



Bergbambos tessellata (Poaceae, Bambusoideae) endemic to southern Africa: new record from Limpopo, South Africa

Authors

^{1,2}Aluoneswi C. Mashau 
^{1,3}Moleseng C. Moshobane 

Affiliations

¹South African National Biodiversity Institute (SANBI), Private Bag X101, Pretoria, 0184, South Africa.

²Centre for African Ecology, School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Johannesburg, Private Bag X3, Wits, 2050, South Africa.

³Centre for Functional Biodiversity, School of Life Sciences, University of KwaZulu-Natal, P/Bag X01, Scottsville, Pietermaritzburg, 3209, South Africa.

Corresponding Author

Dr A.C. Mashau; e-mail: c.mashau@sanbi.org.za.

Dates

Submitted: 30 August 2023
 Accepted: 15 January 2024
 Published: 8 March 2024

How to cite this article:

Mashau, A.C. & Moshobane, M.C., 2024, '*Bergbambos tessellata* (Poaceae, Bambusoideae) endemic to southern Africa: new record from Limpopo, South Africa', *Bothalia* 54, a4. <http://dx.doi.org/10.38201/btha.abc.v54.4>

Copyright: © 2024. The Authors.
 Licensee: SANBI. This work is licensed under the Creative Commons Attribution 4.0 International License

Bergbambos is a temperate C₃ bamboo grass genus, consisting of one species found mainly along southern African mountain ranges (Temperate Afromontane Region). We document here a new record of *Bergbambos tessellata* found in the Thabazimbi area along Hamerkop Street near the fence of an old nursery (non-functional). The specimen was identified at the National Herbarium (PRE) using a light microscope and compared with other herbarium specimens or materials, collected from other South African provinces. This discovery is accompanied by diagnostic features for precise species differentiation, as well as illustrations facilitating visual distinction. Notably, *Bergbambos tessellata* exhibits an unusual geographical range in the Waterberg Biosphere region within the valley. This discovery not only enriches our comprehension of bamboo dispersion dynamics but also engenders a heightened impetus for in-depth investigation into the various factors that underlie its restricted presence within this specific ecological niche. The documentation of this species therefore holds considerable importance in formulating effective conservation strategies and promoting sustainable management practices.

Keywords: *Bergbambos tessellata*, new record, Poaceae, Thabazimbi.

Introduction

Bergbambos Stapleton consists of one species in southern Africa (Soreng et al. 2015). It is a genus of temperate C₃ bamboo grasses, which is mainly found along the southern African Drakensberg (Temperate Afromontane Region). *Bergbambos tessellata* (Nees) Stapleton is the only endemic southern African bamboo that occurs from the Eastern Cape through the KwaZulu-Natal Drakensberg to Lesotho and Free State. The crescent-shaped distribution range of this tree grass is marked in the southwest by the Bamboesberg, west of Tarkastad and in the northeast by Van Reenen's Pass in the Drakensberg. The common name of this grass is *bergamboes* (an Afrikaans word that translates to 'mountain bamboo'). The *bergamboes* or mountain grass was firstly described by Nees von Esenbeck in 1841 as a member of the genus *Nastus*, because of similarity of the spikelet with *Nastus borbonicus* J.F.Gmel (for more information, see taxonomic treatment section).

Materials and methods

The *Bergbambos tessellata* specimen was collected in the Thabazimbi area at Hamerkop Street near an old nursery (non-functional) and that specimen was recorded as the first record of this grass in Limpopo, South Africa. The

specimen of *Bergbambos tessellata* was identified at the National Herbarium (PRE) using a light microscope and compared with other herbarium specimens or materials, collected from other South African provinces. The conservation of this species in Limpopo is not secured, because it seems like people are unaware of the presence of this plant species in the province. This indicates that the species likely escaped from the old nursery to where it is found today.

Taxonomic treatment

Bergbambos tessellata

Bergbambos tessellata (Nees) Stapleton, in *PhytoKeys* 25: 99 (2013).

