WEBBIA Journal of Plant Taxonomy and Geography

Firenze University Press
www.fupress.com/webbia

OPEN ACCESS

Citation: Defty, E., & Darbyshire, I. (2024). New taxa of *Barleria* sect. *Prionitis* (Acanthaceae) from the Horn of Africa biodiversity hotspot in Somalia. *Webbia. Journal of Plant Taxonomy and Geography* 79(1): 19-29. doi: 10.36253/jopt-15729

Received: January 29, 2024

Accepted: February 20, 2024

Published: March 19, 2024

Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

Competing Interests: The Author(s) declare(s) no conflict of interest.

Editor: Lia Pignotti

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New taxa of *Barleria* sect. *Prionitis* (Acanthaceae) from the Horn of Africa biodiversity hotspot in Somalia

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Abstract. Two new taxa in *Barleria* L. sect. *Prionitis* Nees (Acanthaceae) are described from Somalia, namely *Barleria biramosa* Defty & I.Darbysh. from central Somalia and *B. compacta* Malombe & I.Darbysh. subsp. *minima* I.Darbysh. & Defty from the northeast coastal region. These taxa are further endemics of the Horn of Africa biodiversity hotspot and have highly restricted ranges. *Barleria biramosa* was previously included within *B. punctata* Milne-Redh., another range-restricted endemic of the Horn of Africa region form northeast Ethiopia and northern Somalia; an updated description of *B. punctata* is therefore provided. Notes on the habitat requirements and conservation status (extinction risk) of the species are provided. *Barleria biramosa* is considered to be globally Endangered whilst *B. compacta* subsp. *minima* is currently assessed as Least Concern; the published assessment of Vulnerable for *B. punctata* is confirmed. With these additions, 11 taxa in 10 species of *Barleria* sect. *Prionitis* are currently recognised in Somalia.

Keywords: Barlerieae, conservation, diversity, IUCN Red List, taxonomy.

INTRODUCTION

The Horn of Africa biodiversity hotspot-one of only two entirely arid biodiversity hotspots globally-ranges across the drylands of northeast continental Africa, the southern Arabian Peninsula and the Socotra archipelago. It covers most of Somalia, Djibouti, parts of Ethiopia, Eritrea, Kenya, Yemen and Oman, and a small portion of northeastern Sudan (CEPF 2024). This hotspot is particularly important for its rich endemic flora, with many plant species having highly restricted ranges (Thulin 2004; Friis et al. 2005; Marshall et al. 2016; CEPF 2024). For example, in Somalia, Thulin (2006a) reports a total flora of 3,165 species, of which approximately 800 (25%) are endemic.

Northeast Africa in general, and in particular the Horn of Africa hotspot, is amongst the most diverse areas globally for the Acanthaceae family

(Manzitto-Tripp et al. 2022). For example, in the species-rich genus *Barleria* L. (Acanthaceae: Acanthoideae: Barlerieae; Manzitto-Tripp et al. 2022), 32 species are known from Somalia alone, 12 (37.5%) of which are endemic (numbers modified from POWO 2024), this representing over 10% of the total species richness in *Barleria*. Several of the endemic species from this region have been described relatively recently, including *B. albomarginata* Hedrén, *B. compacta* Malombe & I.Darbysh., *B. dentata* Hedrén, *B. ensermui* I.Darbysh., *B. ilicifolia* Hedrén and *B. shebelleensis* Ensermu & I.Darbysh. from Somalia, and *B. gidoleensis* Ensermu & I.Darbysh., *B. ferox* Ensermu & I.Darbysh. and *B. negeleensis* Ensermu & I.Darbysh. from Ethiopia (Hedrén 2006a; Malombe and Darbyshire 2010; Ensermu and Darbyshire 2018). Many are known from few botanical collections, and *B. ensermui* and *B. ilicifolia* are both known only from the type collections, despite being showy, large-flowered species. Hence, the likelihood of further new discoveries in *Barleria* within this region is high, particularly as large areas remain under-explored botanically.

However, the Horn of Africa is one of the most degraded biodiversity hotspots in the world due to overgrazing, charcoal production, political instability and infrastructure development (Thulin 2004; CEPF 2024). Therefore, it is important that the endemic species of the region are identified and described in light of the high levels of threat faced in this region and the urgent need for effectively targeted conservation efforts.

As part of a planned monograph of *Barleria*, two interesting taxa within sect. *Prionitis* Nees that have come to light amongst herbarium specimens from Somalia are here investigated morphologically for their taxonomic status. The first is a taxon from central Somalia that has been previously included within *Barleria punctata* Milne-Redh. by Hedrén (2006b) in the *Flora of Somalia* treatment of *Barleria*. That species is otherwise known only from northern Somalia and northeast Ethiopia, and is disjunct from the central Somalian populations both geographically and ecologically. The second taxon is from arid coastal northeast Somalia and is closely allied to *Barleria compacta* Malombe & I.Darbysh., described in 2010 from the same region, although with most collections from further inland (Malombe and Darbyshire 2010).

MATERIALS & METHODS

Herbarium specimens of the potential new taxa and morphologically allied species housed at EA, ETH, FT, K and UPS herbaria were analysed and measured at K, using standard herbarium practices; herbarium abbreviations follow Thiers (updated continuously). Prior to dissection, flowers were soaked in Aerosol OT 5% solution; all other characters were measured on dry material. All duplicates seen by the authors are marked "!". Barcodes for duplicates are listed wherever available to facilitate digital access to the specimens.

The distribution map for the relevant taxa was produced in QGIS V.3.2, using georeferenced herbarium collections. Country borders and first-order administrative boundaries were downloaded from GADM (https://gadm.org/maps.html).

