



A taxonomic revision of the genus *Lomandra* Labill. (*Asparagaceae: Lomandroideae*) in New Guinea and lectotypification of the name *Xerotes banksii* R.Br.

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Key words

Lomandra banksii
Lomandra decomposita
New Guinea flora
taxonomy

Abstract The genus *Lomandra* (*Asparagaceae: Lomandroideae*) is taxonomically revised for New Guinea with two species recognised, *L. banksii* and *L. decomposita*. Both also occur in northeast Queensland, Australia, and the former is also recorded in New Caledonia. Lectotypification of the basionym *Xerotes banksii* R.Br., now *L. banksii*, is designated. Notes are provided for both species. An updated identification key for the New Guinean *Lomandra* species is also presented.

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INTRODUCTION

Lomandra Labill. is a genus of *Asparagaceae* in the subfamily *Lomandroideae* and found mainly in Australia. Currently, there are a total of 61 species indigenous in Australia (Wang 2023, IPNI continuously updated), two of this total occur in New Guinea (Stevens 1978, Lee & Macfarlane 1986) and one of the two further extends to New Caledonia (Mueller 1876, Schlechter 1908, Guillaumin 1913) where it is sometimes treated as the separate species *L. insularis* Schltr. (Hallé 1980). The *Liliaceae* s.lat. of Malesia (including New Guinea) were treated by Jessop (1979) but as the family classification adopted excluded *Lomandra*, there is no flora account for the genus that covers New Guinea.

The genus *Lomandra* was first recorded for New Guinea by Mueller (1876), based on a sterile specimen identified as *Xerotes banksii* R.Br. collected by J. Orkney near Baxter's River (Mueller 1876). The species name was first changed to *L. banksii* (R.Br.) Engl. (Lauterbach 1913), then corrected as *L. banksii* (R.Br.) Lauterb. (Stevens 1978). A second species identified as *L. multiflora* (R.Br.) Britten by Stevens (1978) was collected by C.E. Ridsdale (1968) from near Weam, Western District of Papua on 1 August 1967. Currently, two *Lomandra* species are known for New Guinea, *L. banksii* and *L. decomposita* (R.Br.) Jian Wang ter & A.R.Bean (formerly identified as *L. multiflora*).

The current classification of *Lomandra* species (Lee & Macfarlane 1986) places the two New Guinea species near each other in *L. sect. Lomandra* ser. *Lomandra*. A recent molecular phylogenetic study of *Lomandra* (Gunn et al. 2023) provides some support for the Lee & Macfarlane classification though with

indications of a greater number of infrageneric taxa and some indicated changes of rank. However, of particular relevance here is that *L. ser. Lomandra* was found to be non-monophyletic and the relationships of *L. banksii* to be near *L. ordii* (F.Muell.) Schltr. and sect. *Macrostachya* (Benth.) Engl. and distant from *L. multiflora* (to which the non-sampled *L. decomposita* would be expected to be close).

MATERIALS AND METHODS

This revision is based on morphological examination of *Lomandra* material from the following herbaria: BRI, CANB, MEL and NSW (for abbreviations see Thiers continuously updated). Images of type specimens from BM, K and P have also been examined, indicated with * in text. The measurements are based on dried material, but the dimensions of florets are based on material reconstituted with boiling water.

TAXONOMY

Lomandra Labill.

Lomandra Labill. (1805) 92. — Lectotype (designated by Lee in Lee & Macfarlane 1986: 223): *Lomandra longifolia* Labill.
Xerotes R.Br. (1810) 259. — Type: not designated.

Unbranched shrubs or tufted herbaceous plants, dioecious. *Leaves* distichous, with distinctive sheathing basal margins, linear, glabrous, apex entire or with obscure teeth. *Staminate* and *pistillate inflorescences* similar, paniculate with flowers single or in clusters (in clusters in New Guinea), usually whorled but sometimes reduced and appearing irregularly alternate. *Flowers* campanulate, sessile or pedicellate. *Sepals* and *petals* similar except sepals thinner. *Outer stamens* inserted on receptacle or rim of perianth tube; inner on perianth close to or distant from the outer, outer and inner filaments similar or different in length. *Ovary* 3-locular, ± sessile; ovule 1 per locule; style short, stigmas 3. *Capsule* subglobular, loculicidal. *Seeds* ellipsoidal, brown, orange or reddish.

