

Lomandra altior Jian Wang ter and *L. breviscapa* Jian Wang ter (Laxmanniaceae), two new species from the Wet Tropics of north Queensland, Australia

Jian Wang

Summary

Wang J. (2021). *Lomandra altior* Jian Wang ter and *L. breviscapa* Jian Wang ter (Laxmanniaceae), two new species from the Wet Tropics of north Queensland, Australia. *Austrobaileya* **11**: 124–134. *Lomandra altior* Jian Wang ter and *L. breviscapa* Jian Wang ter are described, illustrated and compared to the putatively related species *L. hystrix* (R.Br.) L.R.Fraser & Vickery. *Lomandra altior* is known from high altitudes of the Thornton Peak – Mt Spurgeon – Mt Lewis areas, while *L. breviscapa* is restricted to the Mt Edith – Mt Bartle Frere – Mt Bellenden Ker areas. A key for the three closely related species is provided. Notes on the distribution including a map, habitats, phenology and affinities of the two newly described species are provided. Conservation status recommendations are also discussed.

Key Words: Asparagaceae; Laxmanniaceae; *Lomandra*; *Lomandra altior*; *Lomandra breviscapa*; *Lomandra hystrix*; Australia flora; Queensland flora; Wet Tropics flora; taxonomy; new species

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Introduction

The genus *Lomandra* Labill. includes four sections with 57 species to date (CHAH 2020; Wang & Bean 2017; Wang 2018, 2021). *Lomandra* has had various family placements over the past decades, such as Xanthorrhoeaceae in *Flora of Australia* (Lee & Macfarlane 1986), Dasypogonaceae (Briggs 1986; Chase *et al.* 1995) and Laxmanniaceae (Chase & Stevens 1998; Wang 2021). The genus is often placed in the family Asparagaceae subfamily Lomandroideae as recently circumscribed (Barrett 2018; Gunn *et al.* 2020; Govaerts *et al.* 2021). The family Laxmanniaceae is retained here following the systematic arrangement applied at the Queensland Herbarium (BRI).

Examination of herbarium material has revealed the existence of two distinctive species that were in the past either misidentified as *Lomandra hystrix* (R.Br.) L.R.Fraser & Vickery or unidentified species of *Lomandra*. *Lomandra hystrix* was originally published

as *Xerotes hystrix* R.Br. by Brown (1810). It has been variously classified as *Xerotes longifolia* var. *hystrix* (R.Br.) Domin or *Lomandra longifolia* subsp. *hystrix* (R.Br.) Lee. The current name was established in 1937 (Lee 1962; Lee & Macfarlane 1986). It grows mainly near streams along the eastern coast of north-eastern New South Wales and eastern Queensland. It was noted by Lee & Macfarlane (1986) that the plants on mountains of north Queensland differed in inflorescence dimensions and the appearance of male flowers. Furthermore, *L. hystrix* occurs at low rather than high altitude (Lee & Macfarlane 1986). Since then, more collections of both male and female plants with fertile parts have become available for detailed taxonomic study. From study of them, two new species, *Lomandra altior* Jian Wang ter and *L. breviscapa* Jian Wang ter, both restricted to the Wet Tropics bioregion of north Queensland, are described in this paper.

Lomandra altior and *L. breviscapa* share similar characteristics with *L. hystrix* (referred to in the key as the *L. hystrix* group), being robust plants with tussocks arising from condensed ascending rhizomes and with acute leaf apices usually with 2–4 minutely lateral teeth. However, both new species can be easily distinguished from *L. hystrix* by the shorter inflorescence rachis, significantly shorter bracts of flower branches and flower groups, and depressed globular to globular ovoid fruits (pyramid-shaped fruits in *L. hystrix*).

The two new species described here brings to ten, the number of *Lomandra* species (including 3 subspecies) found in the Queensland Wet Tropics bioregion (viz. *Lomandra altior* Jian Wang ter, *L. banksii* (R.Br.) Lauterb., *L. breviscapa* Jian Wang ter, *L. confertifolia* subsp. *pallida* A.T.Lee, *L. decomposita* (R.Br.) Jian Wang ter & A.R.Bean, *L. filiformis* (Thunb.) Britten subsp. *filiformis*, *L. hystrix* (R.Br.) L.R.Fraser & Vickery, *L. laxa* (R.Br.) A.T.Lee, *L. longifolia* Labill., *L. multiflora* (R.Br.) Britten subsp. *multiflora*). Both newly described species are endemic to high altitude montane habitats on granite substrates.

Biogeography

Lomandra is mainly in Australia, with two species extending to New Guinea and one species in New Caledonia (Lee & Macfarlane 1986; Wang 2018, 2021).

The distribution of the two newly described species wholly in rainforest or

vegetation communities adjacent to rainforest, i.e. montane herbland/heathland is congruent with widely recognised biogeographic barriers along the Australian east coast for species distribution (Bryant & Krosch 2016). *Lomandra altior* is known only from the Thornton Peak – Mt Spurgeon – Mt Lewis areas, albeit always at higher altitudes, to the north of the Black Mountain Corridor (BMC). By comparison, *L. breviscapa* is restricted to the Mt Edith – Mt Bartle Frere – Bellenden Ker areas, south of the BMC. The two species occurring in limited minor centres of endemism and refugia on mountain tops and/or higher montane areas are putatively examples of populations persisting *in situ* following species fragmentation (vicariance), rather than long range dispersal.

