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Two new endemic species of *Hermannia* L. (Malvaceae: Byttnerioideae)—*H. lilacina* and *H. boschbergensis*—from the Cape Midlands Escarpment (Eastern Cape, South Africa)

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ABSTRACT

Hermannia L. is primarily an African genus of some 250 species, with the centre of diversity located in southern Africa. It is the sixth-most endemic-rich genus in the Greater Cape Floristic Region, although endemics occur in all biomes in southern Africa. Two new species of *Hermannia* L. (Malvaceae: Byttnerioideae) are described from the Cape Midlands Escarpment mountains, Eastern Cape Province of South Africa. *Hermannia lilacina* Gwynn. & V.R.Clark is common in Karoo Escarpment Grassland (Grassland Biome), mostly above 1600 m in the eastern Sneeuberg Massif (Nardousberg to Aasvoëlkrans, i.e. behind Graaff-Reinet to Pearston), with one record from the interior of the western Great Winterberg–Amatholes (i.e. near Tarkastad). *Hermannia boschbergensis* Gwynn. & V.R.Clark is apparently confined to mid-elevations in Eastern Cape Escarpment Thicket (Albany Thicket Biome) at 1200 m on the Boschberg (eastern Sneeuberg, near KwaNajoli/Somerset East) and is currently only known from two collections. Recognition of these two new species complements numerous other recent discoveries from these mountains.

1. Introduction

Gwynne-Evans (2015)—in the first comprehensive systematics of *Hermannia* L. (Malvaceae Juss., subfamily Byttnerioideae Burnett, Tribe Hermannieae DC.)—recognised *c*. 250 species and supported Linnaeus' two subgenera: *Hermannia* L. (c. 127 species) and *Mahernia* L. (c. 112 species). *Hermannia* is primarily an African genus with only five species occurring outside the continent. The centre of diversity for the genus is in southern Africa (Gwynne-Evans, 2015), with species present in every biome (Gwynne-Evans, 2015). *Hermannia* is the sixth-most endemic-rich genus in the 'Cape Floristic Region' (*sensu* Goldblatt and Manning, 2002), fitting the biogeographic concept of the Greater Cape Floristic Region (*sensu* Born et al., 2007) and considered to be a "Cape Clade" (Linder, 2003). Within Malvaceae, *Hermannia* is placed within the tribe Hermannieae in the subfamily Byttnerioideae (Bayer and Kubitzky, 2003). The subfamily Byttnerioideae is part of the Byttneriina subclade, one of the two strongly supported clades in the APGIV classification of Malvaceae (*sensu lato*), which includes the APGIII families Malvaceae (*sensu stricto*), Bombacaceae, Sterculiaceae, and Tiliaceae (APG IV, 2016).

The Cape Midlands Escarpment—Sneeuberg, Great Winterberg–Amatholes, Stormberg (mostly Eastern Cape, but also marginally Northern and Western Cape provinces, South Africa)—was the focus of intensive botanical investigation between 2005 and 2016 by VRC as part of the Great Escarpment Biodiversity Research Programme led by NBP at Rhodes University. From the >11,000 herbarium voucher specimens collected, numerous new plant species were discovered, new locality records of many species not known from these mountains were noted, along with an increased understanding of the floristics, biogeography, and ecology of these mountains (e.g. Clark et al., 2009, 2011a, 2011b, 2014; Clark and Barker, 2014). Complemented by additional fieldwork by DGE in 2006 focusing on *Hermannia*, new discoveries in the Cape Midlands Escarpment included two hitherto unknown species (Clark et al., 2009)—one apparently localised to the Boschberg, and one from the higher, eastern parts of the Sneeuberg together with a record from the Great Winterberg component of the Great Winterberg–Amatholes.

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A novel species—recognised here as *H. lilacina* Gwynn. & V.R. Clark—was collected multiple times in the Sneeuberg between 2005 and 2007 by VRC during multiple field expeditions (see Clark et al., 2009), with one collection made in the Great Winterberg–Amatholes in 2009 by VRC (see Clark et al., 2014). It was given the provisional name '*H. sneeubergensis* Gwynn.' MS by Gwynne-Evans (2015) in his PhD thesis and also used as such by Clark et al. (2009). A second novel species—recognised herein as *H. boschbergensis* Gwynn. & V.R.Clark—was originally discovered by DGE in 2006 during a trip to the Boschberg as part of his PhD research and was given the provisional name '*H. crassifolia* Gwynn.' MS (Clark et al., 2009; Gwynne-Evans, 2015), with a second specimen subsequently collected by VRC in 2008.

2. Materials and methods

All VRC material was lodged in the Selmar Schonland Herbarium (GRA) with duplicates sent to DGE for his PhD on the systematics of *Hermannia* (Gwynne-Evans, 2015). These duplicates and DGE's own collections of both species have been placed in the Casabio Herbarium in Cape Town (CASCT). *In situ* photographs were also taken during the field expeditions by VRC as well as detailed data collected on distribution, abundance, and ecology. DGE independently collected and photographed both species.

In his revision of *Hermannia*, Gwynne-Evans (2015) included both novel taxa in relevant *Hermannia* sections and sub-sections, correlated against similar species, and included in phylogenetic sequencing (see Gwynne-Evans, 2015, for details). The GRA material itself was later databased into a Great Escarpment Biodiversity Programme (GEBP) Botanical Research and Herbarium Management System (BRAHMS) database, made available on the Global Biodiversity Information Facility (GBIF) (Barker et al., 2020), and imaged.

In 2025, VRC—using the GRA material—undertook floral dissections, took trait measurements, and drafted sketches for the formal descriptions of both novel species. Types were also designated. JDV then used the information provided to formulate the diagnoses, taxonomic treatments, and create the figures. These descriptions were combined with the more recent description of *H. lilacina* by DGE post-2015, with characteristics and measurements extracted from his scans of both new species. The various contributions were merged into comprehensive descriptions and images of the new species, as presented below.

3. Taxonomy

3.1. *Hermannia lilacina*

Gwynn. & V.R.Clark **sp. nov.** Type: South Africa, Eastern Cape, Graaff-Reinet (3224): Farm Groot Vallei 428: summit grassland above Suurkloof, Asante Sana Private Game Reserve, Sneeuberg (−BB), 3 Nov 2006, *Clark & Ramdhani 431* (GRA, holo., GRA0193850; CASCT, iso.) (Figs. 1–4). (='*Hermannia sneeubergensis* Gwynn.' in Gwynne-Evans, 2015).

