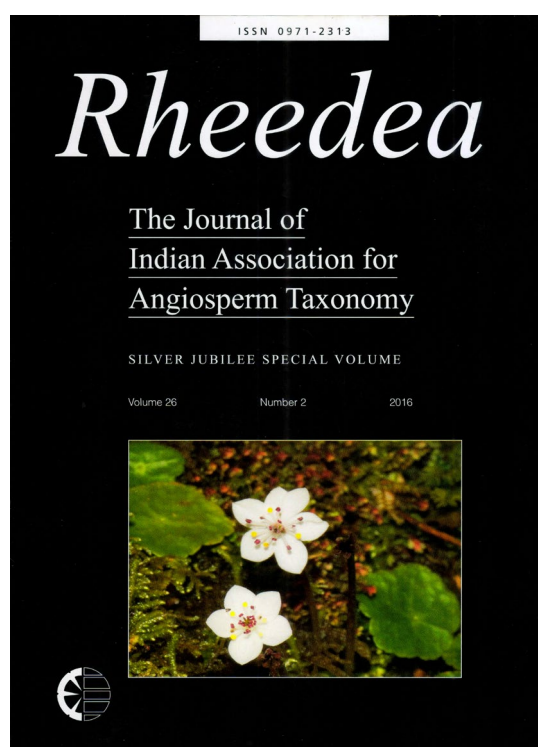




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## *Barleria durairajii* (Acanthaceae): A new species from Tamil Nadu, India

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### Abstract

*Barleria durairajii* (Acanthaceae), a new species allied to *B. hochstetteri* Nees and *B. parviflora* R. Br. ex T. Anderson, is described here along with colour photographs including micrographs of pollen grains, illustrations, comparison with its allied species, and IUCN conservation status from Tamil Nadu, India.

**Keywords:** Acanthaceae, *Barleria*, New Species, *Somalia*, Tamil Nadu

### Introduction

The genus *Barleria* L. is represented by 26 species, 1 subspecies and 1 variety in India, of which 13 are endemics (Shendage & Yadav, 2010). According to the infrageneric classification of Balkwill & Balkwill (1997), species of *Barleria* in India are distributed under two subgenera and seven sections. Section *Somalia* (Oliv.) Lindau is one of the three sections of subgenus *Prionitis* (Nees) C.B. Clarke with two species in India, namely *B. hochstetteri* Nees and *B. stocksii* T. Anderson. This section is represented by c. 50 species globally, the majority of which are distributed in Africa (Darbyshire, 2010), and it can be differentiated from all other sections by the combination of the following characters: plants unarmed; corolla white, pink, mauve or blue; androecium comprising 2 stamens and 2 (or 3) staminodes, lacking antherodes; capsules 2-seeded with prominent sterile beak and with septum partially membranous; seeds with woolly (not straight) hygroscopic hairs.

During the survey on the status and distribution of threatened plants in Vallanadu Black Buck Sanctuary, Thoothukudi district, Tamil Nadu, as part of a project funded by the Tamil Nadu Biodiversity Conservation and Greening Project, an interesting species belongs to the genus *Barleria* has been collected. After a thorough scrutiny of literature (Nees, 1832, 1847; Anderson, 1863, 1867;

Bentham, 1876; Clarke, 1885; Burkill & Clarke, 1899–1900; Gamble, 1924; Wood, 1997; Cramer, 1998; Ensermu, 2006; Hedrén, 2006; Darbyshire, 2010; Shendage & Yadav, 2010) and examination of either the specimens or images of specimens housed at various herbaria (BSI, CAL, FRLH, K, MH), it has been concluded that this species belongs to section *Somalia* and is hitherto undescribed. Therefore, it is described and illustrated here with colour photographs. Furthermore, micrographs of pollen grains obtained using Scanning Electron Microscopy, comparison of new species with its two allied species and IUCN conservation status are provided.

