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Coleus namuliensis and *Coleus caudatus* (*Lamiaceae*): a new species and a new combination in the Afromontane flora of Mozambique and Zimbabwe

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Key words

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taxonomy

Abstract The new species *Coleus namuliensis* (*Lamiaceae*) is described from the granite outcrops and grasslands of Mt Namuli in Zambezia Province of Mozambique. It has previously been confused with *Plectranthus caudatus*, a species that is restricted to the quartzite outcrops of the Chimanimani Mountains on the Mozambique-Zimbabwe border for which the new combination in *Coleus* is formalised in this paper. Other potential confusion species are discussed and a rationale for applying the generic name *Coleus* rather than *Plectranthus* is provided. Despite their highly restricted ranges, *C. namuliensis* and *C. caudatus* are both considered to have a conservation status of Least Concern at present, although climate change may pose a longer-term threat to their survival.

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INTRODUCTION

Whilst preparing a conservation assessment for *Plectranthus caudatus* S.Moore, a species previously considered to be endemic to the quartzite outcrops of the Chimanimani Mountains, three specimens were found in the Kew herbarium named to this species but collected on the granite outcrops of Mt Namuli, some 650 km to the northeast of Chimanimani. These specimens were collected in 2007 during biodiversity surveys conducted in the mountains of Zambézia Province, northern Mozambique under a Darwin Initiative award. The treatment of *Plectranthus* L'Hér. for Flora Zambesiaca *Lamiaceae* (Paton et al. 2013) had already been prepared by the time these specimens were available for study at Kew and so they were not studied in detail or cited in the account. In view of the marked disjunction in distribution and particularly the differing geology, it was considered likely that these two populations represented different taxa and so the Namuli plants were examined in more detail by the current authors. These specimens share many superficial similarities with *P. caudatus*, including the fleshy habit and dense inflorescence spikes with a villose indumentum and, except for the differing substrate, they are known from analogous environments, being found in rocky montane grassland. Indeed, using the treatment of *Plectranthus* in Flora Zambesiaca (Paton et al. 2013), the Namuli plants could potentially key out to *P. caudatus*. However, when comparing the specimens side by side there were clear differences immediately noticeable, such as a lack of the bright pink bracts within the inflorescences that are conspicuous in true *P. caudatus* specimens, smaller leaves which are not so markedly bullate, and the inflorescences being more pyramidal in shape and pedunculate rather than sessile. Closer examination under the microscope and measurement of floral characters revealed several other key differences to the specimens of *P. caudatus* seen and to the available descriptions of *P. caudatus* (Rendle et al. 1911, Paton et al. 2013). All relevant keys to *Plectranthus* in Africa (Morton 1963, Codd 1975, Ryding 2006, Paton et al. 2009, 2013) were consulted to find any other potentially allied species, each of which were examined and compared with the Namuli plants (see Table 1). It was concluded that the Namuli plants are a new species to science, apparently restricted to that mountain, and the species is formally described below.

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Applying the correct generic name: Plectranthus vs Coleus

Taken in a broad sense as per recent treatments of the genus (e.g., Paton et al. 2009, 2013), *Plectranthus* is a large genus with approximately 300 species in the Old World Tropics (Lukhoba et al. 2006, Paton et al. 2009). Morton (1962) was the earliest in the modern era, but not the first historically, to treat *Coleus* Lour. as congeneric with *Plectranthus*, although he did maintain *Solenostemon* Thonn. as a distinct genus. Previously they had been distinguished by Bentham (1832, 1848) on the basis of free stamens in *Plectranthus* vs stamens fused into a sheath in *Coleus*, but this was found to be an unreliable distinction (Morton 1962, Codd 1971, 1975, Pollard & Paton 2001, Paton et al. 2009, 2013). Consequently, *Coleus* was subsumed into *Plectranthus* (Morton 1962, Codd 1971) as no clear differentiating characters were found.