Decumbent woody suffrutex (subshrub) 30–150 mm tall, 150–600 mm in diameter, much branched, becoming smaller and woodier in extreme habitats (e.g. rocky summits >2000 m elevation); rootstock c. 70–100 mm long, vertical, up to 100 mm diameter at crown, tapering, branched, dark brown; branches dark brown at the base, thinning and becoming green on young stems, becoming laxer, longer, and less woody on moist windward scarps at (1300–)1800–2000 m elevation; indumentum a combination of sparse to dense, medium-sized to large, fine- to coarse-branched white, flat stellate hairs sessile or on a bulbous base with a central disc and relatively inconspicuous, moderately dense, stalked glandular hairs with a terete or conical stalk 1–4 × longer than the head; head globose or discoid, pale- to dark-purple or amber; stem with a combination of 2–6-branched and 7–10-branched stellate hairs; calyx and abaxial leaf surface with 2–6-branched stellate hairs; stellate hairs sometimes reduced to a single hair or a few hairs on leaf-margins. *Leaves* ovate or elliptic but tending towards linear in extreme conditions (>2000 m elevation), 10–30 mm long (including petiole) × 4.5–8(–13) mm wide; base acuminate; apex acuminate to obtuse to truncate; margins coarsely irregularly crenate-serrate, except at the base where it is entire; light brown giving the appearance of thickening, with scattered, yellow glands with translucent stalks; lamina green, adaxially glabrous, abaxially with scattered, white, stellate hairs on veins only; petiole reddish brown adaxially (on the upper side), light green turning to pinkish abaxially (on the lower side), 3–5.5 mm long, expanding into lamina or abrupt. *Stipules* smaller than the leaves; amplexicaul, one on each side of the petiole; 4.5–5 mm long × 2–2.5 mm wide; entire; narrowly oblong to triangular; glabrous adaxially and abaxially with small glandular hairs on the margins. *Inflorescences* comprising 1- or 2-flowered cymes; borne erect towards the ends of branches on decumbent stems; (16–)27–30 mm long; bracts two, connate at base, entire, adaxially glabrous, abaxially sparsely covered with pin-shaped glands; peduncles (c. 1–)1.5–2.8(–5) mm long, with moderately dense pin-shaped glands and coarse stellate hairs; pedicel lengths variable, 1–4 mm long, filiform with sparse to dense, white, stellate hairs and moderately densely covered with globose subsessile glands and strap-shaped glands, covered with stellate hairs of varying size, some with long branches; upper pedicels 3–5 mm long in geminate-cymes; lower pedicels 1.5–2 mm long; flowers horizontal to nodding, campanulate, 5–8 mm long × 5 mm across the open bell (with a throat 2.5 mm across). *Calyx* campanulate, 2.5–3 mm long; sepal lobes two-thirds of calyx length, 1.2–1.5 mm in length × 0.5–0.7 mm in width between the sinuses, lobes narrowly triangular; apex acuminate with scattered, white, stellate hairs and pedicellate glandular hairs; margin fringed with bristles and paired bristles derived from stellate hairs. *Corolla* actinomorphic, pentamerous, petals obovate, lilac to pale blue, inside streaked with darker blue with base of petal cup green, veins notably paler; 5.4 mm long × 2.7–3 mm wide, campanulate-whorled, slightly spreading, extending 2–4 mm beyond the sepals; narrowly obovate; glabrous abaxially and adaxially; claw 2 mm long × 2 mm wide, with flaps almost touching. *Stamens* 5; anthers filaments green, 2.8 mm long × 1.8 mm wide, dilated towards the triangular shoulders which meet just below the base of the anthers, abaxially thickened forming a central bump; shoulders, moderately densely hairy with an indumentum of scattered fine white stellate hairs and pin-shaped glands on the thickened upper portions, mid-vein prominent; anther narrowly lanceolate-acuminate; 2.8 mm long × 0.7 mm wide; ivory-white; with a beard bearing 8 bristles and sutures with 24–30 short bristles; apex attenuating to form two horns. *Ovary* ovoid to ellipsoidal, adaxially and abaxially truncate; longitudinally grooved; 1.7 mm high × 1.5 mm wide at the widest part, with very dense, white, stellate hairs evenly all over, and prominent brown veins; carpels 5; style filiform, 3 mm long; narrowing towards apex, green becoming white near apex, medium-length bristles dense at the base becoming sparser up to half-way, the apex glabrous; stigma undifferentiated, white. *Fruit* globose to ellipsoidal, 7 mm long × 6 mm wide, green becoming brown, stellate-pubescent. Seeds not seen.

Diagnostic characters

Hermannia lilacina differs from the other closely related species by having crenate-serrate leaf margins (versus lobed in *H. cernua* Thunb., *H. coccocarpa (Eckl. & Zeyh.) Kuntze*, and *H. erodioides (Burch. ex DC.) Kuntze*), generally ovate leaves (versus linear to lanceolate leaves in *H. coccocarpa* and cordate-ovate leaves in *H. erodioides*), and lilac flowers with a green base internally (versus white to lilac with blue base in '*H. atrofulgens Gwynn.*' MS, and blue to pink with a green internal base in *H. erodioides*, and *H. coccocarpa* which is concolorous throughout) (Figs. 1–4). While *H. erodioides* has a similar but more open flower without a distinct throat, *H. coccocarpa* is subtubular with a narrow throat. *Hermannia coccocarpa* and '*H. atrofulgens*' share an upright form, while *H. erodioides* and *H. lilacina* share a sprawling growth form. *H. violacea* (Burch. ex DC.) K. Schum. can be distinguished from *H. lilacina* by its recurved petals and ovate leaves with smaller serrations—as well as that *H. violacea* is confined to Southern Mistbelt