The species conservation (extinction risk) assessment follows the Categories and Criteria of the IUCN Red List (IUCN 2012) and the guidelines for their use (IUCN Standards and Petitions Subcommittee 2022). Extent of Occurrence (EOO) and Area of Occupancy (AOO) were calculated using the GeoCAT tool (https://geocat.iucnredlist.org/; Bachman et al. (2011).

RESULTS

Following detailed morphological investigation, two new taxa are described in the taxonomic account below. As noted in the Introduction, the first of these, *Barleria biramosa* Defty & I.Darbysh., was previously included in the circumscription of *B. punctata* by Hedrén (2006b). Whilst *B. biramosa* is superficially similar to that species, it differs in a number of vegetative and floral traits and the two are readily separable as well as being geographically and ecologically disjunct. As the description of *B. punctata* by Hedrén (2006b) includes specimens of *B. biramosa*, we also provide a full, modified description of *B. punctata s.s.* in the Taxonomic Account below.

The second new taxon is closely allied to *Barleria compacta* Malombe & I.Darbysh., described in 2010 from the same region, although with most collections from further inland (Malombe and Darbyshire 2010). In fact, one of the specimens now assigned to the new taxon was originally included among the paratypes of *B. compacta*. They differ primarily in vegetative characters and have very similar floral morphology and so they are treated as subspecies, with the new taxon *B. compacta* subp. *minima* I.Darbysh. & Defty described below.

Together with other taxonomic changes made after the *Flora of Somalia* account (Hedrén 2006b), i.e., the description *Barleria polhillii* I.Darbysh. and the reduction of *B. glaucobracteata* Hedrén to synonymy within *B. quadrispina* Lindau by Darbyshire *et al.* (2010), this work results in 10 species and 11 taxa being recognised within *Barleria* sect. *Prionitis* in Somalia at present.

However, there is still further taxonomic work needed on this group in the Horn of Africa biodiversity hotspot, particularly in relation to the variable species *B. proxima* Lindau and *B. quadrispina*, which are currently under investigation.

TAXONOMY

Barleria biramosa Defty & I.Darbysh., **sp. nov.**

Type: Somalia, Hiiraan, escarpement above Yasoomman, 04°03′N, 45°45′E, 24 May 1989 (fl., imm. fr.), *M. Thulin & Abdi M. Dahir 6493* (holotype UPS! [UPS No. V-048691]). (Figure 1).

Diagnosis

Barleria biramosa has previously been confused with *B. punctata* but differs in (1) the axillary spines having a stalk 5.5–13 mm long with similarly sized spine rays (versus stalk 1.5–3.9 mm long, usually shorter than the spine rays, up to 5× shorter); (2) the leaf indumentum including unequally biramous hairs (versus hairs all simple, uniramous); (3) the calyx having broad sessile glands on the median portion of the anterior and posterior lobes either side of the midrib (versus no visible glands); (4) the offset of the abaxial lobe relative to other lobes being 8.9–10.6 mm (versus 4.7–5.9 mm); (5) the abaxial corolla lobe shape being lanceolate and 5.8–6.5 × 1.6–1.8 mm in size (versus broadly obovate and 12.2–12.3 × 8.5–9.5 mm in size); (6) the ratio of the abaxial: lateral corolla lobes length being ca. 0.4: 1 (versus 0.88–0.91: 1); and (7) the flowers being held in the distal portion of the branches but the bracts barely differentiated from leaves (versus flowers held in a short terminal spike with the bracts clearly differentiated from the leaves). See Table 1.

Description

Harshly spiny compact shrublet to 30 cm tall (*fide Thulin & Abdi Dahir* 6493); young stems weakly 4-angular, shortly pubescent, hairs patent or slightly retrorse, most dense on two opposite sides, also with stiff appressed (strigose) hairs at and immediately below nodes; mature stems woody with rough bark, up to 6.5 mm diameter. Axillary spines numerous, beige-white, stalk 5.5–13 mm long, 4-rayed, rays of similar length, straight, longest ray 10–16.5 mm long. *Leaves* on petiole 2.4–3.5 mm long, with short fine spreading hairs adaxially; blade elliptic or obovate, 18–28 × 11–14 mm (length: width ratio 1.5–2.35: 1), base cuneate or slightly attenuate, margin entire, apex rounded or obtuse with apical spine 2.4–3.9 mm, adaxial surface glabrous except for short fine spreading hairs along midrib towards base, abaxial surface sparsely strigose along midrib, margin and occasionally on lateral veins, some of these hairs unequally biramous, with broad sessile glands concentrated in proximal half and towards midrib abaxially; lateral veins (2–) 3 per side, strongly ascending and sometimes brochidodromous, pale and somewhat prominent beneath. Inflorescences axillary in distal portion of stems, one per node, each single-flowered, flowers sessile; bracts barely differentiated from the leaves but distal bracts somewhat smaller, 12–19 × 7–9 mm, apex tapered into spine tip 1.8–2.5 mm long, veins more prominent beneath, strigose with hairs more numerous on lateral veins abaxially; bracteoles linear-lanceolate, spinose, white to green, 10–18 × 0.5–0.8 mm, glabrous. Calyx pale grey-green, eventually turning white, not accrescent; anterior lobe lanceolate with long-attenuate apex, 14–17.5 × ca. 4.2 mm, apex spinose or minutely bispinose, external surface with broad sessile glands concentrated in median portion either side of midrib before tapering into spine, midrib prominent distally, parallel veins on external and internal surface but more prominent on internal surface; posterior lobe as anterior lobe but 17.2–21.3 mm, apex spinose, external surface sparsely strigose; lateral lobes narrower, ca. 15 mm long, with minute fine hairs. Corolla yellow or cream-yellow, 31–33 mm long, glabrous externally; tube cylindrical, 10.4–12.7 mm long, ca. 4 mm diameter; limb in "4+1" configuration; abaxial lobe offset by 8.9–10.6 mm, lanceolate, 5.8–6.5 × 1.7–1.8 mm, apex rounded to bluntly acute; lateral lobes broadly elliptic, 14.2–16.4 × 8.8–10.6 mm, apex obtuse (ratio of abaxial: lateral lobe ca. 0.4: 1); adaxial lobes as lateral lobes but 10.3–15.6 × 7.9–10 mm. Stamens inserted ca. 6 mm from base of corolla tube; filaments of long stamens 13.5–13.7 mm long, shortly and sparsely hairy at base, elsewhere glabrous; anthers 3.4 –3.6 mm long; short lateral stamens ca. 0.7 mm long, conspicuously pubescent at base, antherodes 0.45–0.55 mm long. Ovary not seen; style glabrous; stigma linear, ca. 1.4 mm long. Capsule only seen in immature state, 12.5 mm long, glabrous; seeds not seen.