However, recent molecular phylogenetic work (Mwanyambo 2008, Paton et al. in prep) suggests that this broadly circumscribed *Plectranthus* is paraphyletic, with species formerly placed in *Coleus* and *Solenostemon* forming a sister clade to a large group of taxa including well-established and morphologically distinct genera such as *Aeollanthus* Spreng., *Alvesia* Welw., *Capitanopsis* S.Moore, *Tetradenia* Benth. and *Thorncroftia* N.E.Br., in addition to a large group of other species that have been placed in *Plectranthus*, including its type, *P. fruticosus* L'Hér. This molecular evidence is supported by recent morphological studies (Lukhoba et al. 2006, Paton et al. 2009, 2013) that recognise the existence of a '*Coleus*' clade within the broadly circumscribed *Plectranthus* based on the following diagnostic characters:

– the posterior corolla lobe shorter than the anterior, and usually markedly so with the anterior lobe often large and navicular;

Table 1 Key morphological differences between *Coleus namuliensis* and potentially allied species. Measurements for other species are taken in part from Paton et al. (2009, 2013).

Character	*C. namuliensis*	*C. caudatus*	*C. sanguineus*	*P. crassus*	*P. lactiflorus*	*P. montanus*
Height	15–45 cm	60–100 cm	60–250 cm	50–100 cm	100–250 cm	40–250 cm
Inflorescences	Spikes with peduncle 4–45 mm; long-pyramidal shape, dense, without visible rachis between verticils	Lateral spikes sessile, adpressed to main axis, squat columnar, without visible rachis between verticils	Spikes subsessile; verticils dense or up to 5 mm apart with visible rachis	Spikes sessile or with short peduncle; spikes more lax, rachis visible between verticils	Spikes either sessile or with peduncles up to 50 mm long; spikes more lax, rachis always visible between verticils	Spikes either sessile or with peduncle up to 30 mm long; spikes more lax, rachis nearly always visible between verticils
Bracts subtending verticils	3.3–5 mm long; caducous	6–11 mm long; ± persistent	2–3 mm long; caducous	5–15 mm long; caducous	5–25 mm long; caducous	2–4 mm long; persistence variable, sometimes caducous
Calyx length	2.7–4.5 mm long in flower, 4.5–5.8 mm long in fruit	5–7 mm long in flower, 9–10 mm long in fruit	± 2 mm long in flower, 3–4 mm long in fruit	3–4 mm long in flower, 5–6 mm long in fruit	4–5 mm long in flower, 7–9 mm long in fruit	1.5 mm long in flower, 2–3 mm long in fruit
Calyx shape	Lobes all subequal in size and equally spaced; sinus between anterior pair of lobes split almost to base of calyx	Posterior lobe largest, anterior pair of lobes smallest; lateral lobes held closer to posterior lobe than anterior lobes, giving a '3+2' arrangement. In fruiting calyx, posterior lobe forms cucullate posterior lip curving downwards	Posterior lobe ± noticeably longest, giving a (weak) '1+4' arrangement; anterior lobes slightly longer and narrower than lateral lobes	Posterior and lateral lobes larger, sinus between lateral and anterior lobes wider, giving a '3+2' arrangement	Posterior and lateral lobes larger, sinus between lateral and anterior lobes wider, giving a '3+2' arrangement	Posterior lobe noticeably largest, lobes in a '1+4' arrangement
Corolla length	7.5–10 mm	18–20 mm	6–10 mm	10–16 mm	14–22 mm	3–5 mm
Corolla colour	Purple or pale mauve; also recorded as white inside with pink lobes	Blue	Off-white to pale blue or purple	Blue	Blue	White, marked blue or violet, to violet
Nutlets	Orange-brown, shiny, arrowhead-shaped, slightly flattened; not producing mucilage	Dark brown, shiny, flattened-ovoid, smooth; not producing mucilage	Brown with reddish gland dots, shiny, broadly elliptic, flattened, producing a small amount of speckled mucilage	Brown with darker speckles, shiny, ovoid, flattened, smooth, producing speckled mucilage	Brown with darker speckles, flattened-ovoid, smooth, producing copious speckled mucilage	Brown with reddish dots, shiny, broadly elliptic, flattened, producing copious mucilage

– the calyx usually asymmetric at the base with the pedicel attached behind the posterior lip; and
– the stamens free or fused.

