

## New species and distribution record of *Schizostachyum* (Poaceae, Bambusoideae) from Indonesia

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### Abstract

*Schizostachyum sumpurkudusense* Ritonga (Poaceae, Bambusoideae), a newly described bamboo species from Sumatra, Indonesia, is presented here along with an illustrations. This species bears similarities to *Schizostachyum hantu* S.Dransf. from Borneo (Sarawak, Malaysia) morphologically, particularly in having prominent culm and leaf sheath auricles with long bristles. However, it can be distinguished by several key features. Culm sheath ligules of *S. sumpurkudusense* are entire and glabrous, unlike the short, bristled ligules of *S. hantu*. Moreover, the culm sheath blades of *S. sumpurkudusense* are spreading, whereas they are erect when young and later become deflexed in *S. hantu*. The adaxial surface of the blades at the base of *S. sumpurkudusense* is either glabrous or occasionally bears scattered light brown to white hairs, contrasting sharply with the dense, long white hairs found in *S. hantu*. The manuscript includes a detailed description, photographs, illustrations, a distribution map, preliminary conservation status, and a comparative table with the most similar species. On the other hand, *S. hantu* was previously only known from Sarawak, Malaysian Borneo, and was absent from the Indonesian part of Borneo (Kalimantan). Recent exploration in East Kalimantan, Indonesia, and based on specimen examination at the Herbarium Wanariset (WAN), confirmed the presence of *S. hantu* in Kalimantan. Thus, this marks the first official record of *S. hantu* in Indonesia, increasing the number of known *Schizostachyum* species in the country.

**Key words:** Borneo, new record, new species, *Schizostachyum*, Sumatra, Sumpur Kudus, taxonomy

### Introduction

*Schizostachyum* Nees von Esenbeck (1829: 535) is a genus of bamboo (Poaceae, Bambusoideae) first described in 1829 (Yang *et al.* 2007) based on *Schizostachyum blumei* Nees von Esenbeck (1829: 535). Morphologically, *Schizostachyum* is easily recognizable by its clumping growth habit (sympodial), thin-walled culms that are generally straight with long internodes (often exceeding 1 meter in length), often with slender dropping top, or more or less scandent (Holtttum 1967). Just below the culm nodes, pale appressed hairs and a white waxy ring are typically present. The leaf sheath auricles usually bear dense, straight bristles, and much of the abaxial of the leaf blade is often pubescent. The branching of *Schizostachyum* features several slender sub-equal branches. The inflorescences are located at the terminal of leafy branches, consisting of slender spikelets.

The distribution of *Schizostachyum* spans tropical and subtropical area, ranging from Madagascar, southern China, India, to Malesia and the Pacific Islands, with a notable concentration of species in Thailand, Malaysia and Indonesia (Dransfield 1992; Xia 1993, 1996; Wong 1995; Widjaja 1997; Ohrnberger 1999; Xia & Stapleton 2006; Yang *et al.* 2007; Tran *et al.* 2010; Vorontsova *et al.* 2016; Damayanto 2024; Sungkaew *et al.* 2024; POWO 2025). Globally, there are 74 species of *Schizostachyum* (POWO 2025). According to Widjaja (1997, 2019), Indonesia is home to 24 to 26 species of *Schizostachyum*. Ritonga *et al.* (2024) further reported that Sumatra alone hosts 19 species of *Schizostachyum*, nine of which are endemic to the island.

During field exploration in West Sumatra, Indonesia, in August 2024, we encountered a flowering *Schizostachyum* species. Initially, we suspected the specimen to be *S. hantu* Dransfield (1983: 327), a bamboo species endemic to Borneo (reported only in Sarawak, Malaysia) (*see* Dransfield 1983) due to similarities in the culm- and leaf-sheath auricles. However, after examining the type specimens of similar *Schizostachyum* species, analysing specimens from Borneo and Sumatra, and reviewing relevant literature (McClure 1936; Holttum 1953; Dransfield 1983; Widjaja 1997; Damayanto & Widjaja 2016; Muzakki 2020; Muzakki *et al.* 2020), we confirmed that the specimen from West Sumatra represents a new species of *Schizostachyum*, which we describe as follows.

On the other hand, a bamboo exploration was also conducted in Indonesian Borneo, specifically in East Kalimantan, in October 2024. Supported by observations of specimens at the Herbarium Wanariset in East Kalimantan, we discovered a *Schizostachyum* species. Upon identification, the specimen was confirmed to be *S. hantu*. This marks the first recorded occurrence of *S. hantu* in Indonesia, officially establishing it as a new record for the country, as reported in this study.

## Material & Methods

Bamboo exploration was conducted in West Sumatra, Indonesia, in August 2024 and in East Kalimantan, Indonesia, in October 2024. During this fieldwork, bamboo samples were collected following the method outlined by Rugayah *et al.* (2004) and processed into herbarium specimens according to Djarwaningsih *et al.* (2002). Photographs of the fresh specimens were also taken. Herbarium specimens were deposited at the Herbarium Universitas Andalas (ANDA) and Herbarium Bogoriense (BO).

