

NEW SPECIES OF SCHIZOSTACHYUM (POACEAE–BAMBUSOIDEAE) FROM THE ANDAMAN ISLANDS, INDIA

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SUMMARY

Two new species of *Schizostachyum* Nees: *S. andamanicum* and *S. kalpongianum*, are described and illustrated.

Key words: *Schizostachyum*, Andaman Islands, India.

INTRODUCTION

During the revisionary studies on Indian bamboos the authors could undertake a survey in the Andaman Islands. Five species of bamboos, namely *Bambusa atra*, *Dinochloa andamanica*, *Gigantochloa andamanica*, *Bambusa schizostachyoides*, and *Schizostachyum rogersii* have so far been reported from the Andaman Islands (Munro, 1868; Gamble, 1896; Brandis, 1906; Parkinson, 1921). As a result of exploring different parts of the islands two interesting bamboos were collected. Critical examination revealed that they belonged to the genus *Schizostachyum* Nees and hitherto undescribed.

The genus *Schizostachyum* was described by Nees in 1829 based on *Schizostachyum blumei*. This genus is represented by about 45–50 species distributed in tropical and sub-tropical Asia from southern China throughout the Malaysian region, extending to the Pacific islands with the majority of species in Malaysia (Dransfield, 1983, 2000; Ohrnberger, 1999; Wong, 1995).

The genus is characterised by sympodial rhizomes; erect or straggling thin-walled culms; many branches of the same length arising from the node; indeterminate inflorescence; absence of glumes in the spikelets; presence of lodicules; slender ovary with long, glabrous stiff style which is hollow around a central strand of tissue; anthers usually with blunt apex. The bamboos collected from the Andaman Islands have straggling culms and are similar to *Schizostachyum gracile* (Munro) Holttum in certain characters but differ in several other characters. They belong to the species of *Schizostachyum* Nees which are here described as new.

1. *Schizostachyum andamanicum* M. Kumar & Remesh, *spec. nov.* — Fig. 1

Schizostachyo gracili simile facie et culmi vaginae structura, ab eo in culmis effusissimis, internodiis brevibus (ad 20 cm longis), linea nodali conspicua ob annulam spongiosam, palea apice bifurcato, antheris brevibus apice obtuso pilorum tenuium fimbria, stigmatibus inaequalibus, caryopsidis rostro leniter curvato differt. — Typus: *Remesh & Viswakumar* 20780 (holo KFRI; iso L, MH), India, Andaman Islands, Saddle Peak (North Andaman), 150–732 m, 25.05.2000.

