

# *Coleus pyramidatus* (Gürke) K.Balkwill (Lamiaceae) — Resurrection and new combination

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## ABSTRACT

*Plectranthus pyramidatus* has been treated as a synonym of the species now known as *Coleus calycinus*, but differs by having lower leaves cordate and sessile (not cuneate or rounded and petiolate), smaller flowers (5–6 mm long not 10–12 mm long) and by having pin-headed glandular hairs in its indumentum. Thus, the species is resurrected and a new combination, *Coleus pyramidatus*, is made. A key to separate between the three southern African species that would previously have been assigned to *Rabdosiella* is provided, as is a modified description for *C. calycinus*. A threat status of Endangered (EN B1ab(iii) or EN B2ab(iii)) is suggested.

## 1. Introduction

On a field trip in 2017 commemorating the centenary of the founding of the C.E. Moss Herbarium (J), a species of *Coleus* Lour. (then *Rabdosiella* Codd) was collected, because it differed from the widespread *Coleus calycinus* (Benth.) A.J.Paton by having cordate sessile basal leaves, rather than cuneate petiolate basal leaves. It was thought that it may be a new species. Subsequent investigation in the Flora of southern Africa account (Codd, 1985) revealed that there were two synonyms under *Rabdosiella calycina* (Benth.) Codd. Our material did not match the type specimen of *Plectranthus pachystachyus* Briq. available on JStor Global Plants, but there were no type specimens of *Plectranthus pyramidatus* Gürke available for comparison. It was thus decided that a field trip in flowering time to the type locality of *P. pyramidatus* was required, but other commitments prevented this taking place for some years. Subsequently, type specimens of *P. pyramidatus* became available on the University of Zurich Herbaria website and it was clear that our material matched those types. Codd had placed a determinavit label on one of those sheets, declaring it to be an ecological form of *Plectranthus calycinus* Benth.

The C.E. Moss Herbarium was begun by Charles Edward Moss (1870–1930), the first professor of botany at the University of the Witwatersrand, by collecting plant material together with Frederick Arundel Rogers (1876–1944) near Messina (224 numbers) and then at The Downs (now incorporated in Lekgalameetse Nature Reserve) in November 1917 (Fig. 1). A note at the beginning of the herbarium register, in Moss's handwriting, indicates that the first 2000 specimens

were collected by Moss and Rogers (Fig. 1A). The herbarium has now grown to 155,000 specimens and has interesting collections (e.g. from the Witwatersrand before the extensive transformation due to urban expansion and many voucher specimens from the work of Watt and Breyer-Brandwijk (1962)), collections from areas that were visited as part of student field trips (e.g. Inhaca Island, Lake Kariba, Blyderivierspoort Nature Reserve and Oribi Gorge Nature Reserve) or particular research interests (e.g. Mount Sheba Nature Reserve and ultramafic sites in the Barberton Greenstone Belt). The recent incorporation of specimens from the Buffelskloof Nature Reserve Herbarium that were collected outside of Buffelskloof Nature Reserve has boosted the collections from the Limpopo-Mpumalanga-Eswatini Escarpment as well as collections from Mozambique. To commemorate the founding of the herbarium, three employed members and one honorary member of staff undertook a field trip to the Soutpansberg (specifically Lajuma — 18 collections) from 26 to 28 March 2017 and The Downs (now Lekgalameetse Nature Reserve — 5 collections) from 29 March to 30 March 2017, a single member of staff from 24–26 April (7 collections) and a larger group from 28 November to 2 December 2017 (27 collections). These collections included two specimens of *Coleus pyramidatus* from different sites in Lekgalameetse Nature Reserve.

*Coleus calycinus* (Benth.) A.J.Paton was described as *Plectranthus calycinus* by Benth (1838). Sixty years later, *P. pyramidatus* was described by Gürke et al. (1898) followed by *Plectranthus pachystachyus* described by Briquet (1903) five years later. In 1910, Cooke (1910) reduced *P. pyramidatus* to a synonym under *P. calycinus* and *Plectranthus pachystachyus* to a variety under the same species, but maintained the

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latter as a separate taxon because of its narrower leaves and shorter calyx. Codd (1973) transferred *Plectranthus calycinus* to the genus *Rabdosia* (Blume) Hassk. and then he transferred the species to *Rabdosiella* Codd, a genus he recognised to accommodate the two species that Candolle (1848) had treated in *Plectranthus* sect. *Pyramidium* Benth. In that account, Codd (1984) treated *P. pyramidatus* and *P. pachystachyus* as synonyms of *Rabdosiella calycina* (Benth.) Codd. In their reassessment of the genera *Coleus* and *Plectranthus*, Paton et al. (2019) subsumed *Rabdosiella* into *Coleus* and retained *P. pyramidatus* and *P. pachystachyus* as synonyms of *Coleus calycinus* (Benth.) A.J.Paton.

*Rabdosiella leemannii* N.Hahn (Hahn and Bredenkamp, 2007) was described subsequent to the publication of the Flora of southern Africa account of the genus (Codd, 1985) and it has since been transferred to *Coleus* (Manning and Paton, 2023). It can grow into a shrub of 1.5 m or rarely 2 m tall and has smaller flowers (6.9–9.7 mm long) than *C. calycinus* (10–12 mm long). On the basis of Codd's description of the habit of *Rabdosiella calycina* (now *C. calycinus*), he must have treated specimens of *C. leemannii* as *R. calycina* when compiling the description, as the latter never grows as a shrub.

The aim of this paper is to document the differences between

specimens of *Coleus* that match *Plectranthus pyramidatus* and specimens of *C. calycinus* and to determine whether they warrant recognition of two separate species. If they are found to be separate species, then a new combination in *Coleus* will be made and the description of *C. calycinus* revised to exclude the character states relevant to *C. pyramidatus* and *C. leemannii*.

## 2. Material and methods

Herbarium specimens at J and PRE (abbreviations follow Thiers 2025 [continually updated]) as well as those gathered on collecting trips were consulted. Types were viewed on JSTOR Global Plants and the University of Zurich Herbaria website. Herbarium specimens from field trips have been deposited in J, with duplicates distributed as indicated in the lists of specimens (e.g. E, K, MO). Fresh material of *C. pyramidatus* was observed on field trips (Table 1). Distances from Houtbosdorp (the presumed type locality) were calculated using Google Earth.

