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***Lasiopetalum pterocarpum* (Malvaceae s.l.: Lasiopetaleae), a new and rare species from south-west Western Australia**

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Abstract

Shepherd, K.A., Bennett, E.M., Wilkins, C.F. and Sage, L.W. *Lasiopetalum pterocarpum* (Malvaceae s.l.: Lasiopetaleae), a new and rare species from south-west Western Australia. *Nuytsia* 16(1): 175–181 (2006). *Lasiopetalum pterocarpum* E.M. Benn. & K.A. Sheph. *sp. nov.* is described and illustrated. The distinct winged fruit, for which *L. pterocarpum* is named, is unique within Lasiopetaleae. *Lasiopetalum pterocarpum* is allied to *L. floribundum*, which shares a similar habit, large ovate leaves and loose dichasial inflorescences. It can be readily distinguished from *L. floribundum* by its discoloured and strongly-lobed leaves, the absence of glandular hairs on the peduncles, and its larger seeds. This species is known from only one population south of Perth and is classified as critically endangered.

Introduction

Lasiopetalum Sm. (tribe Lasiopetaleae Gay, Malvaceae Juss.) is a genus that currently includes 36 species and one variety. It occurs mainly in the southern regions of Australia but extends north through New South Wales to southern Queensland. This genus has not been comprehensively revised since Bentham's treatment in *Flora Australiensis* (Bentham 1863), although six new species were circumscribed by Paust (1974).

During examination of material housed at the National Herbarium of New South Wales (NSW), KAS noticed that a specimen collected in 1899 by R. Helms from the Serpentine area was morphologically distinct (Figure 1). A single population was subsequently discovered in 1995 from a similar locality (K. Shepherd & J.A. Wege KS 360). No other populations are known. A revision of *Lasiopetalum* for the *Flora of Australia* is in progress and includes a number of new taxa. The description of *Lasiopetalum pterocarpum* E.M. Benn. & K.A. Sheph. is published here in view of its rarity.

Methods

This research is based on observations of herbarium specimens from PERTH and material loaned from NSW. Floral characters were scored from fresh, rehydrated or spirit material preserved in 70% ethanol. Seed and seed coat morphology was examined using vouchers collected by CFW. Photographs of seed

were taken using Zeiss Axiocam system mounted on a dissecting microscope. The seed coat testa was examined using an Environmental Scanning Electron Microscope (Danilastos 1993). The species distribution map was created using the Online Map Creation (OMC) program with GMC software (<http://www.aquarius.geomar.de/omc/>).



Figure 1. *Lasiopetalum pterocarpum* – specimen in NSW collected by R. Helms in 1899. A duplicate is lodged at BRI.

Taxonomy

Lasiopetalum pterocarpum E.M. Benn. & K.A. Sheph., *sp. nov.*

Folia ovata discoloris et valde lobata. Pedunculus in pilis stellatis dispersis obtectus. Fructus in alis inter lineas dehiscentias evolutus.

Typus: WESTERN AUSTRALIA: Serpentine National Park [precise locality withheld], 26 October 1995 K. Shepherd & J.A. Wege KS 360 (*holo*: PERTH 07319193).