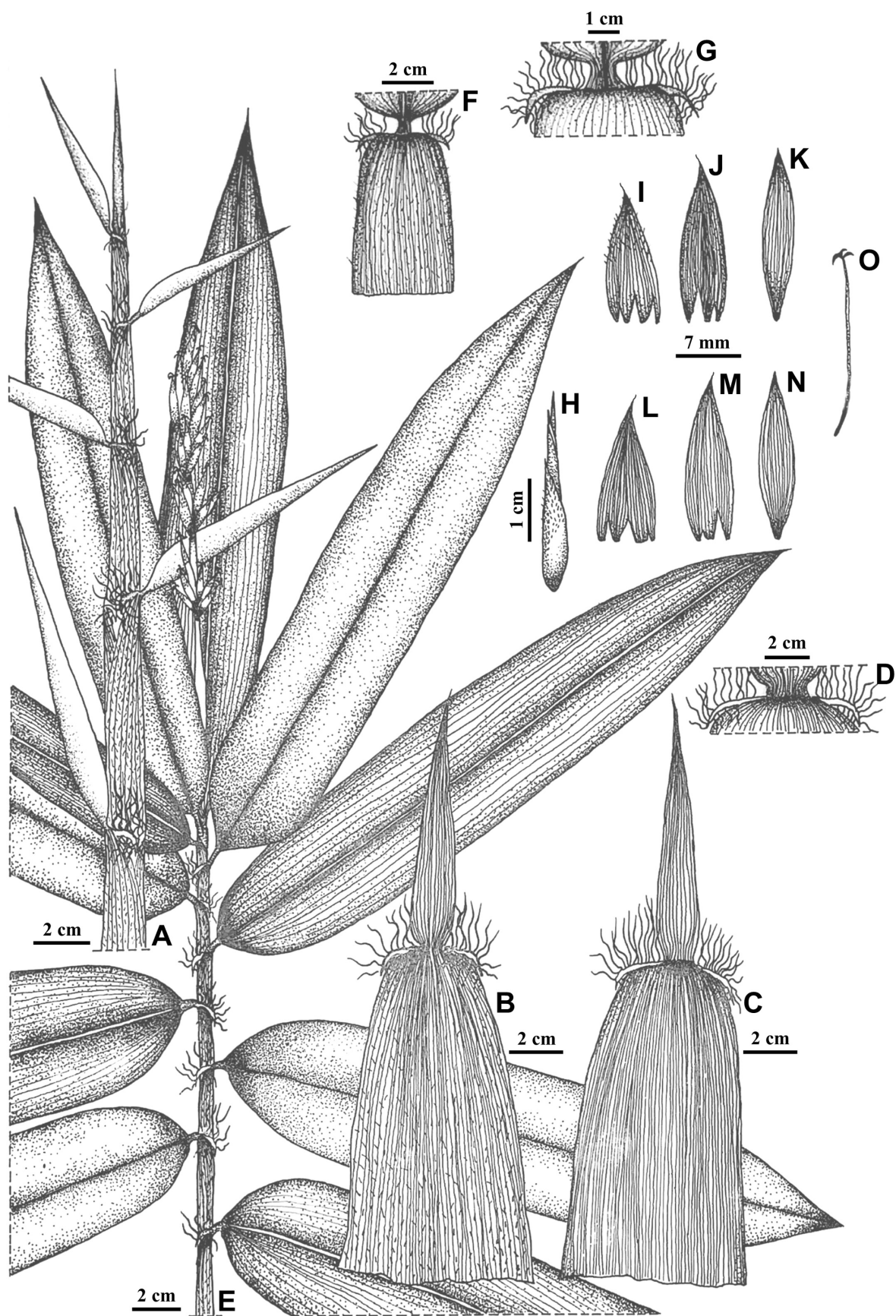
Specimens were identified by comparing them with type specimens, reference specimens held at ANDA, BO, and Herbarium Wanariset (WAN), relevant literature (McClure 1936; Holttum 1953; Dransfield 1983, 2000; Widjaja 1997; Kumar & Remesh 2003; Tran *et al.* 2010, 2012; Wong 2015; Damayanto & Widjaja 2016; Tien *et al.* 2016; Merklinger *et al.* 2017; Cai *et al.* 2020; Muzakki 2020; Muzakki *et al.* 2020; Ng *et al.* 2022), and high-resolution digital images from online databases (Damayanto & Irsyam 2022). Herbarium codes were assigned in accordance with the Index Herbariorum (Girmansyah *et al.* 2018; Thiers 2025). A distribution map was generated using QGIS version 3.16 (QGIS 2025). The conservation status was assessed based on the IUCN (2024) Red List criteria, with particular focus on criterion B (geographic range), which considers factors such as area of occupancy (AOO), extent of occurrence (EOO), and habitat quality. AOO and EOO were calculated using the Geospatial Conservation Assessment Tool (GeoCAT) (Bachman *et al.* 2011; GeoCAT 2025).

## Taxonomic Treatment

*Schizostachyum sumpurkudusense* Ritonga, *sp. nov.* (Figs. 1–3).