Measurements of *C. pyramidatus* and *C. calycinus* were based on dried material and mature organs were measured where possible. Features <2 mm were measured under a dissecting light microscope (Novel model

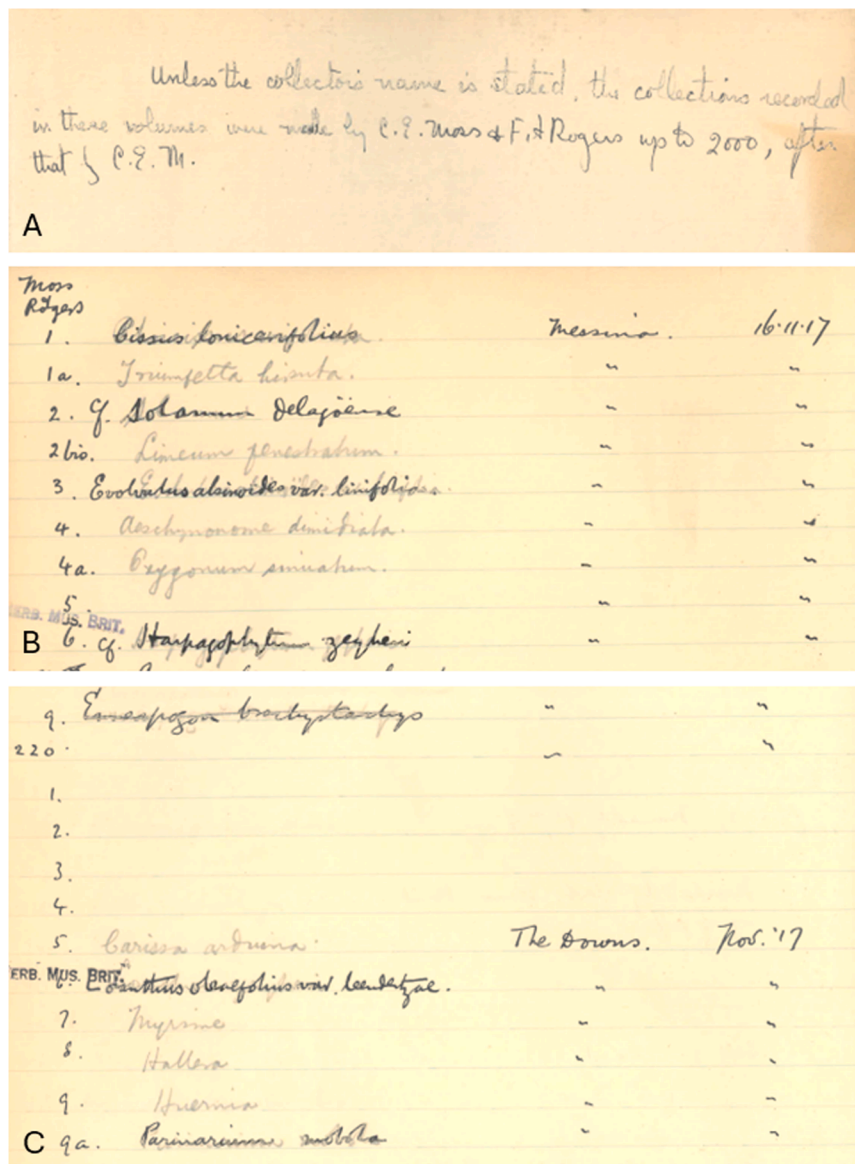


Fig. 1. Extracts from the C.E. Moss Herbarium register: A. Note on top of "title" page; B. Beginning of first page; C. Point at which first specimen from The Downs is recorded.

**Table 1**  
Fieldtrips on which *Coleus pyramidatus* was collected. DM = Donald McCallum, DO = Delia Oosthuizen, KB = K. Balkwill, RR = Reneé Reddy, PSG = various members of Mpumalanga Plant Specialist Group, SA = Simon Attwood.

| Date           | Venue                                                                 | Distance from Houtbosdorp | Collecting Number(s)   | Participants     |
|----------------|-----------------------------------------------------------------------|---------------------------|------------------------|------------------|
| 26–28 Mar 2017 | Lekgalameetse Nature Reserve, southern side of Orrie Baragwanath Pass | 39.6 km                   | KB, DO, DM & RR 14,009 | KB, DO, DM & RR  |
| 24–26 Apr 2017 | Lekgalameetse Nature Reserve, Near Makhutsi Camp                      | 60.3 km                   | KB 14,014              | KB               |
| 17 May 2017    | Near NE corner of Makapansgat 39 KS                                   | 78.5 km                   | KB & DO 14,019         | KB & DO          |
| 20 Jan 2023    | Wolkberg, Monte Christo Dolomites                                     | 25.8 km                   | KB 14,713              | KB               |
| 29 Apr 2023    | Wolkberg, Iron Crown                                                  | 21.1 km                   | KB, DO & SA 14,763     | KB, DO, SA & PSG |
| 30 Apr 2023    | SW of Houtbosdorp, Hwiti Mountain                                     | 4.4 km                    | KB, DO & SA 14,773     | KB, DO, SA & PSG |

NSZ-606). Trichomes were observed with the same microscope. Measurements of *C. leemannii* were taken from [Hahn & Bredenkamp \(2007\)](#). Conservation status (extinction risk) was determined using the

Categories and Criteria of the IUCN Red List ([IUCN 2012](#)) and the guidelines for their use ([IUCN Standards and Petitions Subcommittee, 2024](#)). Extent of occurrence (EOO) and Area of Occupancy (AOO) were



**Fig. 2.** Features that are shared by *Coleus pyramidatus* and *Coleus calycinus*: A. Suffrutescent habit, multi-stemmed in foreground and with fewer stems in background, *C. calycinus* at Mauchsberg; B. Senescing stems from current season and dead stems from previous season, *C. pyramidatus* at Makapans Valley; C. Two-stemmed suffrutex, *C. pyramidatus* at Lekgalameetse Nature Reserve; D. Synflorescence with branches at about 45° to the main axis, *C. pyramidatus* at Monte Christo dolomites in Wolkberg; E. Leaf-like bracts in synflorescence, with scorpioid cymes in their axils, *C. calycinus* at Morgenzon; F. Bilabiate corolla with attachment on lower edge rather than base, *C. calycinus* at Morgenzon; G. Accrescent calyces, *C. calycinus* at Morgenzon; H. Shiny dark brown to black mericarps, *C. pyramidatus* — voucher *Balkwill et al. 14,763 (J)*. Photographers: K. Balkwill (A & D – H); D. Oosthuizen (B & C).