Basionyms: *Arundinaria tessellata* (Nees) Munro, in *Transactions of the Linnean Society* 26 (1): 31 (1868). *Nastus tessellatus* Nees in *Florae Africae Australioris Illustrationes Monographicae, Gramineae* 1: 463 (1841).

Thamnocalamus tessellatus (Nees) Soderstrom & R.P.Ellis, in *Bothalia* 14 (1): 54 (1982).

Type: South Africa, Eastern Cape, 'in monte Katberg, altitude 500', 'without date', *Drege s.n.* (K, K000335516; PRE, lectotype, designated by Soderstrom & Ellis in *Bothalia* 14 (1): 54 (1982).

Description

Loosely tufted bamboo 1–5 m high; rhizome stout, woody, sympodial with each new rhizome becoming a culm; culm to 20 mm diameter, profusely branched above, dark maroon when young. Leaf blade 50–150 × 8–15 mm, stiff, narrowly lanceolate, tapering to an acuminate apex forming a hard point, strongly cross-veined. Spikelet 16–18 mm long, with tessellate venation; glumes 9.9–15.0 mm long; palea 10.0–12.5 mm long; anthers 7.8–8.0 mm long (Figure 1) (Fish et al. 2015). Flowering infrequently in local populations (flowering recorded in 1908 and 1953) (Soderstrom & Ellis 1982).