Etymology

The species epithet "*biramosa*" denotes the unequally biramous hairs, present on the foliage, that are unusual in *Barleria* sect. *Prionitis*; this is one of the key characters for separation of this species from *Barleria punctata*.

Distribution

Occurs only in Buloburde District, Hiiraan Region of Central Somalia (C2 floristic region). (Figure 2).

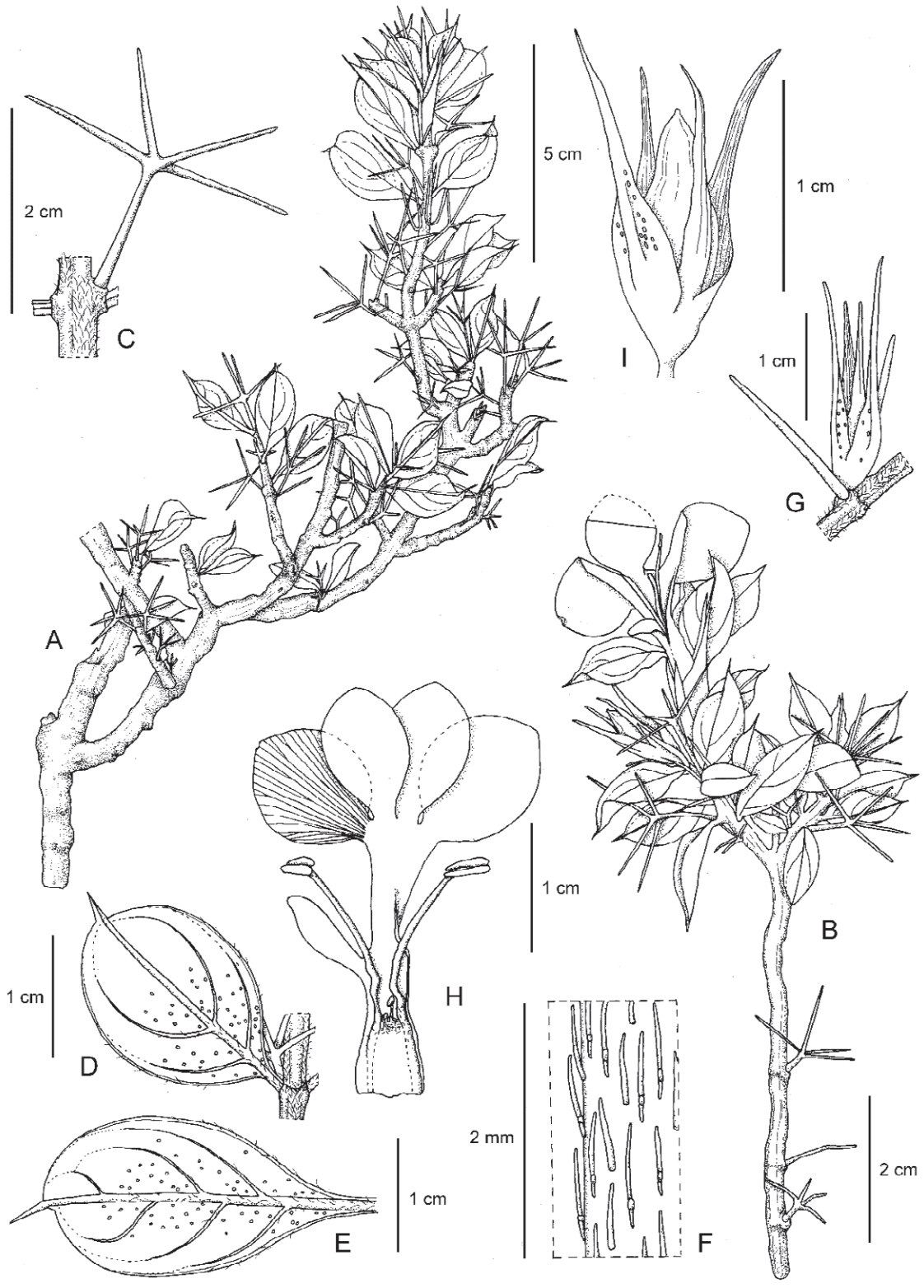

Figure 1. *Barleria biramosa.* **A.** Habit, mature stems and leafy branches. **B.** Habit, flowering branch. **C.** Axillary rayed spine. **D.** Leaf in situ, abaxial surface, with axillary spine. **E.** Leaf, abaxial surface, showing variation in leaf shape. **F.** Detail of leaf indumentum including biramous hairs. **G.** Calyx and bracteoles. **H.** Dissected corolla with androecium. **I.** Immature fruit within calyx. A, E and G from *P. Kuchar 15631* (UPS); B–D, F, H and I from *M. Thulin & Abdi M. Dahir 6493* (UPS, holotype). Drawn by Ellie Defty.

