

Lomandra grayi Jian Wang ter (Laxmanniaceae), a new species from north-east Queensland, Australia

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Summary

Wang, J. (2023). *Lomandra grayi* Jian Wang ter (Laxmanniaceae), a new species from north-east Queensland, Australia. *Austrobaileya* 13: 1–6. *Lomandra grayi* Jian Wang ter from tropical north-east Queensland is described, illustrated and compared to the morphologically similar species *L. filiformis*. Notes are provided on its distribution (including a map), habitat, phenology and affinities. A conservation status of Least Concern is recommended.

Key Words: Laxmanniaceae; *Lomandra*; *Lomandra filiformis*; *Lomandra grayi*; flora of Australia; flora of Queensland; taxonomy; new species

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Introduction

The genus *Lomandra* Labill. (Laxmanniaceae) includes 59 species to date (Wang 2021; CHAH 2022). There are 56 species endemic to Australia, two endemic to Australia and New Guinea and one endemic to New Caledonia (Lee & Macfarlane 1986; Wang 2021). *Lomandra* has had various family placements over the past decades, including Xanthorrhoeaceae in ‘Flora of Australia’ (Lee 1966; Lee & Macfarlane 1986), Dasypogonaceae (Briggs 1986; Chase *et al.* 1995) and Laxmanniaceae (Chase & Stevens 1998; Wang 2021). The genus is more often placed in a broadly circumscribed Asparagaceae under subfamily *Lomandroideae* Thorne & Reveal (Chase *et al.* 2009; Gunn *et al.* 2020; Govaerts *et al.* 2022). The family Laxmanniaceae is retained here following the systematics applied at BRI where a narrower circumscription of monocot families is preferred.

The genus *Lomandra* was revised by Lee & Macfarlane (1986) for ‘Flora of Australia’, and they recognised 15 species and four subspecies from Queensland. Currently, there are 19 recognised species in Queensland, as well as three non-autonymic subspecies (Wang 2021). A taxonomic review of *Lomandra* in Queensland is underway.

Lomandra filiformis (Thunb.) Britten belongs to *Lomandra* section *Lomandra*, series *Sparsiflorae* (Benth.) A.T.Lee (Lee & Macfarlane 1986). It includes three subspecies, *L. filiformis* subsp. *filiformis*, *L. filiformis* subsp. *coriacea* A.T.Lee, and *L. filiformis* subsp. *flavior* A.T.Lee. The first is distributed throughout eastern Queensland and New South Wales, the second in south-east Queensland, New South Wales and Victoria, and the third is restricted to north-east New South Wales.

Examination of herbarium material of *Lomandra*, especially from north-east tropical Queensland, has revealed the existence of a distinctive species that has been misidentified, mostly as *Lomandra filiformis* subsp. *filiformis*. The new species *Lomandra grayi* is notably different from *L. filiformis* s.l. in the dissimilar inflorescences of the male and female plants and the male flowers being arranged perpendicularly on the rachis.

Materials and methods

This study is based on morphological examination of *Lomandra* accessions from the Queensland Herbarium (BRI) and the National Herbarium of New South Wales (NSW). Only the BRI and CNS

duplicates of the type collection have been examined, with the remaining duplicates to be distributed from CNS after publication. All measurements were undertaken using a binocular microscope and are based on dried material, except the dimensions of florets, which were reconstituted with boiling water. High resolution images of the type specimen of *L. filiformis* stored at UPS were viewed in detail. Dimensions of measurements are inclusive, i.e. 1.0–1.8 is given as 1–1.8.

Herbarium acronyms follow Thiers (updated continuously). Common abbreviations in the specimen citations are CYP (Cape York Peninsula), Mt (Mount or Mountain, except where part of a National Park or State Forest name) and NP (National Park).

Taxonomy

Lomandra grayi Jian Wang ter, sp. nov.

Resembling *Lomandra filiformis* and its subspecies, differing in the dissimilar appearance of male and female inflorescences, longer male inflorescence, longer female scapes, the longer pedicel of male flowers, and male flowers arranged perpendicularly to rachis. **Type:** Australia. Queensland. COOK DISTRICT: Portland Roads, 2 km E of Brown Creek, 10 June 2004, *B. Gray 8931* (holo: BRI [AQ830232]; isotypes: CNS; BO, CANB, L, MO, NOU, NSW *n.v.*, *distribuendi ex CNS*).