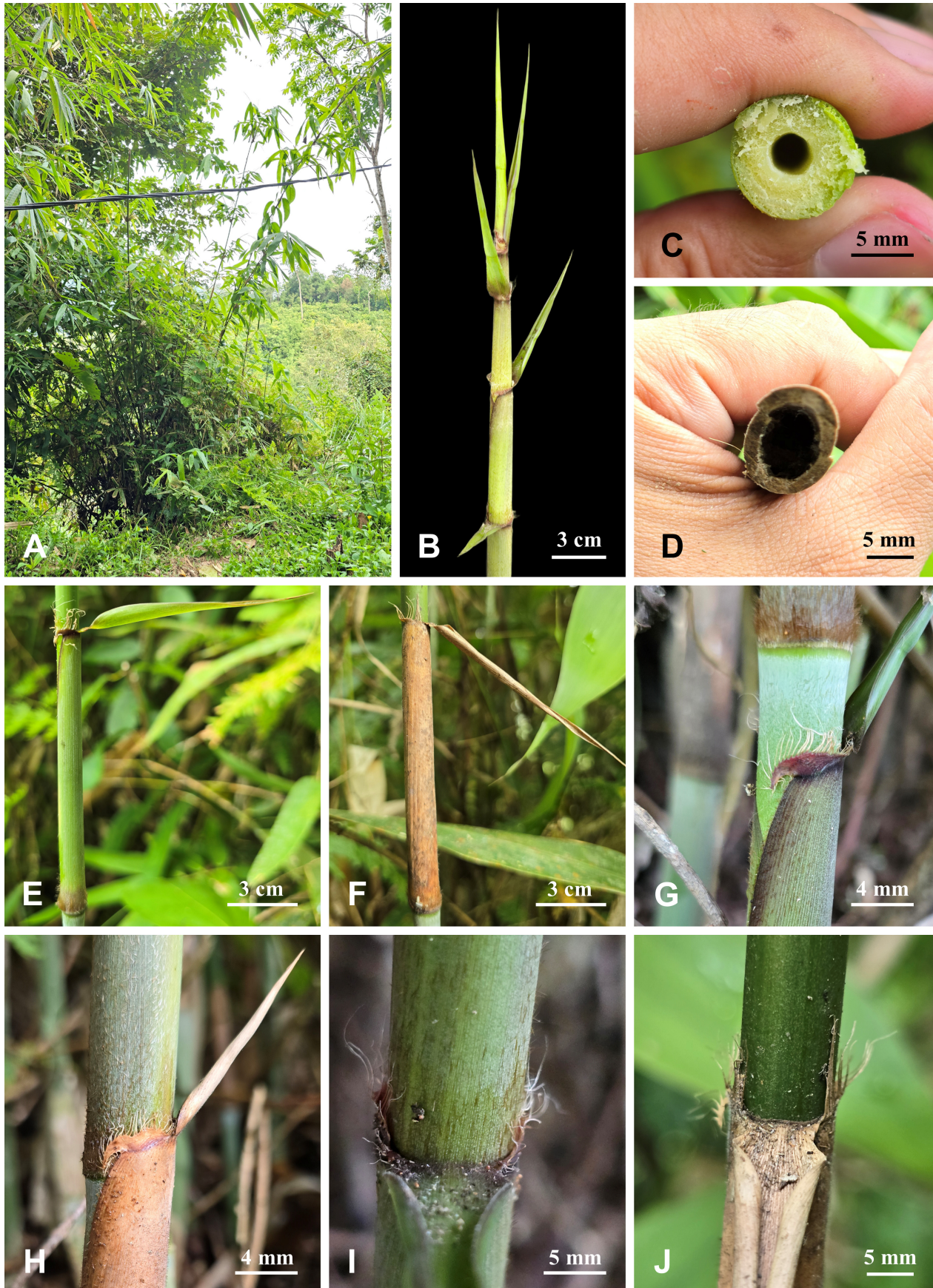
**Type:**—INDONESIA. Sumatra: West Sumatra, Sijunjung, Sumpur Kudus District, Sumpur Kudus Village, 0°27'16.0"S 100°53'36.4"E, 521 m, 9 August 2024, Muhammad Azli Ritonga 115 (holotype BO!, isotype ANDA!).

**Diagnosis:**—*Schizostachyum sumpurkudusense* is morphologically similar to *S. hantu* such as culm- and leaf- sheath auricles prominent with long bristles, but *S. sumpurkudusense* is distinguished from *S. hantu* by culm is green, up to 7 m high and relatively erect (vs. pale green, up to 20 m high, first erect then leaning with age with long drop tips on *S. hantu*); culm internodes are up to 57.5 cm long (vs. up to 100 cm long on *S. hantu*); culm diameter is up to 1.3 cm (vs. up to 2.5 cm on *S. hantu*); culm sheath ligules are entire and glabrous (vs. dentate with bristles on *S. hantu*); culm sheath blades are spreading (vs. erect when young, later deflexed on *S. hantu*); adaxially blades at the base are glabrous or sometimes with scattered light brown to white hairs (vs. dense long white hairs adaxially at the base on *S. hantu*); and leaf sheath ligules are glabrous (vs. with bristles on *S. hantu*).