Habitat & Ecology

This species occurs in deciduous *Acacia-Commiphora* bushland on sandstone slopes (*Thulin & Abdi Dahir* 6493) and on eroding, overgrazed rocky slopes with open bushland (*Kuchar* 15631), at 280–300 m asl.

Conservation status

Based on current evidence, this species is highly range-restricted, with an area of occupancy (AOO) of 8 km^2; the extent of occurrence (EOO) based on application of a minimum convex polygon is less than 1 km^2, hence EOO is matched to AOO at 8 km^2 in accordance with the IUCN guidelines. This species occurs in deciduous bushland, where overgrazing by goats and use of wood for firewood, charcoal burning and house building pose some threat (M. Thulin, pers. comm. 2024). There is some habitat degradation and human activity observable on Google Earth imagery in the immediate vicinity of Yasoomman village. Agricultural activity is also present along the river valley to the west of the escarpment. Based upon this information, two threat-based locations are defined. These threats are inferred to result in a continuing decline in extent and quality of habitat and, combined with its small EOO and AOO, this species is assessed as Endangered (EN) under criterion B1 and B2: EN B1ab(iii)+2ab(iii).

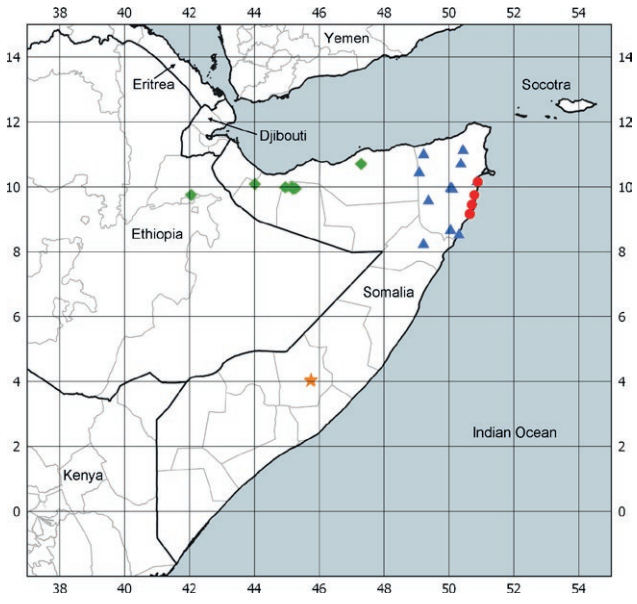

Figure 2. Distribution of *Barleria* species in the Horn of Africa: *B. biramosa* (orange stars); *B. compacta* subsp. *compacta* (blue triangles); *B. compacta* subsp. *minima* (red circles); *B. punctata* (green diamonds).

Taxonomic notes

Although this species has been previously confused with *B. punctata*, and this is the most likely species with which *B. biramosa* could be confused, the two are readily separated by the characters listed in the diagnosis and Table 1. The biramous hairs on the leaves are an unusual character in *B. biramosa*; such hairs are more frequent in *Barleria* sect. *Somalia* (Oliv.) Lindau, where they can be equally biramous to anvil-shaped, i.e., with one well-developed branch and a second, poorly developed or stunted branch (Balkwill and Balkwill 1997; Darbyshire et al. 2010). Within sect. *Prionitis*, unequally biramous hairs have otherwise been recorded in *B. brevispina* (Fiori) Hedrén, another species of the Horn of Africa biodiversity hotspot. That species also shares with *B. biramosa* the highly zygomorphic corolla with a strongly offset and much-reduced abaxial lobe relative to the other lobes. These two species may therefore be allied, and *B.brevispina* is included in Table 1 for completeness. However, *B. brevispina* is easily separated from *B. biramosa* in, amongst other differences, having only shortly-stalked (0.5–3 mm) axillary spines, the sessile glands on the leaves, bracts and (usually) calyx being absent or sparse and inconspicuous and having smaller anthers, 2.5–3.3 mm long. Most populations of *B. brevispina* are additionally most easily separated by having linear-lanceolate to narrowly oblong leaves with a length: width ratio 5.5–15.5: 1 and so markedly different from those of *B. biramosa*. However, there are a few specimens of *B. brevispina* with broader leaves, notably *P.E. Ellis 226* (K! [K001295268]) from SW of El Rago in eastern Ethiopia where the leaves are more elliptic or obovate (length: width ratio ca. 2.4–2.7: 1), similar in shape to those of *B. biramosa*. That specimen is, however, otherwise a good match for *B. brevispina*.

Ipomoea hiranensis Thulin has a similar distribution to *B. biramosa* in the Buloburde District of Hiiraan, with the type specimen (*M. Thulin & Abdi M. Dahir 6488*, holotype UPS, isotype K) from the same escarpment above Yasoomman as the type of *Barleria biramosa* (Thulin 2008).

Additional specimens examined (paratypes)

SOMALIA: Hiiraan Region, ai pozzi (asciutti) di Jessoma, 10 Aug 1959 (fl.), *G. Moggi & R. Bavazzano 755* (FT! [FT0007253]); Bulo Burti District, escarpment east of Aborey, 27 Nov. 1983 (fl.), *P. Kuchar 15631* (UPS! [UPS No. V-1047589]).

Table 1. A comparison of the diagnostic characters for separation of *Barleria biramosa* from *Barleria punctata* and *Barleria brevispina*.