Plants are tussocks with condensed ascending rhizomes, each tussock usually comprising few to numerous tufts. Each tuft is 5–15 mm in diameter at the base with leaves arranged distichously or irregularly. **Leaves** glabrous and usually upright. Leaf sheath margins at first membranous or cartilaginous, fraying into strips or fibres up to 10 cm long, white to light brown. **Leaf blades** flattened or curved adaxially, slightly to strongly convex abaxially, or inrolled especially for the lower part; with up to 25 parallel veins on both sides; the margins smooth or scabrid; leaf apex obtuse, near rounded, minutely toothed, or occasionally acuminate. Leaves of male plants 28–70 cm long, (1–)2–4(–5) mm wide. Leaves of female plants 33–52 cm long, (2–)3–

5 mm wide. Male and female inflorescences dissimilar in appearance. **Male inflorescence** a raceme, unbranched or bearing a few slender branches, each branch 3–9 cm long at the base or near the base of rachis; the scape flattened, smooth, several vertical parallel veins on both sides obvious, especially on dried specimens, 9–32 cm long, (0.6–)1.5–2.5 mm broad, white to light brown; the rachis slightly flat to terete, smooth or rarely slightly verrucose, irregularly vertically angled or channelled, (6–)11–23 cm long, 0.5–2 mm broad, white to light brown; inflorescence and its branches usually subtended by a bract, long- to short-deltoid, 2.5–10 mm long, 0.5–1 mm wide at the base (that is usually the widest point), white to light brown, membranous except the mid vein. **Male flowers** (20–)40–80(–120), solitary, alternate or sometimes appearing paired or a few grouped together, rarely whorled; each flower subtended by bract, 1.5–2(–4) mm long, 0.5–1 mm wide, usually completely encircling the pedicel; flowers borne perpendicularly to rachis, pedicels terete, (2–)3–4(–7) mm long, 0.1–0.2 mm wide, pale, flowers usually of similar age within each inflorescence; buds ellipsoid to globular, becoming hemispherical or flattened-globose at anthesis, 1.5–2 mm long, 2.5–3 mm wide at open end. **Male perianth** segments 6 with distinct outer and inner whorls; outer tepals (sepals) 3, long- to short-deltoid, free except on the very base, uniform in size, texture thick with thin whitish margins, 1.6–1.8 mm long, 0.6–0.8 mm wide, green to light green; inner tepals (petals) 3, broadly elliptical, free except on the basal *c.* 1/5, uniform in size, texture thick with slightly thin margins, 1.5–2 mm long, 1–1.5 mm wide, light yellow to light brown except for whitish colour on the margins. **Stamens** 6, 3 adnate basally to swollen inner surfaces of inner tepals, 2 adnate basally to swollen base of inner tepals, 1 adnate basally to swollen base of outer tepal; filaments lacking; anthers all similar, versatile, 0.4–0.7 mm long and 0.25–0.5 mm wide, bright yellow to occasionally creamy yellow; pistillode in the centre very rarely developed, mostly whitish; stigma and style hardly formed. **Female inflorescence** simple, (6–)14–30 cm long,

rarely with a few branches, each up to 1 cm long at the base or near the base of rachis; the scape flattened, smooth, often with several vertical parallel veins on both sides, obvious on dried specimens, creamy to light brown, 10–22 cm long, 1.4–2 mm broad; the rachis irregularly angled, smooth or rarely minutely verrucate, 1.5–3.5 cm long; inflorescence bracts 0–2, long- to short-deltoid, up to 5 mm long and 4 mm wide at the base (the widest point); each flower has a bract resembling the general bracts, but can also be broadly cucullate, 1.5–4 mm long and 1–3 mm wide, white to light brown, membranous, 1/2–4/5 encircling the pedicel. **Female flowers** 10–25, alternate, single, appearing crowded; borne in clusters on rachis; pedicels terete, or irregularly angled and channelled, 0.5–0.6 mm long, 0.4–0.5 mm wide, creamy to pale brown, flowers usually of similar age within each inflorescence; buds globular, becoming cup-shaped with age, pale cream to greenish. **Female perianth** segments 6 with distinct outer and inner whorls; outer tepals (sepals) 3, greenish, ovate, 2.2–2.8 mm long, 1.4–1.8 mm wide, connate at the base; inner tepals (petals) 3, pale cream, broadly ovate, 2.6–3.6 mm long, 1.6–2.6 mm wide, connate near base. **Staminodes** inconspicuous or sometimes absent, when present lacking filaments and bearing vestigial anthers, 3 inserted on the middle part of inner tepals, 3 alternating with them on the middle of lower part of each outer tepal; pistil conspicuous, styles very short and fused with 3 stigmatic lobes; ovary sessile, flattened globular, 0.6–1 mm long, 1.5–18 mm diameter, with 3 locules; ovules 1 per loculus. **Fruiting pedicels** 1–3 mm long, single, occasionally in groups of 2 or 3 in the lower section. **Capsules** obovoid, usually 6–7 mm long, 5–7 mm diameter, light brown to brown, each carpel with 1–5 transverse wrinkles; carpel light to dark brown inside; the carpel margins smooth; fruiting perianths with usually 6 tepals, leathery, persistent, outer whorl 2.1–2.3 mm long, 1.8–2 mm wide; inner whorl 2.9–3.2 mm long, 2.6–2.8 mm wide, bracts occasionally present. **Seeds** 1 per locule, usually two seeds in each fully developed fruit, narrowly ovoid to ovoid, 4.1–4.5 mm long, 2.4–2.6 mm wide, usually

