

# *Lomandra ramosissima* Jian Wang ter (Laxmanniaceae), a new species from southern central Queensland

Jian Wang

## Summary

Wang, J. (2018). *Lomandra ramosissima* Jian Wang ter (Laxmanniaceae), a new species from southern central Queensland. *Austrobaileya* **10**(2): 266–272. *Lomandra ramosissima* Jian Wang ter is described and illustrated. Notes on its distribution including maps, habitat, phenology and affinities are provided. A conservation status of Least Concern is proposed.

Key Words: Laxmanniaceae, *Lomandra*, *Lomandra multiflora*, *Lomandra multiflora* subsp. *multiflora*, *Lomandra patens*, *Lomandra ramosissima*, Australia flora, Queensland flora, taxonomy, new species, conservation status.

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## Introduction

*Lomandra* Labill. is a genus of four sections with 55 species, all occurring in Australia, with two species extending to New Guinea and one species in New Caledonia (Lee & Macfarlane 1986; Macfarlane & Conran 2014; Wang & Bean 2017). The genus was revised by Lee who recognised 10 species and four subspecies from Queensland (Lee 1966). Currently, there are 19 recognised species in Queensland, as well as three non-autonymic subspecies (Wang 2017; Wang & Bean 2017).

Examination of herbarium material has revealed the existence of a distinctive species that was in the past misidentified as either *Lomandra patens* A.Lee or *L. multiflora* (R.Br.) Britten subsp. *multiflora*. Therefore, a new species *L. ramosissima* (Figs. 1 & 2), restricted to southern-central Queensland, is described in this paper.

The three species *Lomandra multiflora*, *L. patens* and *L. ramosissima* share similar characteristics of being robust plants forming tussocks from condensed ascending rhizomes, having leaf apices broadly rounded to obtuse without teeth and whorled branching male

flower clusters. However, *L. ramosissima* can be easily distinguished from *L. patens* by the reddish to dark brown leaf sheaths (white, grey or brown in *L. patens*), the strongly verrucous rachis and scapes (smooth in *L. patens*), the smaller male flowers, the much shorter filaments (filaments are 0.8–1 mm long for *L. patens*), the much smaller and poorly formed pistillode, and the shorter fruiting styles (fruiting styles 1.8–2.5 mm long for *L. patens*). *L. ramosissima* differs from *L. multiflora* subsp. *multiflora* by the more robust spreading habit, the much shorter pedicellate male flowers (pedicels 3–8 mm long in *L. multiflora* subsp. *multiflora*) and the much branched female inflorescences.

## Materials and methods

This study is based on morphological examination of *Lomandra* material at BRI; especially specimens identified as *Lomandra patens* and *L. multiflora* subsp. *multiflora*, as well as specimens received on loan from DNA, MEL, NSW and NT. All measurements are based on dried material, except the dimensions of flowers which are based on material reconstituted with hot water.