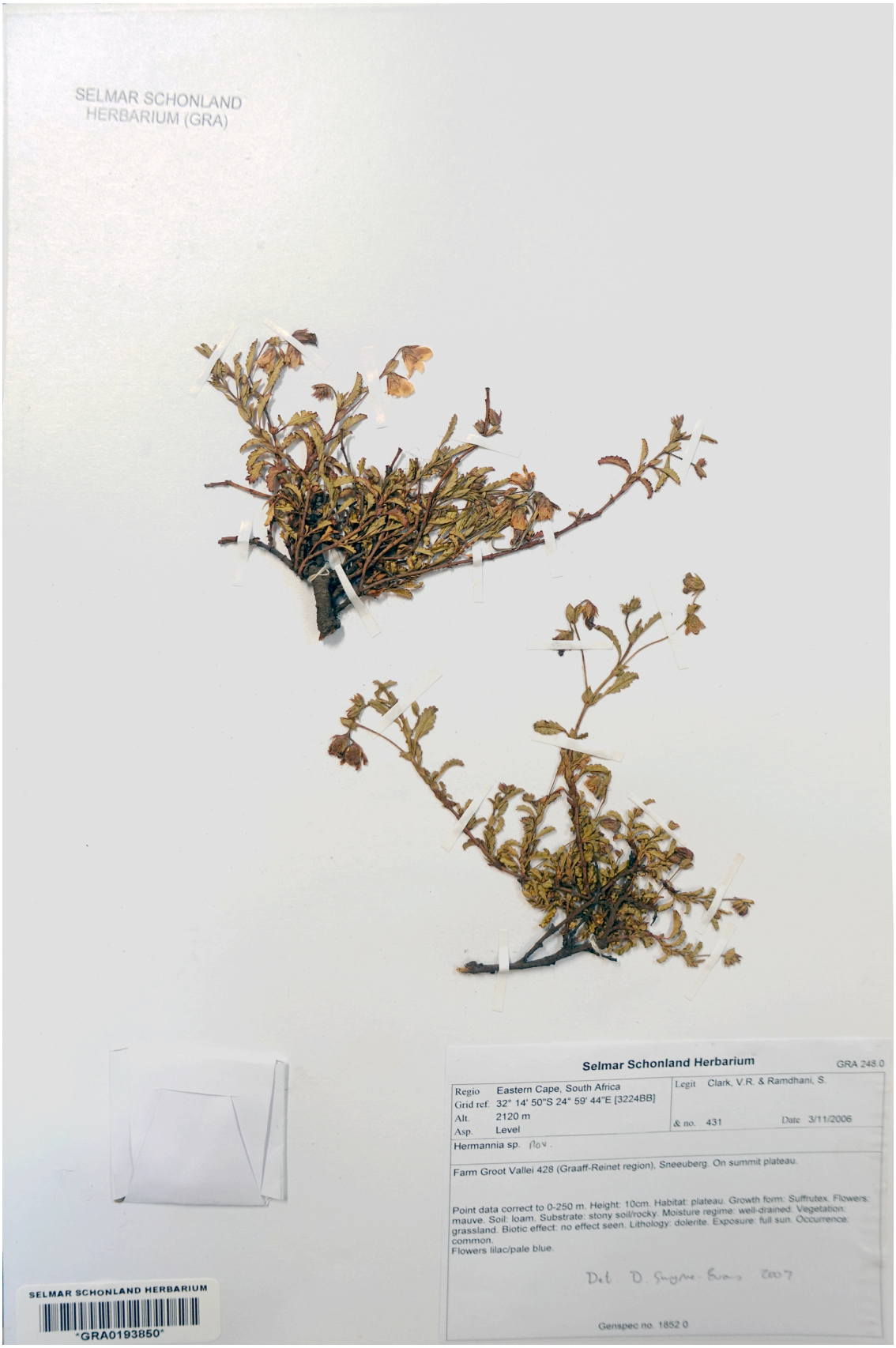

Fig. 1. Holotype of *Hermannia lilacina* Gwynn. & V.R.Clark (*Clark & Ramdhani 431*, GRA). Credit: Selmar Schonland Herbarium.

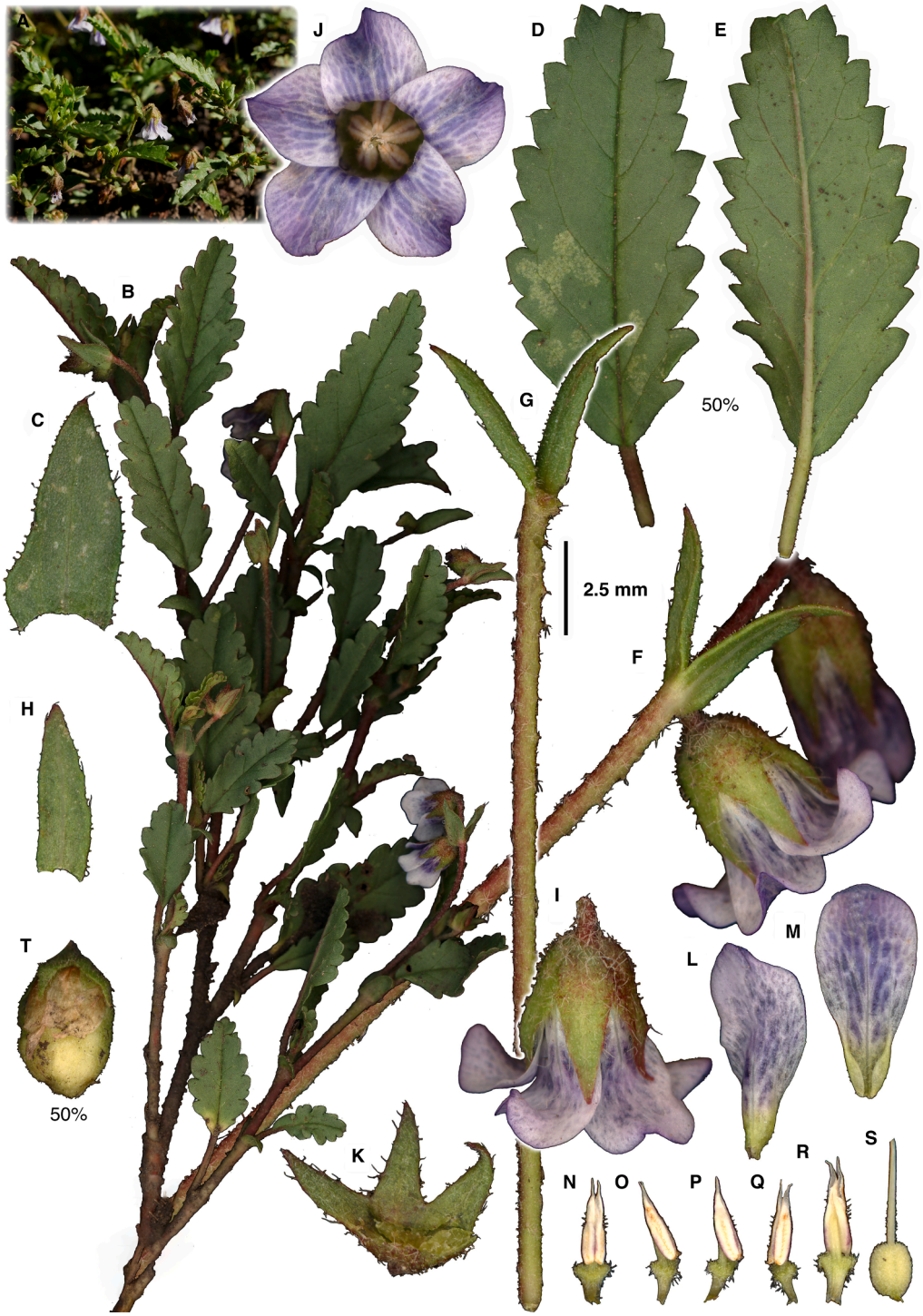

Fig. 2. Morphological characters of *Hermannia lilacina* Gwynn. & V.R.Clark: (A) flowering branches, (B) flowering branch, (C) stipule (adaxial), (D) leaf (adaxial), (E) leaf (abaxial), (F) paired inflorescence, (G) peduncle and bracteoles, (H) bracteole (adaxial), (I) flower (side view), (J) flower (below), (K) calyx (adaxial), (L) petal (abaxial), (M) petal (adaxial), (N, O, P, Q) stamen (abaxial), (R) stamen (adaxial), (S) pistil, (T) immature fruit (2:1 scale). Prepared by D. Gwynne-Evans from material in the Casabio Herbarium (CASCT).