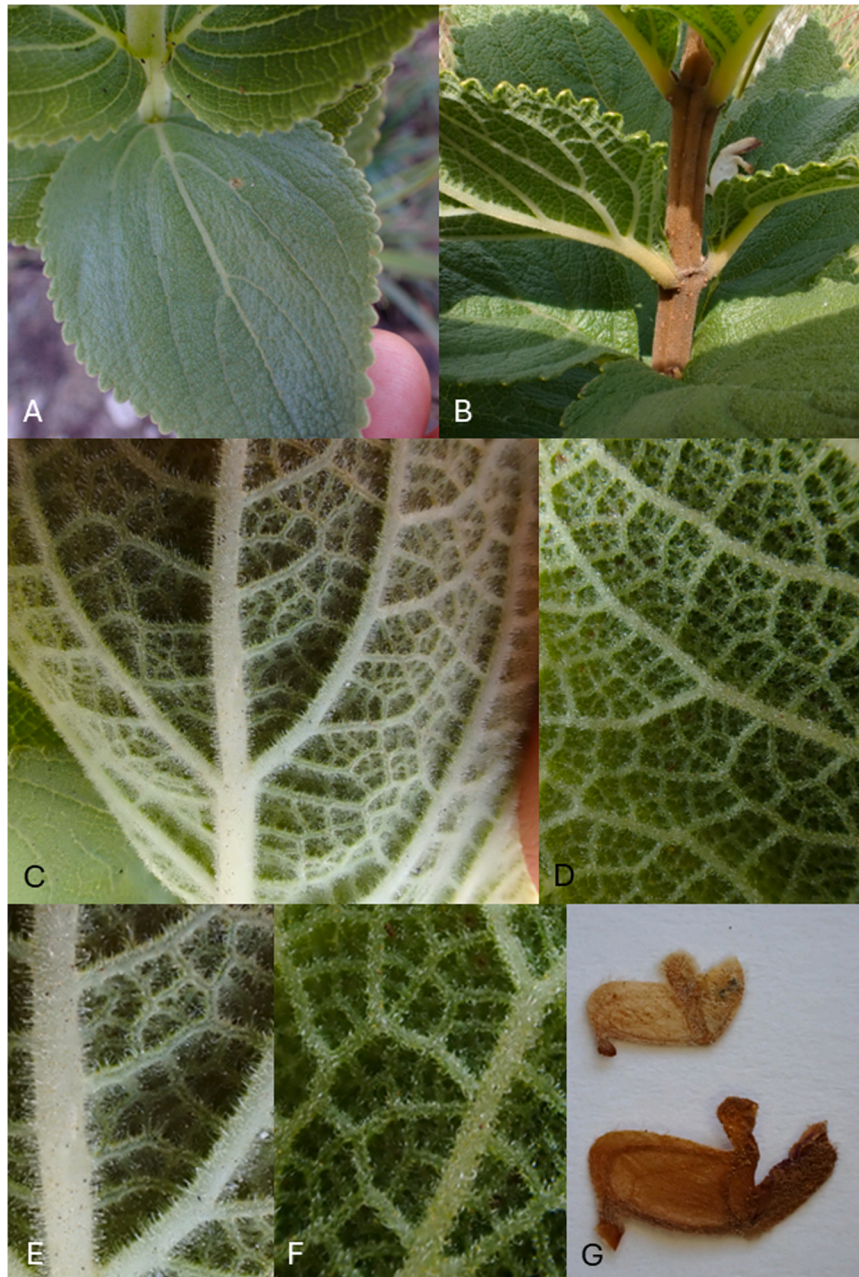
calculated using area polygons inserted on Google Earth. Criteria for the South African National Categories were found at <http://redlist.sanbi.org/redcat.php> (SANBI, 2025).

### 3. Results

Both *C. calycinus* and *C. pyramidatus* occur as suffrutices of up to 1.5 m high with one to several stems from the base (Fig. 2A–C), which sets them apart from *C. leemannii* which occurs as a shrub sometimes up to 2 m tall (Hahn and Bredenkamp, 2007). Both former species usually have ternate (Fig. 3A and B) rather than opposite leaves that gradually decrease in size to become bracts in the inflorescence (Fig. 2C and F). Both have open thyrsoïd synflorescences with branches at about 45° to

the main axis, with scorpioid cymes in the axils of the bracts (Fig. 2E and F). In both species, the upper lip of the calyx is very slightly larger and set apart from the other lobes at anthesis, but the calyx enlarges considerably through to the fruiting stage (Fig. 2G) and the calyx lobes are then subsimilar. Both species and *C. leemannii* have the corolla attached along its lower edge, rather than at the base (Fig. 2F and G). The mericarps of *C. calycinus* and *C. pyramidatus* are ellipsoid and shiny (Fig. 2H), although those of *C. calycinus* are larger ( $2 \times 1.5$  mm rather than  $1.5 \times 1.2$  mm) and lighter in colour.

*Coleus pyramidatus* differs from the widespread and variable *C. calycinus* by its basal leaves which are sessile and cordate (Fig. 3A), rather than petiolate and cuneate to rounded (Fig. 3B) and its indumentum on stems and leaves, which in addition to sessile glands



**Fig. 3.** Features that distinguish *Coleus pyramidatus* from *Coleus calycinus*: A. Sessile leaves with cordate bases, *C. pyramidatus* at Lekgalameetse Nature Reserve; B. Petiolate leaves with rounded to broadly cuneate bases, *C. calycinus* at Morgenzon; C&E. Undersurface of leaves with long, fine straight hairs and pin-head glands, *C. pyramidatus* at Lekgalameetse Nature Reserve; D&F. Undersurface of leaves with short, coarse curved hairs, *C. calycinus* at Morgenzon; G. Dried corollas of *C. pyramidatus* (upper) and *C. calycinus* (lower) — vouchers Balkwill et al. 14,773 (J) (upper) and Balkwill & Oosthuizen 15,019 (J) (lower). Photographers: D. Oosthuizen (A, C & E); K. Balkwill (B, D, F & G).

comprises dense, fine, straight eglandular hairs together with pin-headed glandular hairs (Fig. 3C&E), whereas in addition to the sessile glands, *C. calycina* has rather coarse short, curved eglandular hairs (Fig. 3D&F). The corollas of *C. pyramidatus* are smaller: 5–6 mm long with tube 3.5–4 mm long and 2.2 mm deep at the base, upper lip 1.5–2 mm long, and lower lip 3–3.8 mm long contrasted with corolla 10–12 mm long with tube 5.5–6.5 mm long and 3.5–5 mm deep at the base, upper lip erect, 2.2–3 mm long and lower lip 4.7–8 mm long (Fig. 3G).

On the basis of these differences, it is appropriate to resurrect *C. pyramidatus*. In addition, a key to species that would previously have been treated as *Rabdosiella* is provided and a revised description is provided for *C. calycinus* to exclude the character states that encompass *C. leemannii* and *C. pyramidatus*, which were included in Codd's concept of *C. calycinus* in his Flora of southern Africa account (Codd, 1985).

#### 4. Taxonomy

##### 4.1. Key to species that would previously have been regarded as belonging to the genus *Rabdosiella*

1. Plants usually forming shrubs, branching below the synflorescence; leaves opposite, narrowly cuneate at the base; stems not markedly ribbed..... *C. leemannii*

Suffrutescent with annual stems seldom branching below the synflorescence; leaves usually ternate (rarely opposite), broadly cuneate, rounded or cordate at the base; stems with six (rarely four) marked ribs..... 2

2. Basal leaves sessile; leaf bases cordate; corollas 5–6 mm long including lower lip; indumentum on stems and leaves with long, fine straight hairs and pin-headed glandular hairs..... 1.

##### *C. pyramidatus*

Basal leaves petiolate; leaf bases broadly cuneate or rounded; corollas 10–12 mm long including lower lip; indumentum on stems and leaves with short, rather coarse, curved eglandular hairs..... 2.

##### *C. calycinus*

##### 4.2. Taxonomic descriptions

##### 1. *Coleus pyramidatus* (Gürke) K.Balkwill **comb. nov.**

*Plectranthus pyramidatus* Gürke in Bull. Herb. Boissier 6: 548 (1898). Type: South Africa, Limpopo [Transvaal], Houtbosch, Rehmann 6179 (Z-000021005—United Herbaria Z+ZT!, lecto. here designated; Z-000021006—United Herbaria Z+ZT!, isolecto.).