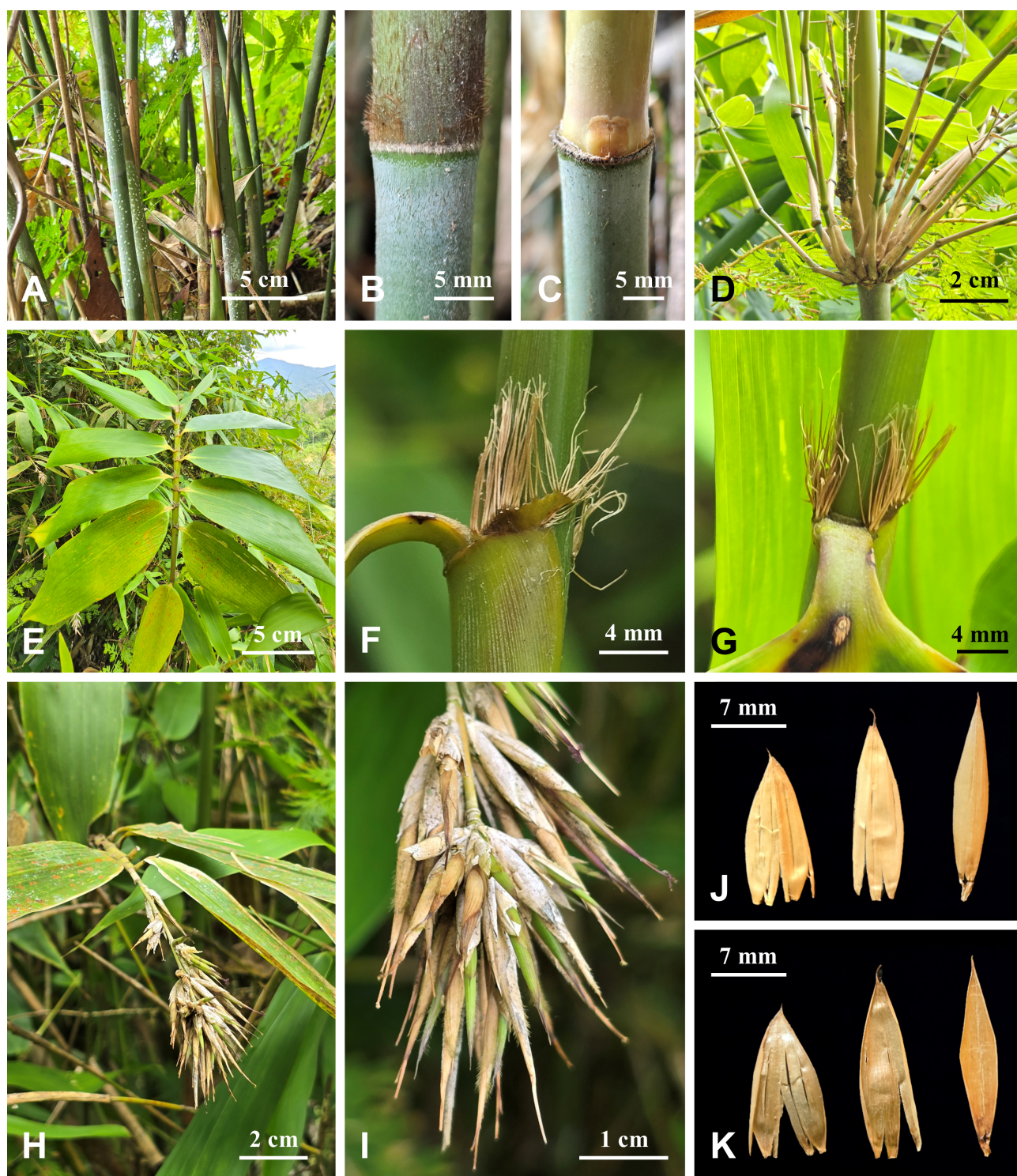
**FIGURE 1.** Line drawing of *Schizostachyum sumpurkudusense* Ritonga. A. shoot, B. culm sheath showing abaxial side, C. culm sheath showing adaxial side, D. detail of culm sheath auricles, E. leaves, F. leaf sheath, G. detail leaf sheath showing auricles, H. pseudospikelet, I. outer part of glume, J. outer part of lemma, K. outer part of palea, L. inner part of glume, M. inner part of lemma, N. inner part of palea, O. pistil (Drawn by Wardatul Aini).





**FIGURE 2.** *Schizostachyum sumpurkudusense* Ritonga. A. habit, B. shoot, C. cross section of young culm, D. cross section of mature culm, E. young culm sheath, F. old culm sheath, G. culm sheath auricle when young, H. culm sheath auricle when old, I. culm sheath ligule when young, J. culm sheath ligule when old (Photographed by Muhammad Azli Ritonga).





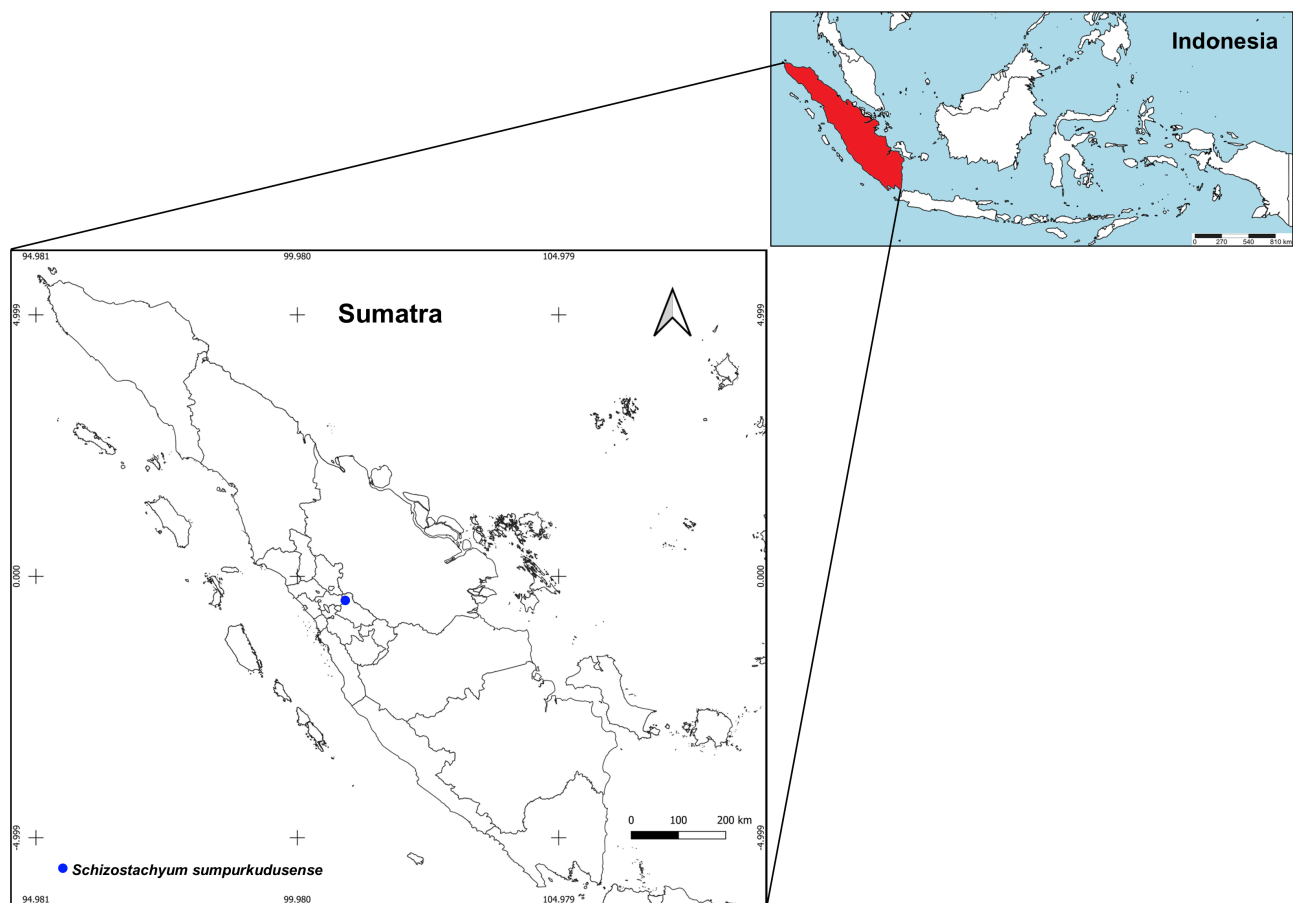
**FIGURE 3.** *Schizostachyum sumpurkudusense* Ritonga. A. culms, B. culm node showing brown hairs and white wax, C. branch bud, D. branches, E. leaves, F. leaf sheath auricle, G. leaf sheath ligule, H. inflorescence, I. group of pseudospikelets, J. from left to right: outer part of glume, lemma, and palea, K. from left to right: inner part of glume, lemma, and palea (Photographed by Muhammad Azli Ritonga).