Character	*Barleria punctata*	*Barleria biramosa*	*Barleria brevispina*
Length of spine stalk	1.5–3.9 mm	5.5–13 mm	(0.5–) 1–3 mm
Longest spine ray	15–22 mm	10–16.5 mm	4–15 mm
Leaf indumentum (strigose hairs)	Uniramous	Uniramous and unequally biramous	Uniramous and/or unequally biramous
Leaf spine length	1.2–2.5 (–3.4) mm	2.4–3.9 mm	0.5–2.3 mm
Leaf shape and length:width ratio	Elliptic or slightly ovate to obovate 1.78–3.25: 1	Elliptic or obovate 1.5–2.35: 1	Usually linear-lanceolate to narrowly oblong 5.5–15.5: 1 More rarely shorter and (oblong-) elliptic to obovate 2.4–4.7: 1
Veins on leaf	Inconspicuous	Prominent beneath	Inconspicuous in narrow-leaved form, more prominent on abaxial surface in broader-leaved form
Glands on leaf	Few broad sessile glands at base	Broad sessile glands scattered but numerous, densest at base	Few or no broad sessile glands at base
Inflorescence form	Short terminal spike with bracts clearly differentiated from leaves	Flowers held in distal portion of branches but bracts barely differentiated from leaves	Axillary, sometimes restricted to the uppermost axils
Bract spine tip length	2.5–4.9 mm	1.8–2.5 mm	0.5–2.3 mm
Arrangement of sessile glands on bracts	Broad cupular glands dense proximally between veins	As on leaves	As on leaves
Bracteole shape and size	Ovate or lanceolate, then 1–2 × 0.5–0.8 mm, or linear-lanceolate and spinose, then 4.5–11.5 × 0.5–1.6 mm	Linear-lanceolate and spinose, 10–18 × 0.5–0.8 mm	Linear-lanceolate, 9.5–19 × 1–2 mm
Calyx glands	Broad sessile glands absent	Broad sessile glands conspicuous on median portion either side of midrib	Broad sessile glands absent or rarely present either side of midrib
Calyx anterior lobe size	3–9 × 2–3 mm	14–17.5 × ca. 4.2 mm	14–19 × 3–6 mm
Corolla tube length	13.5–15.5 mm	10.4–12.7 mm	7.5–13 mm
Offset of abaxial lobe relative to other lobes	4.7–5.9 mm	8.9–10.6 mm	10–14.5 mm
Abaxial corolla lobe shape and size	Broadly obovate, 12.2–12.3 × 8.5–9.5 mm	Lanceolate, 5.8–6.5 × 1.6–1.8 mm	Lanceolate or subulate, 2.5–9 × 1–2 mm
Ratio of abaxial: lateral lobe length	0.88–0.91: 1	ca. 0.4: 1	0.25–0.6: 1
Insertion point of stamens	8.5–9.7 mm from base of corolla tube	ca. 6 mm from base of corolla tube	5–7 mm from base of corolla tube
Filament length (long abaxial stamens)	14.7–17.5 mm	13.5–13.7 mm	18–26 mm
Anther length (long, abaxial stamens)	3.5–3.8 mm	3.4–3.6 mm	2.2–3.3 mm

Barleria punctata Milne-Redh. (Milne-Redhead in Hutchinson & Bruce 1941, p. 170); Ensermu (2006: 415); Hedrén (2006b: 439),, pro parte, excl. spec. ex Somalia C2 region.

Type: Somalia, Somaliland, Barataga, 10°05′N, 44°01′E, 31 Oct. 1932 (fl., imm. fr.), *J.B. Gillett 4522* (holotype K!, 2 sheets [K000394468, K000394469]).

Description

Harshly spiny compact shrublet, 30–100 cm tall; young stems strongly 4-angular, shortly pubescent in two opposite grooves, hairs patent, elsewhere glabrous except for longer ascending or spreading hairs along nodal line; mature stems woody, greyish in colour, up to 7 mm diameter. Axillary spines numerous, beige-white, stalk 1.5–3.9 mm long, occasionally puberulous,

(2–) 4-rayed, rays sometimes of unequal length, straight, longest ray 15–22 mm long. Leaves on petiole 1.8–3.5 mm long, with short fine spreading hairs adaxially and continuing onto blade midrib, sparsely strigose abaxially; blade elliptic or slightly ovate to obovate, 15–28 × 6–13 mm (length: width ratio 1.78–3.25: 1), base cuneate, attenuate or obtuse, margin entire, apex acute or slightly attenuate with apical spine 1.2–2.5 (– 3.4) mm long, adaxial surface glabrous or sparsely strigose along midrib towards base, abaxial surface sparsely strigose along midrib, margin and occasionally on lateral veins, all hairs uniramous, and with few broad sessile glands proximally; lateral veins (2 –) 3 (– 4) per side, strongly ascending, inconspicuous. Inflorescences a series of single-flowered, opposite cymes together forming a terminal-spike 20–29 mm long, flowers sessile; bracts pale glaucous-green, falcate, obovate to elliptic or broadly so, 11.4–16 × 4.6–6.8 mm, apex tapered into spine tip 2.5–4.9 mm long, veins pale and prominent abaxially, densely strigulose on midrib and sparsely so on lateral veins and with broad cupular glands dense proximally between the veins; bracteoles white to green, variable, from ovate or lanceolate, then 1–2 × 0.5–0.8 mm (type specimen), to linear-lanceolate with a long spine tip, then 4.5–11.5 × 0.5–1.6 mm, sparsely strigose along abaxial midrib and margin. Calyx pale grey-green, eventually turning white, not accrescent; lobes variable in shape, anterior and posterior lobes either ovate, then 3–4.5 × 3.2–4.2 mm, apex obtuse to very shortly attenuate, or lanceolate-acuminate, then 5–9 × 2–3 mm, margin can be membranous and minutely and irregularly toothed towards acumen but mostly entire, apex spinose, midrib prominent distally, external surface otherwise smooth with no veins visible, strigose with ascending hairs concentrated along the midrib; lateral lobes similar but slightly narrower, external surface sparsely strigose along midrib. Corolla yellow or orange-yellow, 32–35 mm long, glabrous externally; tube cylindrical, somewhat curved, 13.5–15.5 mm long, 2.4–2.7 mm in diameter; limb in "4+1" configuration; abaxial lobe offset by 4.7–5.9 mm, broadly obovate, 12.2–12.3 × 8.5–9.5 mm, apex rounded to obtuse; lateral lobes elliptic, 13.3–14 × 6.5–9.4 mm, apex subacute to rounded with minute acumen (ratio of abaxial: lateral lobes 0.88–0.91: 1); adaxial lobes elliptic, 12.1–14.6 × 5.8–8.6 mm, apex acute. Stamens inserted 8.5–9.7 mm from base of corolla tube; filaments of long stamens 14.7–17.5 mm long, shortly and sparsely hairy proximally; anthers 3.5–3.8 mm long; short lateral stamens ca. 1.9–2.4 mm long, pubescent, antherodes 0.4–0.8 mm long. Ovary not seen; style glabrous; stigma linear, 1.5–1.9 mm long. Capsule 15.5–16 mm long, glabrous; seeds ca. 7.3 × 4.8 mm, with silky, straight hygroscopic hairs.