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Distribution — Sixty-one species (Australia, New Guinea, New Caledonia); *Malesia*: two species in New Guinea.

KEY TO THE SPECIES OF LOMANDRA FROM NEW GUINEA

1. Unbranched shrubs, 1–2 m tall. Leaves dehiscent just above the base. Staminate tepals 2.2–3 by 1–1.5 mm. Pistillate

tepals 4.3–5.3 by 2.8–3.2 mm. Fruits symmetrical, strongly pointed at the apex. Seeds orange or reddish when dry 1. *L. banksii*

1. Tufted herbaceous plants, 50–70 cm tall. Leaves not dehiscent. Staminate tepals 0.8–1 by 0.5–0.8 mm. Pistillate tepals 2.5–3.1 by 1.5–2.9 mm. Fruits asymmetrical, not pointed at the apex. Seeds pale brown to brown 2. *L. decomposita*

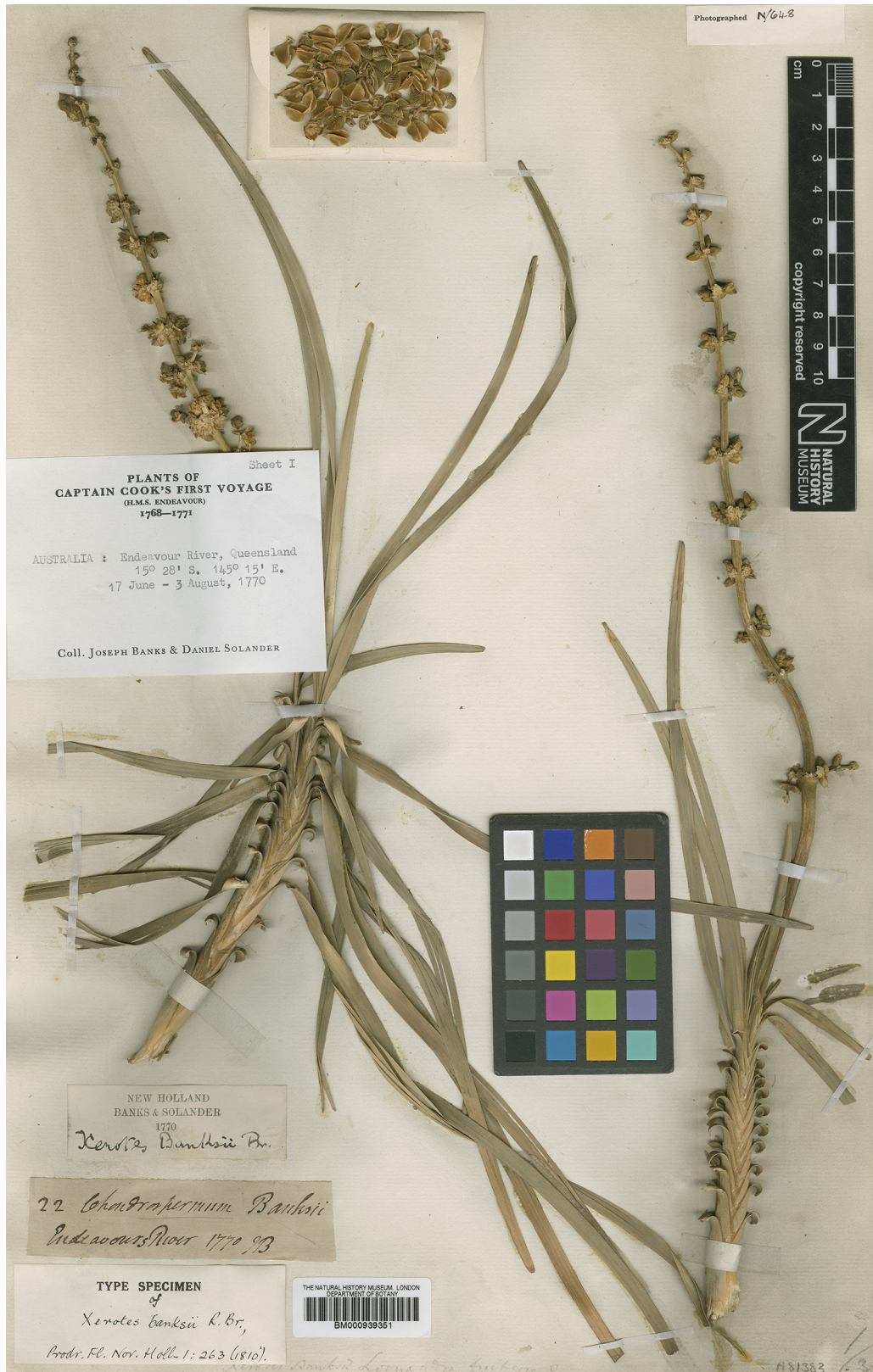


Fig. 1 Lectotype sheet of *Xerotes banksii* R.Br. in the Natural History Museum London (BM000939351); labels showing '*Xerotes banksii* Br.' in Brown's handwriting on the New Holland Banks & Solander 1770 label. The whole sheet is designated as the lectotype. Image with permission of the Trustees of the Natural History Museum, London.

1. *Lomandra banksii* (R.Br.) Lauterb. — Fig. 1

Lomandra banksii (R.Br.) Lauterb. (1913) 294. — *Xerotes banksii* R.Br. (1810) 263. — Lectotype (first step designated by Lee & Macfarlane 1986: 120, second step designated here): *J. Banks & D. Solander s.n.* (lecto BM [BM00939351]*; isolecto BM [BM000990569, BM000990570]*, BRI [AQ424979], MEL [MEL2297611]*, NSW [NSW133221, NSW171097]*, P [P00781047]*), Australia, Queensland, Cook District, Endeavour River, 1770 (see discussion below).

Unbranched shrubs, 1–2 m tall. *Leaves* rather scattered, 25–40 cm long, 3.5–4.7 mm wide; lamina dehiscing readily at c. 0.5 cm from base, remainder recurving strongly; apex with 1–3 obscure teeth. *Inflorescences* terminal, exceeding leaves, branched once or twice, lowest whorl of branches borne 5–15 cm above the base, usually at least 2 cm between whorls, branches to 12 cm