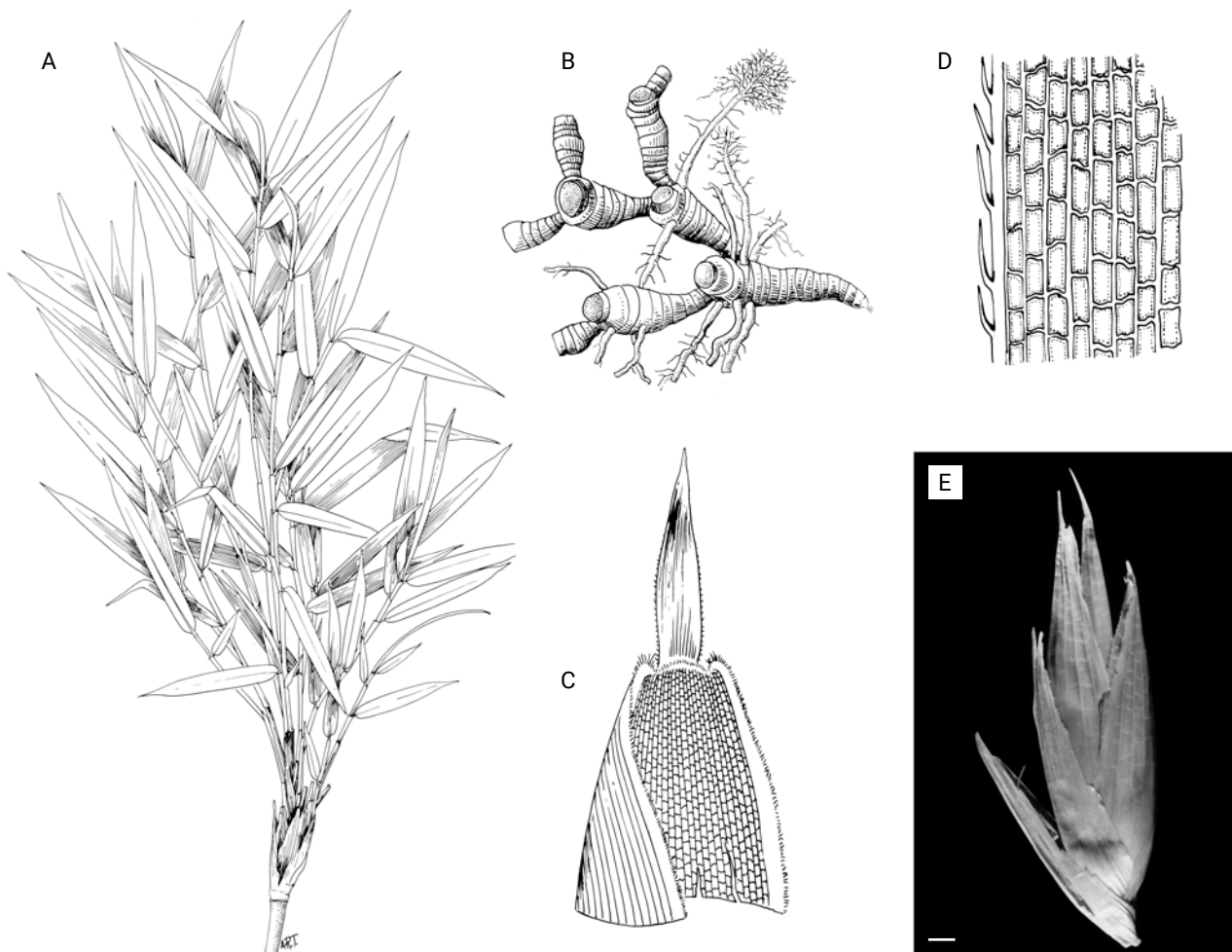


Figure 1. *Bergbambos tessellata*; A, leafy branch; B, rhizome; C, culm leaf (inside view); D, section of leaf blade showing cartilaginous margin and tessellate venation; E, spikelet (16–18 mm). A–D, Artist: A.R. Tangerini, Botany Department, National Museum of Natural History, Smithsonian Institution, USA; E, Photographer: Dr Marinda Koekemoer. Source: Fish et al. (2015).

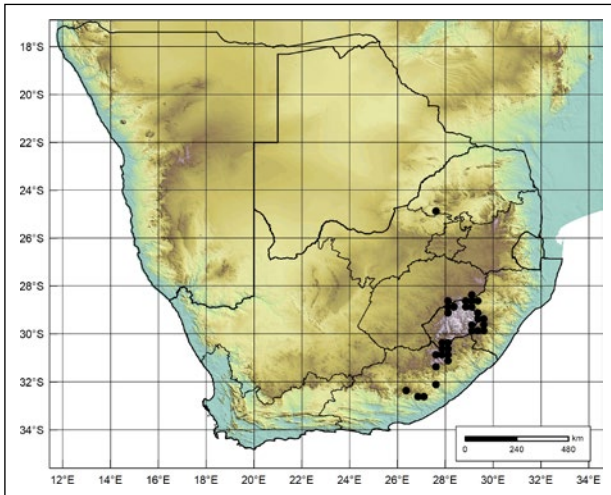


Figure 2. Distribution (●) of *Bergbambos tessellata* in South Africa. Source: map created by Dr Hester M. Steyn.

Distribution and ecology

Bergbambos tessellata is an endemic grass in southern Africa in the Eastern Cape through the KwaZulu-Natal Drakensberg to Lesotho and the Free State (Figure 2). The new record or population of *Bergbambos tessellata* in Limpopo was found in the Thabazimbi area, along Hamerkop Street near the fence of an old and non-functional nursery. The coordinates of the specimen are 24°57'S., 27°40'E (2427DC). This grass is commonly found on mountainsides in wet environments and sheltered ravines, at an altitude range of 1 600–2 700 m a.s.l.

Conservation status and habitat sensitivity

The frequency of *Bergbambos tessellata* in southern Africa is locally common. The identified population is characterised by its limited size, denoting a singular occurrence of this species. *Bergbambos tessellata* displays a distinctive rarity in its geographical distribution, predominantly evident within the Thabazimbi regions of the Waterberg Biosphere. The current investigation documented a range of 100–250 mature individuals within each population surveyed.

Crucially, no indications of local utilisation, which could potentially exert deleterious pressures on the survival of this ecologically significant species, were observed during the course of this study. It is plausible that this species may transition into a threatened status upon thorough examination. Notably, the Thabazimbi area remains largely unexplored, and it is reasonable to conjecture that *Bergbambos tessellata* may exhibit additional occurrences within the broader expanse of the park.