Forest and *H. lilacina* almost exclusively confined to Karoo Escarpment Grassland (Clark et al., 2009).

Affinities

Hermannia lilacina and *H. violacea* are the only two *Hermannia* species with distinctly lighter veins in their petals. While *H. violacea* was not included in the molecular analyses of Gwynne-Evans (2015), morphologically it is assumed that these two species are closely related. The molecular analyses of Gwynne-Evans (2015) do confirm closeness with other morphologically similar species—such as '*H. atrofulgens*', *H. coccocarpa*, and *H. erodioides*—forming part of a Karoo summer rainfall clade. These species generally present serrate leaves, and red or blue flower pigments.

Etymology

The specific epithet 'lilacina' is derived from the Latin *lilacinus* meaning 'lilac' and is named for the colour of its flowers, which is unique in the genus.

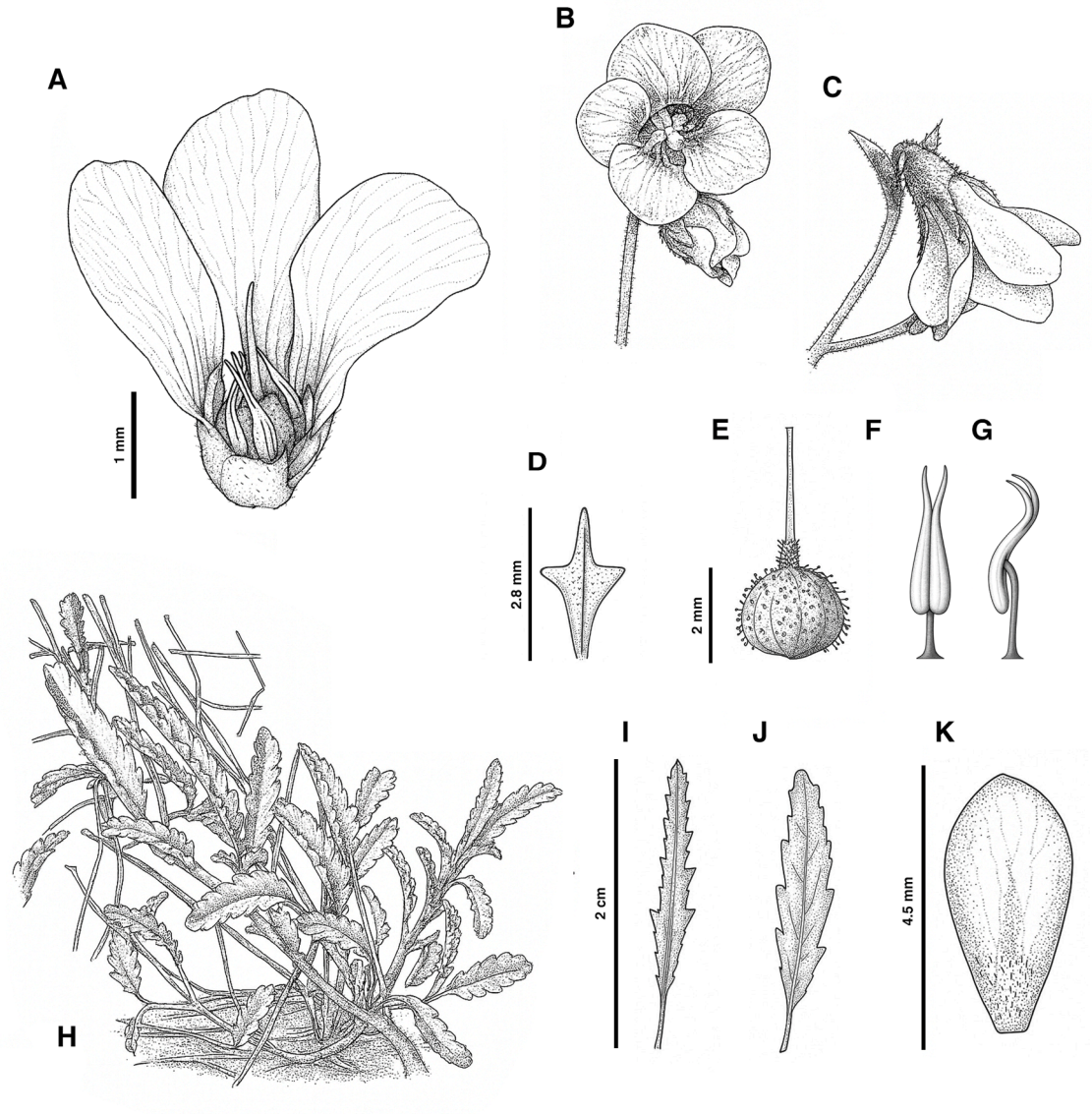

Fig. 3. Morphological characters of *Hermannia lilacina* Gwynn. & V.R.Clark: (A) top-down view with petals removed, (B) front view of a flower, (C) side view of a flower, (D) filament, (E) gynoecium, (F) front view of anther, (G) side view of anther, (H) habit, (I)–(J) leaf form variation, (K) petal. Digital art by J. de Deus Vidal Jr, based on dissections and sketches by V.R.Clark using *Clark & Ramdhani 431* (Holotype, GRA).

Phenology

Flowering was recorded from October to April.

Distribution and ecology

Hermannia lilacina is endemic to the south-eastern arc of the Sneeuberg (Nardousberg south-east to Aasvoëlkrans, i.e. behind Graaff-Reinet to Pearston) with one known locality in the central area of the Great Winterberg component of the Great Winterberg–Amatholes, near Tarkastad (Fig. 5); however, much of this area is still very poorly explored botanically (see Clark et al., 2014). It occurs in Mucina and Rutherford's (2006) Karoo Escarpment Grassland (Gh 1) vegetation unit (Fig. 6). In the Sneeuberg, it is a common component of the upland grassland flora, and is usually found above 1600 m elevation, and often co-occurs with *H. coccocarpa*- and *H. erodioides*-. *Hermannia lilacina* occurs in *Tenaxia disticha* (Nees) N.P.Barker & H.P.Linder tussock grassland and shrubby montane grassland, in gravelly, humus-rich dolerite-derived soils, as well as on Beaufort Group (Karoo Supergroup) sandstone soils, and in mixed colluvium soils on scarp slopes. Dwarfism with elevation is very evident in this species as exposed plants on summit plateaus are stockier, smaller, and characters generally smaller than on windward scarp slopes.

Abundance and conservation status

The extent of occurrence (EOO) of *Hermannia lilacina* is c. 345 km^2 in the south-eastern Sneeuberg, but with currently only one known locality in the Great Winterberg (no area estimated, and abundance not given in the fieldnotes). The species is common in the Sneeuberg (probably >10,000 individuals). Although the species is unlikely to be affected by human activities or grazing pressure due to its remote high-elevation habitat, it could be at risk from climate change given that it is already near the upper elevation limits of available habitat. However, we propose the International Union for Conservation of Nature (IUCN, 2012) category of Least Concern (LC).