Habit Multi-stemmed, open shrub 0.2–1.2 × 0.2–0.5 m. *Stems* with scattered, large, ferruginous, stellate hairs 1–1.26 mm diam., over dense, sessile, white, stellate hairs 0.25–0.27 mm diam.; mature stems reddish brown or brown, becoming glabrous with age. *Stipules* absent. *Petiole* 4–14 mm long, hairs as on young stem. *Leaves* ovate, 25–80 × 15–50 mm, distinctly lobed, flat or slightly incurved; apex acute to obtuse; discolorous; adaxial surface with scattered white or ferruginous, sessile or stalked, stellate hairs 0.3–0.7 mm diam., becoming glabrous with age; abaxial surface with scattered, ferruginous, stellate hairs 0.75–0.9 mm diam., more dense on mid rib, over tomentose, white, sessile, stellate hairs 0.4–0.5 mm diam. *Inflorescence* a loose, compound dichasium, leaf opposed, 32–62 mm long, with 5–8 (11) flowers, occasionally a simple dichasium with 2 or 3 flowers. *Peduncles* 9–55 mm long with scattered, ferruginous or white-stalked, stellate hairs 0.75–0.8 mm diam., over dense, sessile, stellate hairs, 0.3–0.5 mm diam., becoming glabrous towards the base. *Pedicels* 0.6–4 mm long, hairs as on peduncle. *Bract* one, at base of pedicel, oblong, 0.8–3.8 × 0.2–0.4 mm. *Bracteole* one, 0.5–0.7 mm from base of calyx, filiform, 0.7–2 × 0.2–0.5 mm, with scattered, stalked, ferruginous or white, stellate hairs to 1.0 mm diam. over dense, white, stellate hairs, 0.25–0.3 mm diam. *Calyx* pink, base dark red to purple; almost divided to base, tube 0.2–0.5 mm long; lobes narrowly-ovate, 5.7–8 × 1–2.3 mm, apex acute; outer surface white, with scattered, stalked, ferruginous or white stellate hairs, over sessile stellate hairs, denser at the calyx base; inner surface with scattered, fine, white, stellate, hairs, glabrous at base. *Petals* absent. *Anthers* elliptic, dark purple, 1.4–1.8 × 0.6–0.7 mm, with apical pores; pollen white. *Filaments* glabrous, 0.75–1 × 0.15–2 mm. *Ovary* 3-celled, 0.7–1 × 0.9 mm, inner surface glabrous, outer surface tomentose with white, stellate hairs and scattered, stalked, clavate glandular hairs. *Ovules* 2 in each cell. *Style* 3–3.7 mm, base with dense, white, stellate hairs at junction with ovary, central c. 2 mm with stalked, white, fan-shaped, reflexed, stellate hairs, 0.3–0.4 mm long, glabrous towards the apex. *Fruit* transversely ellipsoid, distinctly 6(–12) winged between the dehiscence lines, 0.7–2.5 × 1.3–3.6 mm, outer surface with dense stellate and glandular hairs, inner surface of the loculi glabrous. *Seed* ellipsoid, 2.8–3.4 × 1.4–1.5 mm, exotesta black, smooth with scattered, stellate hairs; aril yellow, 1.4–1.5 mm long. (Figures 2, 4)

Specimens examined. WESTERN AUSTRALIA: Serpentine National Park [precise localities withheld]. 22 Oct. 1899, *R. Helms s.n.* (BRI, NSW); 5 Aug. 1972, *S. Paust* 1103A (BRI, PERTH); 8 Dec. 1996, *A. Markey* 1021 (PERTH); 30 Jul. 1997, *J.L. Robson s.n.* (PERTH); 7 Sep. 1999, *V. English* 1200 (PERTH); 24 Sep. 1999, *V. English & R.M. Evans s.n.* (PERTH); 12 May 2006, *C. Wilkins* 2157 (CANB, MEL, NSW, PERTH, UWA).

Distribution. Restricted to one population near Serpentine, c. 48 km south of Perth, Western Australia. (Figure 3)

Habitat. Grows in dark brown or red brown, loam or clayey-sand, over granite, near creek lines and on sloping banks. Associated with *Eucalyptus rudis*, *Corymbia calophylla* woodland over dense thickets of *Trymalium floribundum*, *Acacia* and *Grevillea*.

