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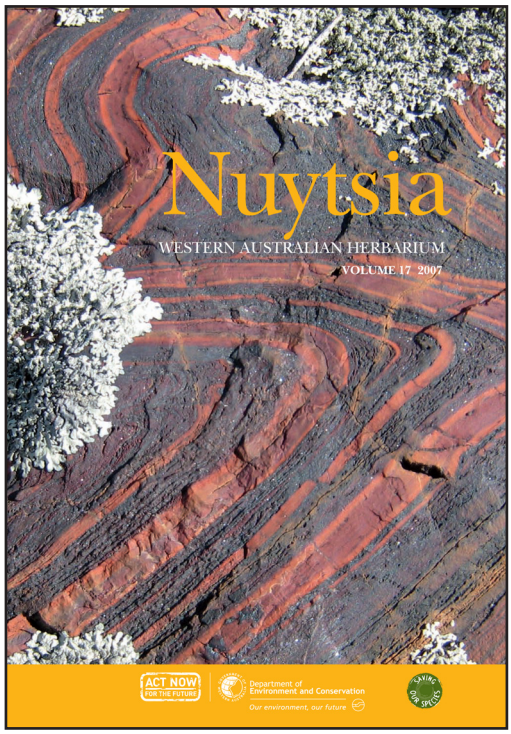

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Lobelia cleistogamoides (Campanulaceae, subfamily Lobelioideae, *Lobelia* sect. *Holopogon*), a new species related to *L. heterophylla* from Western Australia and South Australia

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Abstract

Walsh, N.G. & Albrecht, D.E. *Lobelia cleistogamoides* (Campanulaceae, subfamily Lobelioideae, *Lobelia* sect. *Holopogon*), a new species related to *L. heterophylla* from Western Australia and South Australia. *Nuytsia* 17: 397–402 (2007). *Lobelia cleistogamoides* N.G.Walsh & Albr., a member of the *L. heterophylla* Labill. complex, is described. The new species is known to occur from near Mullewa to just east of Esperance in Western Australia, with a disjunct occurrence on the Eyre Peninsula in South Australia. It differs from *L. heterophylla s. str*. principally in its much smaller flowers and has been known previously as *Lobelia* sp. small flowers (K.F. Kenneally 7705). Current collection information precludes an accurate assessment of its conservation status.

Introduction

Lobelia L. sect. *Holopogon* Benth. (Bentham 1868), currently regarded as endemic in Australia, includes those species of more or less erect habit with inflorescences of cymes or racemes (rarely reduced to a single flower) and flowers that have the anther tube surrounded at the orifice by short, even-sized hairs. A synopsis of the section is in preparation by the present authors which will involve the recognition of several new taxa. The opportunity is taken here to provide an epithet for an unnamed species from this group, *Lobelia* sp. small flowers (K.F. Kenneally 7705). This species has been recognised as distinct for some time and is named here as *Lobelia cleistogamoides* N.G.Walsh & Albr. Although the conservation status of this species is currently not well understood, it is known to occur on Banded Iron Formations (BIF) near Yalgoo and Koolyanobbing. This landform is potentially subject to significant modification through iron ore extraction, and this new species may be regarded as at least locally threatened. It is hoped that provision of a formal name and elucidation of the species' characteristics will lead to a better understanding of its conservation status.

Taxonomy

Lobelia cleistogamoides N.G.Walsh & Albr., *sp. nov.*

Affinis *Lobelia heterophylla* Labill. sensu stricto et aliis taxis innominatis arte cognatis corollis (sub 9.5 mm) et tubis antherarum (sub 1.5 mm) minoribus differt.

Typus: *c*. 1 km south of Mount Ridley, *c*. 70 km north-north-east of Esperance, Western Australia, 4 December 2005, *W.R. Archer* 412053 (*holo*: PERTH 07526970; *iso*: MEL 2296017).

Lobelia sp. small flowers (K.F. Kenneally 7705), Western Australian Herbarium, in FloraBase, http://florabase.dec.wa.gov.au [accessed 1 June 2007].