The '*Plectranthus*' clade, on the other hand, is characterised by having ± equal corolla lobes, a symmetrical calyx base with the pedicel attaching at the mid-line, and free stamens (Paton et al. 2009). A forthcoming paper making the case for the recognition of *Coleus* at the generic rank and providing the necessary new name combinations in *Coleus* is planned for publication in the near future (Paton et al. in prep). We therefore accept *Coleus* (including *Solenostemon*) as a distinct genus. We recognise that the species discussed in this paper are part of this re-circumscribed genus, and so we name the new species *Coleus namuliensis* E.Downes & I.Darbysh., and for any species for which there is already a combination in *Coleus* we use that name. We also make the new combination for the species it is most likely to be confused with, *Plectranthus caudatus* (= *Coleus caudatus* (S.Moore) E.Downes & I.Darbysh.), as this updated name is needed for ongoing studies into the Chimanimani endemics (see Discussion). We have refrained from making further new combinations here, pending the forthcoming paper on *Coleus* by Paton et al. (in prep.).

MATERIALS & METHODS

The present study is based on the investigation of herbarium specimens. The collections at the BM, K and SRGH herbaria were consulted; abbreviations for herbaria follow the standard form listed on Index Herbariorum (Thiers, continuously updated). All specimens cited have been seen except where noted as 'not seen'; those for which only images have been seen are marked with an *. Prior to dissection, flowers were soaked in Aerosol OT 5 % solution; measurement of vegetative organs were made on dry material.

The assessment of the conservation status of the new species follows the categories and criteria of IUCN (2012).

TAXONOMIC ACCOUNT

Coleus namuliensis E.Downes & I.Darbysh., *sp. nov.* — Fig. 1

Most likely to be confused with *Coleus caudatus* (S.Moore) E.Downes & I.Darbysh. (new combination made below), but differs in having: 1) conspicuously pedunculate spikes (vs lateral spikes sessile in *P. caudatus*); 2) smaller bracts subtending the verticils 3.3–5 mm long (vs 6–11 mm long); 3) smaller calyces 2.7–4.4 mm (vs 5–7 mm long); 4) calyx lobes subequal in length and evenly spaced with the sinus between the anterior pair of lobes markedly longer than the other sinuses, divided almost to the base of the calyx (vs calyx in '3+2' lobe arrangement with the lateral and posterior lobes clearly longer than the anterior pair of lobes, the sinus between the anterior pair of lobes not so markedly longer than the other sinuses); 5) smaller corollas 7.5–10 mm (vs 18–20 mm long); 6) orange-brown arrowhead-shaped nutlets (vs dark brown flattened-ovoid shaped nutlets); 7) usually smaller leaves 27–47 by 17–49 mm (vs 40–80 by 20–80 mm); and 8) leaves less markedly bullate. — Type: *Harris 237* (holo K000962083; iso K000962089, LMA (not seen)), Mozambique, Zambezia Province, Mt Namuli, small peak 5 km west of highest peak, S15°22'30.9" E37°02'52.6", fl. fr., 30 May 2007.

Erect semi-succulent perennial herb, with single to several stems arising from a woody base and rootstock, 15–45 cm tall; not reported as aromatic (but inflorescence smells mint-like when soaked); whole plant densely tomentose with long multicellular glandular hairs, with small white or pale yellow gland-tips, also with larger sessile yellow, orange or red glands throughout but these often hidden by the indumentum. *Stems* fleshy, ascending, convexly-quadrangular; less hairy towards base. *Leaves* opposite-decussate, shortly petiolate or sessile, petiole up to 4 mm long; blade fleshy, discolorous, grey-green adaxially, paler abaxially due to dense indumentum, sub-

