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Dendrocalamus nianhei (Poaceae: Bambusoideae), a new species from northern Vietnam

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Dendrocalamus nianhei V.T. Nguyen & V.L. Le *sp. nova* (Poaceae: Bambusoideae) is described and illustrated. It resembles *D. sinicus*, but differs mainly by its shorter pseudospikelets, 12–16 mm long; shorter lemma, 9.7–14.9 mm long; glabrous culm internodes; undulate and bristly culm sheath auricles; and entire leaf sheath ligule.

Dendrocalamus is a fairly large genus in the subfamily Bambusoideae of Poaceae, including about 60–70 species in the subgenera *Sinocalamus* and *Dendrocalamus* (Hsueh & Li 1996, Ohrnberger 1999, Li & Stapleton 2006, Nguyen *et al*. 2011). The genus mainly occurs in the tropical and subtropical regions of Asia, with the diversity center in southern China, northern Vietnam, and Malaysia (Nguyen 1989, 1990, 1991, Ohrnberger 1999, Li & Stapleton 2006, Nguyen *et al*. 2011). Twenty-nine species of *Dendrocalamus* were recorded from Vietnam, but until now, only fourteen of them have been validly described (Nguyen 2006).

During the botanical expedition to Son La Province in 2004, one big-stature bamboo species with glabrous culms, an erect culm sheath and entire leaf sheath ligule drew our attention. The first author planted some living plants in the Cau Hai Bamboo Garden in the same year. These plants flowered in February 2012, and the flowering branches did not bear leaves. In addition to these individuals, it was also found and observed to flower in the Khao Mang Commune (Yen Bai Province) in 2008. After careful comparison with other species in *Dendrocalaus*, we could not place it in any of the previously described taxa, and it is thus here described as a new species.

Dendrocalamus nianhei V.T. Nguyen & V.L. Le, *sp. nova* (Figs. 1 and 2)

Type: Vietnam. Phu Tho Province, Doan Hung District, Chan Mong Commune, 21°31.890´N, 105°11.920´E, alt. 830 m, 10 February 2012 *Van Tho Nguyen NVT312* (holotype FSIV: Herbarium of Forest Science Institute of Vietnam; isotypes IBSC, FSIV-CH: Herbarium of Cau Hai Silvicultural Research and Experimental Centre of FSIV). — Paratypes: Vietnam. Son La Province, Mai Son District, Chieng Ban Commune, *Van Tho Nguyen NVT127* (FSIV, IBSC, FSIV-CH). Yen Bai Province, Mu Cang Chai District, Khao Mang Commune, *Van Tho Nguyen NVT185* (FSIV, IBSC, FSIV-CH); the same place, *Yong-Bing Guo 8D123, 8D124* (FSIV-CH, IBSC).