Materials and methods

This study is based on morphological examination of *Lomandra* material from the following herbaria: BRI, CANB, CNS, DNA, JCT, MEL, NSW. All measurements are based on dried material, except the dimensions of florets, which are based on material reconstituted with boiling water. Dimensions of measurements are inclusive, i.e. 1.0–1.7 are given as 1–1.7.

Common abbreviations in the specimen citations are Mt (Mountain, except where part of a National Park or State Forest name), N (North), S (South), E (East), W (West), EP (Environmental Park), LA (Logging Area), NP (National Park), NPR (National Park Reserve), SFR (State Forest Reserve), TR (Timber Reserve).

Taxonomy

Key to the Queensland *Lomandra hystrix* group

- 1 The primary rachis of inflorescence usually 25–50 cm long; bracts of flower branch and flower clusters more than 1 cm long; mature fruit pyramid shaped **L. hystrix**
- 1. The primary rachis of inflorescence usually 10–20 cm long; bracts of flower branches and flower clusters usually 0.1–0.5 cm long; mature fruit globular ovoid or depressed globular **2**
- 2 Male inflorescence scape 21–50(–80) cm long; female inflorescence scape 23–71 cm long **L. altior**
- 2. Male inflorescence scape 0–5(–8) cm long; female inflorescence scape 0–5 cm long **L. breviscapa**

Lomandra altior Jian Wang *ter sp. nov.*

Resembling *L. hystrix* (R.Br.) L.R.Fraser & Vickery, but differing in the shorter male and female inflorescence rachis, shorter bracts of flower branches and flower groups; also differs by the globular mature fruit. **Typus:** Australia. Queensland. COOK DISTRICT: Near Schillers Hut, Mt Spurgeon, 1 September 1972, *L.J. Webb & J.G. Tracey 13444* (holo: BRI [AQ380891]; iso: CNS [QRS081895]).

Plants forming tussocks from condensed ascending rhizomes, each tussock usually comprising numerous tufts, each tuft up to 3.5 cm in diameter at the base with leaves arranged irregularly or often distichously (**Figs. 1A & 2A**). Leaves rather thin and upright, 70–110 cm long, 0.7–1.3 cm wide, glabrous. Leaf sheath margins at first membranous or cartilaginous, fraying into strips or fibres up to 9 cm long, red or dark brown. Leaf blades flat adaxially, usually green, light green or whitish green, with 16–26 parallel veins on both sides; the margins smooth and occasionally slightly rolled; leaf apex usually acute with 2 lateral teeth well below apex or with 4–6 minute teeth, it is rarely 3-toothed with the middle one the largest, 4–6 mm long, 2.5–3 mm wide (**Figs. 1B & 2B**). Both male and female inflorescences are paniculate, usually 1 or 2 per tuft, usually shorter than the longest leaf. **Male inflorescences** 33–72(–100) cm long, the scape flattened, longitudinally ribbed on each side, smooth or rarely minutely verruculose, 21–50(–80) cm long, 0.3–0.7 cm broad, light green to whitish brown; the primary rachis 4-angled, channelled or slightly to strongly longitudinally ribbed, smooth or rarely minute verruculose, 10–20(–31) cm long, light green to dark brown, bearing numerous branches and flower clusters; branches and flower clusters appearing whorled, opposite or near opposite at nodes; inflorescence branches 4-angled, channelled or slightly to strongly longitudinally ribbed, smooth or rarely minutely verruculose, usually 1–11 cm long; flower clusters with primary branches 0.8–10.5 cm apart on the rachis, 0.5–3 cm apart on the primary branches, inflorescences occasionally developing secondary branches 0.5–1.5 cm apart. Main subtending bracts of

inflorescences usually 2 or 3, long- to short-deltoid, 10–25 mm long, 0.8–5 mm wide at the widest point, with 1–5 veins; bracts of primary and secondary branches and flower clusters usually 2–4, long- to short-deltoid, 1–5(–15) mm long, 0.6–2 mm wide at the widest point, with single mid vein, longest at the basal node of rachis, shorter upwards along primary rachis as well as on primary and secondary branches. Male flowers in groups of 3–6, usually various ages within each cluster (**Fig. 1D**); bracteoles 3, cucullate, 1–1.5 mm long and 1.4–2 mm broad, membranous, completely or near encircling each flower; short pedicellate or sessile, the pedicels when mature *c.* 0.6 mm long and 0.1 mm wide, terete, pale yellow. Flower buds ellipsoid (**Fig. 1E**), pale yellow, at anthesis becoming campanulate. Perianth segments 6, with distinct outer and inner whorls; outer tepals (sepals) 3, elliptical to broadly elliptical, thin, free except at the very base, uniform in size, 1.6–2 mm long, 1.2–1.5 mm wide, pale yellow; inner tepals (petals) 3, elliptical, free except on the basal 1/5–1/4, uniform in size, 1.6–2 mm long, 1–1.4 mm wide, outer surface mostly brown to dark brown except brighter yellow or creamy yellow for margins, inner surface brown to light brown. Stamens 6, 3 adnate basally to the inner tepals, the filament not obvious 0.2–0.3 mm long, *c.* 0.2 mm diameter; 3 alternating with them and adnate basally to outer tepals, the filament longer, 0.3–1 mm long, *c.* 0.2 mm diameter; anthers all similar, versatile, 0.6–0.8 mm long, 0.4–0.5 mm wide, creamy yellow to bright yellow. Pistillode poorly formed, *c.* 0.5 mm long and 0.4 mm diameter, hyaline or pale yellow (**Fig. 1F**). **Female inflorescences** 28–88 cm long; the scape flattened, 23–71 cm long, (0.25–)0.4–0.65 cm broad, pale green to whitish brown; the primary rachis 4- or irregularly angled or channelled or slightly to strongly longitudinally ribbed, smooth or rarely minutely verruculose, (6–)12–20 cm long, bearing numerous branches and flower clusters; branches and flower clusters appearing whorled or opposite at nodes, very rarely alternate; inflorescence branches 4- or irregularly angled or rarely rounded, smooth or rarely minute verruculose, 1–7