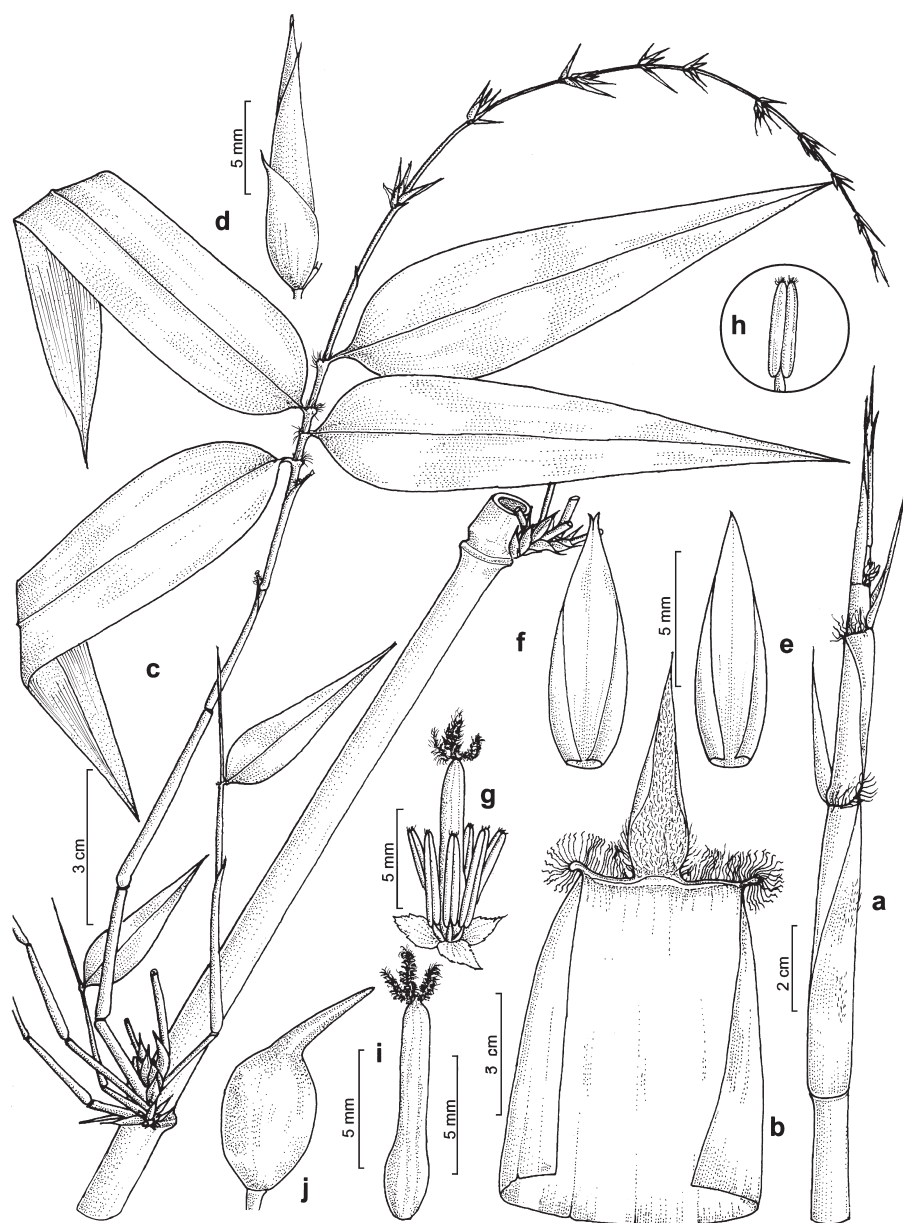


Fig. 1. *Schizostachyum andamanicum* M. Kumar & Remesh. a. Young shoot; b. culm sheath; c. culm with flowering branch; d. spikelet; e. lemma; f. palea; g. floret with lodicule; h. stamen; i. ovary; j. fruit (all: Remesh & Viswakumar 20780).

A semiscandent sympodial bamboo with highly straggling culms arching over neighbouring plants and forming large bushes in hill slopes. *Internode* hollow, thin-walled, 18–22 cm long, 1.2–1.8 cm diam., pale green with purplish tinge when young, yellowish green to golden yellow when mature, clothed with minute silky hairs. *Nodes* somewhat swollen with a smooth spongy nodal ring. *Branch complements* typically a cluster of slender subequal branches. *Young shoot* greyish green with pale orange to purplish brown tinge. *Culm sheath* rigid, 13–16 cm long, at base 4–6 cm wide; at apex 4–5 cm wide, greyish green with purplish orange tinge, clothed by a few brown hairs. *Auricle* small elongated, dark brown up to 2 mm high with many long silky, white bristles coiled. *Culm sheath blade* linear lanceolate, 5–7 cm long, up to 0.8 cm wide, purplish brown bearing few bristles near the rounded basal part, inner surface sparsely hairy, hairs silky white, outer surface glabrous. *Ligule* up to 2 mm long. *Leaf blade* linear lanceolate, 8–32 by 2.6–4.8 cm, base broadly attenuate, glabrous. *Leaf sheath* glabrous, margin serrulate, auricle small, 1 mm high with few bristles. *Inflorescence* indeterminate, terminating leafy branches. *Spikelets* arranged in a group of semiverticillate clusters at each node, thin, up to 1.2 cm long, 1-flowered. *Lemma* membranous, up to 9 by 4 mm, bearing a rachilla extension at the base. *Palea* membranous, up to 7 by 5 mm, apex bifurcated. *Lodicules* 3, unequal, 2 large (3 by 2 mm, 3 by 3 mm) and one small (2 by 1 mm), margins and apices toothed. *Stamens* 6. *Filaments* free. *Anthers* 2.5–3 mm long, apex obtuse, unequal, with fine hairs. *Ovary* slender, glabrous. *Style* flattened up to 1 cm long. *Stigma* 3, unequal, plumose, tufted. *Caryopsis* up to 15 by 4 mm with a globular basal part and a slightly bent beak.