Distribution

Occurs in northeast Ethiopia within the Somali Regional State (Harerge floristic region), and in northern Somalia within Maroodi-jeeh [Marodijeh] and Sahil Regions of Somaliland (N1 and N2 floristic regions). (Figure 2).

Habitat & Ecology

This species occurs on rocky slopes and ridges associated with mountain valleys and on open stony ground, sometimes associated with limestone, at 884–1524 m asl.

Conservation status

This species is assessed as Vulnerable under criteria B: VU B1ab(iii)+2ab(iii) on the IUCN Red List (Darbyshire and Roberts 2023). It has an extent of occurrence of 12,915 km^2, an area of occupancy of 28 km^2 and is known to occur in seven locations. The major threat to this species is overgrazing by livestock, exacerbated by drought, and there is an inferred resultant continuing decline in area, extent and quality of habitat.

Taxonomic notes

The type specimen and the single specimen seen from Ethiopia—the two western-most collections—differ notably from the other material in having ovate calyx lobes 3–4.5 mm long (versus lobes lanceolate-acuminate, 5–9 mm long); minute to small, ovate to linear-lanceolate bracteoles, 1.2–6.7 × 0.6–0.8 mm (versus larger, always linear-lanceolate, 9.3–11.5 × 1.1–1.6 mm) and proportionately broader bracts with a shorter apical spine, 2.5–3.2 mm long (versus spine 3.4–4.9 mm long). Two subspecies may well be involved but it is desirable to see more material before drawing firm conclusions.

Barleria punctata is superficially similar to the more widespread species *B. proxima* but differs most clearly in having glabrous, not puberulous, corollas and capsules, in having more sparsely hairy calyces, those of *B. proxima* being strigose throughout externally, and in having a larger and broader abaxial corolla lobe, that of *B. proxima* being only 3–4.5 mm wide (measurements for *B. proxima* from Darbyshire et al. 2010).

Additional specimens examined

ETHIOPIA: 27 km NE of Dire Dawa on road to Djibouti, 09°45′N, 42°03′E, 10 April 1972 (fl., imm. fr.), *M.G. Gilbert 2333* (EA!, ETH!, K! [K001295170]). **SOMALIA:** Somaliland, near road from Erigavo to Mait, 29 July 1957 (fl., imm. fr.), *J.G.B. Newbould 715* (K! [K001295174]); foot of Sheikh Pass, 9 Oct 1957 (fl.), *P.R.O. Bally 11824* (K! [K001295175]); Sheikh, 8 June

1973 (fl.), *J.R.I. Wood S/73/143* (K! [K001295173]); Plateau edge, 09°57′N, 45°61′E, 25 June 1981 (fl., imm. fr.), *J.B. Gillett & R.M. Watson 23622* (EA!, K! [K001295172]); Sheikh Pass behind secondary school, 15 Oct 1983 (fr.), *J. Aronson et al. 19* (K! [K001295343]); mountains above Qoton, 09°59′N, 44°57′E, 27 May 2002 (fl., imm. fr.), *M. Thulin 11040* (K! [K001295171]).

Barleria compacta Malombe & I.Darbysh. subsp. ***minima*** I.Darbysh. & Defty, **subsp. nov.**

Type: Somalia, road 14 km W of Bender Beila [Bandarbeyla], 9°27′N, 50°43′E, 12 July 1980 (fl.), *J.B. Gillett 23105* (holotype EA!). (Figure 3).

Diagnosis

Subsp. *minima* differs from subsp. *compacta* in (1) the axillary spines having a stalk 7– 15.5 mm long and usually longer than the spine rays (versus (0.8–)1.5–5 mm long, usually shorter than the spine rays and up to 3–5× shorter); (2) the leaves being shortly oblong-elliptic or somewhat obovate (versus leaves linear, linear-lanceolate or narrowly oblong); (3) the flowers being subsessile (versus flowers usually on a peduncle 1.5–8 mm long, rarely subsessile); and (4) the anterior and posterior calyx lobes being lanceolate, with a gradually tapering apex that is not acuminate (versus anterior and posterior calyx lobes lanceolate-acuminate). See Table 2.