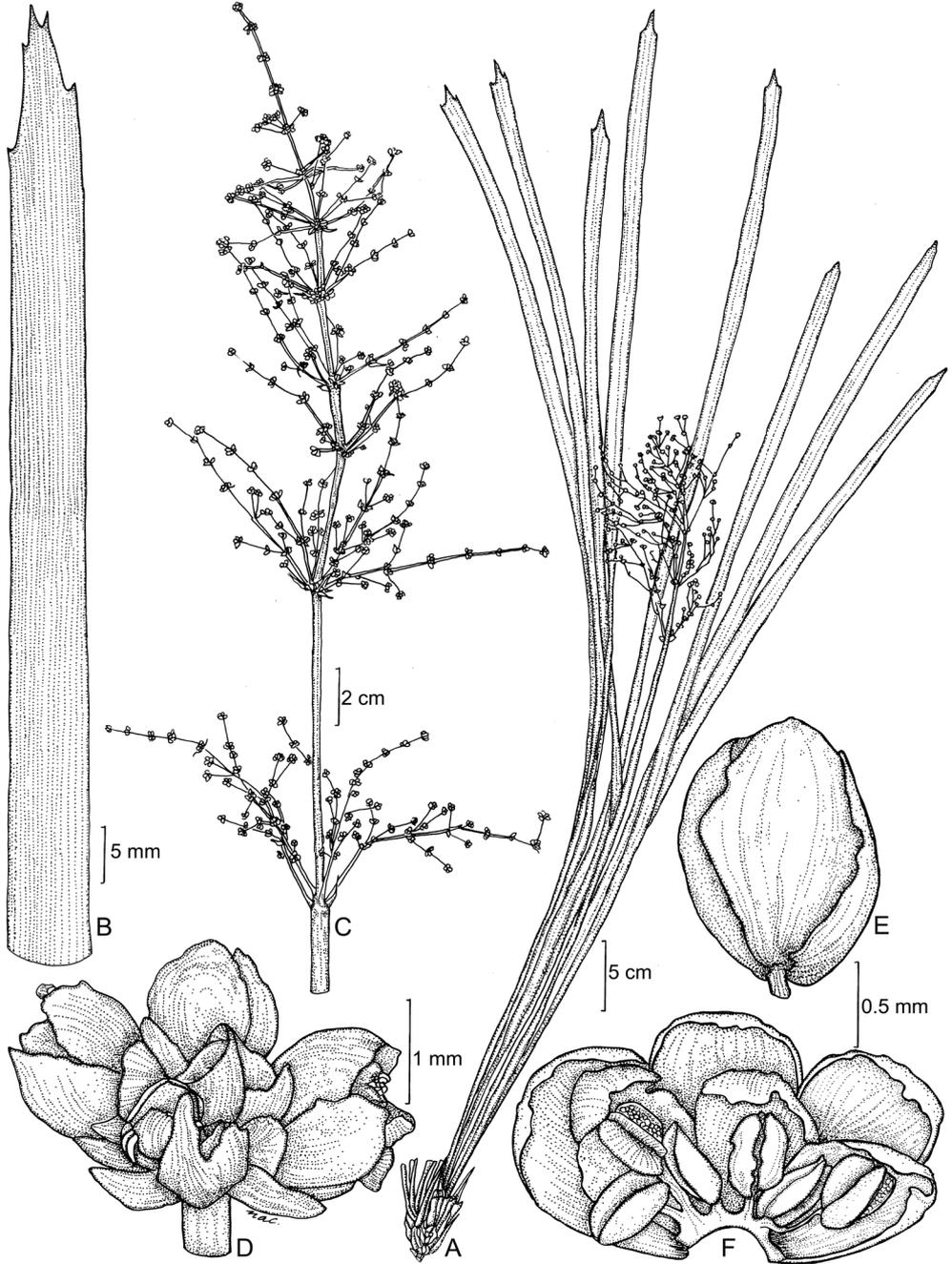


Fig. 1. *Lomandra altior* (male). A. habit of tuft with inflorescence. B. distal part of leaf showing its apex with teeth. C. terminal portion of inflorescence (basal part of scape removed). D. cluster of flowers of various ages. E. mature bud with a short pedicel. F. flower spread open. A & B from *Webb & Tracey 13444* (BRI, holotype); C–F from *Foreman 1725* (BRI). Del. N. Crosswell.