Distribution — India, Andaman Islands, North Andaman, Saddle Peak.

Ecology — Occurring in hilltop stunted evergreen forests, altitude 350–732 m.

Flowering & fruiting — Flowering occurs irregularly throughout the year.

Etymology — This species is named after the collection locality, Andaman Islands, which is a treasure house of rare and endemic plant species.

Note — *Schizostachyum andamanicum* is similar to *S. gracile* (Munro) Holttum in general appearance and culm sheath structure, but it differs from the latter in having a highly straggling culm, short internodes (up to 20 cm), a well-marked nodal line with a spongy ring, short anthers with obtuse apex and a fringe of fine hairs, unequal stigma and caryopsis with a slightly bent beak (Table 1).

2. *Schizostachyum kalpongianum* M. Kumar & Remesh, *spec. nov.* — Fig. 2

Schizostachyo gracili simile facie et culmi vaginae natura, etc., culmo effuso, internodiis longis (ad 45 cm), culmi vaginae ligula marginibus undulatis, spiculis bifloris, caryopsidis pagina projecturis proprie angulosus distinctum. — Typus: M. Kumar & Remesh 20778 (holo KFRI; iso L, MH), India, Andaman Islands, North Andaman, Kalpong Damsite, ± 200 m, 22.05.2000.

Straggling sympodial bamboo, culms up to 5 m tall, sometimes arching over neighbouring trees. *Internodes* up to 40–45 cm long, hollow, thin-walled, 2–2.5 cm diam., pale green with brownish hairs when young, becoming dull green and glabrous with white powdery below the nodes. *Branch complements* typically a cluster of slender subequal branches. *Young shoots* pale orange red. *Culm sheaths* 15–20 cm long, 9–14 cm wide at the base, rigid, orange red with golden brown to dark brown hairs. *Auricle*