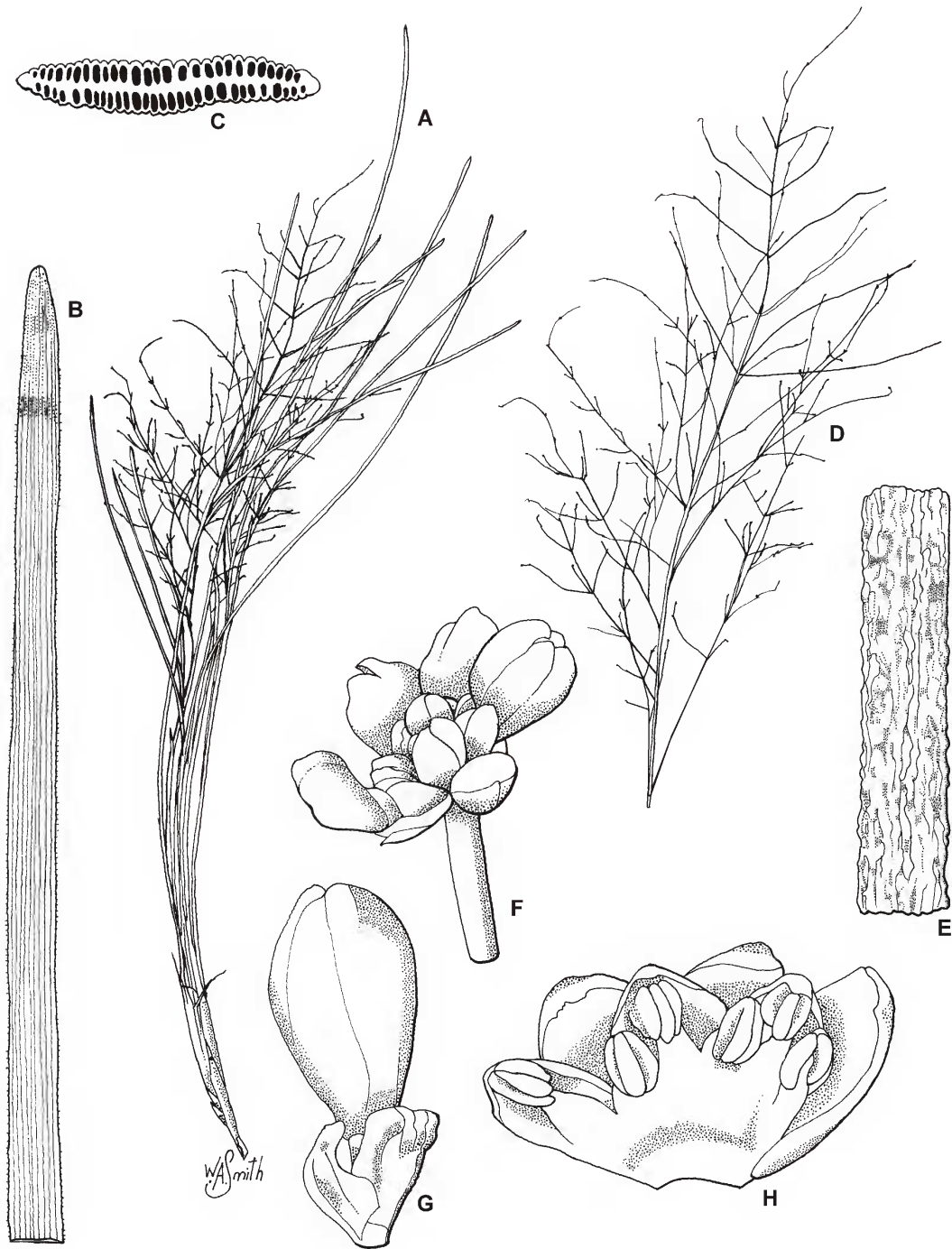
Abbreviations in the specimen citations include NP (National Park) and SF (State Forest).

## Taxonomy

***Lomandra ramosissima*** Jian Wang *ter sp. nov.*; resembling *L. patens* but differing in the reddish to dark brown leaf sheaths (leaf sheaths are white, grey or brown in *L. patens*), the strongly verrucose rachis and scapes (the surfaces of rachis and scapes are smooth in *L. patens*), the smaller male flowers, the filaments connate to the inner tepals for almost all their length, the poorly formed pistillode, the much shorter fruiting styles and smaller sized fruits. **Typus:** Australia. Queensland. LEICHHARDT DISTRICT: Precipice National Park, Precipice Creek Catchment, 25 September 1996, *P.I. Forster PIF19692* (holo: BRI [1 sheet]).