Erect *annual*, *c.* 10–45 cm high, arising from a short taproot. *Stems* simple or 1–several-branched near base, glabrous to sparsely indumented with short papillae or scabrosities to *c*. 0.1 mm long. Plants often continuing to grow when uprooted. *Leaves* all cauline, often crowded near the base, leaves sessile or the lower ones with with slender petioles to 20 mm long, lamina linear to narrow-elliptic or oblanceolate, or the lowermost obovate or spathulate, 3–25(–35) mm long, 0.5–3(–8) mm wide, entire, crenate, toothed or shallowly lobed with up to 4 teeth or lobes on each side, indumented like the stems, tapered at the base, obtuse, acute to subacute at the apex, concolorous or slightly discolorous, venation indistinct on upper linear leaves, or midrib and secondary veins visible (lower leaves). *Inflorescences* 3–18-flowered one-sided racemes, rarely branching within the inflorescence; pedicels arising more or less opposite a leaf-like bract on rachis, usually gently sinuate, 2-flexed and upturned in distal part, 4–9 mm long (elongating to *c*. 25 mm in fruit), a bracteole 1.5–3 mm long present near halfway along pedicel, rarely a second bracteole present proximal to this. Hypanthium glabrous, truncate-obovoid, 2.5–3.5 mm long, 2–3.5 mm wide. *Calyx*-lobes erect, narrowly triangular, 1.5–3.0 mm long. *Corolla* 6–9.5 mm long, mostly mid-blue, lilac or blue-mauve, yellow in throat and often the 2 dorsal petals yellowish; tubular part of corolla 4–5 mm long, slit dorsally to the hypanthium, externally glabrous, internally sparsely hairy; upper 2 lobes ± elliptic, entire, 1–2 mm long, *c.* 1 mm wide, directed forwards, not or only slightly recurved; lower 3 lobes spreading, central lobe broadly elliptic or obovate, 2.5–4 mm long, 2.5–3.3 mm wide, obtuse, lateral lobes broadly falcate, 2–2.5 mm long, 1.5–2 mm wide, subacute; staminal filaments 3–3.5 mm long, minutely hairy towards base, distally connate for *c.* 0.5–1 mm, all but the dorsal filament basally adnate to corolla for up to *c.* 0.5 mm, anther tube 0.8–1.5 mm long, glabrous except for minute, even hairs at orifice *c*. 0.1–0.3 mm long. *Capsule* ovoid, ellipsoid or globose, 5.5–9 mm long, 3–6 mm diam. *Seeds* ± ellipsoid, trigonous, 1–1.2 mm long, 0.7–1 mm wide (including a 0.1–0.2 mm wing arising from each of the 3 angles); testa smooth, shining. (Figures 1, 2A)

Specimens examined. WESTERN AUSTRALIA: upper Irwins River, Nov. 1877, *Anon. s.n*. (MEL); 10.5 km NE of Mt Heywood, 14 Dec. 1991, *W.R. Archer* 1412915 (MEL); 26.5 km NE of Mt Heywood, 14 Dec. 1991, *W.R. Archer* 14129112 (MEL); 2 km ESE Mt Andrew, 23 Nov. 1991, *W.R. Archer* 2311919 (MEL); Oldfield River, 26 Jan. 2001, *W.R. Archer* 2601021 (MEL); Oldfield River tributary, 27 Jan. 2001, *W.R. Archer* 2701021 (MEL); E side of track, *c.* 3.5 km NNW of Bungalbin Hill, Helena Range, 26 Sep. 1995, *N. Gibson & M. Lyons* 2760 (PERTH); N side of track, *c.* 2.5 km N of Lake Deborah West, *c*. 12 km ENE of Barcooting Hill, Ennuin Station, 16 Oct. 1996, *N. Gibson & M. Lyons* 2680 (PERTH); Dalwallinu town reserve, 6 Nov. 1999, *M. Hislop* 1823 (PERTH); W of Red Kangaroo Hill, Nov. 1891, *R. Helms s.n.* (MEL); near Warangering, Nov. 1891, *R. Helms s.n.* (AD); Fowlers Gully, 2 km S of the Wongan Hills – Piawaning Road, 194 km NE of Perth, 5 Oct. 1981, *K.F. Kenneally* 7705 (MEL, PERTH); 4.4 miles W of Warralakin, 12 Nov. 1989, *B.H. Smith* 1239 (MEL, NSW); Peak Charles, 28 Nov. 1973, *A.S. Weston* 9002 (PERTH). SOUTH AUSTRALIA: Scrubby Peak sandhills, Oct. 1989, *R. Bates* 21267 (AD); western ridge of Carapee Hill, 200–300 m alt., 27 Oct. 1983, *J.Z. Weber* 8341 (AD, CHG); Middlecamp Hills Conservation Park, 31 Oct. 1983, *J.Z. Weber* 8512 (AD).

Distribution. Widespread in the south-west of Western Australia, from near Mullewa in the north, south to the Stirling Range, and east to the Esperance area. Also known from the central part of the Eyre Peninsula, South Australia (Figure 2B).

