

Arundinella setosa var. *setosa* (Poaceae): a new record for Andaman and Nicobar Islands, India

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Abstract: *Arundinella setosa* Trin. var. *setosa* (Poaceae) is reported as a new addition to the grass flora of Andaman and Nicobar Islands. This adds a further species to the two species of *Arundinella* that have been enlisted in earlier reports from this region. A description, phenological and ecological notes, world distribution, photographic plates, and an identification key are provided.

Keywords: *Arundinella*, Distributional record, Grass flora, Middle Andaman.

Introduction

Species of *Arundinella* Raddi (Poaceae) are distributed in the tropics and subtropics, mainly in Asia, and the genus is represented by about 55 species (Kabeer & Nair, 2009; POWO, 2022). In India, the genus has 21 species, of which two species, *Arundinella ciliata* (Roxb.) Nees ex Miq. and *A. hookeri* Munro ex Keng are recorded from the Andaman and Nicobar Islands (Murugan *et al.*, 2016).

During the botanical exploration of different parts of Andaman Islands for the study of the grass flora of the islands, a grass belonging to the genus *Arundinella* was collected from Middle Andaman. After critical examination of the specimens, herbarium consultation and thorough study of the relevant literature (Bor, 1955, 1960; Kabeer & Nair, 2009; Potdar *et al.*, 2012; Veldkamp, 2015), it was identified as *A. setosa* Trin. var. *setosa*. This species was recorded earlier from mainland

India (Bor, 1955; Kellogg *et al.*, 2020), and not collected or reported from Andaman and Nicobar Islands so far. Thus, the present collection forms a new distributional record of the species to the grass flora of Andaman and Nicobar Islands (Fig. 1). A description along with photo plates and an identification key are provided for easy identification.

Taxonomic Treatment

Arundinella setosa Trin., Gram. Panic. 63. 1826 var. *setosa*; Bor, Grasses Burma, Ceylon, India & Pakistan 424. 1960; Karthik. *et al.*, Fl. Ind. Enum. Monocot. 187. 1989; Veldkamp, Blum. 59: 174. 2015. *Type:* NEPAL, *s.d.*, Lindley *s.n.* (LE). **Fig. 2**

Perennials. Culms 40–50 cm long, tufted, caespitose; nodes glabrous; internodes 2.5–8 cm long, terete, glabrous. Leaf blades 10–15 × 0.2–0.5 cm, linear-lanceolate, apex acute, ventral surface scabrid, margins serrulate with few long hairs; ligules membranous with long hairs at apex and back, hairs up to 0.5 mm long, mouth bearded with up to 1 mm long hairs; leaf sheaths 2.5–4 cm long, margins with up to 2 mm long hairs. Peduncles 12–22 cm long. Inflorescence an effuse panicle, 8–12 cm long; racemes alternate; spikelets paired, similar, 4.8–5.2 × 0.5–1 mm long, lanceolate, awned; pedicels short and long, triquetrous, ridges scabrid; short pedicels 1.5–5 mm long; long pedicels 3–10 mm long. Lower glumes 3.8–5 × 0.5–0.8 mm, lanceolate, chartaceous, glabrous, apex attenuate or acuminate; 3-veined, mid vein keeled or sometimes one lateral vein also keeled, keels scabrid; margins

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Fig. 1. Collection area of *Arundinella setosa* Trin. var. *setosa* in the Andaman and Nicobar Islands (map created in GeoCAT: <http://geocat.kew.org>).

entire, open. Upper glumes 4–5 × *c.* 1 mm, lanceolate, chartaceous, scabrid dorsally from upper middle to apex, apex acuminate with usually bifid tip; margins entire, open. Florets 2: lower male, upper bisexual. Lower lemma 3–3.2 × 0.5–0.7 mm, lanceolate, boat shaped, chartaceous, glabrous, apex bifid; 3-veined, laterally compressed towards upper middle to apex, margins entire, open. Lower palea 2.8–3 × 0.4–0.5 mm, lanceolate, membranous to chartaceous, apex minutely fimbriate, 2-keeled, keels minutely winged, scabrid; margins ciliate from middle to apex, infolded. Stamens 3, anthers 1–1.2 × *c.* 0.2 mm, yellow, filaments 0.4–0.5 mm long. Upper lemma 1.9–2.1 × 0.4–0.5 mm, lanceolate, chartaceous to membranous, apex with 2 lateral setae; setae 1–2 mm long, scabrid; awned, awn 4–5 mm long, geniculate; column 1–2 mm long, awn arises between two setae; margins entire, open. Upper palea 2–2.2 × *c.* 0.3 mm, lanceolate, boat shaped, chartaceous to membranous, dorsally scabrid; apex minutely bifid; 2-keeled; margins serrulate towards upper middle to apex, base flapped, infolded. Stamens 3, as above in lower florets. Ovary 0.2–0.3 × *c.* 0.1 mm, oblong; style 2