Robust plants forming tussocks from condensed ascending rhizomes. Each tussock comprising usually 1 to 6 tufts. Each tuft up to 2 cm in diameter with leaves arranged irregularly at first becoming distichous with age. Leaves tough and upright. Leaf sheath margins at first membranous or cartilaginous, fraying into strips or fibres up to 15 cm long, reddish to dark brown. Leaf blades flat or slightly convex on the abaxial side, 40–80 cm long, 2.5–5 mm wide, usually glaucous, scabrid, with up to 45 parallel veins on both sides; leaf apex broadly rounded to obtuse without teeth; the margins smooth to minutely denticulate. Male and female inflorescences similar in appearance, 1–3 per tuft, usually longer than the longest leaf. Male inflorescence paniculate; the peduncle flattened, verruculose, reddish to dark brown near the base, light brown elsewhere, (20–)30–60 cm long, usually 0.3–0.4 cm wide; the primary rachis 4-angled or channelled, verrucate, (10–)25–45(–60) cm long, bearing numerous branches and flower clusters; branches and flower clusters appearing whorled or opposite at nodes; inflorescence branches 4-angled, verruculose, usually 5–25 cm long; flower clusters with branches 1.5–10 cm apart on the primary rachis, 1–7 cm apart on the secondary rachis (first branch), 0.5–2.5 cm apart on the tertiary rachis (second branch); inflorescences occasionally developing a quaternary rachis (third branch) up to 1 cm apart. Cluster bracts usually 3–6, long- to short-deltoid,

up to 1.2 cm long, 0.1–0.3 cm wide at the widest point, with 1–6 veins, often longest at the basal node of primary rachis, shorter upwards along primary rachis as well as on secondary and tertiary rachis. Male flowers in groups of 6–14; bracteoles 3, cucullate, *c.* 1.1 mm long and 0.7–1 mm wide, membranous, completely encircling each flower. Male flowers becoming pedicellate, the pedicels when mature 1–1.5(–2) mm long, 0.3–0.4 mm wide, terete, pale yellow to brown, usually various ages within each cluster (**Fig. 1F & G**); buds ellipsoid, pale yellow with purple tinge, at anthesis becoming campanulate; perianth segments 6 with distinct outer and inner whorls; outer tepals (sepals) 3, broadly elliptical, thin, free except at the very base, uniform in size and texture, 2.3–2.6 mm long, 1.3–1.5 mm wide, pale yellow with purple tinges; inner tepals (petals) 3, elliptical, free except on the basal 1/4–1/3 proportion, uniform in size and texture, 2.5–2.9 mm long, 0.9–1.1 mm wide, mostly creamy yellow except for brighter yellow in the middle of outer surface. Stamens 6, 3 adnate basally to the inner tepals, 3 alternating with them and adnate basally to antetepals; the filament not obvious *c.* 0.3 mm long and 0.2 mm diameter; anthers all similar, versatile, 0.5–0.6 mm long and 0.4–0.5 mm wide, creamy yellow to bright yellow; anthers of inner tepals slightly distal than the antetepalous anthers (**Fig. 1H**). Pistillode poorly formed, 0.3–0.4 mm long, 0.2–0.3 mm diameter, hyaline or pale yellow. Female inflorescences paniculate; the peduncle flattened, verruculose, pale green to pale purple, 15–60 cm long, 0.25–0.35 cm broad; the primary rachis 4- or irregular angled or channelled, verruculose, (10–)20–35 cm long, bearing numerous branches and flower clusters; branches and flower clusters appearing whorled or opposite at nodes; inflorescence branches 4- or irregular angled or sometimes rounded, verruculose, usually 5–15 cm long; flower clusters with branches 1.5–9 cm apart on the primary rachis, 1–6 cm apart on the secondary rachis (first branch), 0.5–2 cm apart on the tertiary rachis (second branch); rarely developing a quaternary rachis (third branch) as male inflorescences. Cluster bracts usually 5–7, with 1–7 veins,



**Fig. 1.** *Lomandra ramosissima* (male). A. habit of tuft with young inflorescence  $\times 0.2$ . B. distal part of leaf  $\times 3$ . C. transverse section of leaf  $\times 16$ . D. young inflorescence (basal part of rachis removed)  $\times 0.3$ . E. section of rachis showing the verrucous surface  $\times 16$ . F. cluster of flowers with various ages  $\times 8$ . G. unopened flower with bracteoles  $\times 16$ . H. flower spread open  $\times 16$ . A, D & E from *Olsen 3573 & Byrnes* (BRI); B, C, F–H from *Forster PIF19692* (BRI, holotype). Del. W. Smith.