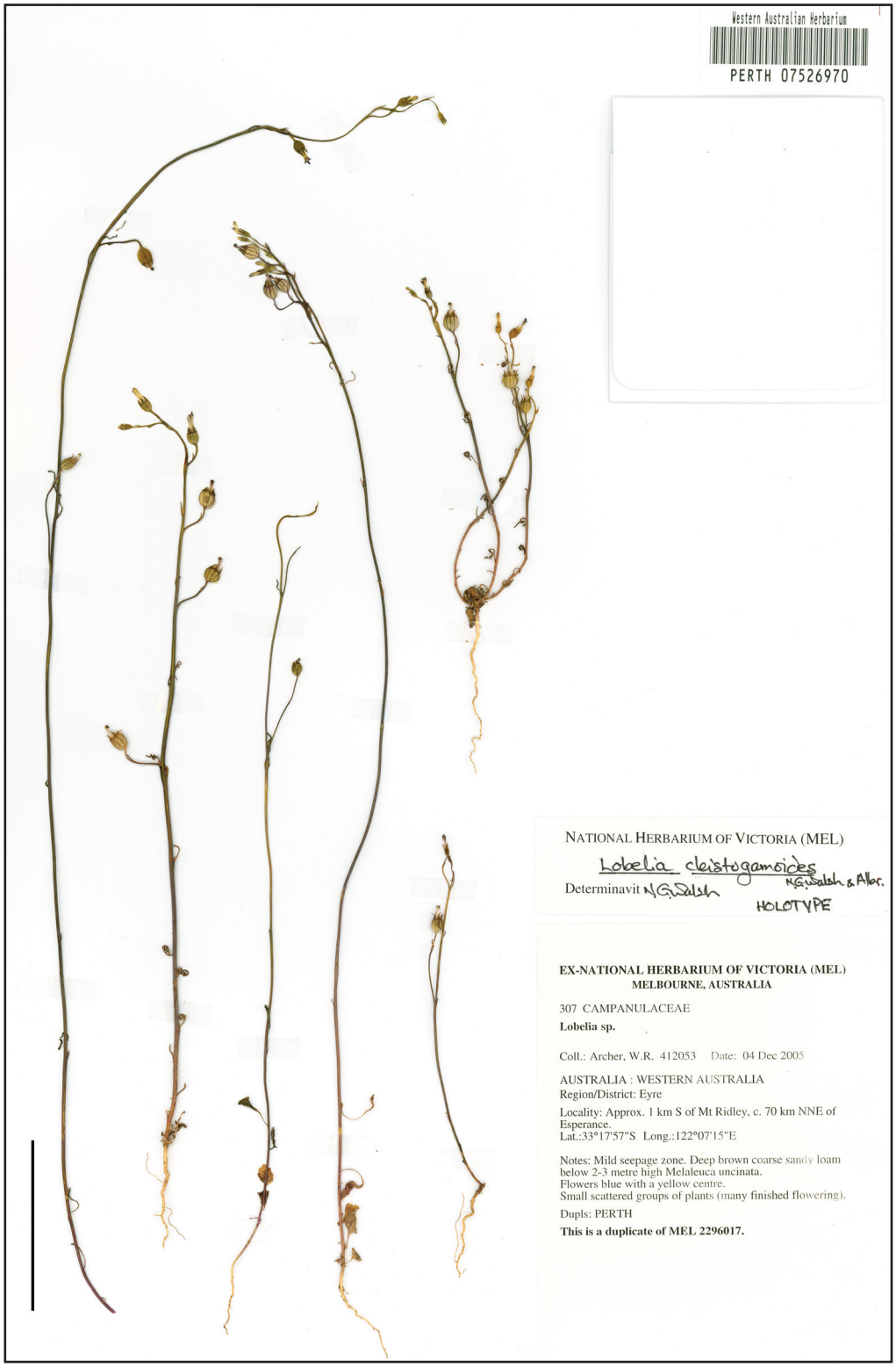

Figure 1. Holotype of *Lobelia cleistogamoides* (*W.R. Archer* 412053). Scale = 5 cm.

