

A SYNOPSIS OF THE SUBTRIBE BAMBUSINAE (GRAMINEAE: BAMBUISOIDEAE) IN VIETNAM

Tran Van Tien^{a*}

^aThe Faculty of Biology, Dalat University, Lamdong, Vietnam

Article history

Received: July 10th, 2016 | Received in revised form: September 10th, 2016

Accepted: September 20th, 2016

Abstract

A complete list of accepted names for the Vietnam Subtribe Bambusinae Presl comprises 11 genera, which are widely distributed in tropical and subtropical region in Vietnam, from commonest bamboos grown around villages to forests. It is distinguished from the closely related subtribe by having rhizomes sympodial; tree, shrub or scrambler; branch complement several, 1 dominant; inflorescence iterant, .

Keywords: *Bambusinae*; *Bamusoideae*; Synopsis; Vietnam.

1. INTRODUCTION

Bambusinae Presl, is one of the largest Subtribe in the Tribe Bambuseae, Bamusoideae of Poaceae, was established by Presl (1830), which is characterized by having culm arborescence, many stamen, style conjunction, and stigmas 3. Clayton and Renvoize (1986, p.283) paid more attention to the culm-sheaths, inflorescence and ovary for his study on the Bamboo of the world. Based on this, they found the use of those characters, i.e., “Ovary appendage broadly conical and usually hairy, inflorescence rarely simple, usually compound or iterant; culm-sheaths mostly deciduous for delineating subtribe”. This generic concept was reduced Subtribe *Dendrocalaminae* Benth, *Hickeliinae* Camus, and *Pseudocoicinae* Camus into *Bambusinae*. This treatment divided *Bambusinae* into 25 genera. However, Ohrnberger (1999) adopted Presl’s generic concept with minor modification, which used the iterant inflorescence characters divided *Bambusinae* into 19 genera. This treatment was adopted by Wong (2005); and Nguyen and Tran (2013).

*Corresponding author: Email: tientv@dlu.edu.vn

In Vietnam, since the genera concepts which Balansa (1890) applied to Vietnam, *Bambusinae* has no found identification treatment. Therefore, accurate specific identification is problematic. The objective of this contribution is to provide as synopsis of *Bambusinae*. And a brief discussion is also provided for each genus, diagnostic characters and distribution.

2. MATERIAL AND METHODS

This study is based on field studies throughout Vietnam and on herbarium collections from the herbaria [IBSC, KUN, SWFC, CANT, SYS, K, P, VNM, HN, HNU, and FSIV (Herbarium of Forest Science Institute of Vietnam)]. The latter included both localities that were known from herbarium and literature references, which are previously and newly published.

3. RESULTS

3.1. Generic delimitation

Delimitation of *Bambusinae* and its allies in the past based entirely on productive characters, special emphasis characters of inflorescence. Taxa representing in all *Bambusinae*, which is characterized by having rhizomes sympodial; tree, shrub or scrambler; branch complement several, 1 dominant; inflorescence iterant.

3.2. Synopsis

3.2.1. *Bambusa* Schreb., *Gen. Pl. 1: 236. 1789. TYPE. Bambusa arundinacea* (Retz.) Willd. (= *B. bambos* (L.) Voss).

Taxonomic notes: Rhizomes sympodial; tree, shrub or scrambler; branch complement several, 1 dominant, sometimes with recurved branch-thorn at the node; inflorescence iterant, comprising an untidy tuft, pseudospikelets sessile, spikelets 1-many flowered, 1-3 terminal vestigial flowers.

Distribution: Commonest bamboo grown around villages, forest.

Species: 60-70 species.

3.2.2. *Dendrocalamus* Nees, *Linnaea*. 9 (4): 476. 1834. TYPE. *Dendrocalamus strictus* (Roxgh.) Nees.

Taxonomic notes: This genus is similar to *Bambusa* in general appearance, but differs in having branches several to many, none to 3 dominant, without branch-thorn at the node; spikelets 1-many flowered falling together, typically without terminal vestigial flower; stigma 1.

Distribution: Commonest bamboo grown around willages.

Species: 20-25.

3.2.3. *Gigantochloa* Kurz ex Munro, *Trans Linn. Soc. London* 26:123. 1868. TYPE. *Gigantochloa atter* (Hass Karl) Kurz ex Munro.

Taxonomic notes: This genus is similar to *Dendrocalamus* in general appearance, but differs in having auricles absent or small; lodicules absent, anther apices typically pointed filaments united into a firm tube.

Distribution: This bamboo grows in the degraded natural forest.

Species: 10-15 species.

3.2.4. *Melocalamus* Bentham, *J. Linn. Soc. Bot. London* 19: 134. 1881. TYPE. *Melocalamus compactifolius* (Kurz) Bentham.

Taxonomic notes: The fleshy fruit of *Melocalamus* immediately distinguishes it from *Bambusa*, *Dendrocalamus*, *Gigantochloa*, which are also climbing bamboos.