cm long; flower clusters with branches 1–6 cm apart on the primary rachis. Unlike male inflorescences, female inflorescences not developing a third rachis (second branch). Bracts of inflorescences usually 2 or 3, long- to short-deltoid, 15–32 mm long, 3–5 mm wide at the widest point, with 1–5(–7) veins; bracts of branches and flower clusters usually 2–6, long- to short-deltoid, 1–5(–10) mm long, 0.6–2 mm wide at the widest point, with 1–3 veins, longest at the basal node of rachis, shorter upwards along primary rachis as well as on secondary and tertiary rachises, shorter and narrower distally. Female flowers usually in group of 2–6, similar ages within each cluster; each flower subtended by 1–3 cucullate bracteoles, 0.9–1.5 mm long, 1.1–2 mm wide, membranous, pale yellow with purple tinges in the middle, completely encircling the flower base (**Fig. 2D**); sessile or with a very short pedicel. Perianth segments 6; outer 3 tepals (sepals) broadly ovate, 3.1–3.5 mm long, 1.5–1.9 mm wide, creamy to pale yellow with purple tinges at the apex, adnate at the base; inner 3 tepals (petals) ovate, 3.4–3.5 mm long, 1.6–2 mm wide, adnate near base. Staminodes 6, whitish-transparent, 0.4–0.5 mm, filaments 0.15–0.2 mm long, anthers vestigial, 3 inserted on lower middle part of inner tepals, 3 alternating with them on the margin of lower side of each inner tepal. Pistil conspicuous, styles short and fused with 3 stigmatic lobes; ovary urn-shaped, *c.* 1.1 × 1.8 mm, on a ciliolate stalk, *c.* 0.3 × 0.6 mm, locules 3; ovules 1 per loculus. Fruits sessile, usually in groups of 1–3 of similar ages. Fruiting styles 0.8–1 mm long. Capsules depressed globular, usually 4.5–6 mm long, 4.5–6 mm diameter, carpels irregularly wrinkled at maturity; carpels brownish yellow to bright yellow outside, whitish yellow inside; the 6 hardened perianth segments persistent, 2–3 mm long, 1.2–2 mm wide; the hardened bracts occasionally persistent, 1–1.5 mm long, 0.8–1 mm wide (**Fig. 2E**). Seeds 1 per locule, ovoid, *c.* 4.2 mm long and 3.3 mm wide, 2-angled on inner face, rounded on outer face, smooth or slightly rough, translucent, whitish brown (**Fig. 2F**).

Additional specimens examined: Queensland. COOK DISTRICT: NPR 164, Thornton Peak, Nov 1973, *Hyland 7095* (BRI, CNS); *ibid*, Nov 1973, *Hyland 7102* (CNS); Thornton Peak, Nov 1973, *Hartley 14034* (BRI); *ibid*, Sep 1984, *Irvine 2241A* (CNS); SFR 143, North Mary LA, Nov 1978, *Gray 1077* (CNS); Mt Lewis, *c.* 55 km NNE of Mareeba, Oct 1980, *Henderson H2641* (BRI); Mt Lewis, 13 km from junction with Mareeba to Mossman Road, Oct 1987, *Foreman 1725* (BRI, CNS, MEL); Mt Lewis, Jan 1988, *Sankowsky 773 & Sankowsky* (BRI); SFR 143, Riflemead, North Mary LA, Oct 1994, *Gray 5823* (CNS); *ibid*, Nov 1995, *Gray 6401, 6402* (CNS); SFR 143 Parish of Riflemead, North Mary LA, May 1996, *Gray 6733* (BRI, CNS); Mt Spurgeon, Feb 2003, *Cooper WWC1813A & 1813, Jensen, Jago, Russell* (BRI, CNS); Mt Lewis FR, Mt Lewis Road *c.* 100 m past CSIRO EP 118, Dec 2006, *Ford AF4903 & Metcalfe* (BRI).

Distribution and habitat: *Lomandra altior* is endemic to north Queensland and is known only from a few mountain tops and high montane areas in the Wet Tropics bioregion from 1,000 m to 1,350 m altitude. It has been recorded from Thornton Peak in the north, Mt Spurgeon in the centre, and south to the Mt Lewis area (**Map 1**).

The habitats are mainly tropical rainforests, i.e., simple notophyll vine thicket/vine forest on soils of sandy loam or reddish gravelly soil derived from and overlying granite detritus or boulders. The common canopy species at Mt Lewis sites are: *Sloanea macbrydei* F.Muell., *Halfordia kendack* (Montrouz.) Guillaumin, *Sphalmium racemosum* (C.T.White) B.G.Briggs, B.Hyland & L.A.S.Johnson, *Ackama australiensis* (Schltr.) C.T.White, *Elaeocarpus elliffii* B.Hyland & Coode and *Argyrodendron* sp. (Mt Haig L.S.Smith+ 14307). The small tree and shrub species include: *Chionanthus acuminiger* F.Muell., *Streblus glaber* subsp. *australianus* (C.T.White) C.C.Berg, *Ficus leptoclada* Benth., *Lenbrassia australiana* (C.T.White) G.W.Gillett var. *australiana* and *Uromyrtus metrosideros* (F.M.Bailey) A.J.Scott. *Lomandra altior* has also been recorded in montane herbland/heathland on exposed granite outcrops adjacent to these rainforests.

Phenology: Male flowering was mainly recorded from September to November. It was also recorded in February. Female flowering was recorded in October and November.