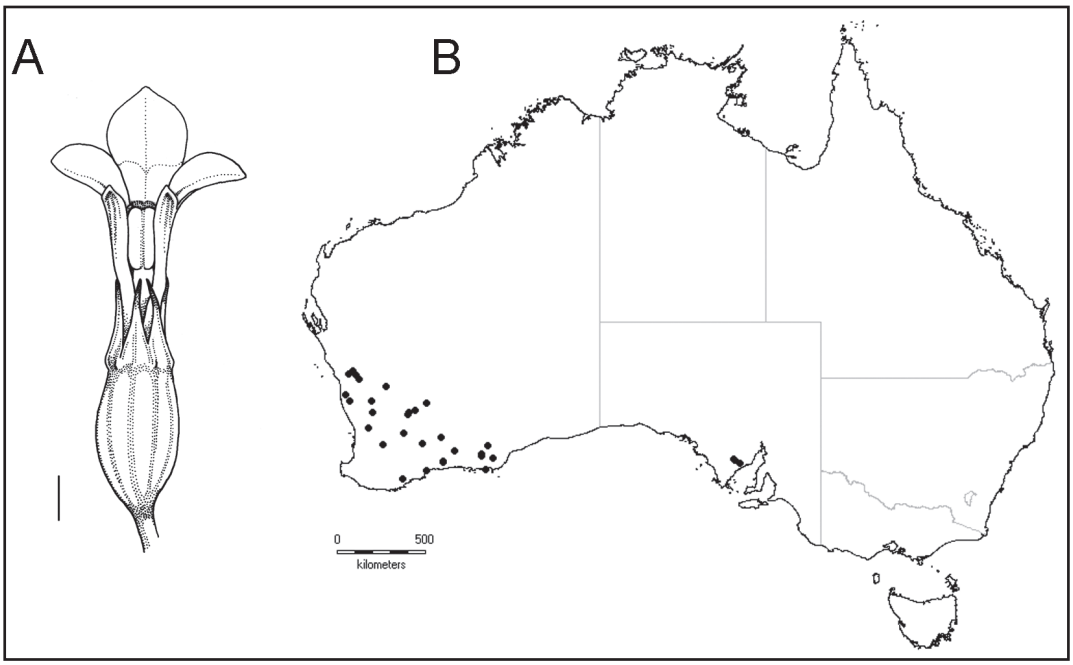

Figure 2. *Lobelia cleistogamoides*: A – flower (*W.R. Archer* 412053), scale = 1 mm; B – distribution.

Habitat. Often occurring on shallow soils associated with rocky (granite, sandstone, limestone, ironstone) substrates. Collectors' notes include the following site descriptions: 'Growing with *Casuarina*, *Petrophile* and *Dryandra* on lateritic plateau'; 'Red clay soils with banded ironstone gravel. *Acacia acuminata* thicket over mixed dense herbs'; 'Dry bare brown shallow loam over granite. Low woodland with *Acacia acuminata*, *Grevillea levis*, *Pimelea avonensis*'; 'Sandy flat among rocks'; 'Sandstone and limestone formation with *Melaleuca uncinata*'; 'yellow sand, *Acacia*, Myrtaceae, *Waitzia*'; 'Slightly elevated alluvial sandy loam alongside dry drainage channel …, *Melaleuca holosericea*, *M. brevifolia*, *M. lateriflora*'; 'Open ground with scattered sedges and shrubs (*Acacia*, *Callistemon*, *Lepidosperma*, *Allocasuarina huegelii*)'.

Phenology. Flowers and fruits October, November and December.

Conservation status. On the basis of this scant information it is not possible to assign an IUCN risk code (IUCN 2001) with confidence other than 'DD' (data deficient). More detailed information on population structure and distribution is required to determine if the species requires conservation action. Not listed under Department of Environment and Conservation (DEC) Conservation Codes for Western Australian Flora.

Etymology. The epithet refers to the small flowers (particularly in relation to *L. heterophylla*) and the fact that virtually every flower produces mature capsules, implying a cleistogamous mode of pollination. It is not certain that the flowers of *L. cleistogamoides* are actually cleistogamous, or that any of the other species in sect. *Holopogon* may not be. All the species in this group are highly fecund and it is rare that flowers do not mature to produce seed-filled capsules.

Affinities. *Lobelia cleistogamoides* is clearly closely related to *L. heterophylla* on the basis of the general morphology of the foliage, inflorescence and corolla, and in particular, by the winged, trigonous seeds. It is readily distinguished however by its smaller floral parts, most obviously the corolla and anther tube not more than 9.5 mm and 1.5 mm long respectively. *Lobelia heterophylla*, as currently recognised, is very variable. Nonetheless, with the exception of *L. cleistogamoides*, all the entities currently referred to *L. heterophylla* have corollas at least 15 mm long and anther tubes 3–4.5 mm long. We believe that the recognition of several infraspecific entities within *L. heterophylla* is warranted (Walsh & Albrecht in prep.). *Lobelia cleistogamoides* is sympatric with typical *L. heterophylla* in some locations (e.g. near Warralakin, Mt Heywood near Esperance). Collectors' notes indicate it may be quite common locally, but the number of herbarium specimens seen is much fewer (in the order of only about 5% in number) than those of typical *L. heterophylla*.

Notes. Information on some specimens indicate that germination is stimulated by fire.

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