long, perhaps shorter in pistillate than in staminate plants. *Staminate flowers* sessile, each ensheathed by two bracts of c. 1 mm long; the outer 3 tepals (sepals) 2.2–2.5 by c. 1.5 mm; the inner 3 tepals (petals) c. 3 by 1 mm; stamens 6, filaments opposite sepals c. 1.7 mm long, filaments opposite petals c. 2.1 mm long, the anthers c. 0.5 mm long; pistillode prominent, c. 1.5 mm long, stigma not developed. *Pistillate flowers* sessile, usually with a single additional ensheathing bract; outer 3 tepals (sepals) 4.3–5.3 by c. 3.2 mm, inner 3 tepals (petals) 4.6–4.8 by c. 2.8 mm; stamens very much as in staminate flowers, but anthers rudimentary; ovary ovoid, 3-angled, c. 2.7 by 1.9 mm across; style c. 1.3 mm long; stigma papillate, with 3 short, retrorse arms. *Fruits* symmetrical, surrounded by persistent tepals at the base, ovoid, 8–9 by 5–7 mm across, usually 3-seeded, strongly pointed at the apex, the valves with 4 or 5 fine transverse wrinkles per mm. *Seeds* ellipsoid, slightly curved or not, c. 5 by 3–3.5 mm across, orange or reddish when dry, the testa coarsely and irregularly reticulate.

Distribution — *Malesia*: Papua New Guinea (Western Province); Australia (NE Queensland), New Caledonia (partly after Plants Of the World Online (POWO) continuously updated).

Habitat & Ecology — *Lomandra banksii* is an occasional plant in dense savannah forests at low altitude. Flowering and fruiting: January.

Specimens examined. AUSTRALIA, *N. Byrnes 3126a* (staminate: BRI), [Australia, Queensland] Lizard Island; *S.L. Thompson SLT14293* (staminate, pistillate and carpellate: BRI), [Australia, Queensland] 25 km Southeast of Lakefield Range base; *K.A.W. Williams 85153* (pistillate and carpellate: BRI), [Australia, Queensland] Dulhunty River, south bank. — NEW GUINEA, *L.J. Brass 8700* (staminate, pistillate and carpellate: A*; pistillate and carpellate: BRI), [Papua New Guinea, Western Division] Tarara, Wassi Kussa River.