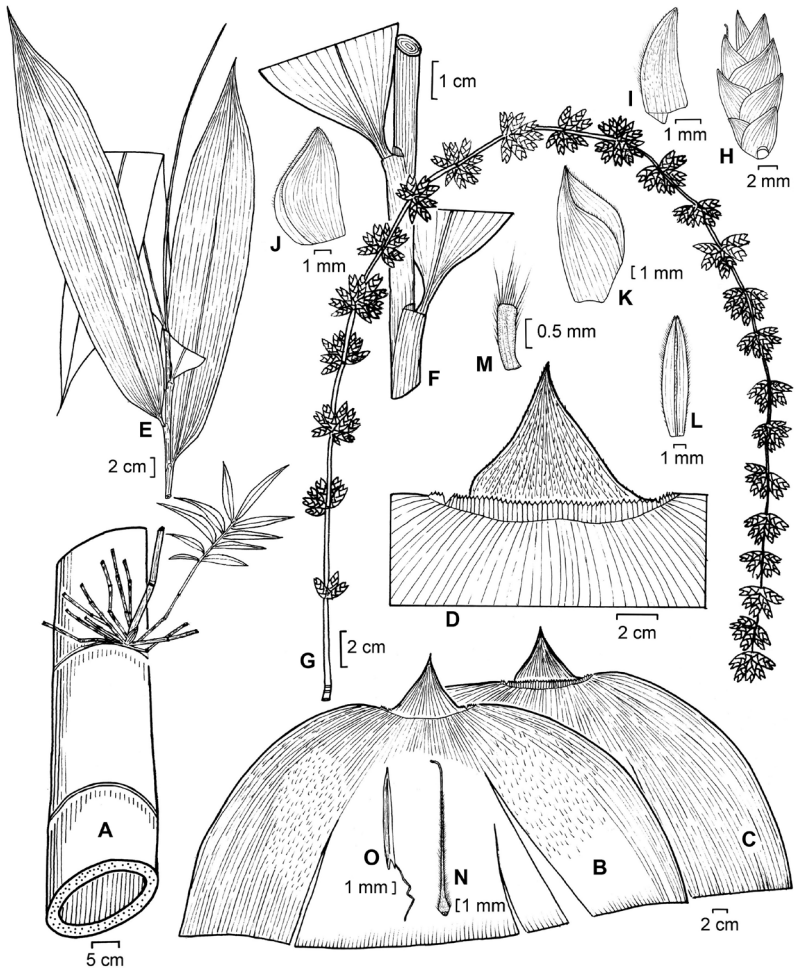

Fig. 1. *Dendrocalamus nianhei* (drawn from the holotype and the paratype NVT127). — **A**: Culm and branches. — **B**: Culm sheath (abaxial view). — **C**: Culm sheath (adaxial view). — **D**: Culm sheath ligule. — **E**: Leaf branch. — **F**: Leaf ligule. — **G**: Flowering branch. — **H**: Pseudospikelet. — **I**: Prophyll. — **J**: Glume. — **K**: Lemma. — **L**: Palea. — **M**: Lodicule. — **N**: Pistil. — **O**: Anther.

ETYMOLOGY. The specific epithet is derived from name of the bamboo taxonomist of IBSC, Prof. Dr. Xia Nianhe.

Arborescent bamboo, rhizomes pachymorph, short necked. Culms 20–22 m tall, 18–24 cm in diameter, apically pendulous; internodes 26–39 cm long, wall 3.0–4.0 cm thick, initially white powdery, intranode with a 7–9 mm high ring of brown velvet, infranode with a 3–5 mm high ring of brown velvet. Branches many at midculm internode, subequal; branching from 11th to 12th node up, about 2.5–3 m above ground. Culm sheaths caducous, proper leathery, 24–33 cm long, 55–69 cm wide, abaxially densely brown sericeous, margins thinly ciliate; apex concave, 23–30 cm wide; auricles small, margins undulate, bristly; ligule 7–9 mm high, margin serrulate; blade erect, garlic-shaped, short, 1/5–1/4 as long as sheath proper, adaxially dense setose, adaxially glabrous, margin setose, base extended toward both sides and joined with auricles, apex mucronate. Leaves (8–)10–14 per ultimate branch, sheaths yellow hairy, lustrous when dry; auricles absent; ligule 2–4 mm long, entire, glabrous; pedicel 8–9 × 2–3(–5) mm; leaf blade oblong-lanceolate, big one 52–56 × 7.2–12.5, small one 30–37 × 5–7 cm, base nearly rounded, adaxially glabrous, abaxially rough, apex acute, secondary veins 14–17 pairs. Inflorescence bracteate, iterauctant; flowering branches leafless, pendulous, internodes 1.5–5cm, with 3–8 clustered pseudospikelets at each node; pseudospikelet lanceolate, apex acute, 12–16 × 4–7 mm; prophyll triangular, 4.1–4.4 mm long, one-keeled, abaxially pubescent, keel long ciliate; florets 5–6, terminal floret perfect and each floret opening when mature;