Fig. 1 *Coleus namuliensis* E.Downes & I.Darbysh. a. Habit; b. medium-sized leaf, abaxial surface; c. apex of inflorescence showing bracts; d. mid-region of inflorescence showing calyces; e. bract, adaxial surface; f. detail of hairs from mid-margin of bract; g. calyx, dorsal view; h. calyx, lateral view; i. detail of hairs from calyx surface; j. sessile glands from calyx surface; k. corolla, stamens and style, lateral view; l. face view of upper lobes of corolla after slitting of corolla and splaying the lobes; m. nutlet, views of opposite faces (a (plant), b: *Timberlake et al. 5146*; a (rootstock): *Harris et al. 237*; c–m: *Patel 7384*; all K). — Scale bars: a = 5 cm; b–d = 1 cm; e, g–h, k–l = 2 mm; f, i, m = 1 mm; j = 250 µm. — Drawn by Andrew Brown.

orbicular to elliptic, 27–47 by 17–49 mm, length : width ratio 0.9–1.95 : 1 (mean 1.27 : 1), decreasing in size and becoming more elliptic in the distal portion of the plant, base rounded to cuneate, margins crenate, apex rounded to obtuse; venation anastomosing. *Inflorescences* of dense spikes, arranged singly or up to nine in largely leafless terminal portion of stems, opposite-decussately arranged, individual spikes long-pyramidal, 21–85 by 6–13 mm, each vertical comprised of opposite 3-flowered cymes very compact to neighbouring verticils and adpressed to main axis, without visible rachis between the verticils; peduncle 8–45 mm long; bracts subtending inflorescence branches (spikes) elliptic, 4–15 by 2–9 mm, decreasing in size towards distil portion of plant, base obtuse, apex acute to obtuse; bracts subtending each cyme conspicuous in distal portion of spike, but caducous in proximal portion, sub-elliptic to ovate, 3.3–5 by 2.2–3.6 mm, length : width ratio 1.2–1.9 : 1 (mean 1.6 : 1), base rounded, sessile, apex acuminate to attenuate, abaxial surface glabrous, red and white hairs recorded by collectors in the field (*Harris 237*); bracteoles absent. *Calyx* dark purple towards tips of lobes in dry specimens, flowering calyx 2.7–4.5 by 2.2–3.2 mm, fruiting calyx 4.5–5.8 by 2.4–3.2 mm, with five equal, attenuate lobes, with one longer sinus between the two anterior lobes, this 2.3–3.6 mm long, other four sinuses 1.5–2 mm long. *Corolla* purple or pale mauve, also recorded as white inside with pink lobes, 7.5–10 mm long, internal surface glabrous, external surface densely tomentose; tube (measured from base to most forward part of upper lip, i.e., up to where tube opens on to lower lip) 4–6.5 mm long, upper lip with four lobes 1.2–2.2 mm long, lower lip navicular, 3.2–4 mm long. *Stamens* four, adnate to tube at mouth of corolla, filaments free, 2–2.5 mm long, anthers 0.5–0.7 mm long, with patchy concentrations of red/orange sessile glands seen in dry specimens. *Pistil* with glabrous style 5–9 mm long, easily dislodged; stigma white, shortly bifid. *Nutlets* shiny, orange-brown, arrowhead-shaped, slightly flattened, 1.2–2 by 0.5–1 mm.

Distribution & Ecology — *Coleus namuliensis* is known only from Mt Namuli in Zambezia Province of northern Mozambique where it is recorded from montane grassland and in the forest-grassland transition, typically on rock outcrops and rock faces, on sandy loam soil over granite (Timberlake et al. 2009). It grows together with a variety of herbaceous species, grasses and sedges including *Coleochloa setifera* (Ridl.) Gilly. It has been recorded at 2050–2060 m elevation but is likely to occur over a somewhat wider altitudinal range.

Additional specimens. Mozambique, Zambezia Province, Mt Namuli, small peak 5 km W of highest peak, S15°22'30.6" E37°02'52.5", fl. fr., 30 May 2007, *Patel 7384* (K 4 sheets, LMA (not seen)); Mt Namuli, Muretha Plateau, S15°22'57.3" E37°02'00.7", fl. fr., 31 May 2007, *Timberlake 5146* (K 3 sheets, LMA (not seen)).