Notes — There has been some confusion surrounding the authorship of the combination *Lomandra banksii*. Currently two versions are in use: *Lomandra banksii* (R.Br.) Engl. ex Lauterb., as listed by both the IPNI (continuously updated) and POWO (continuously updated); and *Lomandra banksii* (R.Br.) Lauterb., as used in Australian sources including the Flora of Australia (Lee & Macfarlane 1986) and the Australian Plant Name Index (APNI, continuously updated). Ewart (1916) listed 26 combinations in *Lomandra* for the *Xerotes* species of Brown and others included in the ‘Second Systematic Census’ of Mueller (1889), among them *X. banksii*. However, Stevens (1978) was the first modern author to recognise that it was Lauterbach (1913) who first transferred *X. banksii* to *Lomandra*. Stevens thus applied the name *L. banksii* (R.Br.) Lauterb. when describing the species from New Guinea in detail.

It is noteworthy that Lauterbach (1913: 294) credited the combination *L. banksii* to Engler (1888) by giving the authority as ‘(R. Br.) Engl.’. Despite his presentation of the genus as ‘*Lomandra* Labill. (*Xerotes* R. Br.)’, and thus being the first author to reinstate *Lomandra* as the correct earliest name over *Xerotes*, Engler (1888) did not mention *L. banksii* or indeed any

other *Lomandra* species in his monograph. By citing Engler as the author of the species name, Lauterbach was apparently asserting that Engler (1888) had, without explicitly listing them, transferred all *Xerotes* species names to *Lomandra*. Since Engler did not associate any species epithets with the name of the genus *Lomandra* (see the International Code of Nomenclature for algae, fungi, and plants (ICN) Article 35.2; Turland et al. 2018), Lauterbach is taken to have made an error in author citation and the correct authorship for *Lomandra banksii* is (R.Br.) Lauterb. The usage by Ewart (1916) is a later isonym and has no nomenclatural standing.

Lectotypification — When Brown (1810) described *Xerotes banksii* R.Br. his citation ‘(T.) B v. s.’ referred to material collected by J. Banks & D. Solander in 1770 from Endeavour River, northeast Queensland. Subsequently, Lee & Macfarlane (1986) gave the type citation ‘T: Endeavour River, [Qld], 1770, J.Banks & D.Solander; holo: BM, photo seen (♀); iso: P’. Given that the concept of type specimens did not exist at the time that the name was published by Brown, and that Brown evidently had more than one specimen available to him, this indication of a holotype was incorrect and should instead be taken as a lectotype designation, as indicated by Maberley & Moore (2022) for several other Lee & Macfarlane ‘holotype’ designations. However, JSTOR Global Plants shows that there are three specimen sheets of *X. banksii* R.Br. collected by Banks and Solander present at BM so the Lee & Macfarlane lectotypification should be considered a first step lectotypification. Although only one of the three BM specimens is pistillate as cited by Lee & Macfarlane and it could be argued that this was sufficient to identify the specimen they were citing, it seems preferable to explicitly indicate a specimen using the more recently furnished BM barcode number as a second step lectotypification. Therefore, the lectotype for the name *Xerotes banksii* R.Br. according to the ICN rules (Turland et al. 2018) is chosen here as BM00939351, the only sheet of pistillate plants (having mature fruits); it bears an original label by Banks & Solander and is annotated with the epithet *banksii* (as the unpublished field name ‘*Chondrospermum Banksii*’, possibly by Solander) (Fig. 1). This sheet was also indicated as a ‘Good Candidate for Lectotype’ by Maberley & Moore (2022: 186). The other sheets listed, staminate, with flowers shed, are presumed to be duplicates, part of the original gathering, and we regard them as isolectotypes. Note that some of the other isolectotypes cited above were distributed from BM subsequent to Brown’s death, so they may have been available to Brown when *X. banksii* was published.

2. *Lomandra decomposita* (R.Br.) Jian Wang ter & A.R.Bean

Lomandra decomposita (R.Br.) Jian Wang ter & A.R.Bean (2017) 59. — *Xerotes decomposita* R.Br. (1810) 262. — *Xerotes multiflora* R.Br. var. *decomposita* (R.Br.) Domin (1915) 526. — Lectotype (designated by Wang & Bean 2017): *J. Banks & D. Solander s.n.* (lecto BRI [AQ49624]; isolecto BM [BM000939335, BM000939336]*, BRI [AQ424984], P [P01843933]*), Australia, Queensland, Cook District, Endeavour River, 1770.