Distribution: This bamboo grows in the degraded natural forest in valleys, but is also common along rivers or valleys.

Species: 6 species

3.2.5. *Bonia* Balansa, *J. Bot.*, 4: 29. 1890. TYPE. *Bonia tonkinensis* Balansa.

Taxonomic notes: This genus is similar to *Bambusa* in general appearance, but

differs in having culms solid or nearly so; nodes slightly prominent; branches solitary, nearly as thick as culms.

Distribution: Bamboo grown on Limestone Mountain in the north of Vietnam.

Species: 1-2 species.

3.2.6. *Thyrsostachys* Gamble, *Indian For.* 1: 20. 1894. TYPE. *Thyrsostachys oliveri* Gamble.

Taxonomic notes: This genus is similar to *Bambusa* in general appearance, but differs in having leaves small, palea prominently bifid, cleft to 1/3 of its length.

Distribution: Commonest bamboo grown around willages.

Species: 2 species

3.2.7. *Maclurochloa* Wong, *Kew Bull. J.* 48(3): 528. 1993. TYPE. *Maclurochloa montana* (Ridelry) K.W.

Taxonomic notes: *Maclurochloa* differs from *Bambusa* in having only one or two perfect flowers in the spikelet, which also has 3-5 transitional (empty) glumes, of which the upper ones are as large as the lemma; also, the primary-branch bud prophyll has free margins in *Maclurochloa*, and fused margins in *Bambusa*. *Maclurochloa* differs from *Gigantochloa* in having flowers with free filaments and emarginate anther apices. *Maclurochloa* also differs from *Dendrocalamus* in that an extended rachilla internode bearing a vestigial terminal flower. The non-fleshy fruit of *Maclurochloa* immediately distinguishes it from *Melocalamus*, which are also climbing bamboos.

Distribution: The species grows sparsely scattered within degraded valleys and mountain gorges, mixed with broadleaved trees and other bamboos.

Species: 6 species

3.2.8. *Kinabaluchloa* Wong, *Kew Bull. J.* 48(3): 525. 1993. TYPE. *Kinabaluchloa wrayi* (Stapf.) K.W.

Distribution: Only known from Giangly locality, Bidoup mountain, Lacduong district, Lamdong province, but here found in several populations.

Taxonomic notes: *Kinabaluchloa* differs from *Bambusa* in having a reduced number of flowers, and in having primary-branch bud prophylls with free margins. It is distinguished from *Gigantochloa* by the reduced number of flowers and by having rachilla internodes that disarticulate below the lemma. It differs from *Dendrocalamus* in that even with a reduced number of flowers in the spikelet, an extended rachilla internode bearing a terminal vestigial flower is always present, and in that all paleas are keeled. *Thyrsostachys* has the lowermost palea bifid, and *Dinochloa* and *Melocalamus* are characterised by fleshy fruits, whereas in *Kinabaluchloa* the paleas are not bifid.

Species: 1 species

3.2.9. *Nianheochloa* Nguyen & Tran, *Adansonia*, 34(2): 257-264. 2012. TYPE. *Nianheochloa bidoupenensis* Nguyen & Tran.

Taxonomic notes: This remarkable genus is similar to *Kinabaluchloa* K.M. Wong in general appearance, but is distinct in its clambering culm habit, pachymorph rhizomes with extended necks, glumes shorter than the lowest lemma, and short rachilla internodes between flowers.

Distribution: Only known from the TYPE locality – Hongiao peak, Bidoup mountain, Lacduong district, Lamdong province, but here found in several populations.

Species: 1 species.

3.2.10. *Cochinchinochloa* Nguyen & Tran, *Blumea*, 58: 28-32. 2013. TYPE. *Cochinchinochloa braiana* Nguyen & Tran.

Taxonomic notes: This remarkable genus is similar to *Macclurochloa* K.M. Wong in general appearance, but is distinct in its a thick swollen patella at the culm nodes and nodes of leafy branches, pseudospikelets having two perfect florets, the rachilla internode between the perfect florets elongated, a rachilla extension bearing an imperfect floret at maturity, a narrowly 2-keeled palea with an abaxial groove, three

lodicules, six stamens, free filaments, a glabrous ovary with a long style and three stigmas, and an oblong caryopsis with relatively thin pericarp.

Distribution: Only known from the TYPE locality – Brain mountain, Dilinh district, Lamdong province, but here found in several populations.

Species: 1 species.

3.2.11. *Yersinochloa* Nguyen & Tran, Nord. J. Bot., 34: 400-404. 2016. TYPE. *Yersinochloa dalatensis* Nguyen & Tran.

Taxonomic notes: This remarkable genus is similar to *Macclurochloa* K.M. Wong, *Cochinchinochloa* Nguyen & Tran, in general appearance, but is distinct in its inflorescence terminating leafy branches, indeterminate, pseudospikelets having one perfect florets, palea unkeeled, three lodicules, six stamens, free filaments, anther apices bearing tiny spines; glabrous ovary with long style; stigmas 3, plumose; caryopsis oblong with relatively thin pericarp.