Conservation — The following assessment is derived from a 1-day meeting of the IUCN Southern African Plant Specialist Group held in February 2017 (attended by the second author of this paper) in which this species was assessed. *Coleus namuliensis* has a highly restricted range, with an Extent of Occurrence (EOO) of less than 23 km^2, this being the maximum extent of montane grassland on the Namuli massif. The Area of Occupancy (AOO) is recorded as 12 km^2 based on application of a standard 2 by 2 km grid cell size (IUCN Standards and Petitions Subcommittee 2017). However, there is currently no subsistence farming or livestock grazing occurring on the upper slopes and plateaus of Mt Namuli where this species occurs. This threat appears to have been overstated in the provisional conservation assessment of *Crotalaria namuliensis* Polhill & T.Harris (Harris et al. 2011). Although grasslands of the Namuli massif do get burnt by man, this species is restricted to rocky grassland areas at high altitude that are not impacted by this burning (Legado Initiative, pers. obs.). Historically, there were feral / domestic pigs roaming free on the mountain that potentially damaged the habitat for this species by digging up the thinly vegetated grassy areas over rock (Timberlake et al. 2009). However, these pigs have since been largely removed as potatoes are now the main crop cultivated on the lower slopes of the mountain and pigs are too damaging to potato farming (Legado Initiative, pers. obs.). They do not appear to have caused lasting damage to the upland grasslands and so are no longer considered to be a plausible threat. Therefore, despite its very small range, there are no current threats to this taxon or its montane grassland and rock habitats and so it is assessed as of Least Concern (LC). In view of its extreme range-restriction, this species and the other Namuli grassland endemic species should be regularly monitored, as any future threats to their habitats such as increased fire frequency or cattle grazing could quickly endanger these species. In the longer term, climate change and resultant changes in montane vegetation assemblages may pose a threat to this species.

Notes — This species is quite easy to separate from other *Coleus* (*Plectranthus*) species due to features in the inflorescence; no other species possess the combination of congested long-pyramidal spikes with a pointed apex, subequal calyx lobes except for the deep anterior sinus, and markedly pointed nutlets. In Table 1 we compare *Coleus namuliensis* with species of *Coleus* (*Plectranthus*) that share the following characters: posterior corolla lobe shorter than anterior; crassulaceous leaves; congested spiciform inflorescences; calyx with a deeper sinus between the anterior pair of lobes; pedicels 4 mm long or less, and; dense tomentose hairs covering at least part of the plant. The species that share these characters to a greater or lesser extent are *C. caudatus* from the Chimanimani Mountains, *P. montanus* Benth. which is widespread in eastern and southern Africa, *Plectranthus crassus* N.E.Br. from Mt Mulanje in southern Malawi, *Coleus lactiflorus* Vatke (= *P. lactiflorus* (Vatke) Agnew) from eastern Africa and *P. sanguineus* Britten from Malawi, Mozambique and Zimbabwe (Table 1). The combinations in *Coleus* are yet to be made for *P. montanus*, *P. crassus* and *P. sanguineus*.

Coleus namuliensis is found to differ from each of these species in multiple character traits. The shape of the calyx in *C. namuliensis* is different to all of them, as the lobes are ± equally sized and positioned, whereas the others have a '3+2' arrangement involving more spatial separation between the lateral and median lobes, or '1+4' arrangement with a larger posterior lobe. Plant height and size differences in various organs also occur; in general, *C. namuliensis* is shorter than the other species and has smaller bracts, calyces and corollas than *C. caudatus*, *P. crassus* and *C. lactiflorus*, but larger than those of *P. montanus* (see Table 1).