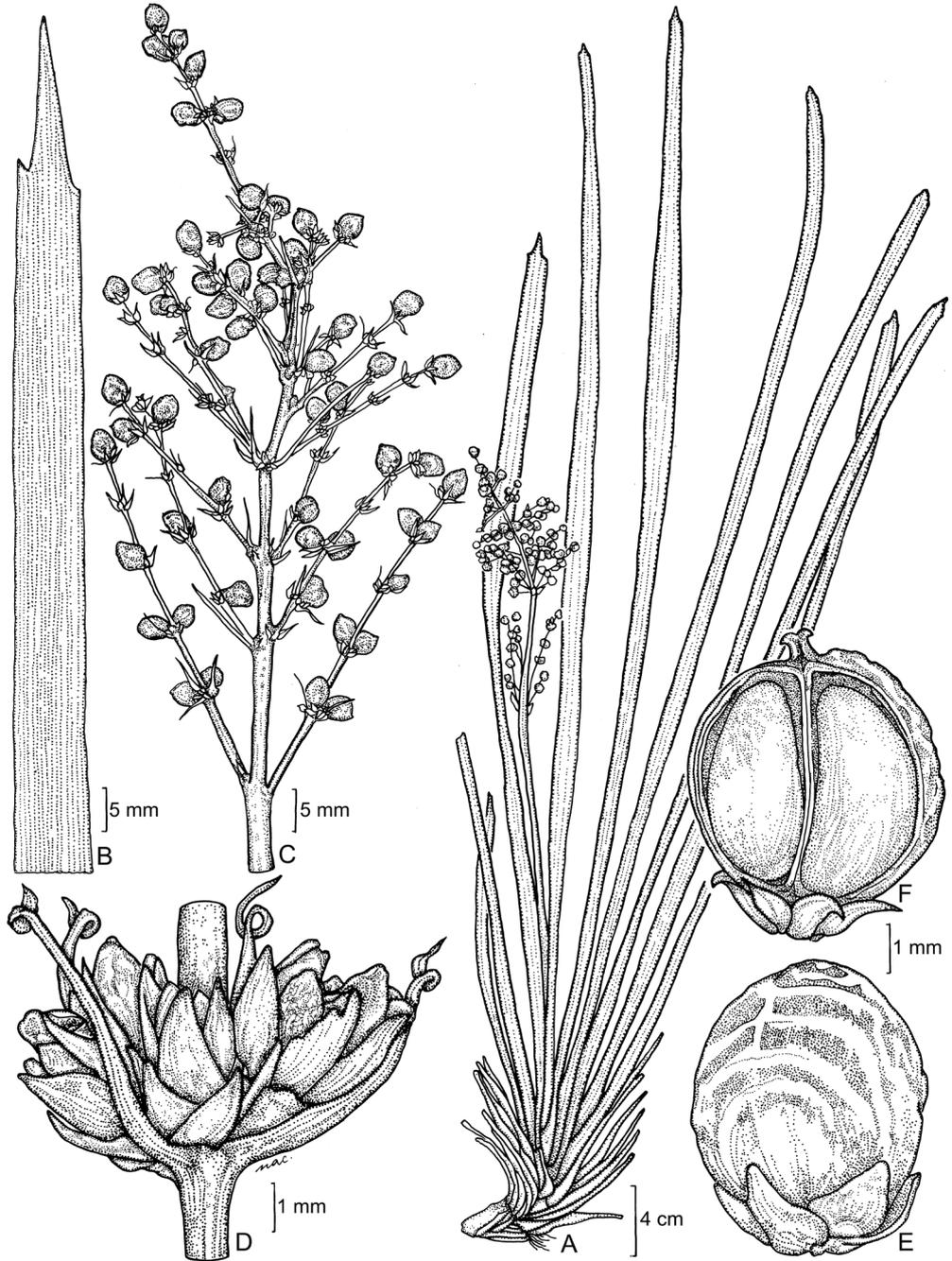


Fig. 2. *Lomandra altior* (female). A. habit of plant with fruiting inflorescence. B. distal part of leaf showing its apex with teeth. C. inflorescence (basal part of scape removed), fruiting. D. cluster of flowers of similar ages. E. fruit with wrinkles and hardened persistent perianth. F. fruit with longitudinal cross-section, showing fruiting style and two carpels of the tri-carpellate ovary. A & D from *Henderson H2641* (BR1); B, C & E from *Cooper WWC1813A* (BR1); F from *Gray 6733* (CNS). Del. N. Crosswell.

Mature fruit was mainly collected from December to February. It was also recorded in May.

Affinities: *Lomandra altior* is putatively closely related to *L. hystrix*, from which it differs most obviously in the short inflorescence rachis, the significantly shorter bracts of flower branches and flower clusters, and the depressed globular fruit (pyramid-shaped fruit for *L. hystrix*).

Notes: *Lomandra altior* is parapatric with *L. hystrix*; the latter species has a wide distributional range in eastern Australia from Cooktown in north Queensland to Coffs Harbour in the Central Coast District of New South Wales. In Queensland, *L. hystrix* is usually a common species mostly from rainforests near and along water courses. However, it is not known to occur from high altitudinal mountain tops of the Wet Tropics bioregion.

Conservation status: *Lomandra altior* is only known within a narrow geographic range on higher mountain areas in north Queensland; however, it can be a common species where it occurs. It has been recorded from Daintree NP, Mount Spurgeon NP and Mount Lewis NP, and is not known to be at risk in the wild. Therefore, the species is not considered to be threatened and a **Least Concern** conservation status is recommended using the criteria by IUCN Standards and Petitions Committee (2019).

Etymology: From the Latin *altior* meaning 'higher'. This refers to the high altitude habitat where the species occurs.

***Lomandra breviscapa* Jian Wang ter sp. nov.**

Resembling *L. hystrix* (R.Br.) L.R.Fraser & Vickery, but differing in the male and female inflorescences with shorter rachis, shorter bracts of flower branches and flower clusters, and globular ovoid fruit. It differs from *L. altior* Jian Wang ter by the significantly shorter scapes and shorter rachis of both male and female inflorescences, shorter bracts of female inflorescence, and depressed globular seed. **Typus:** Australia. Queensland. COOK DISTRICT: Danbulla National Park, TERN

plot off Mt Edith Road, Robson Creek, 7 Nov 2015, *A. Ford 6479* (holotype: CNS 142792.1; isotypes: BRI, NSW *distribuendi*).