Distribution: This bamboo grows in the degraded natural forest in valleys, but is also common along rivers or valleys, between 1100 and 1500 m a.s.l., southern Vietnam.

Species: 1 species.

4. CONCLUSIONS

A complete list of accepted name for the Vietnam Subtribe *Bambusinae* Presl comprises 11 genus, and 120-130 species, which is widely distributed in tropical and subtropical Vietnam, from Commonest bamboo grown around villages to forest. It is distinguished from the closely related subtribe by by having rhizomes sympodial; tree, shrub or scrambler; branch complement several, 1 dominat; inflorescence iterauctant.

ACKNOWLEDGMENTS

Authors would like to thank Prof. Dr. Nguyen Hoang Nghia, Vietnamese Academy of Forest Sciences for financial support. The curators of the herbaria [CANT,

FSIV, IBSC, HN, HNU, KUN, K, P, SWFC, SYS, and VNM] are thanked for the use of all their facilities.

REFERENCES

- Balansa, B. (1890). Catalogue des Graminées de l'Indo-chine Française: Bambusées. *Journal de Botanique*, 4, 27-32.
- Bentham, G. (1881). Notes on Gramineae. *Journal of the Linnean Society*, 19, 134-145.
- Clayton, W. D., & Renoize, S. A. (1986). *Genera Graminum, Grass of the World*^l. Kew Bulletin Additional Series III.
- Gamble, J. S. (1894). A handsome new Burmese Bamboos. *Indian Forester*, 1, 20-31.
- Kurz, S., & Munro, W. (1868). A monograph of the Bambusaceae, including description of all the species. *Transactions of the Linnean Society of London*, 26(1), 123-132.
- Nees, Von Esenbeck, C. G. D. (1834). Bambuseae Brasiliensis Seu Resensuit et Alias in India Orientali Provenientes Adjecit. *Linnaea*, 9(4), 476-489.
- Nguyen, H. N., & Tran, V. T. (2012). *Nianheochloa* (Poaceae: Bambusoideae), a new Bamboo Genus endemic to Bidoup Mountain, Southern Vietnam. *Adansonia*, 34(2), 257-264.
- Nguyen, H. N., Tran V. T., & Hoang, T. T. (2013). *Cochinchinochloa* (Gramineae: Bambusoideae-Bambusineae), a new bamboo genus endemic to Braian mountain, Southern Vietnam. *Blumea*, 58, 28-32.
- Nguyen, H. N., & Tran, V. T. (2016). *Yersinochloa* (Gramineae: Bambusoideae-Bambusineae), a new bamboo genus endemic to Lamvien Plateau, Southern Vietnam. *Nordic Journal of Botany*, 34, 400-404.
- Ohrnberger, D. (1999). *The Bamboos of the World*. Oxford, UK: Elsevier.
- Presl, J. S. (1830). Gramineae: Reliquiae Haenkeana. *Paragae*, XX(1), 356-367.
- Schreber, J. C. D. (1789). *Genera Plantarum*. Frankfurt: Am Main.
- Wong, K. M. (1993). Four new Genera of Bamboos (Gramineae: Bambusoideae) from Malesia. *Kew Bulletin*, 48(3), 525-528.
- Wong, K. M. (2005). *Mullerochloa*, a new genus of Bamboo (Poaceae: Bambusoideae) from North-East Australia and notes on the circumscription of *Bambusa*. *Blumea*, 50, 425-441.

**TÓM LƯỢC THÀNH PHẦN BẬC PHÂN LOẠI THUỘC PHÂN TÔNG TRE
(SUBTRIBE BAMBUSINAE) THUỘC HỌ CỎ (GRAMINEAE:
BAMBUSOIDEAE) Ở VIỆT NAM**

Trần Văn Tiến^{a*}

^a*Khoa Sinh học, Trường Đại học Đà Lạt, Lâm Đồng, Việt Nam*

^{*}*Tác giả liên hệ: Email: tientv@dlu.edu.vn*

Lịch sử bài báo

Nhận ngày 10 tháng 07 năm 2016 | Chính sửa ngày 10 tháng 09 năm 2016

Chấp nhận đăng ngày 20 tháng 09 năm 2016

Tóm tắt

Qua nghiên cứu và hệ thống tre trúc ở Việt Nam, Phân tông tre hiện nay có khoảng 12 chi, phân bố rất rộng, từ vùng nhiệt đới đến á nhiệt đới, từ các vùng làng quê đến vùng rừng núi tự nhiên. Phân tre có những đặc điểm nhận biết là thân ngầm, mọc cụm, thân bụi nhỏ hay cây lớn, đứng hay bò trườn, 1 cành lớn và nhiều cành nhỏ, hoa dạng không giả.

Keywords: *Bambusinae; Bamusoideae; Synopsis; Việt Nam.*