Suffrutescent with 1–several stems arising annually from a woody rootstock, 0.5–about 1 m tall, with stems to about 10 mm in diameter and brown at the base, markedly 6-ribbed except near the base, with dense fine straight eglandular and pin-headed glandular hairs, bright green when young. Leaves ternate, sessile; blade broadly ovate, 45–85 × 30–60 mm, at the base and becoming smaller and passing into bracts upwards, mesic, both surfaces with fine, straight, eglandular and pin-headed glandular trichomes but much denser below where sessile glands are also present, darker green above and hairs make undersurface greyish green in some herbarium specimens; veins markedly impressed above with deep cavities between veins below, which are sometimes obscured by hairs; apex acute to rounded; base cordate; margin crenate to bluntly toothed with about 14–24 asymmetric teeth on each side. Inflorescence a terminal branched thyse 130–300 mm long; branches held at about 45° to the main axis; with scorpioid cymes in axils of bracts becoming very dense; cymes up to 15 mm long, pedicels 1–2 mm long. Calyx tube about 1.5 mm long with lobes about 1 mm long and upper tooth slightly larger with dense sessile glands between veins on the tube and eglandular hairs on the veins and very dense on the lobes, green, sometimes tinged mauve on lobes at anthesis; erect, with tube about 5

mm long and lobes 1.5–2 mm long and all subequal and narrowly deltoid with stalked and sessile glandular hairs on the tube and dense eglandular hairs on the margins of and within the lobes at fruiting. Corolla white, flushed mauve usually on upper lip but sometimes on both, 5–6 mm long; tube 3.5–4 mm long, 2.2 mm deep at the base, narrowing gradually to 1.5 mm at the throat, with long eglandular hairs and sessile orange glands; upper lip erect, 1.5–2 mm long, with dense eglandular hairs and orange glands on the outer surface; lower lip extended, shallowly boat-shaped, 3–3.8 mm long, with dense eglandular hairs and orange glands on the outer surface. Stamens declinate, attached at the mouth of the corolla tube, 2 mm long, enclosed in the lower corolla lip; filaments free; anthers bithecate, purple. Stigma minutely bifid; mericarps ellipsoid with three rounded angles, one large curved face and two smaller flat faces, 1.5 × 1.2 mm, shiny dark brown or black.

**Nomenclatural notes:** There are two sheets of the type gathering in the Zurich Herbaria, so one must be designated as a lectotype. Z-000021006 has very little floral material and what is present is immature and masked by a piece of tape attaching the specimen to the mounting board. Z-000021005 has a bit more inflorescence material attached to the specimen and some in an envelope and so is chosen as the lectotype.

**Etymology:** The only potential clue about the derivation of the name is that Gürke (1898) says that the species belongs in *Plectranthus* sect. *Pyramidum* Benth. That name in turn is based on the pyramid-shaped inflorescences of the group.

**Distribution and Ecology:** *Coleus pyramidatus* occurs in a triangle between near Houtbosdorp in the north, to Makapan Valley north-east of Mokopane in the south-west and near Makhutsi Camp in Lekgalameetse Nature Reserve in the south-east (Fig. 4). It is thus another endemic of the Limpopo-Mpumalanga-Eswatini Escarpment (Clark et al., 2022). It occurs in rocky grassland, usually on quartzite, but the Monte Christo locality in the Wolkberg is most likely dolomite and Hwiti Mountain is gabbro.

**Phenology:** *Coleus pyramidatus* has been collected in flower mainly between December and April with one specimen from May and in fruit between March and May.

**Conservation Notes:** A polygon drawn around the locations at which specimens of *C. pyramidatus* have been collected provides an Extent of Occurrence (EOO) of 2300 km<sup>2</sup>. There are 31 observations of the species on iNaturalist that have been photographed since 2022 and these are within the area defined by herbarium specimens. The Makapan site is isolated and is 66 km west of the closest known site. The intervening area is likely to be too dry for *C. pyramidatus*. The area encompassing the other herbarium collections and all the iNaturalist observations is 567 km<sup>2</sup>. Of that area, about 15 % has been planted with commercial tree plantations and possibly only 50 % is suitable habitat, giving an area of 240.6 km<sup>2</sup>, which together with the Makapans site would make a potential Area of Occupancy (AOO) of 250 km<sup>2</sup>. Three of the localities from which specimens have been collected are nature reserves, but two of the other localities are close to exotic tree plantations and so are vulnerable to habitat degradation by alien trees that escape from cultivation. Some of the iNaturalist locations are in areas where there is expansion of land transformation due to increasing human populations in semi-rural areas. Assessment against the IUCN categories (IUCN 2012), reveals the following: *C. pyramidatus* meets the B1 (EOO <5000 km<sup>2</sup>) and B2 (AOO <500 km<sup>2</sup>) criteria for Endangered. In addition, the known localities are far apart and thus severely fragmented (criterion B(a)) and some populations are threatened by land transformation and uncontrolled invasion of grassland by escaped exotic tree species and encroachment into grasslands by indigenous woody species because of increased carbon dioxide in the atmosphere. Thus, a suggested threat status for *C. pyramidatus* is Endangered (EN B1ab(iii) + EN B2ab(iii)).

##### *Additional specimens examined:*

South Africa. LIMPOPO. 2329 (Polokwane [Pietersburg]): Pietersburg district, Houtbosch, in mountains, 1810 m (–DD), Feb 1904, Bolus 10,982 (PRE); near Houtboschdorp, old mission station, 1540 m (–

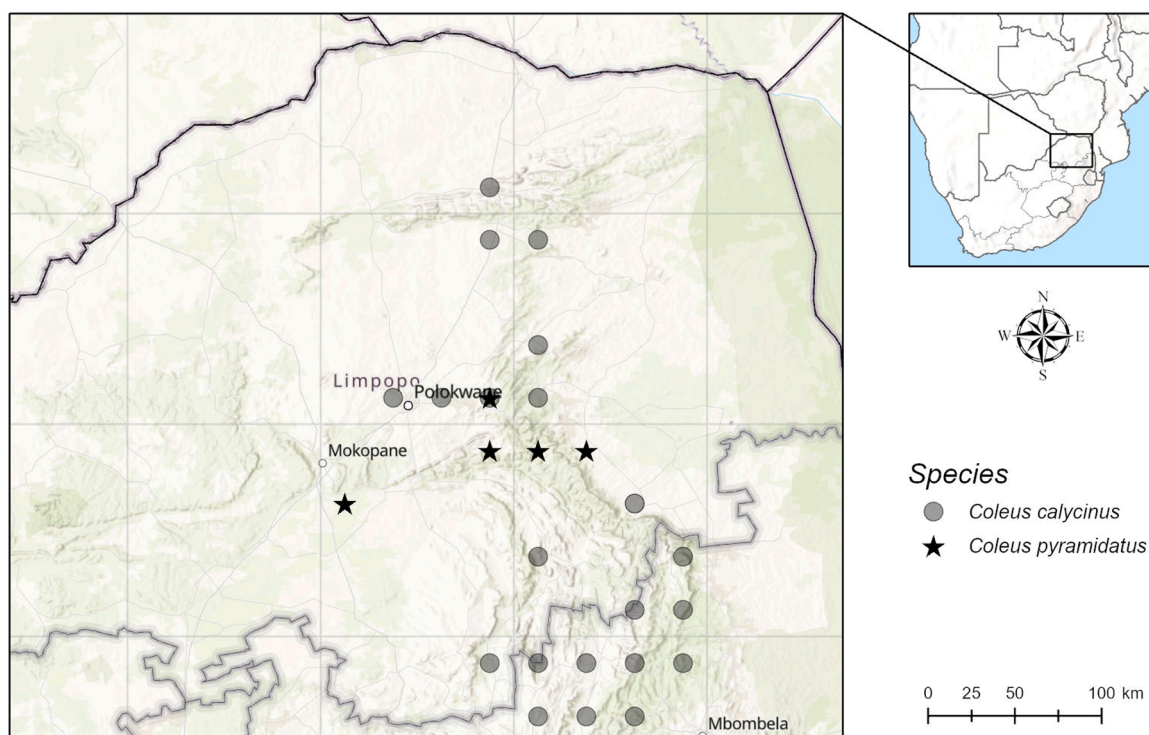


Fig. 4. Distribution of *Coleus pyramidatus* and *C. calycinus* in Limpopo based on herbarium specimens. Cartographer: M. Lötter.