Tufted clump, sympodial. Shoots green, covered by light brown hairs and scattered white wax, margin of sheaths blackish purple, blades erect to spreading, junction between the base of the blades and the culm sheath proper purplish-green. Culms green, 5–7 m high, 1.2–1.3 cm in diameter, internodes 37.4–57.5 cm long, erect, wall 2–4 mm thin, near the culm nodes of young culms covered by pale appressed hairs and white wax. Branches consist of several slender, sub-equal branches. Culm sheath relatively persistent or tardily caducous, covered by long, light brown hairs particularly near the base, 20.6–24.1 × 6.9–24.1 cm, green with a purplish flush, especially in the upper part near the base of the blades when young, turning brown with age; auricles 2–3 mm high, prominent, curved outward with acute

tips (look like a sickle), dark purple when young, turning brown with age, bristles up to 7 mm long; ligules entire, up to 2 mm high, glabrous; blades  $8.8\text{--}11.3 \times 1.3\text{--}1.7$  cm, spreading, narrowly triangular to lanceolate with a narrow base, green with purplish flush near the base when young, turning brown with age, glabrous or sometimes covered by scattered light brown to white hairs adaxially particularly at the base, glabrous abaxially. Leaf blades  $29\text{--}37.3 \times 4.5\text{--}6$  cm, green, oblong-lanceolate, abaxial pubescent; auricles up to 2 mm high, prominent, curved outward with acute tips (look like a sickle), bristles 7–9 mm long; ligules entire, up to 1 mm high, glabrous. Inflorescence 5.6–10.1 cm long, terminating a leafy branches, bearing dense groups of pseudospikelets at the nodes of its axis; pseudospikelet 2.3–3.4 cm long, cylindrical with pointed tips, slender, green or green with purple tinges near the tip when young, becoming brown with age, covered by light brown to white hairs; glume c.  $1.4 \times 0.6$  cm with long acute tips, covered by light brown to white hairs on outer part; lemma c.  $1.3 \times 0.5$  cm long with long acute tips; palea c.  $1.2 \times 0.4$  cm long with acute tips; stamens 6; filament 6–6.5 mm long; style 1.4–3.1 cm long; stigma 3, feathery, purple. Fruits not available.

**Phenology:**—This species flower from August to December, with new shoots emerging from July to December.

**Distribution:**—This species is known to grow only in West Sumatra, specifically in Sumpur Kudus Village, Sumpur Kudus District, Sijunjung Regency (Fig. 4).



**FIGURE 4.** Distribution map of *Schizostachyum sumpurkudusense* Ritonga in West Sumatra.

**Habitat:**—This species grows on forest edges, roadsides, and cliff edges in open areas at an elevation of 521 meters above sea level (Fig. 5).

**Etymology:**—The specific epithet of the newly described species is derived from its type locality, Sumpur Kudus Village, West Sumatra, Indonesia.

**Uses and vernacular name:**—The culms of *S. sumpurkudusense* are commonly used as stakes to support chili or cucumber plants. The vernacular name of this species in the Minangkabau language is *buluah mounti*.

**Provisional conservation status assessment:**—*Schizostachyum sumpurkudusense* is endemic to West Sumatra and is known to exist in only a single clump. The AOO for *S. sumpurkudusense* is 4 km<sup>2</sup>, which falls under the criteria for Critically Endangered (CR) according to the IUCN Red List criteria B. Meanwhile, the EOO is recorded as 0 km<sup>2</sup>. The observed clump consists of no more than 90 mature culms. This species grows along roadsides and near cliffs, making it vulnerable to threats such as landslides. Additionally, future road expansion could lead to the loss of this bamboo clump. Its use in local agriculture poses another potential threat through overexploitation. However, these



threats have not yet been precisely measured. Accordingly, based on the IUCN (2024) criteria, *S. sumpurkudusense* is provisionally categorized as Near Threatened (NT), as the specific threats to its existence remain unclear and further surveys are needed to confirm its presence in other locations.