***Barleria durairajii* K. Ravik., D. Naras., Devanath. & Gnanasek., sp. nov. Figs. 1,2**

**Diagnosis:** *Barleria durairajii* is similar to *B. hochstetteri* and *B. parviflora*, but it can be distinguished from the former by whole plant being glabrous, sessile or subsessile oblanceolate leaves with entire margins, solitary flower, linear-lanceolate anticous calyx lobes with an acuminate apex, smaller corolla with short stamens and from the latter by having oblanceolate leaves with acute apex, solitary flower, lanceolate or narrowly ovate anticous calyx lobes with acuminate apex, smaller flower with short stamens and style.

Type: INDIA. **Tamil Nadu**, Thoothukudi district, Srivaikundam range, Vallanadu beat, 08°41'953" N, 77°54'220" E, 60 m, 27.5.2014, K. Ravikumar &

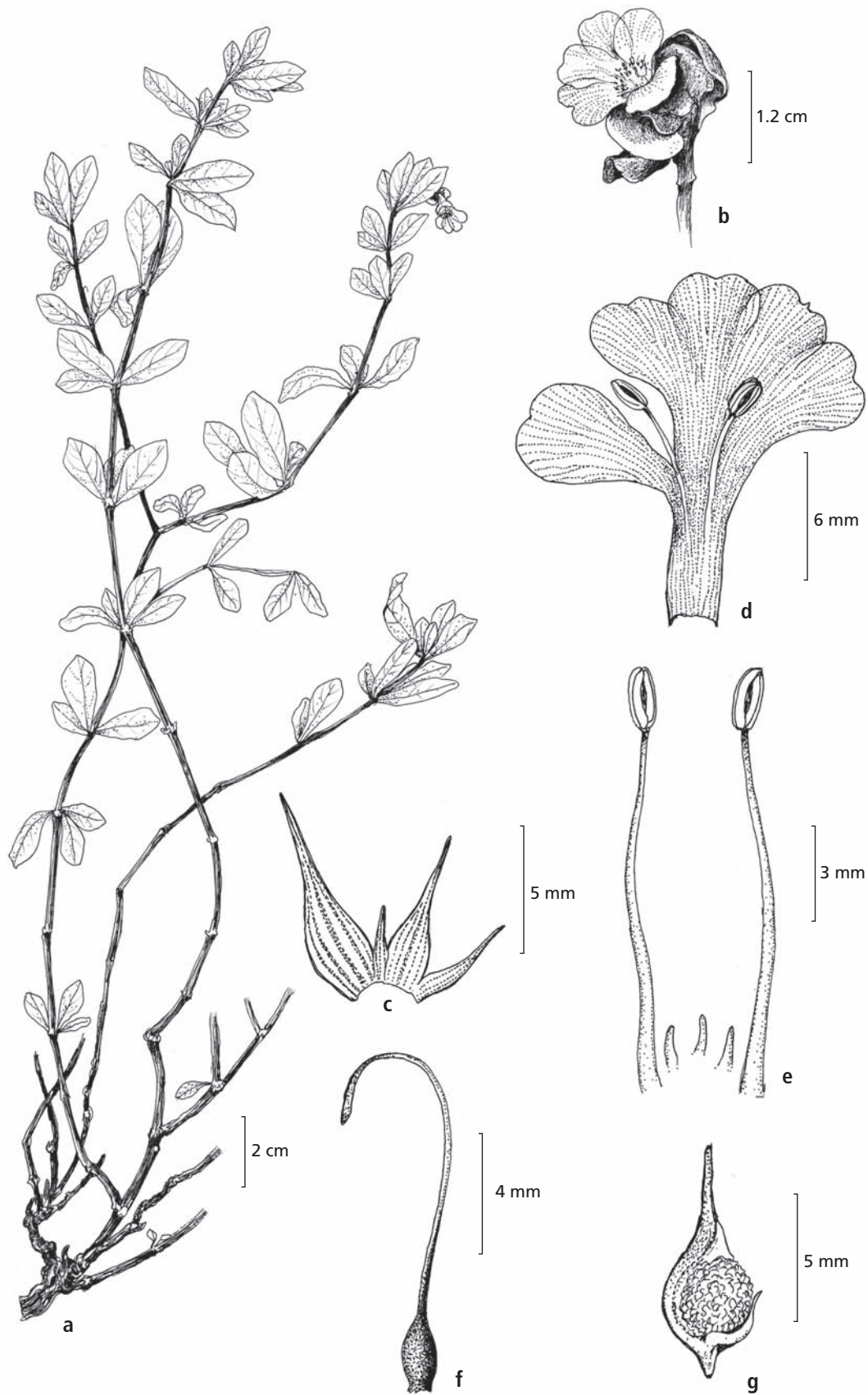


Fig. 1. *Barleria durairajii* K. Ravik., D. Naras., Devanath. & Gnanasek.: a. Habit; b. Flower; c. Calyx; d. Corolla split-open; e. Fertile stamens and staminodes; f. Pistil; g. Capsule showing seed. Drawn from K. Ravikumar & D. Narasimhan 117317.