Remarkably safeguarded and endowed with an absence of apparent habitat or population threats, the Thabazimbi region preserves an aura of protection around this species. Nonetheless, notwithstanding



Figure 3. *Bergbambos tessellata*; A, leafy branch; B, tall bamboo grass in foreground. Photographer: Dr M.C. Moshobane.

human-induced disturbances, harvesting and potential translocations, the intrinsic habitat of *Bergbambos tessellata* faces distinct hazards that plausibly contribute to its enigmatic distribution pattern. Therefore, the meticulous documentation of this species assumes profound importance in understanding its behaviour, habitat and ecological significance within its ecosystem. (Figure 3).

New collection record

SOUTH AFRICA. Limpopo: Thabazimbi area, Hamerkop Street near the fence of old nursery, 2427DC, 16 Mar. 2022, Moshobane, Mudau & Maema 16 (PRE).

Additional specimens examined

LESOTHO. Basutoland, Leribe, 2828CC, Aug. 1912, Dieterlen 279, 279A (PRE); Basutoland, Leribe district,

Pitseng, 2928AA, Dec. 1913, *Dieterlen 1010* (PRE); Basutoland, Meniaming Stream, 2928AA, 7 Jan. 1955, *Jact-Guillarmod 2207* (PRE); Bethlehem district, Hlotse Adit. LHDA, 2828CB, 10 Dec. 1991, *Browning 448* (PRE); Upper Quthing River Gorge, after Makoae's, 3027BD, Jun. 1978, *Schmitz 8315* (PRE); southern Basutoland, tributary of Likhaibaning River, 3028AC, 12 Jan. 1946, *Archibald 2750* (PRE); Basutoland, mountain side above Buffalo River waterfall, 3028CA, 14 Mar. 1904, *Galpin 6931* (PRE).

SOUTH AFRICA. Free State: Bethlehem, Farm Franshoek, Northeast of Ficksburg, 2828CA, 7 Mar. 1972, *Loxton & Ellis 990* (PRE); Farm Klein Thaba Bosigo 173, 2828CA, 11 Mar. 1972, *Scheepers 1863* (PRE); Fouriesburg, Meiringspoort Resort, 2828CA, 11 Apr. 2002, *Venter 9746* (PRE); Fouriesburg District, about 8 km south of Fouriesburg, Farm Caledonspoort 190, Wynford Family Resort, 2828CA, 3 Nov. 2012, *Bester 11247* (PRE); **KwaZulu-Natal:** Mount aux sources, National Park, 2828BD, 20 Apr. 1919, *Mogg 4221* (PRE); Bergville district, Drakensberg National Park 5 m west of hostel, 2828DB, 18 Apr. 1947, *Codd & Dyer 2778* (PRE); Harrismith, Maweni Heights, north of north-west-facing kloof, 2829AC, 18 Dec. 1963, *Van Zinderen 13* (PRE); Bergville district, Mont aux sources, 2829CB, 28 Aug. 1930, *Hutchinson, Forbe & Verdoorn 54* (PRE); Little Switzerland, top of scree forest by river Bamboo, 2829CB, 15 May 1969, *Anderson 278* (PRE); Bergville district, Cathedral Peak Forestry Station, 2829CC, 25 Mar. 1953, *Killick 1893* (PRE); Estcourt district, Giant's Castle Game Reserve, 2929AB, 1904, *Sim 20517* (PRE); Giant's Castle, 2929AD, Nov. 1914, *Symons 150* (PRE); Underberg, Giant's Castel area, Highmoor Forest Station on little berg, 2929BC, 25 Jan. 1978, *Ellis 3161* (PRE); Underberg, Bushman's Nek, 2929CC, 16 Jan. 1969, *Killick & Vahrmeijer 3976* (PRE); Underberg, Natal, along banks of Umzimkulu River, 2929CD, Mar. 1938, *MacClean 739* (PRE); Underberg, Mkhomazi State Forest, 2929DA, 4 Dec. 1985, *Briggs 11* (PRE); **Eastern Cape:** Drakensburg's, near Barkly East, 2 km west of Danger's Hoek, 3027DB, 18 Dec. 1982, *Phillipson 640* (PRE); Barkly East Division, Faskally, Below Mount Newton, 3027DC, 16 Apr. 1967, *Acocks 23872* (PRE); Barkly East district, Tuschielaw Farm, Maartenshoek, 3027DD, 20