**FIGURE 5.** Habitat of *Schizostachyum sumpurkudusense* Ritonga in West Sumatra (Photographed by Muhammad Azli Ritonga).

**Notes:**—*Schizostachyum sumpurkudusense* shares similarities with *S. hantu* and also *S. latifolium* Gamble (1896: 117). A comparison of the morphological characteristics among *S. sumpurkudusense*, *S. hantu*, and *S. latifolium* is presented in Table 1.

**TABLE 1.** Morphological comparisons of *S. sumpurkudusense*, *S. hantu*, and *S. latifolium*.

Characters	<i>S. sumpurkudusense</i>	<i>S. hantu</i>	<i>S. latifolium</i>
Shoots	Green, covered by light brown hairs and scattered white wax, margin of sheaths blackish purple	Pale green, covered by scattered white to brown hairs, margin of sheaths blackish near the tips	Light green, covered by scattered brown hairs
Culms	Green, 5–7 m high, relatively erect	Pale green, 15–20 m high, first erect then leaning with age with long drop tips	Light green, 3–6 m high, erect with long arching tips
Culm internodes	37.4–57.5 cm long	80–100 cm long	35–80 cm long
Culm diameter	1.2–1.3 cm	1.5–2.5 cm	1–2.5 cm
Culm sheath auricles	Prominent, curved outward with acute tips, with bristles	Prominent, easily shed, with bristles	Prominent, with bristles
Culm sheath ligules	Entire and glabrous	Dentate with bristles	Entire with bristles

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TABLE 1. (Continued)

Characters	<i>S. sumpurkudusense</i>	<i>S. hantu</i>	<i>S. latifolium</i>
Culm sheath blades	Spreading, narrowly triangular to lanceolate, scattered light brown to white hairs adaxially at the base	Erect when young, later deflexed, broadly lanceolate, dense long white hairs adaxially at the base	Erect first, later deflexed, hairy adaxially near the base
Leaf sheath auricles	Prominent, curved outward with acute tips, with bristles	Prominent, easily shed, with long bristles	Prominent, with long bristles
Leaf sheath ligules	Entire and glabrous	Small with bristles	Entire with bristles
Inflorescence	5.6–10.1 cm long	About 10 cm long	20–30 cm long
Pseudospikelets	2.3–3.4 cm long	About 2.4 cm long	2–3 cm long

*Schizostachyum hantu* Dransfield (1983: 327) (Fig. 6).

**Type:**—MALAYSIA. Borneo: Sarawak, 1<sup>st</sup> division, near Lundu, 8 May 1981, *S Dransfield SD803* (holotype K!, isotype BO!, KEP, L!, SAR, US).

**Distribution:**—*Schizostachyum hantu* was initially known endemic to Sarawak, Borneo (Dransfield 1983; Dransfield & Widjaja 1995), particularly around Lundu, Mount Matang, and Mount Buri. Later, the species was also identified in Kpg. Siru Darat, Sematan, Sarawak, based on the specimen *Runi & Yü P.C. S61178* (K). Recent surveys in Indonesian Borneo, specifically in East Kalimantan, along with observations of specimens in Herbarium Wanariset, confirmed the presence of this species in the forests of Samboja District, Kutai Kartanegara Regency, and North Balikpapan District, Balikpapan City. This marks the first official record of *S. hantu* in Indonesia, expanding its known range beyond Malaysia. The global distribution of *S. hantu* is illustrated in Fig. 7.

**Habitat:**—In Sarawak, *S. hantu* inhabits forests and forest edges, secondary forests, riverbanks, mountainous areas, and near villages at elevations of 20–700 m above sea level (Dransfield 1983). Meanwhile, in East Kalimantan, this species has been found growing in forests, along forest edges, near lakes, and by roadsides (Fig. 8) at elevations of 29–95 m above sea level.