2-angled on inner face, rounded on outer face, smooth to slightly wrinkled, translucent in appearance, light brown. **Fig. 1.**

Additional specimens examined: Queensland. COOK DISTRICT: Lockerbie, 10 miles [16.6 km] WSW of Somerset, Apr 1948, *Brass 18469* (BRI); *ibid.*, Apr 1948, *Brass 18502* (BRI); 18 km north of Captain Billy turn, on Cape York Road, Jun 2004, *Gray 8924* (BRI, CNS); Mine lease near Skardon River, Apr 2011, *Wannan 6065 et al.* (BRI); Unigan Reserve, Head of Swamp, Weipa, Feb 1989, *O'Reilly 166* (BRI); 8 km from the beach turnoff from Bolt Head on the track to Bromley Station, Jul 1990, *Clarkson 8849* (BRI); Moreton Telegraph Station campground western side, May 2013, *Thompson ST13231* (BRI); W side of Wenlock crossing on Frenchman's Track, May 2013, *Thompson ST13299*, *Nobel & Nelson* (BRI); 7.3 km (by road) W of Tozer Gap, 92 km (by road) NE of Peninsula Development Road, Jun 1993, *Conn 3795 & Doust* (BRI, NSW); 12 km N of the Pennefather Road turnoff on the Weipa – Mapoon Road and 50 m to the E of the road, CYP, Jun 2017, *Addicott EPA3824* (BRI); Olive River Environmental Reserve, 8 km E by road of 'Bromley' Homestead, 48 km E of Moreton Telegraph Station, CYP, Jun 2007, *Forster PIF32827 & McDonald* (BRI, NSW); Browns Creek area, 18 km E of Pascoe River crossing of Portland Road toward Lockhart River, Jun 2017, *Fell DGFBC18/14 & Pritchard* (BRI); 24.2 km S of Batavia Downs on the Peninsula Development Road, Apr 1990, *Clarkson 8322 & Neldner* (BRI); McIlwraith Range, 10.8 km from Peach Creek Crossing, past Forest Pocket, Aug 2002, *Gray 8206 & Jones* (BRI); NNE of Strathburn airstrip on road to Yarraden, Jun 2005, *Wannan 4001 & Beasley* (BRI); 11.5 km W of the Laura to Musgrave Road on the track to Dixie, Jun 1989, *Clarkson 8127* (BRI); Laura Quinkan country, Sandy Creek about 200 m of junction with Laura River, Jun 2018, *McDonald KRM20476 & Gugu Yalangi Rangers* (BRI); Midslope of southern fall of Carbine Tableland on Brooklyn Wildlife Sanctuary, c. 5.4 km W of Mt Molloy, Feb 2013, *Jensen 2777 & Kemp* (BRI); c. 700 m N of high transmission powerline, Bridle Creek area, N of Bare Hill, 18.5 km ENE of Mareeba, Feb 2018, *Kemp JEK20062 & Jensen* (BRI); 1 km SW of Stones Hill, east of Mareeba, Jun 1993, *Bean 5695 & Forster* (BRI); Springmount Road, c. 10 km W of Walkamin, May 1990, *van der Werff 11631* (BRI). NORTH KENNEDY DISTRICT: Department of Primary Industry Experimental Plots, Boomerang Station via Mt Garnet, Mar 1975, *Staples 2034* (BRI).

Distribution and habitat: *Lomandra grayi* is endemic to tropical north-east Queensland, primarily on Cape York Peninsula, from the tip of Cape York to Boomerang Station near Mt Garnet (**Map 1**). It has been recorded in the Cape York Peninsula (CYP), Wet Tropics (WET) and Einasleigh Uplands (EIU) Bioregions (REF 2023). The altitudes of locations range from 18 m to 840 m.