DD), 24 Jan 1956, *Codd* 9428 (PRE); South-west of Houtbosdorp, on Hwiti Mountain [Greathead Peak], 1872 m (–DD), 30 Apr 2023, *Balkwill* et al. 14,773 (J, K, MO); Fountainhead 1084 LS, 1600 m (–DD), 20 Mar 1986, *de Wet* 367 (LYD); South of Haenertsburg, near summit of Iron Crown Mountain (–DD), 28 Feb 1957, *Meeuse* 9853 (PRE). **2429 (Zebediela)**: North-east of Mokopane, on the farm Makapansgat 39 KS, near NE corner of the farm, 1714 m (–AC), 17 May 2017, *Balkwill & Oosthuizen* 14,019 (E, J); Polokwane district, Haenertsburg area, Iron Crown, 2090 m (–BB), 21 Dec 1944, *Mogg* 17,367 (J); 29 Apr 2023, *Balkwill* et al. 14,763 (J, K, PRE); Farm Argimedes Punt 208 KS, 2180 m (–BB), 14 Mar 1983, *Venter* 9415 (PRE); Farm Paardevlei 201 KS, 2120 m (–BB), 13 Mar 1983, *Venter* 9404 (PRE); SE of Haenertsburg, Wolkberg proper, near highest dome (–BB), 1 Mar 1957, *Meeuse* 9870 (PRE); Wolkberg, Monte Christo dolomites, 1841 m (–BB), 20 Jan 2023, *Balkwill* 14,713 (E, J, PRE). **2430 (Pilgrim's Rest)**: Pietersburg district, The Downs (–AA), Mar 1945, *Crundall* sub PRE40430 (PRE); 1800 m (–AA), 6 Mar 1974, *Vahrmeijer* 2366 (PRE); Farm Wolkberg 634 LT, Serala Peak, 1980 m (–AA), 8 Mar 1986, *Venter* 11,701 (PRE); Wolkberg Wilderness Area, Serala Buttress (South) (–AA), 14 Mar 1991, *van Wyk & Matthews* 10,523 (PRE); Lekgalameetse Nature Reserve, The Downs, Makwens, 1480 m (–AA), 5 Mar 1985, *Stalmans* 458 (PRE); southern side of Orrie Baragwanath Pass (–AA), 29 Mar 2017, *Balkwill* et al. 14,009 (B, J, K, MO); West of Makhutsi Camp, 980 m (–AB), 25 Apr 2017, *Balkwill* 14,014 (E, J); Farm Madeira, 1340 m (–AB), 8 Mar 1983, *Venter* 9313 (PRE).

*iNaturalist* observations: 125952799, 142987909, 152154083, 156847745, 156982760, 159399487, 159772743, 169585679, 210677326, 248716902, 255267417, 255671917, 256249463, 260690092, 266600533, 267002269, 267002489, 268973660, 268979679, 268998500, 268998890, 269065832, 269067410, 269187940, 269321945, 269322422, 269707977, 275907208, 276390150, 276475540, 276829145, 277581012.

**2. *Coleus calycinus*** (Benth.) A.J.Paton, *PhytoKeys* 129: 31 (2019). Type: South Africa, Eastern Cape, between St Johns and Umsikaba Rivers, 1837, *Drège* 3584 (K, lecto. designated by *Codd* (1975) =

Inter Omsamwubo et Omsamcaba, *Drège* b BM000910154—Global Plants!, G00435200—Global Plants!, HAL114404—Global Plants!, HBG-518,378—Global Plants!, MO 2004,435—Global Plants!, P00450703—Global Plants!, P00450704—Global Plants!, isolecto.).

*Plectranthus calycinus* Benth. in E. Mey., *Comm.* 230 (1838); *Drège*, *Zwei Pfl. Doc.* 148, 152 (1843); Benth. in DC, *Prodr.* 12: 61 (1848); Cooke in F.C. 5,1: 270 (1910). Type: as above.

*Rabdosia calycina* (Benth.) Codd in *Bothalia* 11: 117 (1973); Codd in *Bothalia* 11: 436 (1975). Type: as above.

*Rabdosiella calycina* (Benth.) Codd, *Bothalia* 15: 10 (1984) FSA 28,4: 175 (1985). Type: as above.

*Isodon calycinus* (Benth.) H.W.Li, *J. Arnold Arbor.* 69: 293. 1988. Type: as above.

*P. pachystachyus* Briq. in *Bull. Herb. Boissier* ser. 2,3: 1003 (1903). *P. calycinus* var. *pachystachyus* (Briq.) T.Cooke in F.C. 5,1: 271 (1910). Type: Natal, Umkomaas, Medley Wood 4621 (K, holo.; NH0006187–0—Global Plants!, iso.).

Suffrutex with 1–several stems arising annually from a woody rootstock, 0.6– about 1.5 m tall, with stems to about 10 mm in diameter and brown at the base, markedly ribbed except near the base, with sessile glands and dense rather coarse short curved eglandular hairs when young and less dense when older, green when young. Leaves ternate rarely opposite, petiolate although petioles become shorter upwards so that bracts are subsessile; blade narrowly to broadly elliptic, slightly smaller at the base, then about 70–95 × 40–55 mm about one-quarter way up the stem and then becoming smaller and passing into bracts upwards, subcoriaceous, with sparse, coarse, curved eglandular hairs above and sessile glands and sparse to semi-dense curved eglandular hairs below especially on veins, darker green above; veins markedly impressed above and usually with deep cavities between veins below; apex sharply acute to obtuse; base rounded to cuneate, sometimes attenuate; margin crenate to bluntly toothed with about 14–17 asymmetric teeth on each side. Inflorescence a terminal branched thyrse 120–450 mm long; branches held at about 45° to the main axis; with scorpioid cymes in axils of bracts becoming very dense; cymes up to 12

mm long, pedicels 2.5–4.5 mm long. Calyx tube about 1.2 mm long with lobes about 1 mm long and upper tooth slightly larger with dense sessile glands between veins on the tube and eglandular hairs on the veins and very dense on the lobes, green, sometimes tinged mauve on lobes at anthesis; erect, with tube about 6 mm long and lobes about 1.5 mm long and all subequal and narrowly deltoid with stalked and sessile glandular hairs on the tube and dense eglandular hairs on the margins of and within the lobes at fruiting. Corolla white, occasionally lilac or mauve, lower lip with mauve to purple margin, upper lip white or lilac, 10–12 mm long; tube 5.5–6.5 mm long, 3.5–5 mm deep at the base, narrowing gradually to 3–3.3 mm at the throat, with long eglandular hairs and sessile orange glands; upper lip erect, 2.2–3 mm long, with dense eglandular hairs and orange glands on the outer surface; lower lip extended, shallowly boat-shaped, 4.7–8 mm long, with dense eglandular hairs and orange glands on the outer surface. Stamens declinate, attached at the mouth of the corolla tube, 3–6 mm long, enclosed in the lower corolla lip; filaments free, anthers bithecate, purple. Stigma minutely bifid; mericarps ellipsoid with three rounded angles, one face more convex than the other,  $2 \times 1.5$  mm, shiny brown.