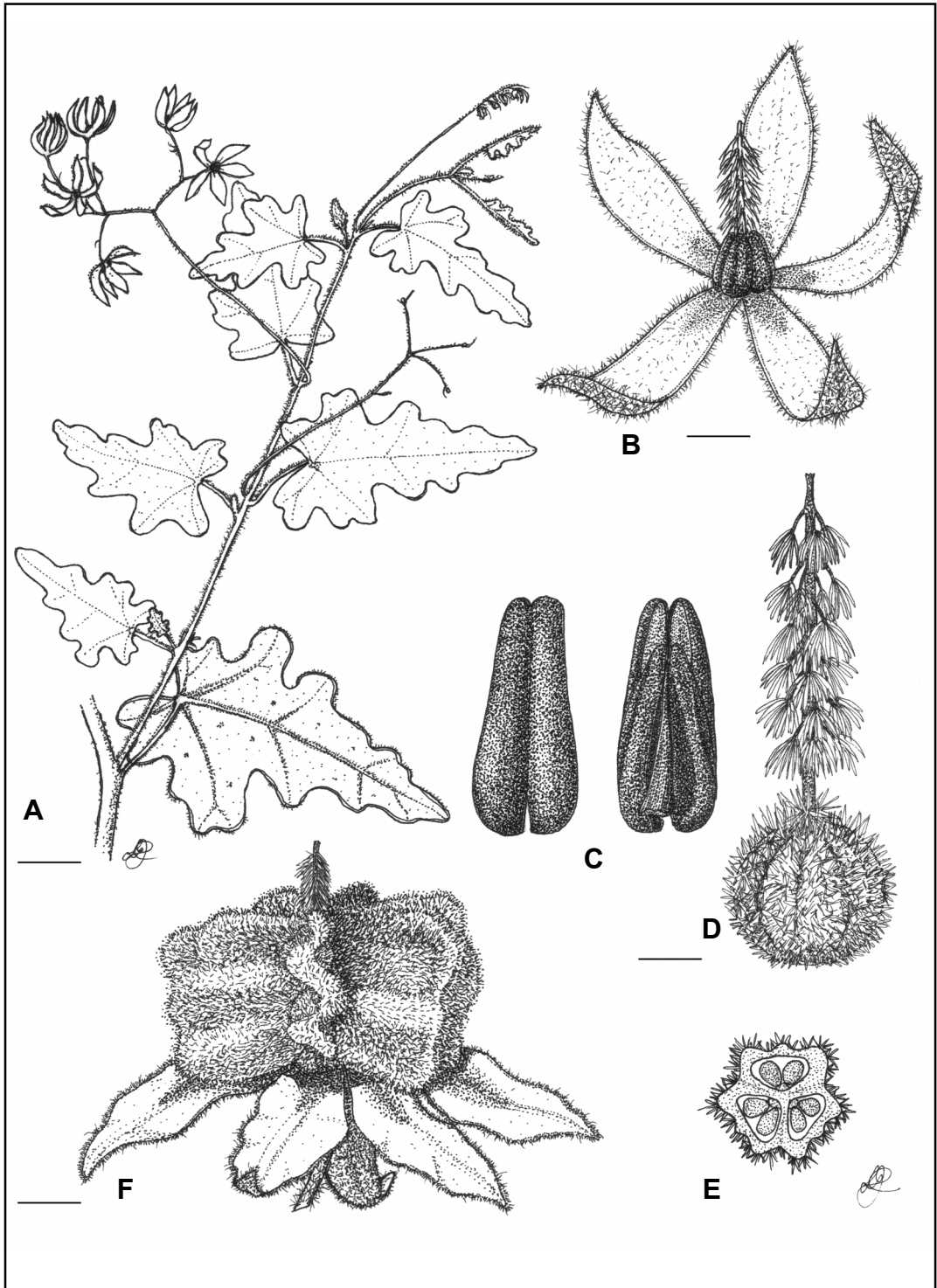


Figure 2. Illustration of *Lasiopetalum pterocarpum*. A – habit; B – flower; C – anthers (abaxial, adaxial); D – gynoeceium; E – t.s. of young ovary; F – winged fruit. (Scale bars: A – 10 mm; B – 2.5 mm; C–E – 0.5 mm; F – 2 mm.)

Phenology. Flowering from August to December.

Conservation status. Conservation Codes for Western Australian Flora: Rare. In 1998, this species was ranked as Critically Endangered; it is only known from a single population with c. 550 mature individuals (Wilkins *et al.*, in prep).