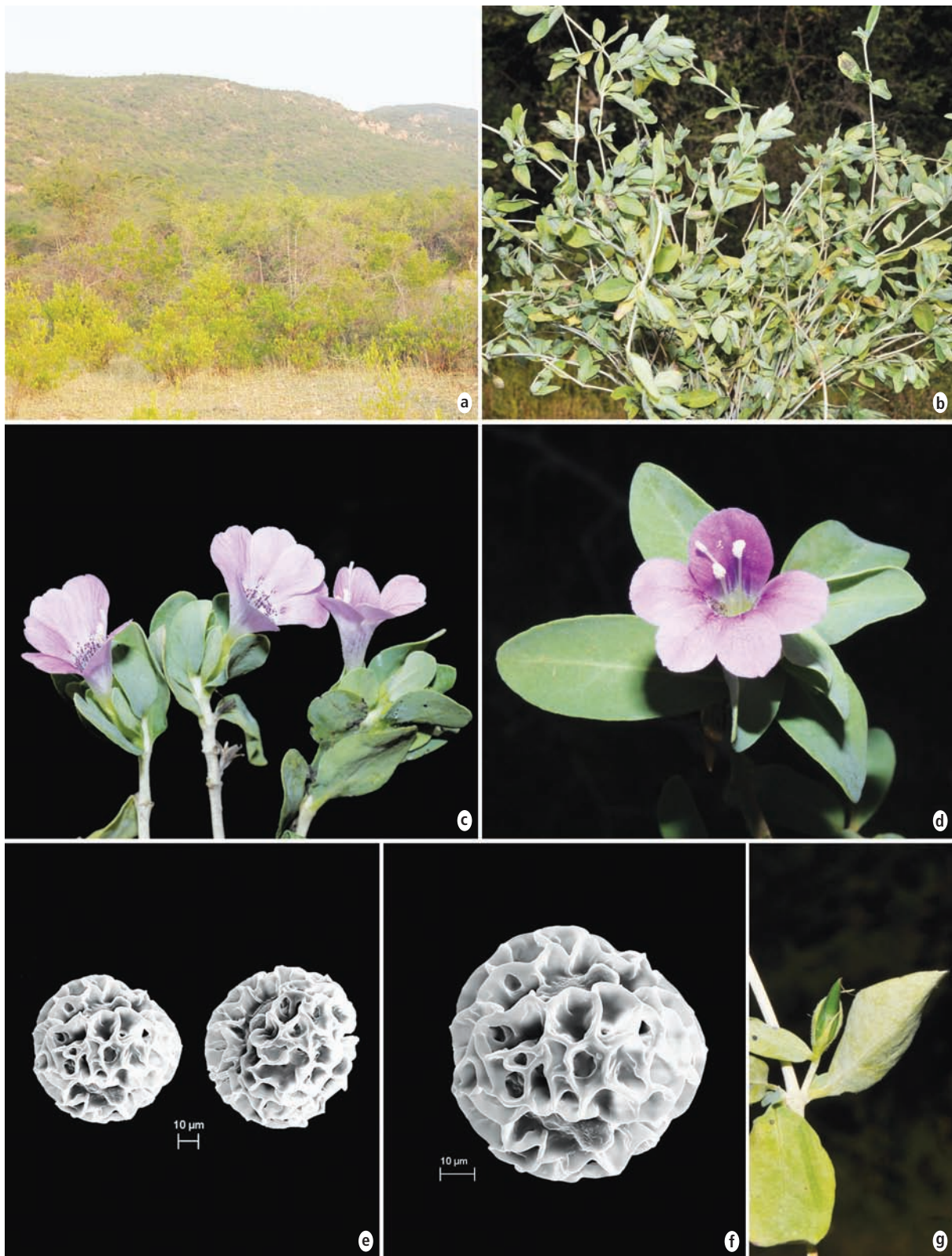


Fig. 2. *Barleria durairajii* K. Ravik., D. Naras., Devanath. & Gnanasek.: a. Habitat – A view of Vallanadu Black Buck Sanctuary; b. Habit; c & d. Flowers; e & f. Pollen grains; g. Capsule.

*D. Narasimhan* 117317 (Holotype, MH; Isotypes, FRLH, MH)

Herb, perennial, decumbent, to 60 cm high. Stems terete to slightly 4-angled, canescent-strigose throughout, biramous, glaucous; internodes to 6 cm long. Leaves oblanceolate, rarely narrowly elliptic, 0.5–3.5 × 0.5–1.5 cm, attenuate at base, entire at margins, acute at apex, hairy when young, soon glabrous; lateral veins 3–5 pairs, inconspicuous on both surfaces; petioles indistinct or to 2 mm long. Flowers axillary, solitary, sessile. Bracteoles 2, oblanceolate, 1.2–5 × 1–3 mm, glabrous. Calyx 4-lobed, unequal; anticus calyx lobes lanceolate or narrowly ovate, 5.5–10 × 0.7–2.5 mm, minutely ciliate at margins, acuminate at apex, surface glandular-pubescent; posticus calyx lobes linear-lanceolate, 1.7–4 × 0.2–0.6 mm, acuminate at apex, glandular-pubescent. Corolla 1–1.6 cm long, purple, darker around throat; tube 7–8.5 mm long, pubescent; limb 2-lipped; lower lip broadly obovate, 8–9 mm long, obtuse or retuse at apex; upper lip 9–10.5 mm long, 4-lobed; lobes obovate, retuse at apex. Fertile stamens 2, exserted; filaments 7.5–9 mm long, dilated at base; anthers basifixed, oblong, 1.8–2.2 × 0.7–0.9 