

Scleria lithosperma var. *lithosperma* (Cyperaceae): an addition to the flora of Nepal

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Abstract: *Scleria lithosperma* (L.) Sw. var. *lithosperma* (Cyperaceae) is reported here as a new addition to the flora of Nepal. It was collected from the Chure region of Madhesh province, Nepal. A brief description of the species, notes on habitat and distribution, a photo plate, and its morphological differences with closely related taxa are provided, along with a revised key to the species of *Scleria* P.J.Bergius in Nepal.

Keywords: Chure, *Hypoporum*, Madhesh province, *Scleria pergracilis*.

Introduction

Scleria P.J.Bergius (Cyperaceae), comprising around 255 species, is mainly tropical and subtropical in distribution, with certain taxa reaching North America (Larridon *et al.*, 2021; POWO, 2024). Recently, four monophyletic subgenera have been recognized in the genus (Bauters *et al.*, 2016). Among them, *Scleria* subgen. *Hypoporum* (Nees) C.B. Clarke is the second largest subgenus, primarily characterized by nutlets in which the hypogynium is reduced or even absent (Bauters *et al.*, 2018). *Scleria lithosperma* (L.) Sw. is one of the species in this subgenus with two varieties, *i.e.*, *S. lithosperma* (L.) Sw. var. *lithosperma* and *Scleria lithosperma* var. *linearis* Benth.

Six species of *Scleria*, *S. biflora* Roxb., *S. levis* Retz., *S. parvula* Steud., *S. pergracilis* (Nees) Kunth, *S. rugosa* R.Br., and *S. terrestris* (L.) Fassett, have been recorded in Nepal so far, with only one species in the subgen. *Hypoporum*, *i.e.*, *S. pergracilis* (Nees) Kunth (Shrestha *et al.*, 2022). Bhandari *et al.* (2021) provided a key to the species of *Scleria* found in Nepal.

During a floristic survey of the Chure region of Madhesh province, Nepal (Fig. 1), for the study of the flowering plants, a few specimens of a *Scleria* species were collected. After a thorough examination of the specimens and review of relevant literature (Core, 1936; Noltie, 1994; Zhang *et al.*, 2010), it was identified as *Scleria lithosperma* (L.) Sw. var. *lithosperma*, a species not previously reported from Nepal. Herbarium specimens of *S. lithosperma* var. *lithosperma* were also checked at E and K (online images) herbaria (acronyms follow Thiers, continuously updated). This report of *S. lithosperma* var. *lithosperma* for the first time in Nepal brings the total number of species to seven in *Scleria* and two in the subgen. *Hypoporum*. A revised key to the species of *Scleria* in Nepal is provided, modifying the key of Bhandari *et al.* (2021).

Taxonomic Treatment

Scleria lithosperma (L.) Sw., Prodr. [O. P. Swartz]: 18. 1788. var. ***lithosperma***. *Scirpus lithospermus* L., Sp. Pl. 1: 51. 1753. **Fig. 2**

Perennial herbs, rhizomatous. Rhizome creeping, nodulose. Culms erect, unbranched, triquetrous, 30–65 cm tall, glabrous, clothed at base with purplish leaf sheaths. Leaves several; basal leaves sheath-like, bladeless; cauline leaves linear, 6–24 × 0.2–0.4 cm, margin finely toothed, apex acuminate, both surfaces glabrous; leaf sheaths triquetrous, glabrous or pubescent; contraligule triangular, c. 2 mm long, apex ciliate. Involucral bracts leaf-like, up to 12 cm long. Inflorescence poorly paniculate, axillary or terminal; spikelets distant on the panicle, 1–3 in cluster. Nutlet-bearing spikelets bisexual. Glumes ovate-lanceolate, 2–4 mm long, keeled, apex cuspidate or mucronate,