Etymology. Derived from the Greek (*ptero* – winged; *carpum* – fruit), in reference to the unique wings that develop between the dehiscence lines as the fruit matures. (Figure 4C)

Affinity. The distinctly winged fruit of *L. pterocarpum* is unique within the tribe Lasiopetaleae. Some species of *Seringia* (Wilkins 2002) have wings on the dehiscence lines, rather than between the dehiscence lines as seen in *L. pterocarpum*. It is closely allied to *L. floribundum* with which it shares broadly-ovate leaves, a loose dichasial inflorescence, and pale pink or white flowers, with the calyx lobes divided almost to the base. While *L. floribundum* possesses entire to slightly irregularly lobed leaves bearing scattered stellate hairs, *L. pterocarpum* has leaves that are distinctly lobed and discolorous due to a dense indumentum on the abaxial surface. The peduncle of *L. pterocarpum* is covered in stellate hairs, while in *L. floribundum* both stellate and glandular hairs are present. *Lasiopetalum pterocarpum* also has larger flowers and seeds than *L. floribundum*. (Figure 4D)

Notes. This taxon has been previously known by the phrase name '*Lasiopetalum* sp. Serpentine (S. Paust 1103A)'. The epidermal cell pattern on the seed exotesta is similar to that observed in *L. compactum* Paust (Wilkins 2002) and the aril belongs to subtype 3a of Wilkins & Chappill (2002). (Figure 4E)

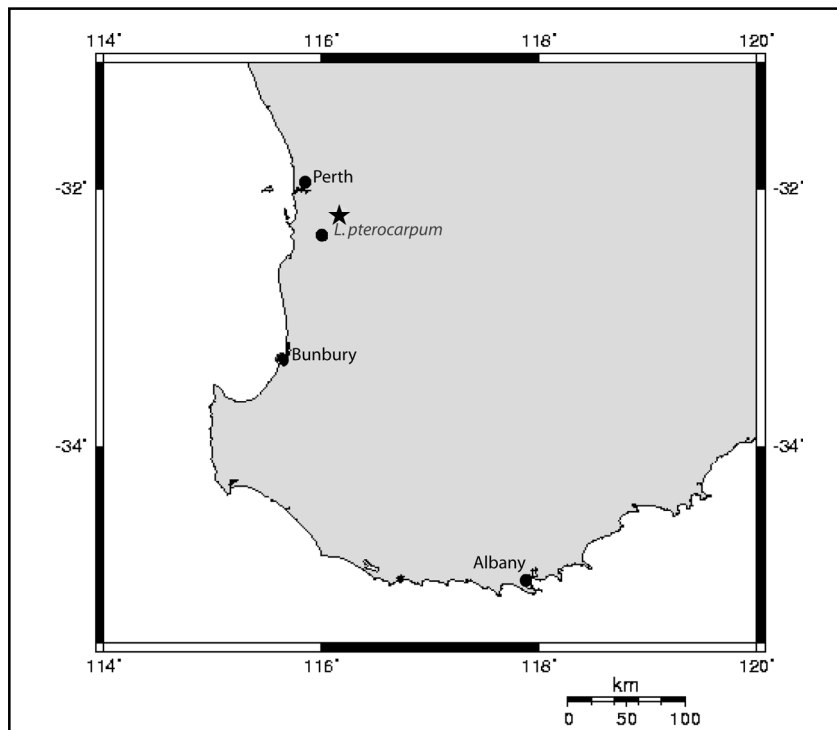


Figure 3. Distribution of *Lasiopetalum pterocarpum* (★).