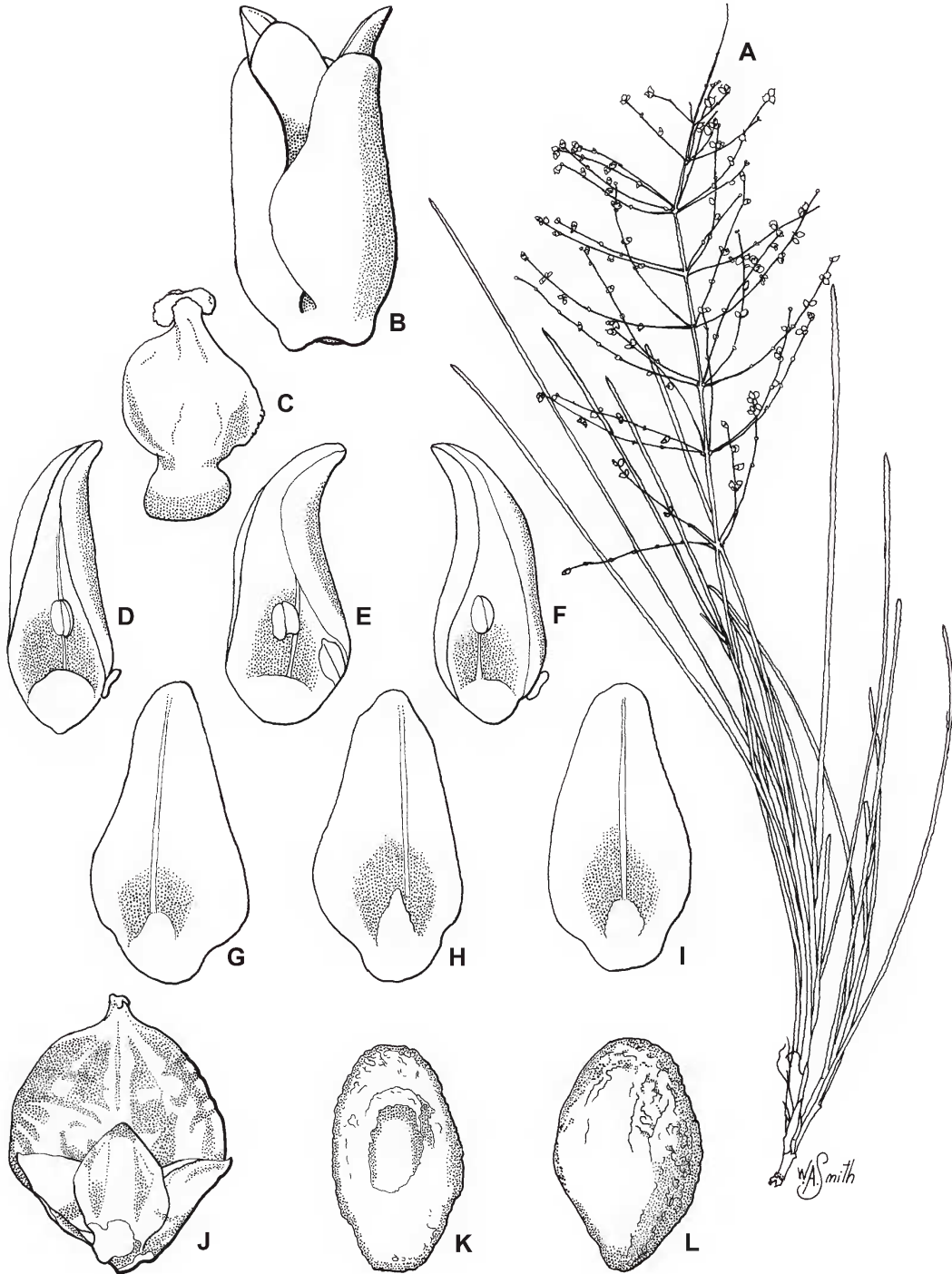
long- to short-deltoid, up to 3 cm long, *c.* 0.3 cm wide at the base, often largest at the basal node of primary rachis, shorter and narrower distally. Female flowers usually in group of 2–9(–12), each subtended by up to 6 cucullate bracteoles, 0.8–1.3 mm long, 0.7–1.5 mm wide, membranous, pale yellow with purple tinges, completely encircling the flower base; sessile or shortly pedicellate, the pedicels usually 0.3–0.5 (–1.5) mm long, 0.4–0.5 mm wide, different ages within each cluster; outer 3 tepals (sepals) broadly ovate, 3–3.3 mm long, 2–2.5 wide, creamy to pale yellow with purple tinges in the middle, adnate at the base; inner 3 tepals (petals) ovate, *c.* 3.2 mm long and 1.5 mm wide, adnate near base. Staminodes 6, whitish-transparent, filaments absent, anthers vestigial, 3 inserted on lower middle part of inner tepals, 3 alternating with them on the margin of lower side of each inner tepals (**Fig. 2D–F**). Pistil conspicuous, styles very short and fused with 3 stigmatic lobes (**Fig. 2C**); ovary sessile obovoid, 1.5–1.6 mm long, 1.1–1.3 mm diameter, with 3 locules; ovules 1 per loculus. Fruits sessile, usually in groups of 1–4 of similar ages. Fruiting styles 0.2–0.5 mm long. Capsules usually 4–5 mm long, 4–5 mm diameter with 3 transverse wrinkled carpels at maturity; carpels dark grey outside, orange-yellow inside; the carpel margins slightly ridged; the 6 hardened perianth segments persistent, 2.8–3.8 mm long, 2.1–2.4 mm wide; the hardened bracts occasionally persistent, *c.* 1 mm long, up to 1 mm wide (**Fig. 2J**). Seeds 1 per locule, ovoid, *c.* 4 mm long and 2.5 mm wide, 2-angled on inner face, rounded on outer face, rough or slightly wrinkled, translucent, light orange to brown (**Fig. 2K & L**).