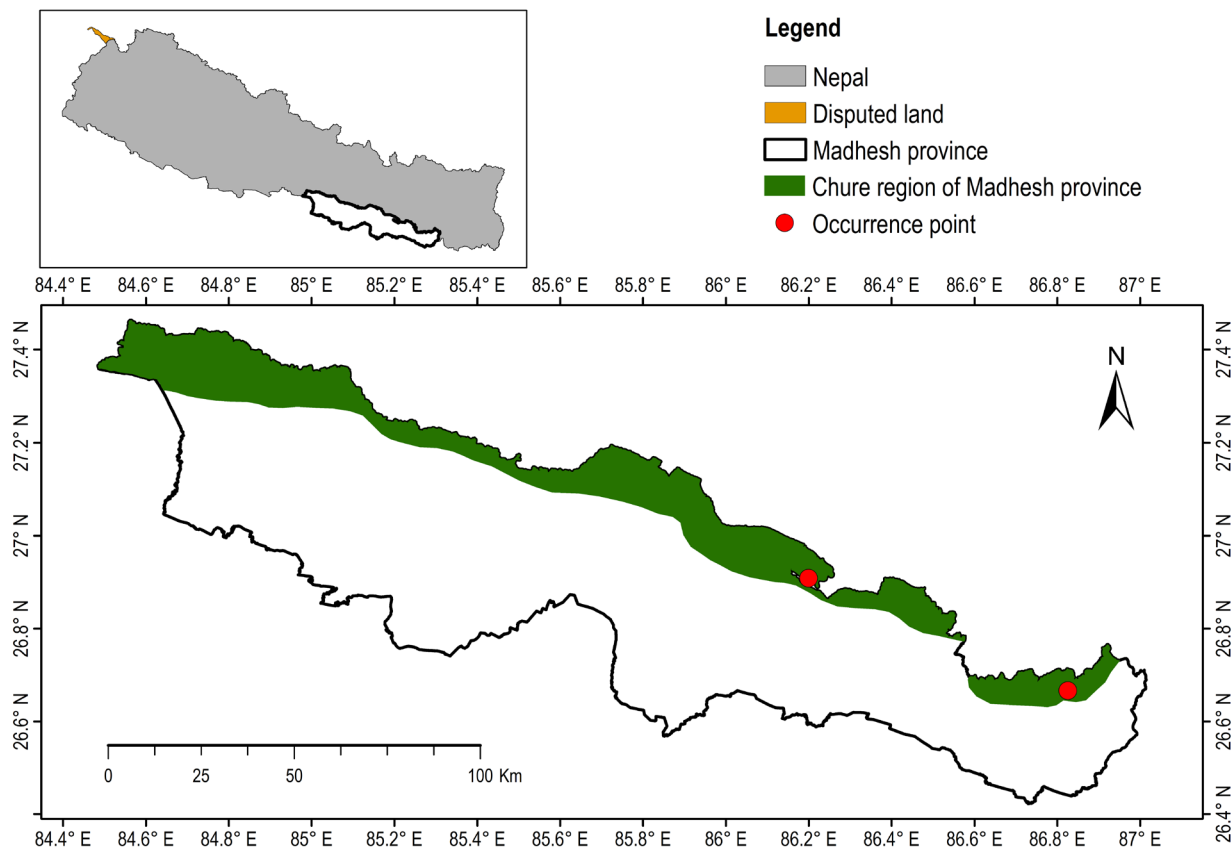


Fig. 1. Map showing the distribution of *Scleria lithosperma* (L.) Sw. var. *lithosperma* in Nepal.

glabrous, brown to rusty brown. Nutlets obtusely trigonous, obovoid-ellipsoid, $2.5\text{--}3 \times 1.5\text{--}1.8$ mm, base cuneate into trigonous structure, apex umbonulate, shiny, smooth, glabrous, white. Hypogynium reduced to a very narrow annular ring, adnate to extreme nut base, brownish.

Flowering and fruiting: Flowering from August to November; fruiting from September to November.

Habitat: This species was found growing in dry soil, in sloping, forested areas in the Chure Hills of Nepal. It was collected from both *Shorea robusta* C.F.Gaertn. (Dipterocarpaceae) mixed forest forest and *Terminalia anogeissiana* Gere & Boatwr. (Combretaceae) dominated forest.