mm, muticous, longitudinally dehiscent; pollen grains tricolporate, spheroidal, tectum reticulate, honeycomb-like. Staminodes 3, c. 0.3 mm long. Ovary oblong, 1.7–1.85 × 0.7–0.9 mm, glabrous; style 10–11.5 mm long; stigma minutely bifid. Capsules ovoid with prominent sterile beak, 8–10 × 5–7 mm, glabrous, 2-seeded; seeds ovoid, 3.5–4 × 2.5–3 mm, covered with appressed-silky hairs.

*Flowering & Fruiting:* April–July.

*Habitat:* *Barleria durairajii* is found growing on lateritic soil in dry thorn scrub forest at 60 m elevation, associated with species such as *Acacia leucophloea* (Roxb.) Willd., *Apluda mutica* L., *Aristida adscensionis* L., *Barleria prionitis* L., *Blepharis maderaspatensis* (L.) B. Heyne ex Roth, *Cymbopogon caesius* (Hook. & Arn.) Stapf, *Euphorbia tortilis* Rottler ex Ainslie, *Dalbergia coromandeliana* Prain, *Dichrostachys cinerea* (L.) Wight & Arn., *Drimia indica* (Roxb.) Jessop, *Dyschoriste littoralis* (L.f.) Nees, *Gmelina asiatica* L., *Grewia tenax* (Forssk.) Fiori, *Justicia prostrata* (Roxb. ex C.B. Clarke) Gamble, *Orthosiphon rubicundus* (D. Don) Benth., *Pentanema indicum* (L.) Y. Ling, *Spermacoce articularis* L.f. and *Ziziphus xylopyrus* (Retz.) Willd.

*Etymology:* This species is named after Mr. Durairaj Rajaiah, former Professor of Botany, Madras Christian College (Autonomous), Chennai, for infusing interest to the first two authors in the field of plant taxonomy.