**Nomenclatural Notes:** Bentham (1838) cited specimens from two Drège localities when describing *Plectranthus calycinus*. The locality

designated b was “Inter Omsamwubo et Omsamcaba”. When designating a lectotype, Codd (1975) cited “Cape, between St. Johns and Umsikaba Rivers, Drège 3584 (K!, lecto.; = Drège b in G!; MO!; P!; S!)” — apparently a different collecting number and a different locality. However, Omsamwubo is the same as St John’s River (Sosnovsky et al., 2021) and so this is the b locality. P00450702 has a ticket indicating that it is “a” from between “Morley & Omtata” and so is not an isoelectotype.

**Etymology:** Bentham (1838) described the fruiting calyx of *C. calycinus* when diagnosing the species against *Plectranthus ternifolius* D. Don (now *Isodon ternifolius* (D. Don) Kudô) and said it differed by being 3–4 lin (6–8 mm) long, subinflated and veined. The fruiting calyx of *P. ternifolius* is 4 mm long (WFO, 2025) and this is likely what the epithet was intended to highlight.

**Distribution and Ecology:** *Coleus calycinus* is endemic to South Africa and Eswatini and occurs from the Soutpansberg (where it appears to be rare) southwards along the escarpment to Pirie in the Qonce district (Fig. 5). In Limpopo, *C. calycinus* occurs more easterly than *C. pyramidatus*. It grows in grasslands on a variety of substrates.

**Phenology:** Plants resprout at (or near when there has not been a fire) the ground each year and flower from December through to June, with a very strong peak in April. Plants have been collected in fruit from

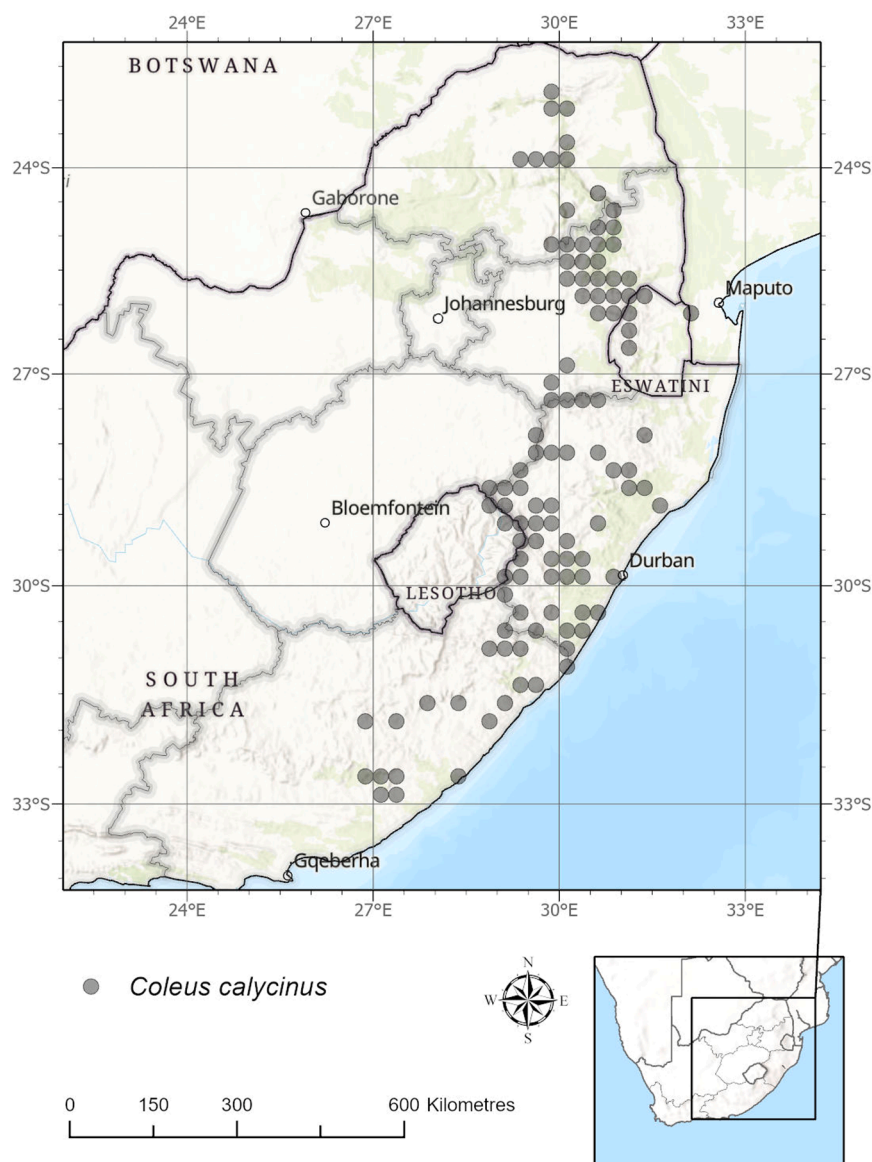


Fig. 5. Distribution of *Coleus calycinus* based on herbarium specimens. Cartographer: M. Lötter.

February to May, but most likely still have fruit in June.

**Conservation Notes:** *Coleus calycinus* is widespread and common and is not threatened, thus the Least Concern status of Foden & Potter (2005) is accurate. It also does not qualify for the additional South African categories of Critically Rare or Rare (SANBI, 2025).