Feb. 1977, *Bigalke 74* (PRE); Maclear, Farm Woodcliffs, Hillside opposite house, 3028CC, 6 Feb. 1992, Abbott 5639 (PRE); Woodcliffs trails, ridge opposite Reed Park, 3028CC, 14 Nov. 1992, *Abbott 5857*; (PRE); Maclear, Farm Fresh Water, 3028CC, 4 Mar. 1992, *Abbott 12180* (PRE); Drakensberg, Maclear, border between farms Pondo Gates and Ben Farraday, QDS: 3128AA, 4 Mar. 1992, *Van Wyk & Abbott 12142* (PRE); Tarkastad, Great Winterberg, east slopes on Farm Winterberg, 3226AD, 15 Jan. 1990, *Linder 5099* (PRE); Victoria East District, Top of Gaika's Kop, Hogsback, 3226DB, 23 Feb. 1942, *Archibald 1* (PRE); Amatole Mountains, Elandsberg, south-facing slope, just below plateau, 3226DB, 28 Oct. 1981, *Phillipson 434* (PRE); Keiskammahoek district, Gxulu mountain, bare plateau on mountain top, 3227BA, 9 Mar. 1948, *Story 3515* (PRE); Victoria East District, Hogsback, 3227CA, *Leemann s.n.* (PRE).

Acknowledgements

Our grateful thanks to: Dr Hester Steyn, National Herbarium, Pretoria, South African National Biodiversity Institute, for the distribution map; the South African National Biodiversity Institute for support.

Competing interests

The authors declare that they has no financial or personal relationships that may have inappropriately influenced her in writing this article.

Authors' contributions

A.C.M. (South African National Biodiversity Institute/ University of Witwatersrand) prepared the draft and analysed the data, M.C.M. (South African Biodiversity Institute/ University of KwaZulu-Natal) collected plant material and made conceptual contributions.

References

- Fish, L., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T., 2015, Identification guide to southern African grasses. An identification manual with keys, descriptions and distributions, *Strelitzia* 36, 271–276.
- Munro, W., 1868, 'A monograph of the Bambusaceae', *Transactions of the Linnean Society of London* 26, 1–157.
- Nees von Esenbeck, C.G.D., 1841, 'Gramineae I', *Florae Africae Australioris Illustrationes Monographicae. Glogaviae, Sumtibus Prausnitzianis*, pp. 463–464, <http://dx.doi.org/10.5962/bhl.title.7585>.
- Soderstrom, T.R. & Ellis, R.P., 1982, 'Taxonomic status of the endemic South African bamboo, *Thamnocalamus tessellatus*', *Bothalia* 14, 53–67, <https://doi.org/10.4102/abc.v14i1.1135>.
- Soreng, R.J., Peterson, P.M., Romaschenko, K., Davidse, G., Zuloaga, F.O., Judziewicz, E.J., Filgueiras, T.S., Davis, J.I. & Morrone, O., 2015, 'A worldwide phylogenetic classification of the Poaceae (Gramineae)', *Journal of Systematics and Evolution* 53, 117–137, <http://onlinelibrary.wiley.com/doi/10.1111/jse.12150/epdf>.
- Stapleton, C., 2013, '*Bergbambos* and *Oldeania*, new genera of African bamboos (Poaceae, Bambusoideae)', *PhytoKeys* 25, 87–103.