Distribution: It is a very widespread species, native to the tropics and subtropics. In Asia, it is distributed in Bhutan, China, India, Indonesia, Malaysia, Myanmar, Nepal (present record), Philippines, Sri Lanka, Thailand and Vietnam. Further, it is also found on islands in the Pacific and Indian Oceans, as well as in tropical regions of Africa, America, and

Australia (Zhang *et al.*, 2010).

Specimens examined: NEPAL, **Madhesh province**, Dhanusha district, N 26.909°, E 86.199°, 280 m, 07.09.2023, K. Joshi, S. G.C., Y.B. Poudel, N.P. Ghimire & Y. Uprety FCM-198 (KATH, TUCH); Saptari district, N 26.667°, E 86.825°, 178 m, 09.09.2023, K. Joshi, S. G.C., Y.B. Poudel, N.P. Ghimire, & Y. Uprety FCM-342 (KATH, TUCH).

Notes: The true homology of the hypogynium in *Scleria* is still not resolved, and the presence or absence of this structure in *S.* subgen. *Hypoporum* is still rather unclear (Bauters, 2018).

The description of *Scleria lithosperma* var. *lithosperma* presented in this paper is based on only two specimens collected from the Chure region of Madhesh province, Nepal. Further investigation of the species in similar habitats in the Chure region, including the lowlands of Nepal, is necessary to document its detailed morphology and distribution in Nepal. Given that the Cyperaceae are undercollected in Nepal (Bhandari *et al.*, 2021),