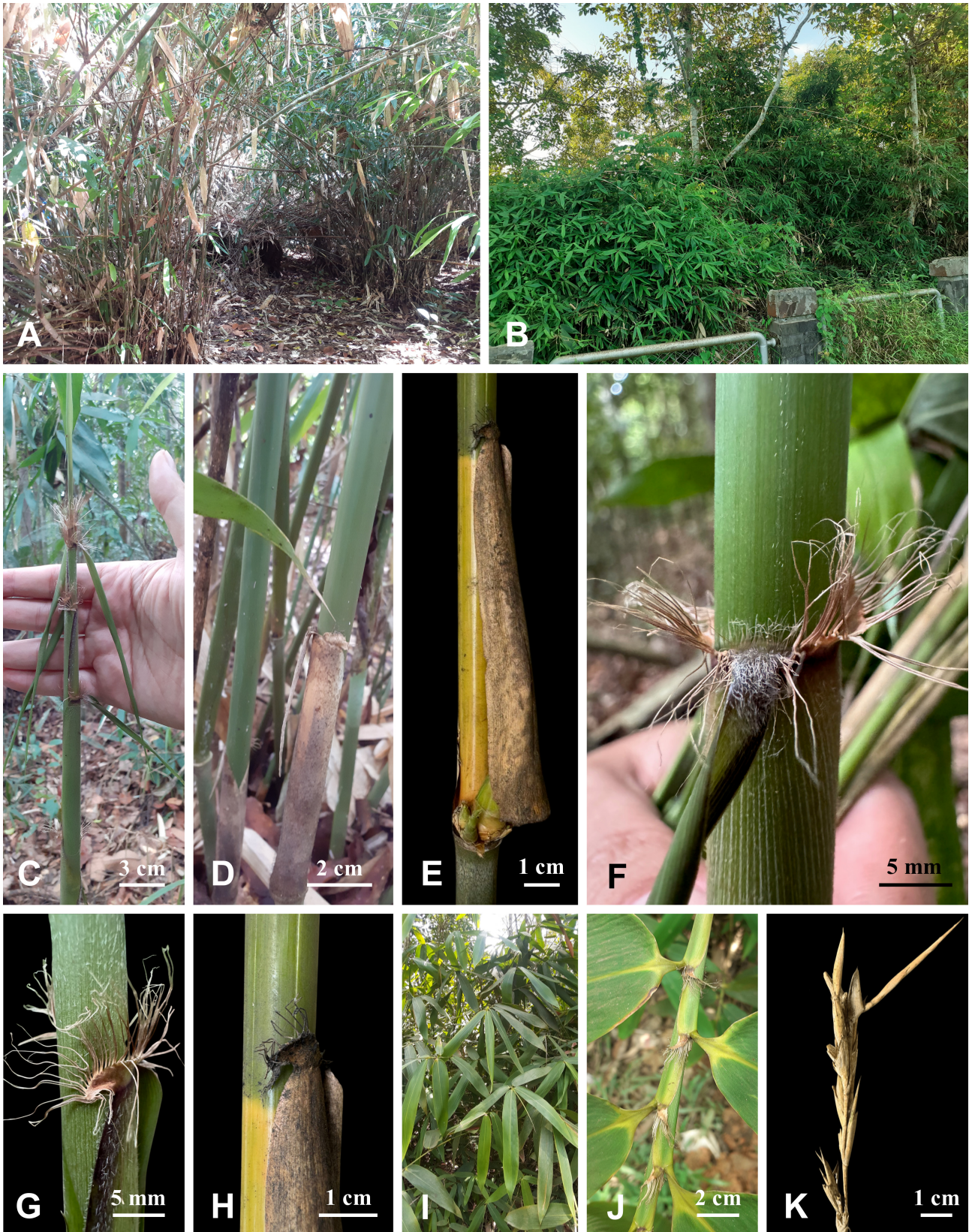
**Phenology:**—This species flower in April, May, October, and December with new shoots emerging in May and October.

**Uses and vernacular name:**—The culms of *S. hantu* in Kalimantan are commonly used as stakes for planting peanut crops, fishing rods, and sticks to scare off orangutans. In Malaysia, they are used for making baskets (Dransfield & Widjaja 1995) and are associated with superstitious beliefs to protect homes. The vernacular name for this species in Kalimantan is *turus* (East Kalimantan), while in Malaysia it is known as *tumiang balu* (Selakau) or *buluh hantu* (Iban).

**Provisional conservation status assessment:**—*Schizostachyum hantu* is a bamboo species endemic to Borneo, specifically in Sarawak, Malaysia, and East Kalimantan, Indonesia. While its AOO is relatively small at 32 km<sup>2</sup>, classifying it as Endangered (EN) according to IUCN Red List criteria B, its EOO is much larger at 41,372 km<sup>2</sup>, placing it in the Near Threatened (NT) category according to IUCN Red List. This species typically grows along roadsides and forest edges, making it vulnerable to threats like habitat loss due to deforestation and road expansion. Additionally, its use by local communities could lead to overexploitation. However, the exact extent of these threats remains uncertain, especially in East Kalimantan, where significant populations exist within protected forest areas. Given the abundance of this species in East Kalimantan and its presence in protected areas, the IUCN has provisionally categorized *S. hantu* as Least Concern (LC).

**Notes:**—In its protologue (Dransfield 1983), the type specimen of *S. hantu* (*S Dransfield SD803*) is recorded as having been collected on 2 May 1981. However, the labels on the specimens of *S Dransfield SD803* in BO, K, and L indicate the collection date as 8 May 1981. On the other hand, there was an error in the transcription of the collectors' names on specimen *Widyaya & Rugaya et al. EAW4784* (WAN), which should have been Widjaja & Rugayah *et al.*