**Selected additional specimens examined:**

South Africa. LIMPOPO. **2229 (Waterpoort):** Zoutpansberg, crest, beside main road (–DD), 9 Mar 1948, *Rodin 4041* (PRE). **2329 (Polokwane [Pietersburg]):** Louis Trichardt (–BB), May 1921, *Breyer sub TvlMus22103* (PRE); Pietersburg (–CD), 1916, *Rogers 18,708* (PRE); Magoebaskloof, Pypkop Lookout, 1850 m (–DC), 5 Apr 1972, *Burger 126* (PRE); 0.8 km from Houtboschdorp on road to Haenertsburg (–DD), 28 Feb 1957, *Meeuse 9813* (PRE); 6 km E of Haenertsburg, Magoebaskloof, Cheerio Halt turnoff, 1450 m (–DD), 24 Mar 1984, *Laminski 11* (J). **2330 (Tzaneen):** Entabeni (–AA), Nov 1931, *Obermeyer 1235* (PRE); Duiwelskloof, Westfalia Estate, 1370 m (–CA), 25 May 1959, *Scheepers 657* (PRE); New Agatha Forest Reserve, about 1 km E of Steilkop, 1600 m (CC), 20 Apr 1971, *Muller & Scheepers 22* (PRE). **2430 (Pilgrim's Rest):** Lydenburg (–BC), Apr 1910, *Leendertz & Jenkins 10,333* (J); Blyderivierspoort Nature Reserve, Steenveld, 1550 m (–BD), 6 Apr 2024, *Balkwill et al. 14,915* (J, K, MO); Leolo Mountain, 1800 m (–CA), 14 Mar 2007, *Herman 1579* (PRE); Mariepskop, path to Blyde River, 1540 m (–DB), *van der Schijff 5100* (PRE); Mount Sheba Nature Reserve, 1900 m (–DC), Apr 1979, *Kerfoot 8311* (J); North-east of Pilgrim's Rest, Morgen-zon Nature Reserve, 1955 m (–DC), 23 Mar 2025, *Balkwill & Oosthuizen 15,019* (J, MO); Blyderivierspoort Nature Reserve, God's Window (–DD), 23 Apr 1967, *Davidson 159* (J). **2529 (eMalahleni [Witbank]):** 4.5 km on Lydenburg road from Mapoch Cave turnoff (–BB), 28 Apr 1999, *Siebert 835* (PRE). **2530 (Mashishing [Lydenburg]):** Steenkampsberg, E of Roossenekal, 2000 m (–AA), 23 Feb 1996, *Burgoyne 4694* (PRE); Lydenburg (–AB), Apr 1910, *Jenkins sub TvlMus10333* (PRE); Dullstroom area, on the farm Kleinzuikerboschkop 93 JT, 1900 m (–AC), 18 Mar 1987, *de Villiers 94* (J); Lydenburg district, Buffelskloof Nature Reserve, High Forest area, 1250 m (–AD), 2 May 1993, *Glen 3337* (J); E of Lydenburg, on the farm Paardeplaats 91 JT, 2000 m (–BA), Mar 1994, *Reid 60* (J); Top of Long Tom Pass, 1800 m (–BA), 4 Mar 1968, *Leistner & Mauve 3215* (PRE); Sabie district (–BB), Feb 1960, *Laughton sub J32697* (J); near Elandschoek Station, Montrose Falls (–BC), *Young 3057* (J); Belfast (–CA), 24 Feb 1917, *Pole-Evans H11564* (PRE); Belfast district, near Machadodorp, Helvetia, 1500 m (–CB), *Young 1736* (J); 21.1 km NE of Badplaas (–CD), 23 Apr 1988, *Pienaar 1070* (PRE); Starvation Creek Nature Reserve, 1540 m (–DA), 6 Apr 1978, *Kluge 1293* (PRE); Nelspruit District, Berlin State Forest, about 6 km east of Kaapsehoop, 1550 m (–DB), 1 May 1987, *Balkwill et al. 3695* E, J, LISC, M, MO, PRU); Carolina district, about 30 km from Badplaas on road to Barberton, on the farm Doyershoek 702 JT, 1500 m (–DC), 28 Apr 2002, *Helm 373* (J); Carolina district, Stolzberg Syncline, on the farm Groenvaly 701 JT, 1280 m (–DD), 27 Mar 1993, *Balkwill & Balkwill 8168* (B, CM, E, J, LISC). **2531 (Komatipoort):** Barberton district, 35 km SE of Mbombela, on the farm Moederlief 209 JU (–CA), 30 April 2014, *Lombard 3* (J); west of Havelock, Songimvelo Game Reserve, on the farm Josefsdal 382 JU, 1640 m (–CC), 9 Apr 1994, *Balkwill 9066* (CM, J, LISC, OSH); Barberton, Lomati Valley, 1230 m (–CD), Mar 1924, *Thorncroft 2051* (PRE). **2630 (Carolina):** Ermelo district, Vossmans Beacon, 1785 m (–BA), 20 Feb 1951, *Bruce 269* (PRE); 2 km from Badplaas turnoff on Lochiel to Jessievale road (–BB), 9 Mar 1989, *Germishuizen 5078* (PRE); Kromhoek farm, Kalkoenkrantz, 1798 m (–CC), 20 Mar 1985, *Turner 741* (PRE). **2729 (Volksrust):** Amersfoort district (–BB), Jan 1961, *Sidney 3510* (PRE); 5 km south of Charlestown on Langsnek Pass (–BD), Mar 1973, *Arnold 210* (PRE). **2730 (Vryheid):** near Wakkerstroom, about 16 km out on Piet Retief road (–AC), 27 Mar 1937, *Repton 916* (PRE); 17 km NE of Wakkerstroom, Farm Oshoek, 1824 m (–AD), 23 Feb 2005, *Meyer 4429* (PRE). **FREE STATE. 2729 (Volksrust):** E of Mont Pelaaan Post Office, on farm Onrecht, 2000 m (–DC), 8 Mar 1972, *Muller 916* (PRE). **2828 (Bethlehem):** Witsieshoek, around hut on way to Mont-aux-Sources, 2000 m (–DB), 1 Apr 1970, *Liebenberg 8127* (PRE).