Description

Spiny minute shrublet, ca. 5 cm tall; stems with very short internodes 1–6 mm long, young stems 4-angular, with some minute and inconspicuous spreading hairs on distalmost internodes, nodal line can be strigulose; mature stems soon woody, with gnarled grey-brown bark, branches below leaves with numerous petiole scars. Axillary spines (sometimes sparse) white or at first (yellowish-) beige, stalk 7–15.5 mm long, 4-rayed, longest ray 8–14 mm long, straight. Leaves subsessile or on short, poorly defined petiole to 2.7 mm long, sometimes with minute spreading hairs adaxially; blade fleshy, glaucous-green, can be markedly glaucous due to whitish epidermal surface, sometimes pink-tinged, shortly oblong-elliptic or somewhat obovate, 11.5–17 × 3.9–7.8 mm (length: width ratio 2.2–3(–3.6): 1), base attenuate or cuneate, margin entire, apex acute or slightly attenuate with stiff apical spine 1–2.3 mm long, sparsely strigulose along midvein beneath, elsewhere glabrous or with few minute spreading hairs when young, with few broad sessile glands proximally beneath; lateral veins 2–3 per side, ascending, can be inconspicuous. Inflorescences axillary, single-flowered, subsessile; bracts foliaceous; bracteoles white (-green) or pale yellow-green, spinose, 9.5–13 × 0.5–0.8 mm, glabrous or with few minute spreading hairs. Calyx pale yellow-green turning white; anterior lobe lanceolate, (8.2–)12.5–14.5 × 2.3–2.6 mm, apex gradually narrowed to a spine or occasionally bispinose, external surface smooth or midrib and parallel lateral veins somewhat visible, glabrous except for few minute fine hairs along margin and at base; posterior lobe as anterior lobe but (9–)14–15 mm long, spinose; lateral lobes slightly narrower, (7.5–)10.7–12.5 mm long. Corolla pale-yellow, 23–26 mm long, sparsely and shortly pubescent towards apex of tube and base of limb; tube cylindrical, 10–14.7 mm long, 1.7–2 mm in diameter; limb subregular; abaxial lobe very slightly offset from other lobes by ± 1 mm, broadly obovate, 10–13 × 6.6–7.7 mm, apex rounded; lateral lobes similar to abaxial lobe but more elliptic-obovate, 8.5–12.7 mm long, apices obtuse or minutely attenuate (ratio of abaxial: lateral lobes ca. 1–1.1: 1); adaxial lobes as lateral lobes but 5.2–6.8 mm wide. Stamens inserted 5.2–7 mm from base of corolla

Figure 3. Holotype of *Barleria compacta* subsp. *minima*; *J.B. Gillett 23105* (EA). Reproduced with permission of the East African Herbarium, National Museums of Kenya.

tube; filaments of long stamens 11–13 mm long, shortly and sparsely hairy proximally; anthers exserted, 1.8–2.6 mm long; short lateral stamens ca. 0.3 mm long, pubescent at base, antherodes 0.2–0.3 mm long. Ovary and style glabrous; stigma linear, 0.7–0.9 mm long. Capsule ± 11 mm long including beak 3.5–4.5 mm long, glabrous; seeds ca. 5.2 × 4 mm, with silky, straight buff-coloured hygroscopic hairs.

Distribution

Occurs in the coastal region of northeastern Somalia in Bari Region, in the vicinity and north of Bandarbeyla town (N3 floristic region). (Figure 2).

Habitat & Ecology

Habitat information for this subspecies is very limited, with the three early (non-type) collections lacking any habitat notes; J.B. Gillett recorded it occurring on a limestone plateau with low sparse *Acacia-Commiphora* bushland and scattered *Dobera glabra* at the type locality. However, it has been noted that the habitat along the coast north and south of Bandarbeyla is composed of mostly bare rocks and sand with sparse vegetation, whereas the plateau a bit further inland has a vegetation of scattered low bushes (*M. Thulin* pers. comm. 2024). It is recorded from ca. 60–240 m asl (220 m recorded on *Gillett 23105*).

Conservation status

This subspecies has a restricted range, with an extent of occurrence (EOO) of 38 km^2 and an area of occupancy (AOO) of 16 km^2 based on known occurrence data. It was recorded as "occasional" at the type locality but no other notes on abundance are available. It is not known from any protected areas, but this species occurs in habitat that is mostly undisturbed by human activity. Despite having no or few permanent inhabitants, apart from in Bandarbeyla itself, the area north and south of the town would be visited after rain by nomads or people coming to fish during certain periods of the year – the latter mainly affecting the coastal strip only (M. Thulin, pers. comm. 2024). With no confirmed threats, this subspecies is assessed as Least Concern (LC), but threats should be assessed more completely and monitored as any increase in disturbance may quickly cause this subspecies to become Vulnerable.

Subsp. *compacta* was also assessed previously as of Least Concern (LC) by Malombe and Darbyshire (2010) and therefore the species as a whole, including the two subspecies now recognised, is considered to be LC.

Taxonomic notes

In the protologue of *Barleria compacta*, Malombe and Darbyshire (2010) noted that *Gillett 23105* (EA) from west of Bandarbeyla in NE Somalia was allied to that new species but differed in the longer stalks to the spines, the shorter and more elliptic or shortly oblanceolate, conspicuously glaucous leaves, and subsessile flowers. The *Gillett* specimen was therefore excluded from *B. compacta*, although a specimen with similarly shaped leaves (*Merla, Azzaroli & Fois* s.n. ex Migiurtinia, Altipiano presso Culule, FT) was included among the para-

Table 2. A comparison of the diagnostic characters for separation of *Barleria compacta* subsp. *compacta*, *Barleria compacta* subsp. *minima* and *Barleria tetracantha*.

