



A new combination in *Dendrocalamus*
(Gramineae: Bambusoideae)

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Summary. A new combination *Dendrocalamus copelandii* (Gamble ex Brandis) N.H. Xia & Stapleton is made for a Burmese bamboo, according to a new circumscription of the genera *Bambusa* and *Dendrocalamus* based upon keeling of the synflorescence prophylls.

Holttum (1956) showed the pericarp-based distinction between *Bambusa* Schreber and *Dendrocalamus* Nees established by Munro (1868), and adopted by Bentham (1883), to be unsound. Soderstrom & Ellis (1988) remarked upon the need for better characters to separate these two genera. Other genera have been erected for intermediate species, but their delimitation has proven extremely difficult. McClure (1940) described one such genus, *Sinocalamus*, but later rejected it (1966).

Gamble was unsure as to whether this species should be placed in *Bambusa*, *Dendrocalamus* or even *Thyrsostachys* Gamble, and advised Brandis to describe it in *Bambusa* pending availability of better fertile specimens. Raizada (1948), when transferring it into *Sinocalamus* repeated McClure's opinion that *Sinocalamus* was not likely to remain sharply set off from *Bambusa* and *Dendrocalamus*. Chia & Fung (1980) reduced *Sinocalamus* to a synonym of *Dendrocalamus*, but returned this species to *Bambusa* in their new subgenus *Dendrocalamopsis*. Keng (1983) elevated *Dendrocalamopsis* to generic level, but as a genus it seems just as difficult to define consistently as *Sinocalamus*. Bennet & Gaur (1990), Tewari (1992), Negi & Naithani (1994) and Negi (1996) all enumerated this species as *Bambusa copelandii*.

Stapleton (1994) reported that the number of keels on the prophylls of the clusters of spikelets constituting the synflorescence could be used to provide a finite quantitative distinction between *Bambusa* and *Dendrocalamus*. Species of the former have broad prophylls (bud-scales) with two keels completely surrounding the synflorescence buds, while species of the latter have narrow single-keeled prophylls, and open buds. This floral character correlates well with vegetative characters and closely follows existing attribution of species. All species of *Bambusa* at K had previously been examined (Stapleton 1991), and it was found that only one species, *Bambusa copelandii* Gamble ex Brandis, did not fit this rule. During a revision of *Bambusa* (Xia 1995), a wider range of material was studied. *Bambusa copelandii* remains the sole species in the genus with single-keeled prophylls subtending the synflorescence. It also has several other characters of *Dendrocalamus*, and it is now felt justified to transfer it from *Bambusa* into that genus.

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Stapleton & Xia (1997) discussed delimitation of *Bambusa* and *Dendrocalamus* further and listed several characters that can be used to distinguish between them. The characters that place this species in *Dendrocalamus* include the furry culm wax, large branch size, production of aerial roots, absence of auricles, large leaf size, lack of rhachilla disarticulation, and pubescence of the lemmas. The loose synflorescence branching and presence of lodicules would place it closer to *Bambusa* but the unreliable nature of these particular characters for separation of the genera has been pointed out (Stapleton & Xia 1997). This species, like others apparently intermediate between *Bambusa* and *Dendrocalamus*, also has several characteristics of *Gigantochloa* Munro. However, they lack the connate filaments described by Munro (1868), which conventionally characterize that genus (Wong 1995), although they may have long empty terminal lemmas.

Bambusa copelandii was briefly described by Brandis without citation of specimens (1906). Gamble had received seeds collected by Copeland in 1896 in an unknown location in the Northern Shan States of Burma and he raised plants in Dehra Dun. The description was based upon sheets and drawings borrowed from Gamble (Raizada 1948). These consisted of seed and several spikelets collected by Copeland, and also collections from the very young plants cultivated in Dehra Dun, collected in 1898, taken to the UK when Gamble retired in 1899, and deposited at K in 1905.

Because the fertile material collected by Copeland in Burma consists only of 2 seed and a few broken spikelets, vegetative material collected in Dehra Dun is selected here as lectotype. Parker collected better vegetative material and good flowering specimens were also collected from the cultivated plants in 1943 and 1944.

Dendrocalamus copelandii (Gamble ex Brandis) N. H. Xia & Stapleton, **comb. nov.**
Type: India, Dehra Dun (cult.), 700m (2200ft), Gamble 27166, Sept. 1898 (lectotype selected here, K!).

Bambusa copelandii Gamble ex Brandis in Indian Trees: 671 (1906).

Sinocalamus copelandii (Brandis) Raizada in Indian Forester 74(1): 10 (1948).

Dendrocalamopsis copelandii (Gamble ex Brandis) Keng f. in J. Bamboo Res. 2(1): 12 (1983).

SELECTED SPECIMENS. BURMA: Northern Shan States, *Copeland* s.n. May 1896, (K!). INDIA (CULT.): Dehra Dun, *Gamble* 27015, July 1898 (K!); *ibid.*, *Gamble* s.n., June 1898 (K!); *ibid.*, 700m (2200ft), *Gamble* 27166, Sept. 1898 (K!); Dehra Dun, Forest School Park, 650m (2000ft), *Birbal* s.n., May 1901 (K!); Dehra Dun, Kaunli Garden, *Parker* 6281, Dec. 1913 (K!); Dehra Dun, Forest Garden, *Parker* 28797, Nov. 1922 (K!); Dehra Dun, Kaunli Garden, *Raizada* s.n., March 1944 (K!).

DISTRIBUTION. Upper Burma; India, Dehra Dun (cult.).

VERNACULAR NAME. *Wagyi* (Burmese).

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