two sheets housed at Kew (K 000686592 and K 000686593) are a good match for the type with the labels in the same hand, and so are designated as isolectotypes. It should be noted that while the lectotype has a glabrous style and obvious red glandular hairs on the outer surface of the calyx, other collections may have either a glabrous style without glandular hairs on the outer calyx or few to many reflexed fan-like stellate hairs on the style with or without the glandular hairs on the outer calyx.

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