Tufted herbaceous plants, 50–70 cm tall. *Stem* a short rhizome. *Leaves* not dehiscing, 50–70 cm long, 2.5–4 mm wide, apex broadly rounded to obtuse without teeth. *Staminate inflorescences* 1 per tuft of leaves, 50–65 cm long, branches whorled or opposite at nodes, 2–5 cm between the whorls, the lowest whorl 20–30 cm long from the base of the inflorescence, with 6–12 branches; the bracts subtending the branches 2–10 cm long, the branches to 11 cm long; clusters of flowers borne in whorls of 3 toward the apex of the branches, the cluster bracts to 3 mm long. *Staminate flowers* 2–4 per cluster, each flower surrounded by 2 bracts; pedicels up to 1 mm long; outer 3 tepals (sepals) c. 1 by 0.7–0.8 mm, the inner 3 tepals (petals)

c. 0.8 by 0.5 mm, stamens 6, the filament often connate throughout their length to the inner tepals; anthers all similar, 0.35–0.45 by 0.2–0.3 mm; pistillode poorly formed. *Pistillate inflorescences* 28–30 cm long; clusters of flowers 1–2.5 cm distant, the cluster bracts to 7.5 mm long. *Pistillate flowers* 2–6 per cluster, each flower surrounded by 2 bracts; the outer 3 tepals (sepals) c. 3.1 by 2.9 mm; the inner 3 tepals (petals) c. 2.5 by 1.5 mm; staminodes 6, whitish transparent, with well-developed filaments and vestigial anthers; ovary obovoid, 1.1–1.3 by 0.7–1 mm diam; style stout, fused, with 3 robust out-curved stigmatic lobes. *Fruits* with usually one seed only developed, asymmetrical, 6–6.5 by 3.3–4 mm across and c. 5 mm deep with distant transverse wrinkled carpels at maturity, not pointed at the apex. *Seeds* ovoid or ellipsoid, 5.5–6 by 3.3–4 by 3–3.5 mm, pale brown to brown.

Distribution — *Malesia*: Papua New Guinea (Western Province); Australia (Queensland).

Habitat & Ecology — *Lomandra decomposita* grows in open woodland. Flowering and fruiting: August.

Specimens examined. AUSTRALIA, J.R. Clarkson 4305 (staminate: BRI), [Australia, Queensland] Coconut Creek, c. 37 km north north east Aurukun; B. Gray 08928 (staminate: BRI, CANB), [Australia, Queensland] Portlands Roads Road, 2 km east Brown Creek; G. Sankowsky 2078 (pistillate: BRI), [Australia, Queensland] Chillili Beach to Cape Weymouth Road. — NEW GUINEA, C.E. Ridsdale NGF 33574 (pistillate: A, BRI, CANB, K, L, LAE), [Papua New Guinea, Western Division] near Weam.

Notes — Stevens (1978) described this species in detail for New Guinea under the name *Lomandra multiflora* (R.Br.) Britten, which currently includes two subspecies *L. multiflora* (R.Br.) Britten subsp. *multiflora* and *L. multiflora* subsp. *dura* (F.Muell.) T.D.Macfarl. The former with staminate flower pedicels 3–8 mm long, that has a wide Australian distribution from north Queensland south to Victoria, but it is not present from Cape York Peninsula (Wang & Bean 2017). The latter, with staminate flowers ± sessile, is restricted to South Australia (Lee & Macfarlane 1986).

Brown (1810) named *Xerotes decomposita* R.Br. based on specimens collected by Banks & Solander from Endeavour River, north Queensland in 1770. This species name was regarded as representing part of the variation in *X. multiflora* by Bentham (1878) and was retained as a synonym by Britten (1905) when he made the combination *Lomandra multiflora*. Domin (1915), however, reclassified it to a variety, *Xerotes multiflora* R.Br. var. *decomposita*, but this was rejected by Lee (1966). It was subsequently included in *L. multiflora* subsp. *multiflora* (Lee & Macfarlane 1986). A new combination *Lomandra decomposita* was eventually made in recognising it as a separate species by Wang & Bean (2017), with this name applying to previous records of *L. multiflora* in Cape York Peninsula, as well as in other locations of northeast Queensland (Wang & Bean 2017) and southern New Guinea.

It is noticeable that the New Guinea population of *Lomandra decomposita* has shorter staminate pedicels (up to 1 mm long) than that of the Queensland populations (pedicels usually 1.5–2.5 mm long), but all other features for the plant in New Guinea are consistent with typical plants from northeast Queensland.

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