*Distribution:* India: Tamil Nadu (Thoothukudi district). **Endemic.**

*Taxonomic Affinity:* *Barleria durairajii* is morphologically similar to *B. hochstetteri* and *B. parviflora* R. Br. ex T. Anderson, however, it can be distinguished by many other characters as given below in **Table 1**.

*Conservation status:* This plant has been provisionally assessed here as Data Deficient (DD) according to IUCN Red List Categories and Criteria version 3.1 (IUCN, 2012). It is currently known only from the type locality, where it is very common. However, more explorations in similar habitats are required to know its population size, area of occupancy and extent of occurrence and threats, if any, to assess the exact threat category.

*Additional specimen examined (Paratype):* INDIA. **Tamil Nadu**, Thoothukudi district, Srivaikundam range, Vallanadu beat, 08°41'953" N, 77°54'220" E, 60 m, 16.12.2014, K. Ravikumar & V. Chelladurai 119119 (FRLH).

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**Table 1.** Comparison of diagnostic characters of *Barleria durairajii* with its two allied species, *B. hochstetteri* and *B. parviflora*

| Characters                  | <i>B. durairajii</i> sp. nov.                                                                            | <i>B. hochstetteri</i>                                                                                                                                                             | <i>B. parviflora</i>                                                                                                   |
|-----------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Leaves</b>               | Oblanceolate, rarely narrowly elliptic, 0.5–3.5 × 0.5–1.5 cm, entire at margins, acute at apex, glabrous | Oblong-elliptic to ovate, rarely lanceolate, 2–5.5(–7) × 0.8–2(–3.5) cm, ciliate at margins, obtuse at apex, surface with short patent eglandular and/or glandular appressed hairs | Ovate-oblong, 2–4 × 1–2 cm, entire at margins, rounded at apex, glabrous except medifixed bristles towards the margins |
| <b>Petioles</b>             | Indistinct to 2 mm long                                                                                  | Distinctly petiolate, petioles 2–10(–17) mm long                                                                                                                                   | Indistinct to 2(–8) mm long                                                                                            |
| <b>Inflorescence</b>        | Flowers always solitary                                                                                  | 1–3(–7)-flowered cymes                                                                                                                                                             | 1–3-flowered cymes                                                                                                     |
| <b>Bracteole</b>            | Oblanceolate, 1.2–5 × 1–3 mm, glabrous                                                                   | Oblanceolate or obovate, 3–25 × 5–10 mm, pubescent with appressed medifixed bristles, non-glandular and glandular hairs                                                            | Ovate, 7–10 × 2.7–3 mm, with medifixed bristles and glandular hairs along the margins                                  |
| <b>Anticous calyx lobes</b> | Lanceolate or narrowly ovate, 5.5–10 × 0.7–2.5 mm, both lobes acuminate at apex                          | Ovate, (4.5–)8–14 × (3–)4.5–10 mm, one lobe acute, other one retuse                                                                                                                | Ovate, 7–10 × 2–4 mm, one lobe acute, other one retuse                                                                 |
| <b>Corolla</b>              | Purple, 10–16 mm long; tube 7–8.5 mm long                                                                | White, pale blue or mauve, 20–40 mm long; tube to 16 mm long                                                                                                                       | Pale purple or lilac, 18–24 mm long; tube 6–9 mm long                                                                  |
| <b>Stamens</b>              | Filaments 7.5–9 mm long; anthers 1.8–2.2 mm long                                                         | Filaments (13–)18–25 mm long; anthers 2–3(–3.8) mm long                                                                                                                            | Filaments 16–17 mm long; anthers 2.9–3.1 mm long                                                                       |
| <b>Ovary</b>                | 1.7–1.85 mm long, glabrous                                                                               | c. 3 mm long, pubescent                                                                                                                                                            | 2.8–3.1 mm long, pubescent                                                                                             |
| <b>Style</b>                | 10–11.5 mm long                                                                                          | 26–30 mm long                                                                                                                                                                      | 18–20 mm long                                                                                                          |

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