Character	*Barleria compacta* subsp. *compacta*	*Barleria compacta* subsp. *minima*	*Barleria tetracantha*
Length of spine stalk	(0.8–)1.5–5 mm, usually shorter than spine rays, up to 3–5× shorter	7– 15.5 mm, usually longer than spine rays	(2.5–)4–12(–18) mm, often longer than or subequal to spine rays
Leaf shape and length: width ratio	Linear, linear-lanceolate or narrowly oblong 5–11(–16): 1	Shortly oblong-elliptic or somewhat obovate 2.2–3(–3.6): 1	Elliptic to narrowly oblong-elliptic or slightly obovate to oblanceolate 2–5.4: 1
Leaf colour	Green, rarely glaucous-green	Glaucous-green to markedly glaucous, can be pink-tinged	Blue-green or somewhat glaucous
Inflorescence form	Subsessile or usually pedunculate, peduncle 1.5–8 mm long, 1-flowered	Subsessile, 1-flowered	Subsessile, 1- or 3-flowered
Calyx shape and length (anterior lobe)	Lanceolate-acuminate, 7–14 mm long	Lanceolate, not acuminate, (8.2–)12.5– 14.5 mm	Lanceolate-acuminate, 6.7–11 mm
Corolla length	16.5–26.5 mm	23–26 mm	13–21 mm
Corolla lobe length	6.5–13 mm	8.5–13 mm	4–5.5 mm
Anther length	1.7–2.5 mm	1.8–2.6 mm	1.5–1.75 mm
Capsule length	7–13 mm including beak 3–5 mm	± 11 mm including beak 3.5–4.5 mm	9–10 mm including short beak 2.3–3.2 mm

types of *B. compacta*. This latter specimen had only been seen as a digital image at the time of the publication of *B. compacta* and so measurements and detailed observations were not taken from *Merla et al. s.n.* when preparing that description. A recent visit to the FT herbarium by one of us (I. Darbyshire) allowed for more detailed investigation of this specimen and also revealed two further collections by *Merla et al.* that match *Gillett 23105*. Detailed study of these four specimens has revealed that this taxon is indeed close to *Barleria compacta* in the compact growth habit, axillary single-flowered cymes, and a subregular corolla with the abaxial lobe barely offset from the other lobes and comparable in size. However, they differ in the characters noted in the Diagnosis above. The rank at which to separate these two taxa is debatable, and they may ultimately prove to be separate species, but given their floral similarity and the fact that some of the differences (e.g., whether or not the flowers are pedunculate) are not entirely diagnostic, we consider subspecies rank to be most appropriate based on current evidence. These two taxa appear to be largely allopatric, with subsp. *minima* occurring close to the Indian Ocean coastline and subsp. *compacta* occurring more inland except for one coastal locality to the south of the known range of subsp. *minima*.

The glaucous leaves of the type specimen are very striking and differ from the typically brighter green leaves of subsp. *compacta*. However, the *Merla et al.* collections are less markedly glaucous and there is some overlap between the leaf coloration on these specimens and on some specimens of subsp. *compacta* (e.g., *T. Fison 25*, K!).

Some of the characters observed in subsp. *minima*, notably the compact habit, long-stalked spines and short leaves, are reminiscent of *Barleria tetracantha* Balf.f., a species that is endemic to the Socotra (Soqotra) archipelago of Yemen. There are some phytogeographic links between northeast Somalia and the Socotran flora, rather unsurprisingly given that Socotra lies only ca. 350 km from the Somali coastline. For example, in Acanthaceae, the Bandarbeyla area is the only known locality in continental African for *Rhinacanthus scoparius* Balf.f., a species previously thought to be endemic to Socotra (Miller and Morris 2004; Thulin 2006b). However, *B. compacta*, including subsp. *minima*, differs from *B. tetracantha* in having markedly larger flowers particularly with regard to the corolla lobes, with the abaxial lobe slightly offset from the other lobes (so less strictly salverform than in *B. tetracantha*), larger anthers and always having single-flowered cymes. For completeness, the *Barleria compacta* subsp. *minima* is compared to both *B. compacta* subsp. *compacta* and *B. tetracantha* in Table 2. In the published RADseq phylogeny of *Barleria* (Comito *et al.* 2022), *B. tetracantha* is resolved as sister to a clade comprising *B. compacta s.s.* and *B. brevispina* (Fiori) Hedrén, the latter two species forming a morphological "species pair" which are almost inseparable in the vegetative and fruiting states but have very different corolla morphology, *B. brevispina* being highly zygomorphic with a much reduced and offset abaxial lobe (Malombe and Darbyshire 2010).

Additional specimens examined (paratypes)

SOMALIA: Migiurtinia: Altipiano, campetto presso Gibalei, 27 Dec. 1953 (fl.), *G. Merla, A. Azzaroli & V. Fois* s.n. (FT! [FT0010283]); Bur Gudodo (a nord di Bender Beila [Bandarbeyla]), 29 Dec. 1953 (fl.), *G. Merla, A. Azzaroli & V. Fois s.n.* (FT! [FT0010284]); Altipiano presso Culule (a sud di Bender Beila [Bandarbeyla]), 31 Jan. 1954 (fl.), *G. Merla, A. Azzaroli & V. Fois s.n.* (FT! [FT0010364]).

ACKNOWLEDGMENTS

The curators and staff of the following herbaria are greatly thanked for providing access to their collections: BM, ETH, FT, K and UPS. We particularly thank Riccardo M. Baldini and Lia Pignotti of the FT for facilitating the visit by I. Darbyshire to the herbarium of the Centro Studi Erbario Tropicale, Università degli Studi di Firenze (FT herbarium) in October 2023. This visit was supported by the Bentham Moxon Trust, under grant BMT24-2021, for which we are highly grateful. We also thank Giacomo Baldesi of the Università degli Studi di Firenze for informative correspondence on the flora of Somalia and the collections held at FT. We are most grateful to Mats Thulin of UPS for arranging the loan of specimens of *Barleria biramosa* to Kew and for providing important insights into the habitats of the new taxa and the likely threats that they face.

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