Additional specimens examined

South Africa. EASTERN CAPE: **3224 (Graaff-Reinet):** Sneeuberg, Nardousberg slopes in mountain grassland, Asante Sana Private Game Reserve (−BB), 32°14′00″S 24°55′30″E, 2000 m, 24 Jan 2006, *Clark & Coombs 336* (GRA); Farm Waterkloof 352, Sneeuberg, slopes above Waterkloof and below Kouekop, Asante Sana Private Game Reserve (−BB), 32°14′31″S 24°56′29″E, 1877 m, 4 Mar 2006, *McKenzie, Weston & Clark 135* (GRA); Farm Groot Vallei 428, Sneeuberg, summit grassland above Suurkloof, Asante Sana Private Game Reserve (−BB), 32°15′11″S

Fig. 4. *Hermannia lilacina* Gwynn. & V.R.Clark: (A), (B), (D), (E) & (G) flowers and inflorescence detail, (C) habit, (F) & (H) capsule. Photographs by V.R.Clark.

25°00′25″E, 1900–2120 m, 3 Nov 2006, *Clark & Ramdhani 431* (CASCT, GRA); Farm Waterkloof 352, Sneeuberg, grassy/shrubby south-facing hillslope above Waterkloof, Asante Sana Private Game Reserve (−BD), 32°15′S 24°57′E, 1600 m, 8 Oct 2005, *Clark, Barker & Devos 7* (CASCT, GRA). **3225 (Pearston):** Farms Grote Kom 343, Bo Plaas 431 & Middel Water 415, Sneeuberg, summit of the Blinkberg (−AA), 32°14′47″S 25°06′06″E, 2090 m, 20 Mar 2007, *Clark & McKenzie 196* (CASCT, GRA); Farms Bo Plaas 431 & Middel Water 415, Sneeuberg, summit of the Blinkberg (−AA), 32°14′12″S 25°06′16″E, 2049 m, 22 Mar 2007, *Clark & McKenzie 442* (CASCT, GRA); Sneeuberg, mountain grassland on upper slopes and summit above Suurkloof, Asante Sana Private Game Reserve (−AC) 32°15′16″S 25°00′57″E, 1800 m, 6 Dec 2005, *Clark & Coombs 141* (CASCT, GRA); Sneeuberg, mountain grassland above Suurkloof, Asante Sana Private Game Reserve (−AC), 32°15′16″S 25°00′57″E, 1800 m, 6 Dec 2005, *Clark & Coombs 212* (GRA); Farm Buffelshoek 25, Sneeuberg, in tangled bush of slope in kloof at base of Aasvoëlkrans (−AC), 32°26′44″S 25°12′51″E, 1350 m, 1 Nov 2006, *Clark & Ramdhani 371* (CASCT, GRA); **3226 (Adelaide/Tarkastad):** Farm Quaggas Hoek 199, Great Winterberg section of the Great Winterberg–Amathole mountains (−AC), 32°19′02″S 26°11′53″E, 1682 m, 8 Mar 2011, *Clark & van der Merwe 142* (GRA).

3.2. *Hermannia boschbergensis*

Gwynn. & V.R.Clark **sp. nov.** Type: South Africa, Eastern Cape, KwaNojoli (=Somerset East), 3225: Farm Glen Avon 74, woodland along roadside between Avon Heights and the summit of the Boschberg (−AD), 5 Nov 2008, *Clark & Andrews 200* (GRA, holo., barcode GRA000018317; CASCT, iso.) (Figs. 7–9). (='*Hermannia crassifolia* Gwynn.' in Gwynne-Evans, 2015).

Multi-stemmed, spreading suffrutex, stoloniferous perennial to c. 80 mm high; branches spreading from the crown of woody rootstock, green-pink becoming brown with age, c. 350 mm long when extended, densely pubescent with white, stellate hairs that become less dense on older branches, intermixed with scattered, irregularly globular, yellowish glandular hairs, presence of glandular hairs greatly reduced on older stems. *Leaves* elliptic to broadly elliptic, size very variable along stems, 7–18 long × 3–18 mm wide; base obtuse to rounded; apex obtuse;