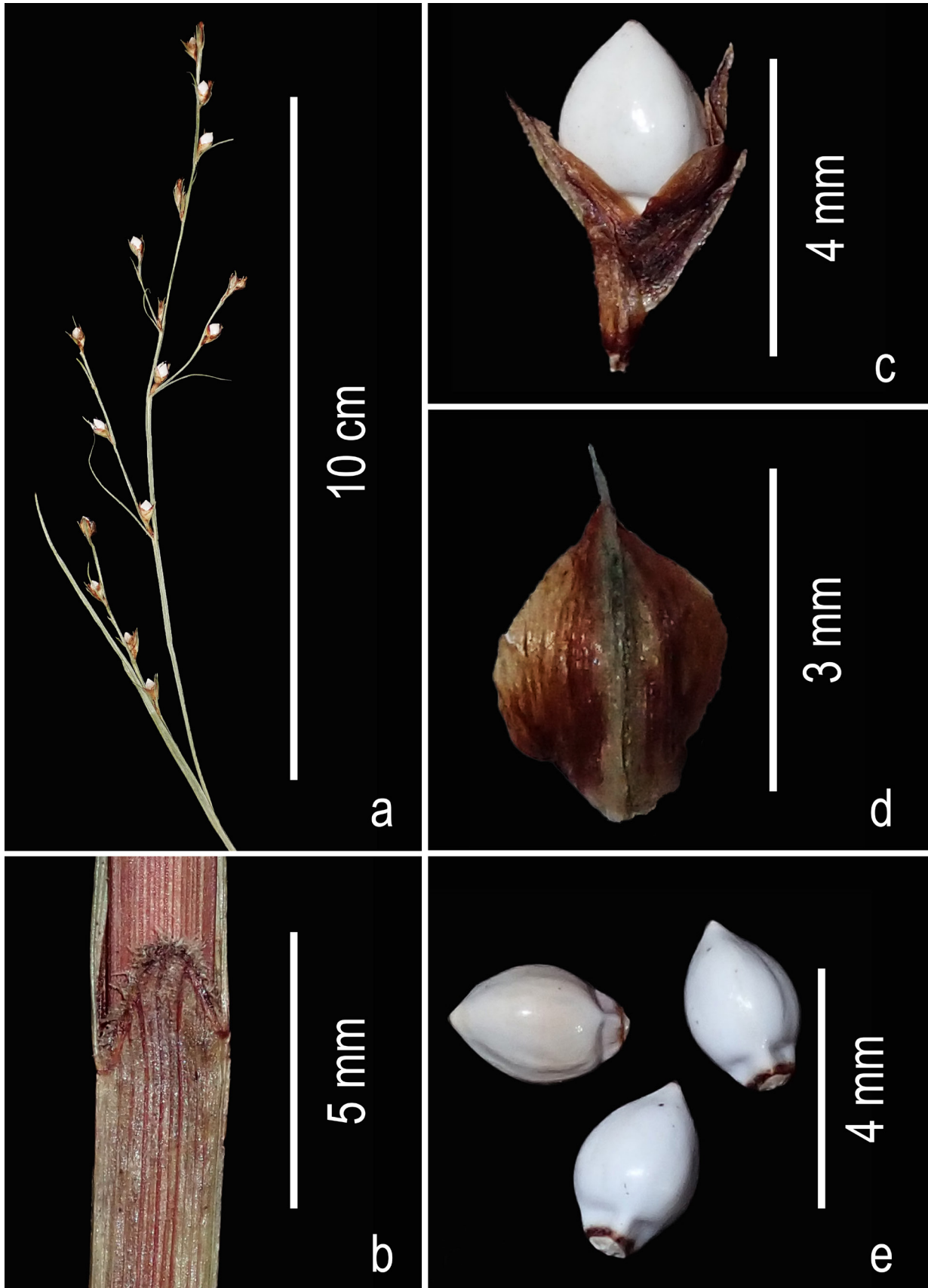


Fig. 2. *Scleria lithosperma* (L.) Sw. var. *lithosperma*: a. Inflorescence; b. Contraligule; c. Spikelet; d. Glume; e. Nutlets (from K. Joshi, S. G.C., Y.B. Poudel, N.P. Ghimire & Y. Uprety FCM-198; photos by Y.B. Poudel).

more botanical exploration in Nepal could widen the distribution of *S. lithosperma* var. *lithosperma*.

The typical variety of *Scleria lithosperma* differs from the heterotypic variety, *Scleria lithosperma* var. *linearis*, by its smooth nutlets. Nutlets in *S. lithosperma* var. *linearis* are transversely rugose or irregularly somewhat reticulate with wavy ridges (Zhang *et al.*, 2010). A morphological comparison of *S. lithosperma* var. *lithosperma* and another Nepalese species of *S.* subgen. *Hypoporum*, *i.e.*, *S. pergracilis*, is provided in Table 1. In addition to the morphological differences, these two taxa also have differences in their known distribution range in Nepal. *S. pergracilis* has been collected from the Mid Hills, between the elevation range of 1200–1800 m (Shrestha *et al.*, 2022), and *S. lithosperma* var. *lithosperma* from the Chure Hills, between the elevation range of 178–280 m (present record).

Key to the species of *Scleria* in Nepal

- 1. Hypogynium reduced or absent 2
- 1. Hypogynium well developed 3
- 2. Inflorescence paniculate; involucre bracts leaf-like *S. lithosperma* var. *lithosperma*
- 2. Inflorescence spicate; involucre bracts bristle-like *S. pergracilis*
- 3. Plants perennial, rhizome present 4
- 3. Plants annual, rhizome absent 5
- 4. Plant much robust; nutlets cancellate; hypogynium lobes obtuse or rounded at apex *S. terrestris*

- 4. Plant smaller; nutlets smooth or slightly rugulose; hypogynium lobes acute at apex, often bidentate *S. levis*
- 5. Glumes beset with long, patent hairs *S. rugosa*
- 5. Glumes glabrous 6
- 6. Nutlets spherical with dark purplish beak, deeply pitted; hypogynium lobes acuminate at apex *S. biflora*
- 6. Nutlets ellipsoid or sub-globose with white beak, not deeply pitted; hypogynium lobes acute at apex *S. parvula*

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Table 1. Morphological comparison of *S. lithosperma* var. *lithosperma* and *S. pergracilis*

Characters	<i>Scleria lithosperma</i> (L.) Sw. var. <i>lithosperma</i>	<i>S. pergracilis</i> (Nees) Kunth
Habit	Perennials	Annuals
Leaves	Linear, 2–4 mm wide	Filiform, c. 1 mm wide
Involucre bracts	Leaf-like	Bristle-like
Inflorescence	Paniculate	Spicate
Nutlets	Obovoid-ellipsoid, glabrous	Sub-spherical, transversely rugose

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