Plants forming tussocks from condensed ascending rhizomes, each tussock usually comprising numerous tufts, each tuft 2–3 cm in diameter at the base with leaves arranged irregularly or often distichously. Leaves glabrous, rather thin and upright, 40–100 cm long, 6–10 mm wide. Leaf sheath margins at first membranous or cartilaginous, fraying into strips or fibres up to 7 cm long, red or dark brown. Leaf blades flat adaxially, usually green, light green or whitish green, with 16–26 parallel veins on both sides; the margins smooth and occasionally slightly rolled; leaf apex mostly acute usually with 2 lateral teeth well below apex, lateral teeth mostly under 1 mm long, but can reach to 9 mm long (**Fig. 3D**); the apex is rarely 3-toothed with the middle one the largest, 3–5 mm long by 2–3 mm wide. Both male and female inflorescences are panicle, usually 1 per tuft, shorter than foliage. **Male inflorescences** 20–25 cm long (**Fig. 3C & E**); the scape flattened, longitudinally ribbed on each side and smooth, 0–5(–8) cm long, 0.3–0.5 cm broad, light to whitish brown; the primary rachis 4-angled, smooth, channelled or slightly to strongly longitudinally ribbed, 16–22 cm long, light to dark brown; bearing numerous branches and flower clusters; branches and flower clusters appearing whorled, opposite or near opposite at nodes, very rarely alternate; inflorescence branches 4-angled, smooth, rounded, channelled or slightly to strongly longitudinally ribbed, usually 1–12 cm long; flower clusters with branches 1–3 cm apart on the primary rachis, (0.5–)1–2.5(–3.5) cm apart on the secondary rachis (first branch), inflorescences occasionally developing a tertiary rachis (second branch) 0.5–2 cm apart. Main subtending bracts of inflorescences usually 2 or 3, long- to short-deltoid, 10–21 mm long, 0.6–2.5 mm wide at the widest point, with 1–5 veins; bracts of branches and clusters usually 1–3, long- to short-deltoid, 1–5 mm long, c. 1.5 mm wide at the widest point, usually with single mid vein, longest at the lower nodes of rachis, shorter upwards along primary rachis as well as on