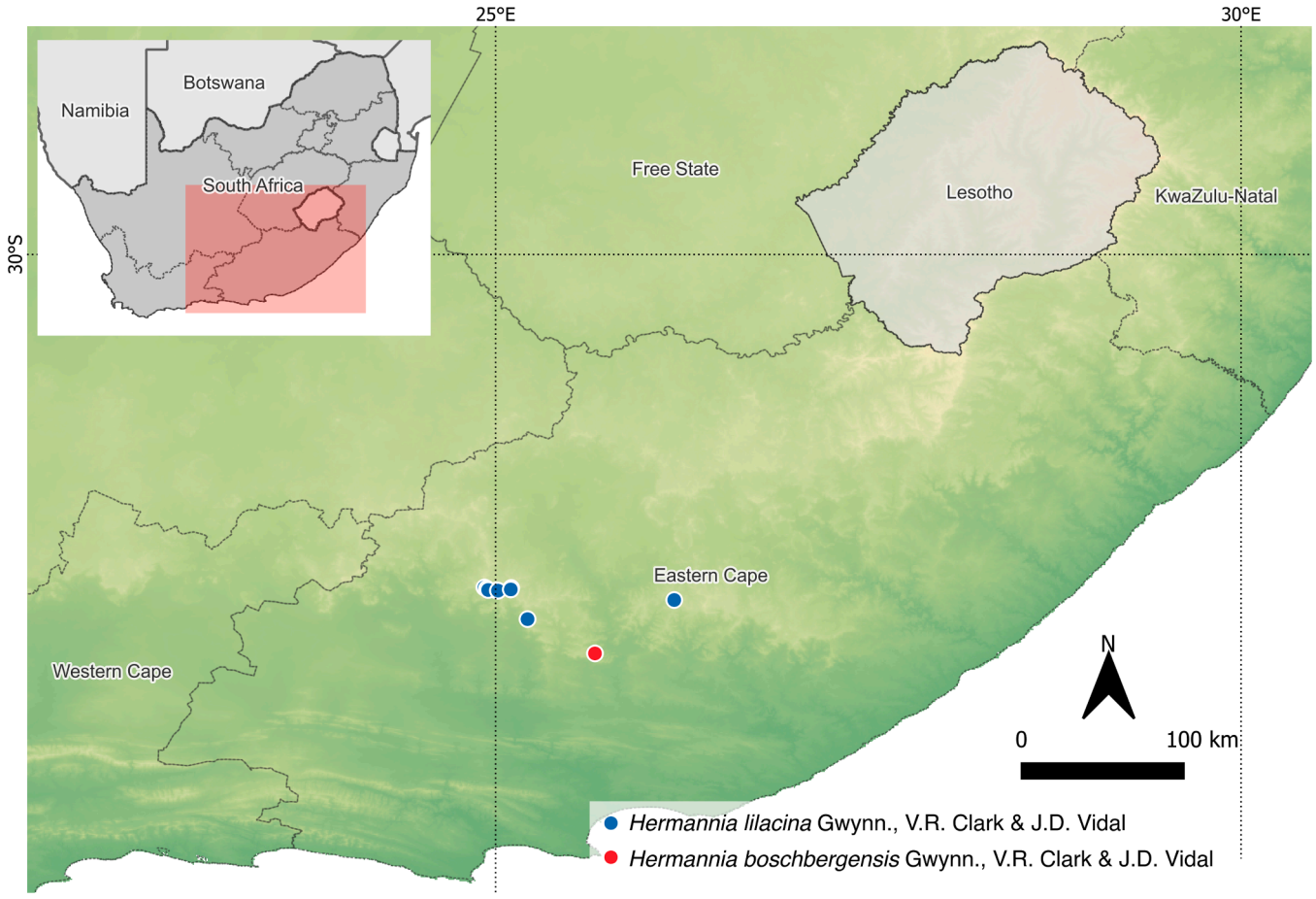

Fig. 5. The known localities of *Hermannia lilacina* Gwynn. & V.R.Clark and *Hermannia boschbergensis* Gwynn. & V.R.Clark in the Cape Midlands Escarpment, Eastern Cape, South Africa. Cartography by J. de Deus Vidal Jr.

Fig. 6. Typical Karoo Escarpment Grassland habitat of *Hermannia lilacina* Gwynn. & V.R.Clark in the Sneeuberg, Eastern Cape (Asante Sana Private Game Reserve). Photograph by V.R.Clark.

Fig. 7. Holotype of *Hermannia boschbergensis* Gwynn. & V.R.Clark (*Clark & Andrews 200*, GRA). Credit: Selmar Schonland Herbarium.

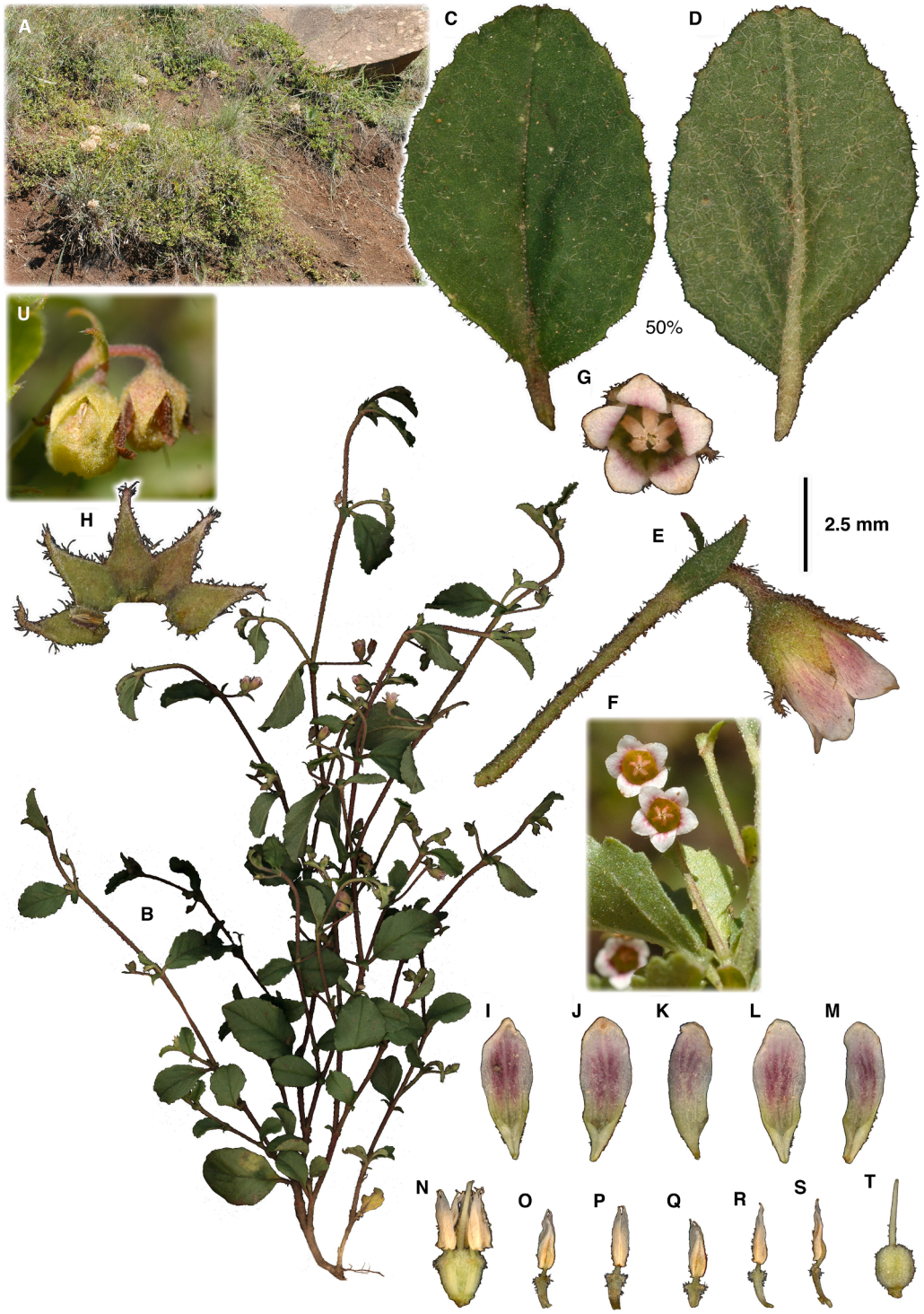

Fig. 8. Morphological characters of *Hermannia boschbergensis* Gwynn. & V.R.Clark: (A) Habit of specimens at type locality on road cutting, (B) flowering branch, (C) leaf (abaxial, 2:1 scale), (D) leaf (adaxial, 2:1 scale), (E) inflorescence with a single flower, (F) photo of paired flowers from below, (G) flower from below, (H) calyx (adaxial), (I, J, L, M) petals (adaxial), (K) petal (abaxial), (N) sexual organs, (O, Q) stamens (adaxial), (P, R) stamens (abaxial), (S) stamen (side), (T) pistil, (U) immature capsules. Prepared by D. Gwynne-Evans from material in the Casabio Herbarium (CASCT).