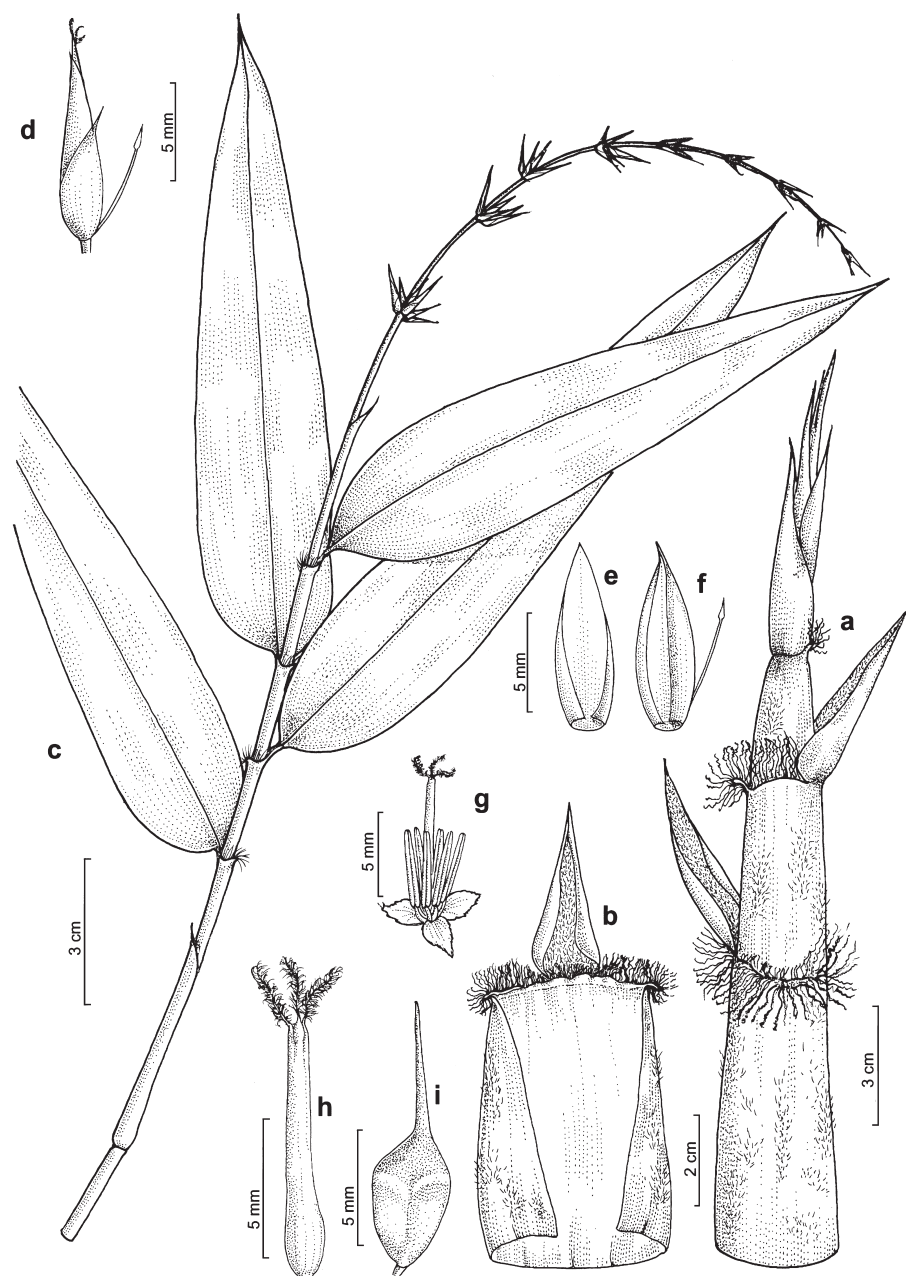


Fig. 2. *Schizostachyum kalpongianum* M. Kumar & Remesh. a. Young shoot; b. culm sheath; c. flowering twig; d. spikelet; e. lemma; f. palea with rachilla extension; g. floret with lodicule; h. ovary; i. fruit (all: Kumar & Remesh 20778).

conspicuous up to 4 mm high with long bristles, tip coiled up to 2.5–3 cm. *Blade* 8–12 cm long, 2.5 cm wide near the base, brownish orange, rigid, conical, outer surface glabrous, inner surface with silky white hairs (up to 9 mm), base slightly rounded, 1.6–1.8 cm wide at junction with the sheath, apex acuminate, from the inner side of the blade numerous silky white hairs originated behind the ligule. *Ligule* short, up to 4 mm long, margin wavy. *Leaves* linear lanceolate, base broadly attenuate, glabrous on both surfaces. *Leaf blade* 22–34 by 3.5–5 cm. *Leaf sheath* with appressed white hairs, hairs caducous. *Auricle* up to 2 mm long, bearing white bristles. *Inflorescence* indeterminate, terminating leafy branches. *Spikelets* arranged in a group of semiverticillate clusters at each node, thin, 1.2–1.3 cm long, 2-flowered, consisting of a sterile and fertile floret and a rachilla extension of 7–8 mm long, bearing a rudimentary floret (up to 2 mm long). *Lemma* 7 by 4 mm. *Palea* 8–9 by 5–6 mm, glabrous, apex fringed with fine hairs. *Lodicules* 3, equal up to 3 by 2 mm, ovate, apex acuminate, margin serrate. *Stamens* 6. *Anthers* up to 5 mm long, apex rounded. *Filaments* free. *Ovary* tubular, glabrous, 9 mm long. *Style* glabrous with well-marked stigmatic base, bearing 3 short stigmas at apex. *Stigma* equal, pinkish and highly plumose. *Caryopsis* 15–18 by 2–6 mm, ovoid, rounded basal part an acute tip with a long beak, surface with angular projections, glabrous.