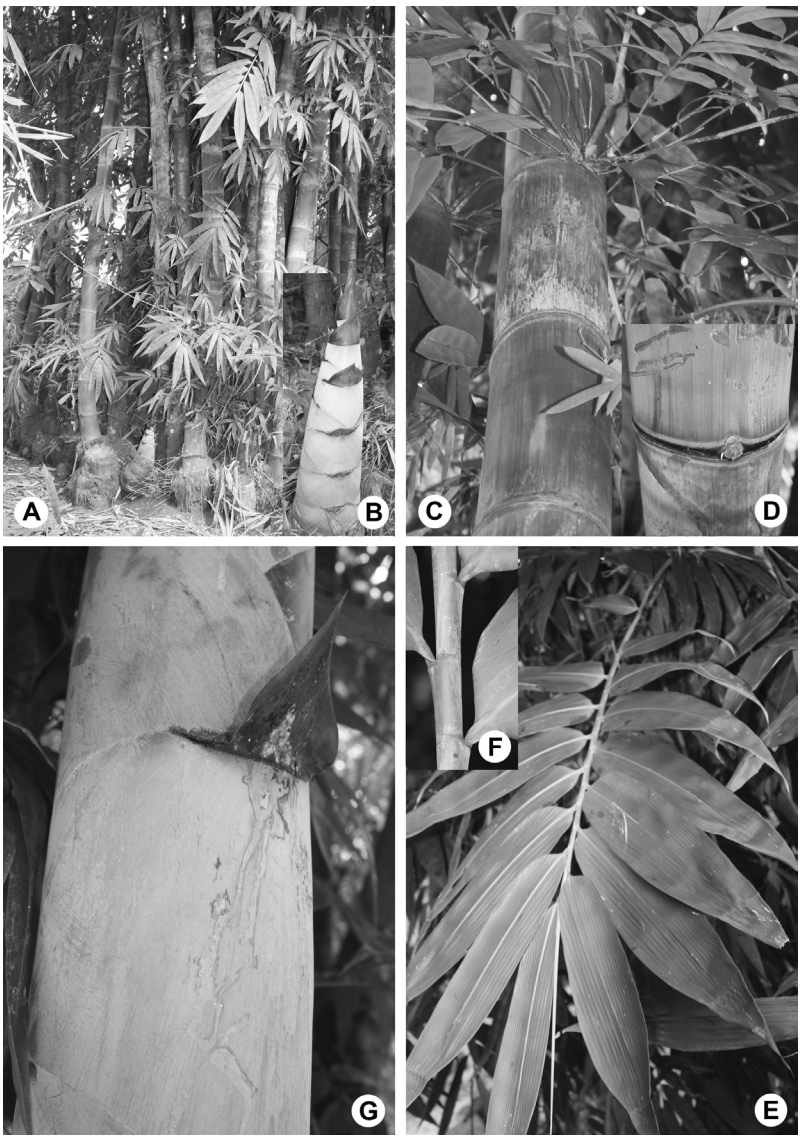

Fig. 2. *Dendrocalamus nianhei*. — **A**: Clump. — **B**: Young shoot. — **C**: Culm and branches. — **D**: Dormant bud. — **E**: Leaves. — **F**: Leaf ligule. — **G**: Culm sheath.

rachilla-internodes very short and not disarticulating. Glumes 3–4, 7.3–10.0 mm long, puberulous margins pubescent, many-veined, apex acute; lemmas broad ovate, 9.7–14.9 × 9.3–11.9 mm, apex mucronate, sometimes with a 0.4–0.5 mm long awn, both sides puberulous, many-veined; palea narrow lanceolate, 11.7–12.4 × 3.8–5.6 mm, 2-keeled, 4- or 5-veined between and without vein, rarely 2-veined on either side of keels, both side thinly pubescent, apex usually bifid; lodicules 0–2, usually 2 at uppermost floret. Anthers yellow, 7.4–8.0 mm long, exserted, apex acuminate, with several white hairs; filament free; stamens 6. Ovary ovoid, long hairy; stigma 1, hairless; pistil 11.6–13.6 mm long. Flowering in December and February, fruit unknown.

Dendrocalamus nianhei is similar to *D. sinicus* in general appearance, but differs in its shorter pseudospikelets, 12–16 mm long, shorter lemma, 9.7–14.9 mm long, glabrous culm, undulate and bristly auricles of culm sheath, and entire leaf ligule (*see* Table 1).

Habitat, phenology and distribution: Only known from three localities: Provinces of Son La, Yen Bai, Phu Tho, and cultivated at 768–1123 m altitude. It was introduced for conservation pur-

Table 1. Morphological comparison of *Dendrocalamus nianhei* with *D. sinicus.*

Character	*D. nianhei*	*D. sinicus*
Culm sheath auricles	small, undulate, bristly	absent
Culm	glabrous	brown velvety
Lemma	9.7–14.9 mm	17–25 mm long
Leaf sheath ligule	entire	sparsely dentate
Anthers	7.4–8 mm long	8–12 mm long
Pseudospikelet	12–16 mm long	30–35 mm long

poses to the Cau Hai Bamboo Garden (Phu Tho Province) from Son La Province in 2004 and it flowered there in February 2012. These plants also flowered in the Khao Mang Commune (Mu Cang Chai District, Yen Bai Province) in December 2008. *Dendrocalamus nianhei* thrives on moist soil, such as in creeks and at hill bases. New shoots are produced from August to October.

Dendrocalamus nianhei has been known since 2004 from the three localities. The type localities have a long history of intensive agriculture and critically declined forest resources in the recent decades. This species only consists of 1–2 clumps cultivated at each locality, and we estimated a total of fewer than 200 individuals for these populations. It seems probable that the natural populations of this species cannot be found.

Acknowledgments

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References

Hsueh, C. J. & Li, D. Z. 1996: *Dendrocalamus* Nees. — In: Keng, B. & Wang, Z. (eds.), *Flora reipublicae Popularis Sinicae* 9 (Poaceae): 162–164. Science Press, Beijing.

Li, D. Z. & Stapleton, C. 2006: *Dendrocalamus* Nees. — In: Wu, C. Y., Raven, P. H. & Hong, D. Y. (eds.), *Flora of China*, vol. 22 (Poaceae): 39–46. Science, Beijing & Missouri Botanical Garden, St. Louis.

Nguyen, H. N. 2006: *Bamboos of Vietnam*. — Agriculcutural Publishing House, Hanoi.

Nguyen, T. Q. 1989: The new species and nomenclature combinations in the genus *Sinocalamus (*Poaceae, Bambusoideae). — *Botanicheskii Zhurnal* 74: 1661–1663.

Nguyen, T. Q. 1990: New taxa of bamboos *(*Poaceae, Bambusoideae) from Vietnam. — *Botanicheskii Zhurnal* 175: 222–224.

Nguyen, T. Q. 1991: A new genus and the new nomenclatural combinations of bamboo species (Poaceae, Bambusoideae) from Vietnam. — *Botanicheskii Zhurnal* 76: 993–994.

Nguyen, V. T., Xia, N. H. & Le, V. L. 2011: *Dendrocalamus parvigemma* sp. nov. (Gramineae: Bambusoideae) from Vietnam. — *Nordic Journal of Botany* 29: 221–223.

Ohrnberger, D. 1999: *The bamboos of the world: annotated nomenclature and literature of the species and higher and lower taxa*. — Elsevier, Berlin.