margins crenate, slightly recurved; lamina green; adaxially glabrescent with moderately dense flat stellate hairs concentrated on the secondary veins, moderately pubescent below with white, flat, stellate hairs concentrated along the veins; stipules triangular, persistent, 2.8 mm long × (0.6–)1 mm wide, green fading to brown with age; above glabrous, below glabrescent with sparse stellate hairs; petioles brown adaxially, light green abaxially, 1–3 mm long, with white, scattered stellate hairs becoming moderately densely stellate-pubescent. *Inflorescences* axillary and terminal, 1- or 2-flowered; peduncles 6–7.5 mm long, with dense stellate hairs intermixed with irregular, stalked, glandular hairs; bracts paired, adnate, lanceolate but slightly broader in the middle, c. 2.5 mm long × 1 mm wide, abaxially with dense, white, stellate hairs and scattered, stalked, glandular hairs; adaxially glabrescent; pedicel 0.5–1.25 mm long; densely covered with flat stellate hairs

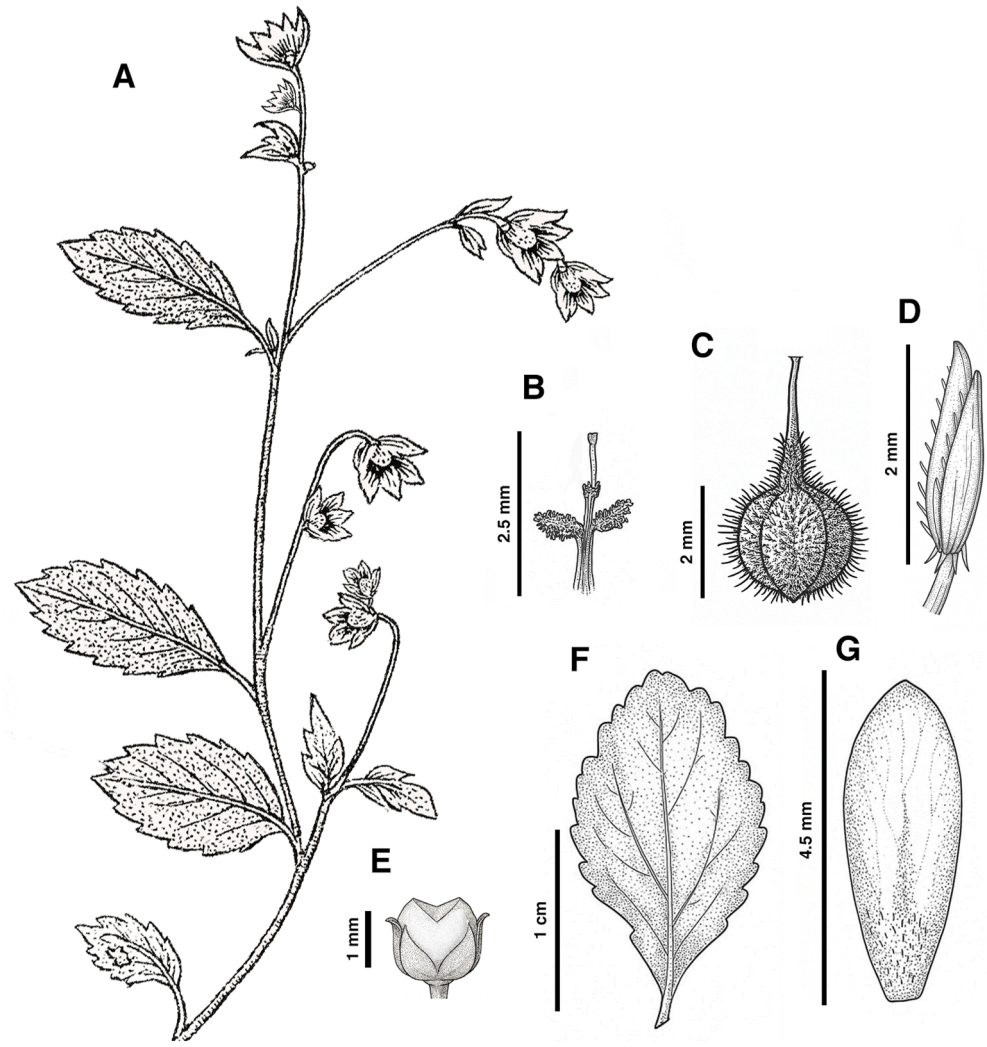

Fig. 9. Morphological characters of *Hermannia boschbergensis* Gwynn. & V.R.Clark: (A) habit, (B) filament, (C) gynoecium, (D) anther (E) capsule, (F) leaf, (G) petal. Digital art by J. de Deus Vidal Jr, based on dissections and sketches by V.R.Clark using *Clark & Andrews 200* (Holotype, GRA).

and sparse glandular hairs; flowers slightly to strongly nodding, 4 mm long, 3.5 mm wide across the open bell flower, throat 1.7 mm across. *Calyx* campanulate, 2.7 mm long, 2.4 mm wide measured at the base of the calyx lobes; deeply divided into 5 sepals half–2/3 of calyx length; calyx lobes triangular, 1.25 mm long × 1.25 mm wide; sinus narrowly v-shaped; apex narrowly acute; abaxially covered with dense, white, stellate hairs and scattered, stalked, glandular hairs; adaxially with wiry simple hairs becoming dense towards the apex of the lobes; petals elliptical to oblanceolate, white with pink markings, 3.75 mm long × 1.25–1.5 mm wide, broadest near apex, extending 0.6–1.2 mm beyond sepals, slightly tapering at base; claw yellow-green with strongly folded flaps touching along much of their length; flaps and sinus abaxially densely covered with simple, short white hairs towards base and along centre; petal blade glabrous abaxially and adaxially. *Stamens* 5, tightly clustered at the apex around the style; filaments green, 3.3 mm long × 0.6 mm wide, dilated for the first 1 mm, tri-lobed (cruciform) near apex, central lobe with a filiform, apical lobe linear, 0.8 mm long, connecting to the anther, lateral lobes forming obtriangular shoulders with dense, stellate hairs. *Anthers* lanceolate to narrowly elliptic, not-exserted; base forming two short glabrous pouches; apically elongated forming thin horns; 1.4 mm long × 0.6 mm wide, cream with golden accents; bristles moderately dense along the pore lips; pistil on a short stout stipe. *Ovary* globose to ellipsoidal; 1.2 mm long × 1 mm wide, green, with dense, silky, white, stellate hairs; style columnar, 2.2 mm long, tapering to an indistinct stigma, pale green, with scattered bristles till 1/3 of the length. *Fruits* globose capsule, green, c. 7 mm high × 4 mm wide, moderately densely stellate-pubescent. *Seeds* not seen.