Table 1. Distinctions between *Schizostachyum gracile*, *S. andamanicum* and *S. kalpongianum*.

characters	<i>S. gracile</i>	<i>S. andamanicum</i>	<i>S. kalpongianum</i>
culm	erect, 1.5–2 cm diam. with drooping tips	highly straggling, 1.2–1.8 cm diam.	straggling, 2–2.5 cm diam.
internode	25–35 cm long, node smooth	18–20 cm, nodal line with a ring of spongy tissue	40–45 cm, node smooth
culm-sheath	blade broadly triangular, inner surface glabrous	blade linear lanceolate, inner surface of the blade sparsely hairy, hair silky white	blade broadly triangular, in between the juncture of ligule and blade a row of silky white hairs, hairs up to 9 mm long, inner surface of the blade densely clothed with long silky white hairs
auricle	lobes up to 5 mm high, bristles up to 8 mm long	lobes up to 2 mm high, bristles up to 1.5 cm long	lobes 4 mm, bristles up to 3 cm long
ligule	5 mm high with a fringe of fine hairs	up to 2 mm high, glabrous	up to 4 mm high, margin wavy, glabrous
spikelet	1-flowered	1-flowered	2-flowered
palea	12 mm long, apex acute, sparsely hairy	7 mm long, apex bifurcated, glabrous	9 mm long, apex acute, fringed with fine hairs
anthers	acute at apex, 4 mm long	obtuse at apex, up to 3 mm long, fringed with fine hairs	obtuse at apex, up to 5 mm long, glabrous
stigma	equal	unequal	equal
caryopsis	surface smooth, beak straight	surface smooth, beak slightly bent	surface with angular projections, beak straight
lodicules	equal	unequal	nearly equal

Distribution — India, Andaman Islands, North Andaman, Kalpong Damsite, Pani-ghat, Bikentikri, Aerial Bay and Kalighat.

Ecology — Growing near the ecotone of moist deciduous forest at an altitude of 50–250 m.

Flowering & fruiting — Flowering occurs irregularly throughout the year.

Etymology — This species is named after the type locality, Kalpong.

Notes — 1. *Schizostachyum kalpongianum* is similar to *S. gracile* (Munro) Holttum in appearance and nature of culm sheath etc. but it is distinct from the latter in having a straggling culm and long internodes (up to 45 cm), characteristic features of culm sheath such as ligule, blade and caryopsis oblong with angular projections (Table 1).

2. *Schizostachyum kalpongianum* is also closely related to *S. andamanicum* in appearance but differs in having a less straggling culm habit, large culms with long internodes (up to 45 cm), conical blade with silky white to golden brown hairs on the inner surface, a fringe of silky white hairs in between the blade juncture and ligule, equal sized stigma and lodicule, caryopsis with angular projections and a straight beak.

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REFERENCES

- Brandis, D. 1906. Indian Trees. London.
- Dransfield, S. 1983. Notes on *Schizostachyum* (Gramineae—Bambusoideae) from Borneo and Sumatra. Kew Bull. 38: 321–332.
- Dransfield, S. 2000. *Schizostachyum khoonmengii*, a new species of bamboo (Poaceae—Bambusoideae) from Brunei Darussalam. Kew Bull. 55: 491–494.
- Gamble, J.S. 1896. The Bambuseae of British India. Ann. Roy. Bot. Gard. Calcutta 7.
- Munro, W. 1868. A monograph of the Bambusaceae. Trans. Linn. Soc. London 26: 1–157.
- Nees von Esenbeck, C.G.D. 1829. *Agrostologia Brasiliensis seu descriptio graminum in imperio brasiliensis huc usque detectorum*. Stuttgart & Tübingen.
- Ohrnberger, D. 1999. The bamboos of the world: 330–336. Elsevier, Amsterdam, The Netherlands.
- Parkinson, C.E. 1921. A forest flora of the Andaman Islands: 271–272. Dehra Dun.
- Wong, K.M. 1995. The bamboos of Peninsular Malaysia: 163–181. FRIM, Kepong, Kuala Lumpur.