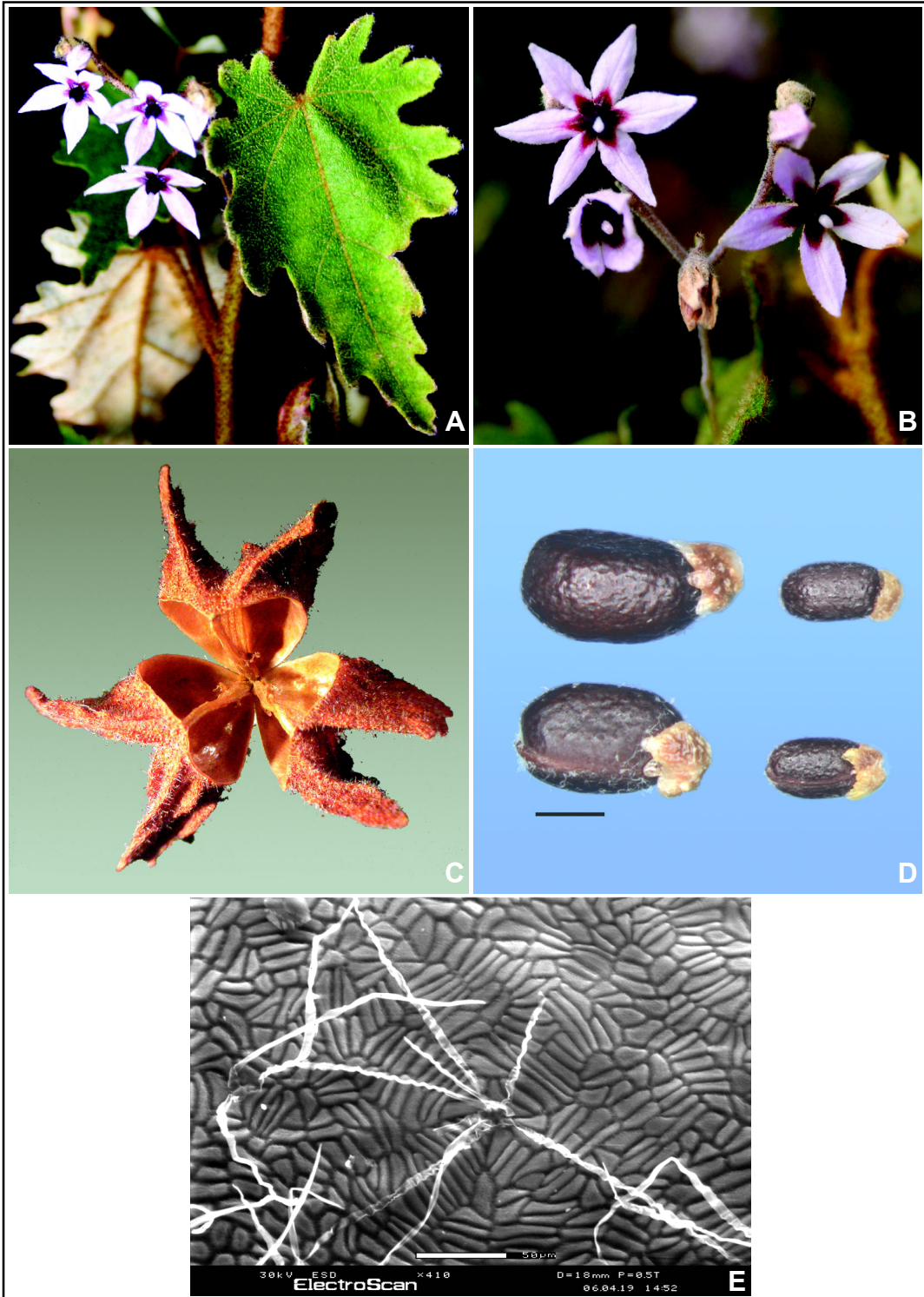


Figure 4. *Lasiopetalum pterocarpum*. A – distinctly lobed, discoloured leaves; B – inflorescence a loose dichasium, calyx pink with a deep purple-red throat and lobes divided almost to the base; C – the distinct winged fruit of *L. pterocarpum*; D – seed of *L. pterocarpum* (left) and *L. floribundum* (right), (scale bar = 1 mm); E – Environmental Scanning Electron micrograph of a seed of *L. pterocarpum* showing the epidermal cells of the seed exotesta and the presence of scattered stellate hairs (white scale bar = 50 µm).

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