On overall gestalt, it is most likely to be confused with *C. caudatus* (for which the new combination in *Coleus* is formalised below) but is easily separated by the diagnostic characters listed in the Recognition section; the differences in, for example, calyx arrangement and nutlet shape are so marked that the similarity may be superficial and we predict that these species may not be phylogenetically close. *Plectranthus sanguineus* can also appears similar to *C. namuliensis* due to the dense, slender inflorescence spikes and small flowers and the calyx in that species can approach *C. namuliensis* in that the posterior lobe is sometimes only slightly larger than the other lobes. However, several characters differentiate it clearly: in *P. sanguineus* the leaves and inflorescences produce a reddish brown dye when crushed (as the name suggests) and the bright red glands are very conspicuous on, e.g., the bracts, calyces and corollas (in *C. namuliensis* the glands are largely hidden by the more dense and longer indumentum); the plant is often leafless

or with few leaves when in flower; the leaves are obovate or spathulate rather than sub-orbicular to elliptic and the spikes become ± quickly elongated with the verticils separated in at least the proximal portion. *Plectranthus sanguineus* is also a taller plant, typically with long slender erect stems. This species also occurs on Mt Namuli.

Plectranthus montanus can have similarly pale corollas to *Coleus namuliensis* but, other characteristics such as the larger corolla length and more congested inflorescences distinguish *C. namuliensis* from this species. For completeness, *C. namuliensis* was also compared to *P. pseudomarrubioides* R.H.Willemse from Ethiopia, Uganda, Kenya and N Tanzania. However, there appear to be more similarities between *P. pseudomarrubioides* and *P. montanus* than *C. namuliensis*, most notably that both *P. pseudomarrubioides* and *P. montanus* have smaller leaves when compared to *C. namuliensis*, both less than 6 by 2.5 cm, and that they both have a noticeably larger posterior lobe of the calyx, giving a '1+4' arrangement of the lobes (Willemse 1985) rather than subequal lobes of the calyx as in *C. namuliensis*. For these reasons, *P. pseudomarrubioides* is omitted from Table 1.

Coleus caudatus (S.Moore) E.Downes & I.Darbysh., *comb. nov.*

Plectranthus caudatus S.Moore in Rendle et al., J. Linn. Soc., Bot. 40 (1911) 176; Paton et al. (2013) 284, f. 8.8.47. — Type: *Swynnerton 2010* (holo BM00564028*; iso K000432000), Zimbabwe, Chimanimani Mts, fl., 26 Sept. 1906.

Distribution & Ecology — *Coleus caudatus* is known only from the Chimanimani Mountains, which span the border between Manica Province of Mozambique and Manicaland Province of Zimbabwe. This aromatic perennial herb occurs in rocky areas in upland grassland over quartzite, most often growing on rock outcrops and faces; it occurs at 915–1680 m elevation.

Additional specimens. Mozambique, Chimanimani Mts, on edge of Goye, fl., 2 Sept. 1944, *Finlay F17* (SRGH*); Chimanimani Mts, fl. fr., 1973, *Dutton 83* (LMA (not seen)); Chimanimani Mts, northern slopes below Mt Dombe, S19°44'39" E33°00'57", st., 17 Apr. 2014, *Ballings & Wursten PB 2227* (K, LMA (not seen), SRGH (not seen)). – Zimbabwe, Chimanimani Mts, fl. 15 May 1947, *Munch 1* (SRGH*); Chimanimani Mts, fl., 4 June 1948, *Munch 102* (SRGH); Chimanimani Mts, fl. fr., 6 June 1949, *Wild 2874* (K, SRGH*); Chimanimani Mts, fl., 8 July 1950, *Thompson 20* (SRGH*); Musapa Gap, fl., 6 Oct. 1950, *Munch 348* (SRGH*); Chimanimani Mts, 'The Corner', fl., 8 Oct. 1950, *Chase 2990* (SRGH*); Chimanimani/Bundi, fl., 16 Mar. 1957, *Phipps 690* (SRGH*); Chimanimani Mts, Stonehenge, fl., 1 Feb. 1958, *Hall 281* (SRGH*); Chimanimani Mts, summit of pass, fl., 18 May 1958, *West 3637* (SRGH*); Chimanimani Plateau, fl., 26 May 1959, *Leach 9040* (SRGH*); Chimanimani Mts, fl., 29 Sept. 1966, *Plowes 2806* (K, SRGH*); Chimanimani Mts, Higher Valley, fl. fr., 8 Apr. 1967, *Grosvenor 364* (K, SRGH*); Chimanimani Mts, fl., July 1972, *Goldsmith 27/72* (K, SRGH*); Chimanimani Mts, Bailey's Folly, fl., 11 Sept. 1981, *Burrows 2391* (SRGH*).