**Additional specimens examined:** Queensland. LEICHHARDT DISTRICT: Grasstree Mt, NE tip of SF 6, *c.* 30 km along Alpha Road and 4 km on track S of Alpha Road, Feb 1999, *Johnson DCJ31 & Turpin* (BRI); Blackdown Tableland, 12 miles [20 km] SSE of Bluff, Sep 1959, *Johnson 1066* (BRI); Blackdown Tableland *c.* 32 km SE of Blackwater, campsite on Mimosa Creek, Apr 1971, *Henderson 757 et al.* (BRI); Crest of mountain 6.75 km NE of Rutland Station, Jul 1999, *Ryan 1613* (BRI); Spring Hill, Expedition Range, Nov 2003, *Forster PIF29627* (BRI, MEL); 24.4 km SSW of Emu Plains Homestead, May 1999, *Stephens Q94503 & Dowling* (BRI); SF 46, about 2.5 km directly W of the Dawson

Highway, Jun 1999, *Schneider MS122 & Appelman* (BRI); 2 miles [3.3 km] S of Ghinghinda, Oct 1963, *Speck 1875* (BRI, MEL); Glenhaughton – Mapala Road, May 1977, *Olsen 3573 & Byrnes* (BRI); 4 km along road to Robinson Gorge, off Glenhaughton to Mapala road, Sep 1992, *Forster PIF11242 & Sharpe* (BRI, MEL); Beilba Section, Expedition NP, Baffle Creek lookout, May 2001, *Semple 306* (BRI, NE, SYD). BURNETT DISTRICT: Nour Nour NP, Hungry Hills, off Possum Creek Pinches Road, Apr 2015, *Forster PIF42500 & Thomas* (BRI); Pile Gully, SF 220, Oct 1996, *Grimshaw PG2580 & Ryan* (BRI, MEL); South of Well Station Creek, *c.* 50 km SW of Mundubbera, Nov 2008, *Bean 28201 & Grimshaw* (BRI). WARREGO DISTRICT: Brigalow Dam enclosure Winneba Section of Chesterton Range NP, Sep 1995, *Grimshaw PG2183 & Bean* (BRI); W of Angellala Creek, 7 km WNW of ‘Rocky’, Jul 1977, *Purdie 674E* (BRI). MARANOVA DISTRICT: 3.5 km E along Redford – Forestvale road from junction Redford – Hoganthulla road, Jul 2007, *Halford Q9352 & Booth* (BRI); Mount Mobil NP, Jul 1992, *McRae 14* (AD, BRI); Barabanel SF 3, *c.* 16 km NNW of Mitchell, Oct 2014, *Mathieson MTM1892 & Ferguson* (BRI). DARLING DOWNS DISTRICT: Yuleba SF, *c.* 47 km W of Condamine toward Surat, Oct 1983, *Canning 5941* (BRI); Glenmorgan, Oct 1969, *Smith s.n.* (BRI [AQ410731], MO, NSW).

**Distribution and habitat:** *Lomandra ramosissima* is endemic to southern central Queensland where it is distributed as far north as Clermont, and south to Glenmorgan, and from Charleville in the west to Gayndah in the east (**Map 1**). This species mainly grows in eucalypt open forests or woodlands on sandstone ridges with sandy soils. The dominant tree species include: *Angophora leiocarpa* (L.A.S.Johnson ex G.J.Leach) K.R.Thiele & Ladiges, *Corymbia citriodora* subsp. *variegata* (F.Muell.) A.R.Bean & M.W.McDonald, *C. leichhardtii* (F.M.Bailey) K.D.Hill & L.A.S.Johnson, *C. scabrida* (Brooker & A.R.Bean) K.D.Hill & L.A.S.Johnson, *C. watsoniana* (F.Muell.) K.D.Hill & L.A.S.Johnson, *Eucalyptus apothalassica* L.A.S.Johnson & K.D.Hill, *E. baileyana* F.Muell., *E. beaniana* L.A.S.Johnson & K.D.Hill, *E. chloroclada* (Blakely) L.A.S.Johnson & K.D.Hill, *E. cloeziana* F.Muell., *E. crebra* F.Muell., *E. decorticans* (F.M.Bailey) Maiden, *E. exserta* F.Muell., *E. mediocris* L.A.S.Johnson & K.D.Hill, *E. melanophloia* F.Muell., *E. panda* S.T.Blake, *E. populnea* F.Muell., *E. suffulgens* L.A.S.Johnson & K.D.Hill and *E. tenuipes* (Maiden & Blakely) Blakely & C.T.White. It





**Fig. 2.** *Lomandra ramosissima* (female). A. habit of plant with fruiting inflorescences  $\times 0.25$ . B. flower with bracteoles removed  $\times 12$ . C. pistil  $\times 16$ . D–F. petals of the flower with staminodes  $\times 12$ . G–I. sepals of the flower  $\times 12$ . J. fruit with hardened persistent perianth  $\times 6$ . K. ventral face of seed  $\times 8$ . L. dorsal face of seed  $\times 8$ . A, J from *Bean 28201 & Grimshaw* (BRI); B–I from *Forster PIF42500 & Thomas* (BRI); K & L from *Purdie 674E* (BRI). Del. W. Smith.

also grows in *Acacia sparsiflora* Maiden tall shrubland and cypress pine forests of *Callitris glaucophylla* Joy Thomps. & L.A.S.Johnson on grey or brown sandy loams. Other non-eucalypt tree species such as *Allocasuarina littoralis* (Salisb.) L.A.S.Johnson, *A. luehmannii* (R.T.Baker) L.A.S.Johnson, *A. torulosa* (Aiton) L.A.S.Johnson and *Lysicarpus angustifolius* (Hook.) Druce were also recorded where *L. ramosissima* occurs.