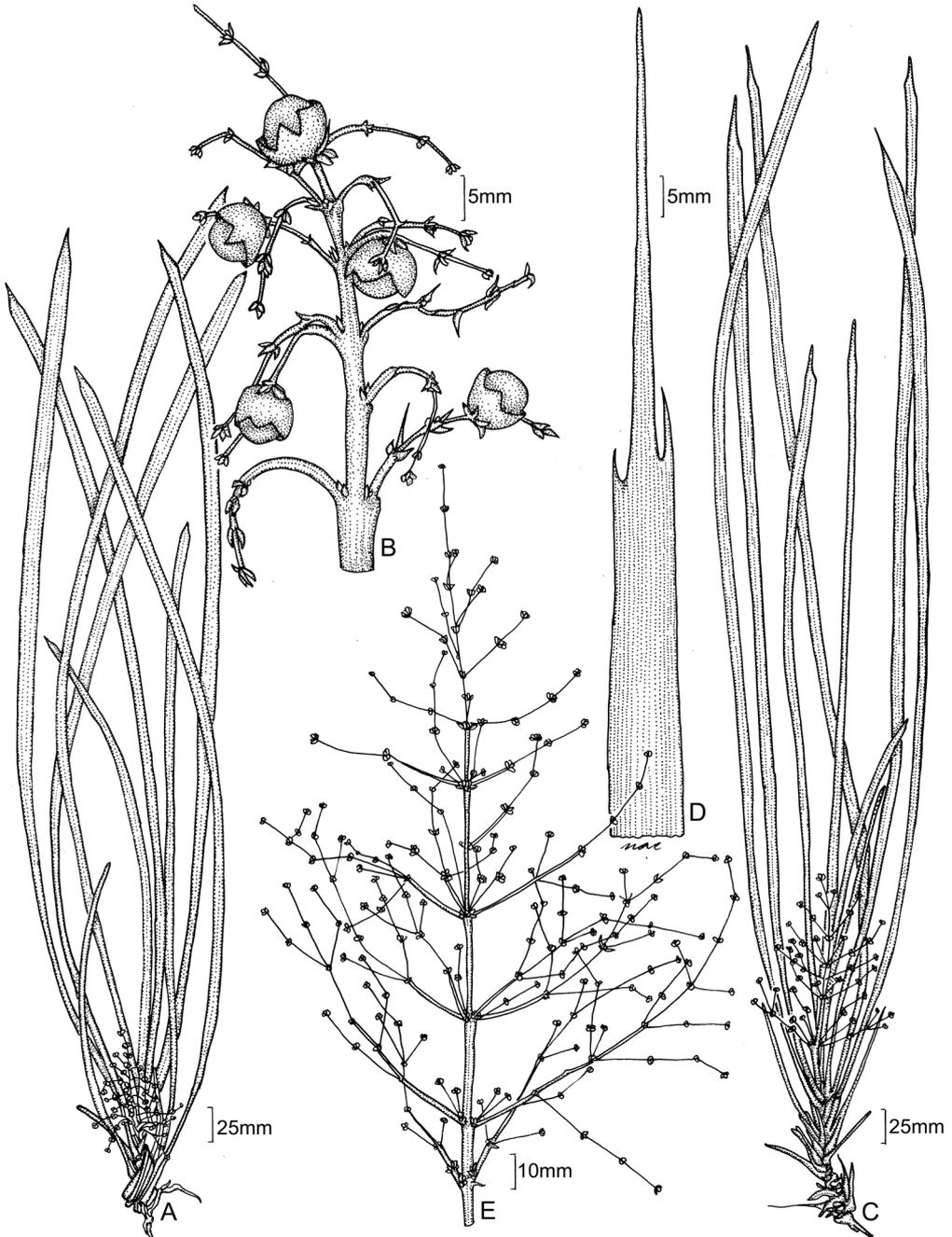


Fig. 3. *Lomandra breviscapa* (male & female). A. habit of tuft with female inflorescence. B. fruiting inflorescence with short scape. C. habit of tuft with male inflorescence. D. distal part of leaf from a male plant showing the apical teeth. E. male inflorescence with flower buds and mature flowers. A from Gray 8304 (CANB). B from Gray 6740 (CNS). C from Ford 6479 (CNS, holotype). D from Jessup, Guymer & McDonald GJM5131 (BRI). E from Skull & Power s.n. (JCT S-04552). Del. N. Crosswell.

secondary and tertiary rachis. Male flowers in groups of 2–5; similar ages within each cluster, bracteoles 3, cucullate, *c.* 1 mm long and 1.1 mm broad, membranous, completely or nearly so, encircling each flower. Flowers sessile, rarely shortly pedicellate, the pedicels when mature *c.* 0.2 mm long \times 0.1 mm wide, terete, pale yellow. Flower buds ellipsoid, pale yellow, becoming obovoid at anthesis. Perianth segments 6 with distinct outer and inner whorls; outer tepals (sepals) 3, elliptical to broadly elliptical, thin, free except at the very base, uniform in size, 1.3–1.8 mm long, 1.2–1.6 mm wide, pale yellow; inner tepals (petals) 3, elliptical, free except on the basal 1/6–1/5, uniform in size, 1.6–2.4 mm long, 1–1.2 mm wide, outer surface mostly brown to dark brown except brighter yellow or creamy yellow margin, inner surface brown to light brown. Stamens 6, 3 adnate basally to the inner tepals, the filament 0.4–1 mm long, *c.* 0.2 mm diameter; 3 alternating with them and adnate basally to outer tepals, the filament 0.4–0.6 mm long, *c.* 0.2 mm diameter; anthers all similar, versatile, 0.3–0.4 mm long, 0.2–0.3 mm wide, creamy yellow to bright yellow. Pistillode poorly formed, *c.* 0.3 mm long and 0.2 mm diameter, hyaline or pale yellow. **Female inflorescences** 10–15 cm long (**Fig. 3A**); the scape flattened, pale to whitish brown, 0–5 cm long, 0.25–0.5 cm broad; the primary rachis 4-angled or irregularly so, or channelled or slightly to strongly longitudinally ribbed, smooth, 3–9 cm long, bearing numerous branches and flower clusters; branches and flower clusters appearing whorled or opposite at nodes, very rarely alternate; inflorescence branches 4-angled or irregularly so, smooth, 1–4 cm long; flower clusters with primary branches 0.5–2 cm apart on the rachis. Unlike male inflorescences, female inflorescences not developing a secondary branch. Main subtending bracts of inflorescences 2, usually with single vein, long- to short-deltoid, 5–12 mm long, 2.5–3 mm wide at the base with 1–3 veins; bracts of branches and clusters usually 1–3, long- to short-deltoid, up to 5 mm long, 2–3 mm wide at the base, often largest at the basal node of primary rachis, shorter and narrower distally. Female flowers in group of 1–4, similar ages within each cluster;

each flower subtended by 1–3 cucullate bracteoles, 1–1.5 mm long, 1.1–1.8 mm wide, membranous, pale yellow, completely encircling the flower base; female flowers with a pedicel *c.* 0.6 mm long \times 0.5 mm wide, outer 3 tepals (sepals) broadly ovate, *c.* 2 mm long \times 1.5 mm wide, creamy to pale yellow with purple tinges at the apex, adnate at the base; inner 3 tepals (petals) ovate, *c.* 1.9 mm long \times 1.4 mm wide, adnate near base. Staminodes 6, whitish-transparent, *c.* 0.2 mm long, filaments *c.* 0.1 mm, anthers vestigial, 3 inserted on lower middle part of inner tepals, 3 alternating with them on the margin of lower side of each inner tepal. Pistil conspicuous, styles short and fused, with 3 stigmatic lobes; ovary urn-shaped, *c.* 0.9 \times 0.6 mm. Fruits sessile, usually in groups of 1 or 2 of similar ages. Fruiting styles 0.3–0.5 mm long. Capsules globular ovoid, usually 6–8 mm long, 5–6 mm diameter, carpels irregularly wrinkled at maturity (**Fig. 3B**); carpels brownish yellow to bright yellow outside, whitish yellow inside; the 6 hardened perianth segments persistent, 2–2.5 mm long, 1.3–1.8 mm wide; the hardened bracts occasionally persistent. Seeds 1 per locule, usually 1 or 2 fully developed per fruit, depressed globular, 3.5–5.5 mm diameter, smooth or slightly rough, translucent, whitish to dark brown.