0.5–0.7 mm long; stigma 2, 0.8–1 mm long, plumose; lodicules 2, 2 mm long, membranous.

Flowering & fruiting: Flowering and fruiting from August to February.

Habitat: The species was observed mostly in hilly areas along rocky slopes with some associated angiosperms, such as *Schizostachyum andamanicum* M.Kumar & Remesh. (Poaceae), *Memecylon* sp. (Melastomataceae), *Grewia* sp. (Malvaceae), and *Phyllanthus andamanicus* Balakr. & N.G.Nair (Phyllanthaceae).

Distribution: India, Australia, Bhutan, Cambodia, China, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Taiwan, Thailand, Vietnam.

Specimens examined: INDIA, **Andaman and Nicobar Islands**, Andaman Island, Middle Andaman, Panchvati, N 12°34'20.55", E 92°57'25.47", 14.11.2018, *Reshma Lakra* 86458 (CAL, PBL). **Andhra Pradesh**, Kurnool district, 10.12.1963, *J.L. Ellis* 18057 (CAL). **Karnataka**, Ramanagara district, Narayanadurga state forests, 19.12.1978, *K.R. Keshava Murty & K.P. Murthy* 5081 (CAL). **Kerala**, Kannur district, Kuthupuramba, 20.02.1978, *V.S. Ramachandran* 5410 (CAL). **Meghalaya**, Shillong, Naga Hills, Dec. 1907, *A. Meebold* 7497 (CAL). **Odisha**, Nigirdah,



Fig. 2. *Arundinella setosa* Trin. var. *setosa*: **a.** Habit; **b.** Pair of spikelets; **c.** Lower glume-ventral view; **d.** Lower glume-dorsal view; **e.** Upper glume-ventral view; **f.** Lower lemma-dorsal view; **g.** Lower palea-ventral view; **h.** Upper lemma-side view; **i.** Upper palea-ventral view; **j.** Androecium and gynoecium along with lodicules (photos by Reshma Lakra).

18.02.1958, *G. Panigrahi* 12572 (CAL). **Tamil Nadu**, Coimbatore district, Manimuthar bridge falls, 26.06.1975, *K.M. Sebastine* 3668 (CAL). BURMA, Maymyo plateau, 25.09.1911. *J.H. Luce* 5428 (CAL).

Notes: *Arundinella setosa* closely resembles *A. nervosa* (Roxb.) Nees ex Hook. & Arn. in general appearance, but differs mainly by its perennial habit against the annual habit in *A. nervosa*. Fischer (1934) treated *A. nervosa* as a synonym of *A. setosa* in the *Flora of the Presidency of Madras*. However, some of the characteristic features of *A. nervosa*, such as up to 25 cm long panicles, acute to caudate upper glumes, up to 2 mm long setae of the upper lemma, and up to 4 mm long awn column distinguish it from *A. setosa* that has a panicle of up to 13 cm long, acuminate upper glume, up to 3 mm long setae of the upper lemma, and up to 4.3 mm long column. Thus, they were regarded as distinct species in recent publications (Kabeer & Nair, 2009; Potdar *et al.*, 2012; Veldkamp, 2015).

Key to the species of *Arundinella* in Andaman and Nicobar Islands

1. Perennials; panicles effuse; upper lemma with two apical setae *A. setosa*
1. Annuals; panicles compact; upper lemma without apical setae 2
2. Glumes dissimilar; upper lemma 1.2–1.5 mm, ovate *A. ciliata*
2. Glumes almost similar; upper lemma 2.2–2.5 mm, elliptic *A. hookeri*

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