Conservation — *Coleus caudatus* is known only from a very small range, with an Extent of Occurrence of 39.5 km^2 based on occurrence data and with the maximum range not exceeding 270 km^2 which is the maximum extent of craggy quartzite and associated grassland on Chimanimani. However, it is considered to be secure there as there are no known threats to its favoured rocky habitats and the entirety of this population falls within protected areas. Whilst the protection is less effective on the Mozambique side of the border than in Zimbabwe, the human impacts within the Chimanimani National Reserve are diminishing and do not impact upon the favoured habitats of this species (Timberlake et al. 2016). It is therefore assessed as of Least Concern (LC) at present, but any increased pressure on the montane habitats of the Chimanimani massif may quickly result in this species becoming globally threatened. In the longer term, climate change may pose a threat to this species, hence regular surveys are desirable to monitor any indications of population decline or range shift. In the National Plant Red List of Zimbabwe, Mapaura & Timberlake (2002) recorded this species as Near Threatened, but in the absence of any threats the assessment is downgraded to LC here.

DISCUSSION: THE BOTANICAL IMPORTANCE OF MT NAMULI AND THE CHIMANIMANI MTS

This work forms a part of ongoing research into plant diversity and conservation in the montane regions of Mozambique (see Timberlake et al. 2009, 2016, Harris et al. 2011). Including the new species described here, the Namuli massif and its foothills are currently known to have at least 14 strict endemic species and two strict endemic subspecies. Several of these species – *Coleus namuliensis*, together with *Crotalaria namuliensis*, *Isoglossa namuliensis* I.Darbysh. (Harris et al. 2011) and a new species of *Crepidorhopalon* currently being described (Darbyshire et al. in prep.) – were first discovered as recently as 2007 during botanical surveys conducted under a Darwin Initiative project on the biodiversity of montane ecosystems in Malawi and Mozambique. It is likely that further botanical inventory work on this massif would result in discovery of other new species to science, particularly if conducted during the main rainy season which is a time when there has been almost no botanical exploration on Namuli to date. The Darwin Initiative surveys also revealed several range extensions of species previously known only from Mt Mulanje in Malawi (Harris et al. 2011). This mountain is therefore a key site for plant conservation, but there is currently no formal protection in place. The Legado Initiative are leading on community-led conservation efforts, aiming to develop the Namuli Community Conservation Area (http://www.legadoinitiative.org/conserve/ accessed July 2017).

The Chimanimani Mts are of even greater botanical significance; *Coleus caudatus* is one of 74 taxa (including 66 species) endemic to this massif, the large majority of which are confined to the quartzite outcrops and grasslands (Timberlake et al. 2016, Wursten et al. 2017). The total flora of the Chimanimani Mts over 1 200 m elevation stands at 977 taxa (Wursten et al. 2017). Fortunately, these mountains are afforded better protection than Mt Namuli, the Zimbabwe side being a National Park and the Mozambique side being a National Reserve which together form the Chimanimani Trans-Frontier Conservation Area. Many of the endemic species are currently considered to be secure and are assessed as of Least Concern.

Work is now underway to identify Important Plant Areas (IPAs) in Mozambique (see Darbyshire et al. 2017) and both Mt Namuli and the Chimanimani Mts are sure to qualify as IPAs based on the presence of high numbers of rare and endemic species and rare habitats.

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members of the IUCN Southern African Plant Specialist Group who took part in the 1-day red listing workshop in February 2017 focussed on the endemic and near-endemic plants of Mt Namuli, particularly to the outgoing chair of this group, Domitilla Raimondo of the South African National Biodiversity Institute, and to the incoming chair, Hermenegildo Matimele of the Instituto de Investigação Agrária de Moçambique (IIAM). We also particularly thank Camila de Sousa and Tereza Alves of IIAM both for their participation in this workshop and their continued support and collaboration on botanical research in Mozambique.

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