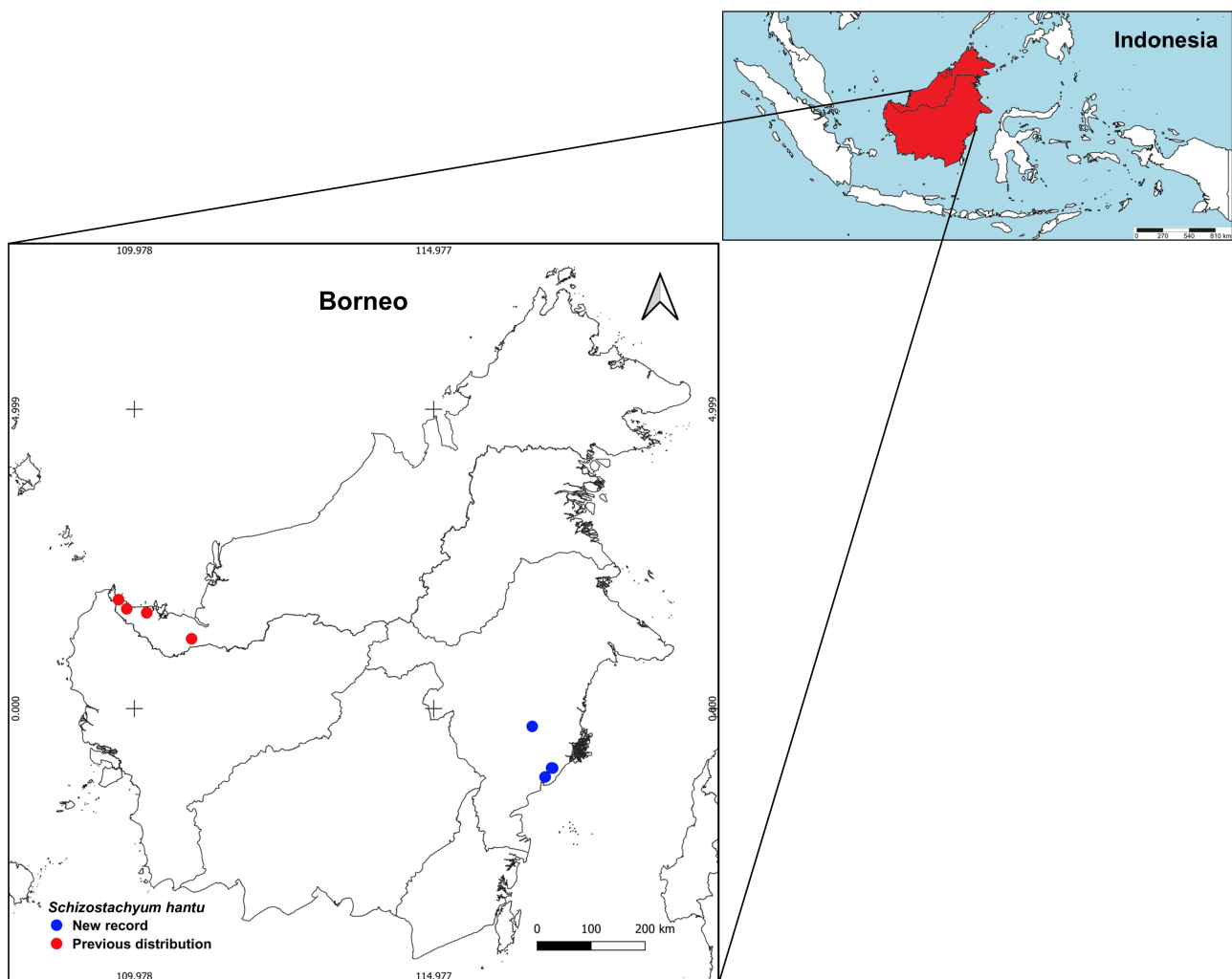




**FIGURE 6.** *Schizostachyum hantu*. A–B. habit, C. shoot, D. culms, E. culm sheath, F. culm sheath showing ligule and inner part of blade, G. culm sheath auricle when young, H. culm sheath auricle when old, I. leaves, J. detail of leaf sheath auricles, K. inflorescence (Photographed by I Putu Gede P. Damayanto [A–D, I–K] and Rani Asmarayani [E–H]).



**Specimens examined:**—MALAYSIA. Sematan, Kpg. Siru Darat, 18 January 1991, *Runi & Yii P C S61178* (K: barcodes K003902032, K003902032); Sarawak, 1<sup>st</sup> Division, Kuching, G. Matang, 700 m a.s.l., 8 April 1981, *S Dransfield SD789* (K: barcodes K003902033, K003902034; L: barcodes L.1328608, L.1328609); Sarawak, 1<sup>st</sup> Division, near Lundu, 8 May 1981, *S Dransfield SD803* (BO; K: barcodes K000290711, K000290712, K000795417; L: barcodes L.0050072, L.0050073); Sarawak, 1<sup>st</sup> Division, Gn. Buri, 700 m a.s.l., 22 May 1981, *S Dransfield SD817* (L: barcodes L.0580160, L.1328610). INDONESIA. East Kalimantan, Kota Bangun, Sungei Peddang, 50 m a.s.l., 10 December 1992, Widyaya [E A Widjaja] & Rugaya [Rugayah] *et al.* EAW4784 (WAN); Kalimantan Timur Province, Kutai Kartanegara Regency, Samboja District, Forest Area with Special Purpose or KHDTK (Kawasan Hutan dengan Tujuan Khusus), km 1.5, 0°59'36.0"S 116°57'51.0"E, 70 m a.s.l., 15 October 2024, *I P G P Damayanto, R Asmarayani, S Nurjannah, M T Rengku, & Muryani IPGPD1893* (BO); Kalimantan Timur Province, Kutai Kartanegara Regency, Samboja District, Forest Area with Special Purpose or KHDTK (Kawasan Hutan dengan Tujuan Khusus), km 4.5, Track Wartono Kardi, 0°59'25.0"S 116°56'48.4"E, 95 m a.s.l., 15 October 2024, *I P G P Damayanto, R Asmarayani, S Nurjannah, M T Rengku, & Muryani IPGPD1896* (BO); Kalimantan Timur Province, Kota Madya Balikpapan, Balikpapan Utara District, Kelurahan Karang Joang, Sungai Wain Village, Kelompok Tani Hutan (KHT) Hutan Lestari UPTD Balikpapan, camp ground, 1°08'25.6"S 116°50'27.1"E, 35 m a.s.l., 18 October 2024, *I P G P Damayanto, R Asmarayani, S Nurjannah, A Sugianto, & R I Saputra IPGPD1904* (BO); Kalimantan Timur Province, Kota Madya Balikpapan, Balikpapan Utara District, Kelurahan Karang Joang, Sungai Wain Village, Kelompok Tani Hutan (KHT) Hutan Lestari UPTD Balikpapan, near Lake Pertamina, 1°08'31.2"S 116°50'14.4"E, 29 m a.s.l., 18 October 2024, *I P G P Damayanto, R Asmarayani, S Nurjannah, A Sugianto, & R I Saputra IPGPD1906* (BO).



**FIGURE 7.** Distribution map of *Schizostachyum hantu* in Borneo.





**FIGURE 8.** Habitat of *Schizostachyum hantu* in Borneo (Photographed by I Putu Gede P. Damayanto).

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