**Phenology:** Male flowering was recorded in September and October. However, male plants with flowering buds were recorded as early as May. Female flowering was recorded in April, October and November, and female plants with buds were found in February, April through July. Mature fruits were collected from July and November.

**Affinities:** *Lomandra ramosissima* is closely related to *L. patens*, *L. multiflora* subsp. *multiflora*, *L. multiflora* subsp. *dura* and *L. decomposita*. All of these species are robust plants (*L. multiflora* subsp. *multiflora* and *L. decomposita* can be slender occasionally) with tussocks from condensed ascending rhizomes, have leaf apices broadly rounded to obtuse without teeth, paniculate male inflorescences and whorled branches (*L. multiflora* subsp. *multiflora* and *L. decomposita* rarely branched), and whorled flower clusters.

*Lomandra ramosissima* differs from *L. patens* by the reddish to dark brown leaf sheath, the strongly verrucous rachis and scapes (smooth in *L. patens*), the smaller male flowers, the much shorter filament (filament is 0.8–1 mm long for *L. patens*), the much smaller and poorly formed pistillode, and the shorter fruiting styles (fruiting styles 1.8–2.5 mm long for *L. patens*).

*Lomandra ramosissima* differs from *L. multiflora* subsp. *multiflora* by the more robust spreading habit, the much shorter pedicellate male flowers (pedicels 3–8 mm long in *L. multiflora* subsp. *multiflora*) and the much branched female inflorescences.

*Lomandra ramosissima* differs from *L. multiflora* subsp. *dura* by the much larger and much branched male and female inflorescences.

*Lomandra ramosissima* differs from *L. decomposita* by the larger and ellipsoid male flower bud, the shorter pedicel male flower and a much branched female inflorescences.

**Conservation status:** *Lomandra ramosissima* can be a common species where it occurs. It is recorded from several National Parks and is not known to be at risk. It is **Least Concern** using the IUCN (2012) criteria.

**Etymology:** From the Latin *ramosissima* meaning ‘very much branched’. This refers to the much branched male and female inflorescences, especially for male inflorescence that often develops quaternary rachis (third branch).

#### Acknowledgements

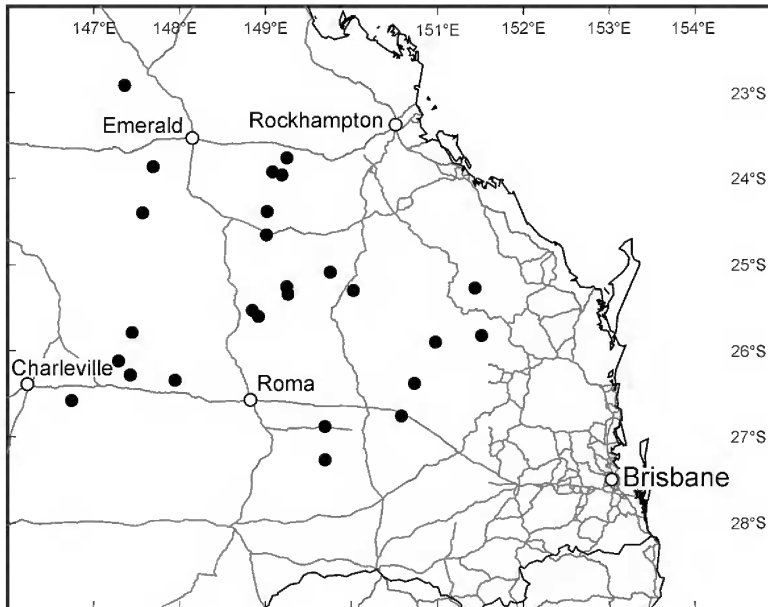
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**Map 1.** Distribution of *Lomandra ramosissima*.