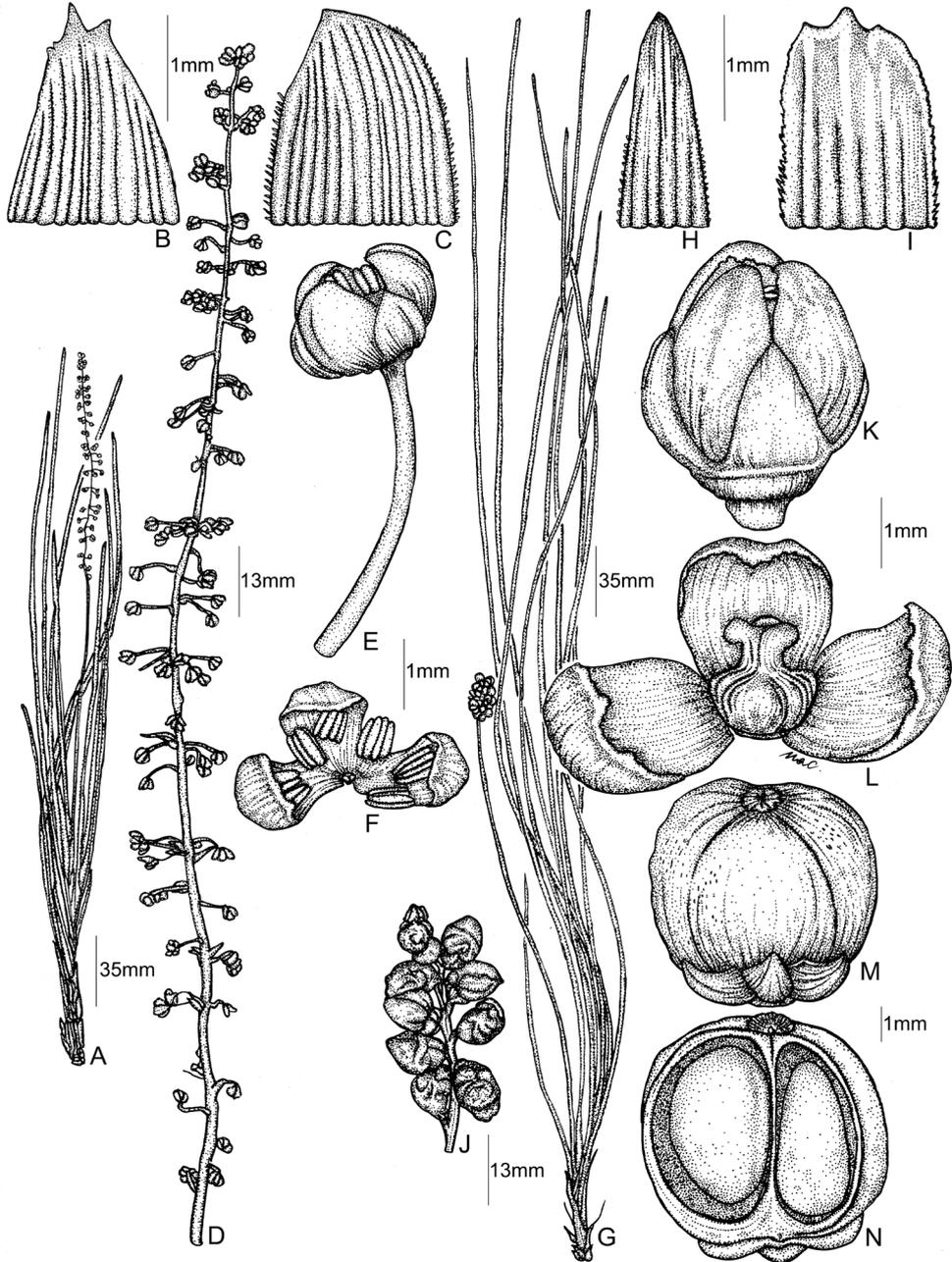


Fig. 1. *Lomandra grayi*. (A–F ♂, G–N ♀). A. habit of tuft with inflorescence. B & C. leaf apex with teeth. D. inflorescence. E. flower. F. flower spread open. G. habit of tuft with inflorescence. H & I. leaf apex with teeth. J. inflorescence. K. unopened flower with a short pedicel. L. flower spread open. M. unopened fruit. N. side section of fruit. A & D from *Gray 8931* (BRI, holotype); B from *Brass 18502* (BRI); C, E & F from *Thompson ST13231* (BRI); G, H & J from *Wannan 4001 & Beasley* (BRI). Del. N. Crosswell.