Diagnostic characters

Hermannia boschbergensis is distinguished from *H. parviflora* Eckl. & Zeyh. in having shorter leaves (7–18 mm versus 17–38 mm); barely crenate margins versus serrate margins; shorter stipules (2.8 mm versus 5–8 mm long); and having two paired bracts, not one. Also, *H. parviflora* sometimes has three flowers on an inflorescence—something shared only with *H. woodii* Schinz.—while *H. boschbergensis* only ever has at most two; peduncles in *H. parviflora* are 13–25 mm long (versus 6–7.5 mm in *H. boschbergensis*); petal length is 2.6 mm (versus 3.75 mm in *H. boschbergensis*); and filaments are 1.2 mm long (versus 3.3 mm in *H. boschbergensis*). *Hermannia boschbergensis* can be differentiated from *H. parvula* Burtt Davy by having elliptic to broadly elliptic, serrate leaves adorned with stellate hairs, versus linear, glabrescent leaves with crenate margins.

Affinities

Hermannia boschbergensis is morphologically most similar to *H. parviflora* and *H. parvula*, sharing small cup-shaped, white flowers (Gwynne-Evans, 2015). Genetic similarity is unknown as it was not included in the molecular phylogeny of Gwynne-Evans (2015).

Etymology

From 'Boschberg'—old South African Dutch for 'forested mountain'

or 'woody mountain'—and the Latin '*-ensis*'—'native of'—as this species is currently only known from the Boschberg mountains near KwaNojoli (=Somerset East), Eastern Cape province, South Africa.

Phenology

Flowering time is at least November to February.

Distribution and ecology

In the Sneeuberg, *H. boschbergensis* is confined to the Boschberg area (Fig. 5), and is currently only known from one area approximately 2.6 km^2 from adjacent to the ascent road near KwaNajoli (=Somerset East) (Farm Avon Heights) to the plateau summit, about halfway up. It was found growing on the roadside on an earthen embankment, in moist scarp woodland dominated by *Vachellia karroo* (Hayne) Banfi & Gallaso, on dolerite-derived soils. Broadly, the vegetation unit in which *H. boschbergensis* occurs is Mucina and Rutherford's (2006) Eastern Cape Escarpment Thicket (AT 13) (Fig. 10). An overview of the Boschberg biophysical environment is provided by Clark et al. (2011a).

Abundance and conservation status

Very little is known about this species at present, as it has only been collected twice, despite many years of botanical exploration in the area by numerous botanists since the mid-19th century (see Clark et al., 2011a). Eastern Cape Escarpment Thicket in the area has perhaps not been as well botanised as the evergreen forest, grassland, and fynbos habitats—where most other local endemics and plants of interest are known to occur. The habitat in which it occurs is used for grazing. This species is a resprouter and thus has resilience against grazing and fire, and is also clearly adapted to disturbance given its presence next to the road. However, a new species of *Hermannia* in the Calvinia region (Hantam–Roggeveldberge, Northern Cape), '*H. cyanella* Gwynn.' MS, despite having a population of several dozen plants and being a resprouter, appears to be extinct after intense grazing for several years. Due to the grazing pressure and the limited range (EOO <100km^2, AOO <10 km^2) in which it is known, but without evidence of decline, the IUCN (2012) category of Near Threatened (NT) is recommended until more populations can be found or evidence of a decline in population.

Additional collections and localities

Material collected by DGE in 2006 and associated information is not currently accessible due to him traveling through Africa, Europe, and the USA for two years. However, DGE material was collected very close to the holotype locality. There is a specimen, *Schlechter 3279* in Herbarium Senckenbergianum Frankfurt/M, with glabrous, serrate leaves from "Camperdown" that is very similar. However, Camperdown is almost 600 km east-north-east of the *H. boschbergensis* type locality, near Pietermaritzburg (KwaZulu-Natal), and is thus unlikely to be the same species – it is more likely a distinct and undescribed allied species.

4. Biogeography & significance

Hermannia lilacina highlights the importance of shared endemism between the Sneeuberg and the adjacent Great Winterberg–Amatholes immediately to the east. Examples of these shared endemics are *Alepidea macowanii* Dummer, *Bergeranthus nanus* A.P.Dold & S.A.Hammer, and *Garuleum tanacetifolium* (MacOwan) Norl., among several others (see Clark et al. 2011a, 2014). The status of *H. lilacina* in the Great Winterberg–Amatholes is not clear at present and current data indicate that the south-eastern, high-elevation Sneeuberg is the most important locality for this species. However, much of the Karoo Escarpment Grassland component of the Great Winterberg is still quite poorly explored (Clark et al., 2014), and additional populations may still be discovered. It is interesting that this species—while so common in the south-eastern Sneeuberg—has not been collected north and west in the Sneeuberg, despite identical habitat across the Sneeuberg arc, relatively good topographic connectivity, and intensive botanical sampling since 2008 (Clark et al., 2009).

The relatively recent discovery of *H. boschbergensis* by DGE in 2006 emphasises the Boschberg as a node of botanical importance in the Cape Midlands Escarpment, and complements at least one other local Boschberg endemic—*Diascia ramosa* Scott Elliot—as well as important Boschberg populations of otherwise scarce Sneeuberg endemics that have scattered populations, such as *Dierama grandiflora* G.J. Lewis and *Kniphofia acraea* Codd (see Clark et al., 2009, 2011a). It also suggests that—despite a long history of botanical exploration in the area since the late 19th century—there are still botanical discoveries to be made in the Boschberg area, particularly in Eastern Cape Escarpment Thicket, which has perhaps been less well explored due to complex topography (scarp slopes) and vegetation density (thorny and thick). The majority of *Hermannia* are open habitat species in the Grassland, Fynbos, and

Fig. 10. Eastern Cape Escarpment Thicket habitat of *Hermannia boschbergensis* Gwynn. & V.R.Clark on the Boschberg near KwaNajoli (=Somerset East), Eastern Cape. Photograph by V.R.Clark.

Nama-Karoo Biomes (Gwynne-Evans, 2015). It is of interest that *H. boschbergensis* is one of the few endemics in the Cape Midlands Escarpment confined to woody habitats (Clark and Barker, 2014), along with *H. violacea*—a species endemic to evergreen Southern Mistbelt Forest on the Boschberg and the adjacent Great Winterberg–Amatholes (Clark et al., 2009); the majority of endemics are grassland species (Clark and Barker, 2014).

5. Conclusion

The recognition of these two new species adds two additional species of *Hermannia* to the flora of the Eastern Cape province *sensu* Bredenkamp (2019), doubling the number of local endemic species, and bringing the total number of provincial *Hermannia* species to 54. Further botanical exploration of Eastern Cape Escarpment Thicket on the Boschberg and Karoo Escarpment Grassland in the Great Winterberg component of the Great Winterberg–Amatholes may result in (i) additional populations of these species being encountered, and (ii) the potential for more novelties.

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CRediT authorship contribution statement

V. Ralph Clark: Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **João de Deus Vidal Jr:** Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Investigation, Formal analysis. **David Gwynne-Evans:** Writing – review & editing, Visualization, Validation, Resources, Methodology, Investigation, Formal analysis, Data curation. **Nigel P. Barker:** Writing – review & editing, Supervision, Resources, Project administration, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no conflicts of interest.

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