**2829 (Harrismith):** Rensburgskop, Manyenyeza, 1800 m (–AD), 2 Apr 1963, *Jacobsz 216* (PRE); Mont Pelaaan, 1925 m (BA), 12 Feb 1974, *Ferreira 156* (PRE). **KWAZULU-NATAL. 2729 (Volksrust):** Utrecht district, near Charlestown, Farm Glen Atholl, 1850 m (–BD), Jan 1928, *Smith 5646* (PRE). **2730 (Vryheid):** Amajuba district, Utrecht, Lui-perdkloof Farm, 1864 m (–AD), 25 Jan 2011, *Mnxati 308* (PRE); Paulpietersburg district, Ecombela (–BC), 3 Mar 1994, *Sikhakhane 420* (PRE). **2731 (Louwsburg):** Ngome State Forest (–CD), 2 Apr 2005, *Styles 2692* (PRE). **2828 (Bethlehem):** Royal Natal Nature Reserve, 1475 m (–DB), 4 June 2010, *Nkuna & Mabatha 2732* (PRE); Drakensberg, Mont-aux-Sources area (–DD), 6 May 1961, *Warren sub J35202* (J). **2829 (Harrismith):** Van Reenen (–AD), 27 Mar 1915, *Medley Wood 13,130* (PRE); Biggarsberg, One Tree Hill Farm, One Tree Hill, 1620 m (–BB), 16 Mar 1996, *Prentice 60* (PRE); Top of Oliviershoek Pass, 1736 m (–CA), 30 Mar 2007, *Meyer 4926* (PRE); Drakensberg, Little Switzerland (–CB), 8 Mar 1969, *Anderson 142* (PRE); 3.2 km from Cathedral Peak Hotel towards Bergville (–CC), May 1971, *Admiraal & Dryfhout 2868* (PRE); Qudeni, 1725 m (–DC), 5 May 1948, *Gerstner 6795* (PRE); 5 km NE of Estcourt, Farm Rensburgspruit (–DD), 5 Apr 1987, *Jordaan 1131* (PRE). **2830 (Dundee):** Dundee, Mpate Mountain, Stoney Braes Farm (–AA), 15 Mar 1996, *Williams 1272* (PRE); Utrecht, Vechtkop (–BA), Mar 1917, *Breyer sub PRE59366* (PRE); 13 km from Babanango to Nquthu, 1440 m (–BD), 18 Apr 2005, *Nkuna & Nevhutalu 943* (PRE). **2831 (Nkandla):** Babanango (–AC), May 1932, *King 276* (PRE); Nkandla Forest (–CA), 3 Apr 1986, *Jordaan 706* (PRE); Melmouth (–CB), 14 Apr 1919, *Mogg 4590* (PRE); Ngoye Forest, northern summit (–DC), 22 Apr 1966, *Venter 2343* (PRE). **2929 (Underberg):** Between Bushman's Neck Police Station and Ngoangoana Police Post (–AA), 11 Mar 1976, *Beverly & Hoener 669* (PRE); Giants Castle Game Reserve, Witteberg area, 1600 m (–AB), 10 Jan 1967, *Trauseld 729* (PRE); Giants Castle, 2000 m (–AD), Jan 1915, *Symons 384* (PRE). Tabamhlope, 1850 m (–BA), 14 Mar 1937, *West 101* (PRE); Estcourt district, Dalton Bridge, 1230 m (–BB), 9 Apr 1938, *West 772* (PRE); Mooi River district, upper reaches of Mooi River, Highmoor Reserve, 2100 m (–BC), 10 Jan 1990, *Balkwill & Balkwill 5212* (J, RSA); Underberg, Bamboo Mountain (–CB), Mar 1938, *McClellan 706* (PRE); Drakensberg Garden, 1700 m (–CC), 6 Feb 1982, *Lambinon & Reekmans 82/306* (PRE); Coleford (Sunnyside), 1540 m (–CD), 9 Dec 1970, *Moll 5151* (PRE); Mpendle district, 9.6 km along Everglade to Boston road, 1540 m (–DB), 25 Feb 1964, *Moll 632* (PRE); Lions River district, 1.6 km on Nottingham Road turnoff from Dargle to Impendhile road, 1475 m (–DB), 25 Mar 1963, *Edwards 3078* (PRE); Impendhile division, Farm Howard Hill, overlooking Umkomaas Valley (–DB), 19 Mar 1943, *Smith 8305B* (PRE); Bulwer district, Manwaqa Mountain, 1850–2150 m (–DC), 12 Mar 1926, *McClellan 222* (PRE); Bulwer (–DD), 13 Apr 1945, *Allsopp 851* (PRE). **2930 (Pietermaritzburg):** Tweedie (–AC), 7 Feb 1920, *Mogg 6747* (PRE); Greytown (–BA), May 1932, *Wylie sub NH21943* (PRE); 1 km to Elandsokop turnoff from road to Boston (–CA), 30 Jan 1985, *Pienaar 549* (PRE); Pietermaritzburg, World's View, 935 m (–CB), 21 Apr 1977, *Venter 1864* (PRE); Byrne, Keerom, 1540 m (–CC), 16 Apr 1972, *Strey 10,943* (PRE); Richmond, 920 m (–CD), 30 Apr 1964, *Bayliss 2194* (PRE); Durban, Gillets (–DD), 14 Apr 1923, *Medley Wood sub PRE59087* (PRE). **3029 (Kokstad):** Sisonke district, Ingwe, Ebazini Village, on road to Igxalingwenwa School, 1389 m (–AA), 5 Mar 2010, *Mnxati 141* (PRE); Weza State Forest, Foothills of Ngeli Mountain, near Rhinkhalsbank, 1380 m (–DA), *Balkwill et al. 2857* (E, J, LISC, M, MO). **3030 (Port Shepstone):** Dumisa, Farm Friedenau, 600 m (–AD), 2 Apr 1909, *Rudatis 638* (PRE); Umzinto district, Vernon Crookes Nature Reserve, 400 m (–BC), 3 May 1998, *Balkwill & Balkwill 10,527* (E, J, NH); Oribi Gorge Nature Reserve, 500 m (–CA), *Vassilatos & Mantell 913* (J); Izotsha Falls (–CB), 3 May 1968, *Strey 7584* (PRE); Paddock, Murchison Flats and Oribi Gorge (–CC), Apr 1937, *McClellan 354* (PRE). **3130 (Port Edward):** Port Shepstone district, Umtamvuna Nature Reserve, 300 m (–AA), 28 April 1979, *Puff et al. 76* (J). **EASTERN CAPE. 3028 (Matatiele):** 11.2 km S of Mount Frere, 920 m (–DD), 10 Apr 1957, *Theron 2194* (PRE). **3029 (Kokstad):** Mount Currie (–AD), Mar 1883, *Tyson 1145* (PRE);

Clydesdale, in mountains, 920 m (–BD), Mar 1886, *Tyson 2749* (PRE); Mt Frere to Cedarville (–CA), 24 Feb 1972, *Strey 10,803* (PRE); Kokstad (–CB), 9 Apr 1910, *Pegler 1771* (PRE); Insizwa (–CC), 30 Mar 1973, *Strey 11,249* (PRE); Kokstad district, Tonti Forest (–CD), *District Forest Officer 581* (PRE). **3126 (Komani [Queenstown])**: Zwart Kei River valley, Junction Farm, 1075 m (–DD), 15 Apr 1911, *Galpin 8161* (PRE). **3127 (Cacadu [Lady Frere])**: Queenstown district, Gwatyu, 1075 m (–CD), 15 Apr 1911, *Galpin 8161* (PRE); Engcobo Mountains (–DB), 1940, *Britten 7033* (PRE). **3128 (Mthatha [Umtata])**: Bizaya Forest, 1600 m (–CB), 24 Jan 1986, *Barker 220* (PRE); 3.2 km NW of Mqanduli, 800 m (–DD), 11 Mar 1955, *Codd 9266* (PRE). **3129 (Port St Johns)**: Near Magwa Store (–BC), 11 May 1969, *Strey 8550* (PRE); About 10 km from Lupatana on road to Lusikisiki (–BD), 12 Jul 1976, *Venter 923* (PRE); 6.4 km E of Libode, 770 m (–CA), 12 Apr 1957, *Theron 2181* (PRE). **3226 (KwaMaqoma [Fort Beaufort])**: Hogsback (–DB), Apr 1960, *Lucas sub J34020* (J). **3227 (Stutterheim)**: Amatola Mountain, near Ghulu Kop (–CA), Apr 1929, *Dyer 1980* (PRE); Stutterheim, Kologha Forest Reserve, 875 m (–CB), 7 Dec 2001, *Meyer BP01033* (PRE); Pirie [Perie] (–CC), Mar 1888, *Sim s.n.* (PRE); Keiskama Hoek (–CD), 17 Apr 1922, *Britten 2872* (PRE). **3228 (Gcuwa [Butterworth])**: Kentani, 370 m (–CB), Feb 1914, *Pegler 162* (PRE). Eswatini. **2531 (Komatipoort)**: Piggs Peak, Havelock road, 1385 m (–CD), 21 Mar 1958, *Compton 27,667* (PRE). **2631 (Mbabane)**: Mbabane district, Darkton Valley, 1385 m (–AA), 11 Jun 1958, *Compton 27,873* (PRE); About 20 km north of Mbabane, Ngwenya Hills, Lion Peak, 1500 m (–AC), 6 Apr 1966, *Maguire 7610* (J); 5 km south of Oshoek, Motjane serpentine band, 1350 m (–AC), 19 Mar 1998, *McCallum 503* (J, MO, PRE, SNH); Usutu Forest, 1075 m (–CA), 22 Apr 1958, *Compton 27,766* (PRE). **2632 (Bela Vista)**: 29 km [18 miles] NNW of Mbabane, Steynsdorp Valley (–AA), 4 Apr 1966, *Maguire 7412* (J).

iNaturalist observations: There are 558 observations of *Coleus calycinus* on iNaturalist.

#### CRedit authorship contribution statement

**K. Balkwill**: Writing – review & editing, Writing – original draft, Validation, Resources, Methodology, Investigation, Data curation, Conceptualization.

#### Conflict of interest

The author declares that he has no conflicts of interest.

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