Lomandra grayi grows with a diverse suite of grass and herbaceous species. Its habitat is mainly open forest or woodland but also occurs on rainforest margins on a variety of substrates including sandy loam, clay loam and ironstone gravel. The dominant tree species may include, in varying compositions: *Eucalyptus crebra* F.Muell., *E. drepanophylla* F.Muell. ex Benth., *E. platyphylla* F.Muell., *E. portuensis* K.D.Hill, *E. tetradonta* F.Muell., *Corymbia citriodora* (Hook.) K.D.Hill & L.A.S.Johnson subsp. *citriodora*, *C. clarksoniana* (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson, *C. confertiflora* (F.Muell.) K.D.Hill & L.A.S.Johnson, *C. hylandii* (D.J.Carr & S.G.M.Carr) K.D.Hill & L.A.S.Johnson, *C. nesophila* (Blakely) K.D.Hill & L.A.S.Johnson, *Lophostemon confertus* (R.Br.) Peter G.Wilson & J.T.Waterh., *Erythrophleum chlorostachys* (F.Muell.) Baill., *Canarium australianum* F.Muell. var. *australianum*, *Melaleuca viridiflora* Sol. ex Gaertn. var. *viridiflora* and *Banksia dentata* L.f.

Phenology: Based on herbarium collections of *Lomandra grayi*, male flowering was recorded mainly from April to July. However, its flowering can be as early as in February. Female flowering was recorded in June and July. Mature fruits were collected mostly during June to August with one record in March.

Affinities: *Lomandra grayi* is readily distinguished by its male flowers arranged perpendicularly to the inflorescence rachis. Although no species can be easily confused with *Lomandra grayi*, it is morphologically similar to *L. filiformis* which is widespread in eastern Australia, from northern Queensland, through New South Wales to Victoria. The two species share similar characteristics: such as tussock forming from condensed ascending rhizomes, the size of leaves and shape of leaf tips. *Lomandra grayi* can be easily distinguished from *L. filiformis* by the dissimilar appearance of male and female inflorescences (male and female inflorescences are similar for *L. filiformis*), the longer male inflorescence (20–55 cm for *L. grayi*, 2–15 cm for *L. filiformis*), longer

female scapes (10–22 cm for *L. grayi*, 1–5 cm for *L. filiformis*), longer pedicel of male flowers (3–4 mm for *L. grayi*, 0.5–2 mm for *L. filiformis*), and male flowers vertically arranged along rachis.

Conservation status: *Lomandra grayi* is widespread in north-east Queensland. Currently there are many locations known stretching along its geographic range. It can be a very common species where it occurs. It is recorded from Batavia NP (CYPAL), Kulla (McIlwraith Range) NP (CYPAL) and Dinden NP. The species is not considered to be threatened in the wild and a **Least Concern** conservation status is recommended using the IUCN (2019) criteria.

Etymology: This specific epithet honours Bruce Gray. Bruce has been a keen botanical collector for many years, being previously employed as a technical officer with CSIRO at the Australian National Herbarium (QRS) in Atherton. Bruce has collected more than 10,000 plant specimens for Australian herbaria.

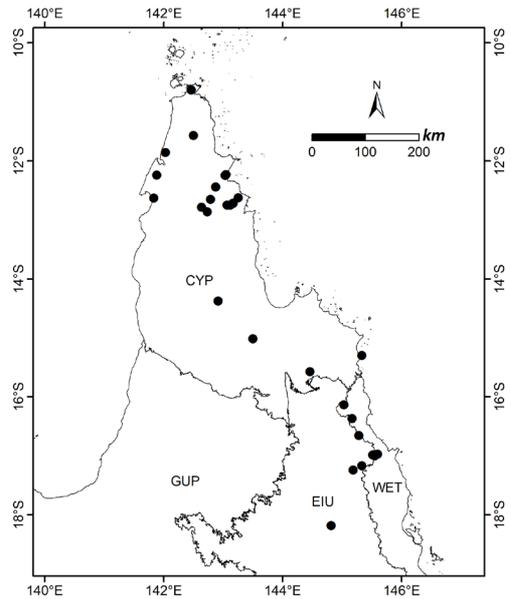
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Map 1. Distribution of *Lomandra grayi* based on collections in Australian herbaria. Abbreviations for Queensland Bioregions: CYP, Cape York Peninsula; EIU, Einiasleigh Uplands; GUP, Gulf Plains; WET, Wet Tropics (REF 2023).