Additional specimens examined: Queensland. COOK DISTRICT: Chalumin-Worree 275kV Transmission Line, near Copper Lode Falls Dam, Lamb Range, SW of Cairns, Oct 1994, *Skull & Power s.n.* (JCT S-04552); SFR 185, Danbulla, Mt Edith, Nov 1995, *Gray 6382* (CNS); Summit of Bellenden Ker Centre Peak, Jul 1962, *Webb & Tracey 7010* (BRI); TR 1230 Boonjee LA, SE of Butchers Creek township, Oct 1988, *Jessup, Guymer & McDonald GJM5131* (BRI); Summit of Bellenden Ker, near radio transmitter building, Aug 1989, *Bostock 0997 & Guymer* (BRI). Mt Bartle Frere, May 1996, *Gray 6740* (CNS); Summit Mt Bellenden Ker, Sep 2002, *Gray 8304* (CANB).

Distribution and habitat: *Lomandra breviscapa* is endemic to north Queensland and restricted to a few mountain tops and montane localities in the Wet Tropics bioregion. The altitudes range from 622 m to 1,622 m. The species has been recorded from SE of Mareeba and Mt Edith in the north, south to Mt Bartle Frere in the Bellenden Ker Range (**Map 1**).

The habitats are mountainous notophyll rainforest on summit plateaus of sandy soils derived from granite or clay soil derived from metasediments. The common canopy and/or subcanopy species at Mt Edith sites are: *Flindersia bourjotiana* F.Muell., *Cardwellia sublimis* F.Muell., *Alphitonia petriei* Braid & C.T.White, *Litsea bindoniana* (F.Muell.) F.Muell. and *Blepharocarya involucrigera* F.Muell. The small tree and shrub species include: *Polyscias australiana* (F.Muell.) Philipson, *Medicosma fareana* (F.Muell.) T.G.Hartley, *Daphnandra repandula* (F.Muell.) F.Muell. and *Steghanthera laxiflora* (Benth.) Whiffin & Foreman subsp. *laxiflora*. The associated species at Bellenden Ker Range included: *Cinnamomum propinquum* F.M.Bailey, *Rockinghamia brevipes* Airy Shaw and *Gahnia sieberiana* Kunth.

Phenology: Male flowering has been most commonly recorded in October and November. It has also been recorded as early as June. Female flowering has only been recorded in September, but is not thought to be different to that of the males. Mature fruit was collected from May and August.

Affinities: *Lomandra breviscapa* is allied to *L. hystrix* but differs by the male and female inflorescences with shorter rachises, shorter bracts of flower branches and flower clusters and globular ovoid fruit. It is also putatively closely related to *L. altior*, but is distinguished by the male and female inflorescences with significantly shorter scapes (0–8 cm long, 21–80 cm long for *L. altior*), shorter rachises (5–8 cm long, 12–21 cm long for *L. altior*), shorter bracts of female inflorescence (5–12 mm long, 15–32 mm long for *L. altior*), and different seed shapes (depressed globular, 3.5–5.5 mm diameter; ovoid *c.* 4.2 × 3.3 mm for *L. altior*).

Notes: Although *Lomandra breviscapa* has short inflorescence scapes usually 0–8 cm long, they can grow longer in cultivation under favourable gardening conditions. A single specimen sheet (BRI [AQ663055]) of a male plant with 20 cm long scape was collected in the garden of D & O Hockings at Maleny, south-eastern Queensland. This plant was originally collected from the summit of Mt Bartle Frere in October 1998.

Conservation status: *Lomandra breviscapa* is a frequent species where it occurs. It has been recorded from Dinden NP, Danbulla NP, Gadgarra NP and Wooroonooran NP and is not known to be at risk in the wild. Therefore, it is not considered to be threatened and a **Least Concern** conservation status is recommended using the criteria by IUCN Standards and Petitions Committee (2019).

Etymology: From the Latin *brevis* (short) and *scapus* (peduncle), in reference to the short stalk (scape) of both male and female inflorescences.

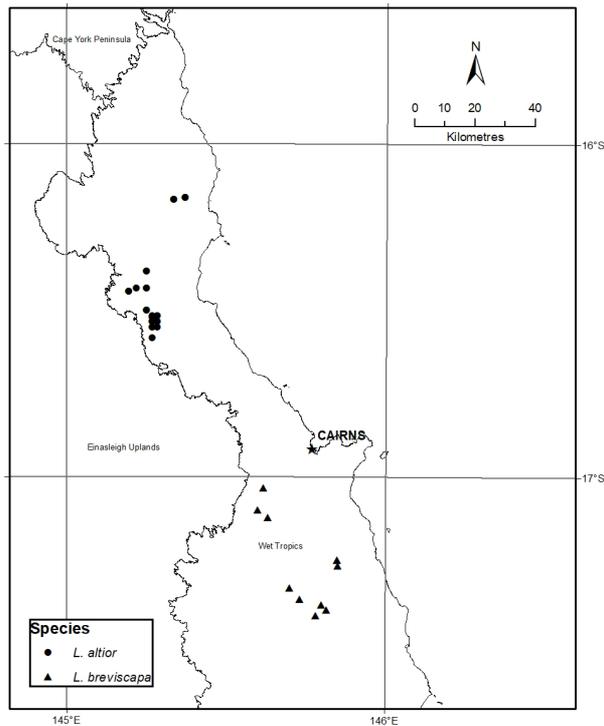
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Map 1. Distribution of *Lomandra altior* and *L. breviscapa*.