

# ILLUSTRATED KEY TO THE PRINCIPAL BHUTANESE FOREST BAMBOOS

(AS KNOWN 2017)

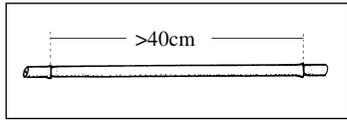
## 1a CLUMP-FORMING BAMBOOS

(culms growing in well-separated clumps of more than 10 culms)

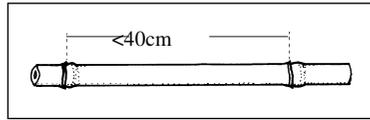


- 2a Max. culm diameter >7cm .... *Dendrocalamus hamiltonii*  
(pagshi, tama bans)
- 2b Max. culm diameter <7cm

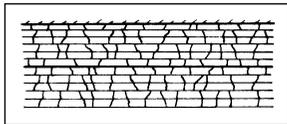
3a Max. internode length > 40cm



3b Max. internode length < 40cm

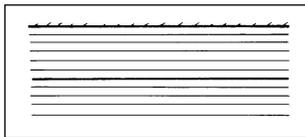


4a Leaves with cross-veins as well as long veins (hold up to light)



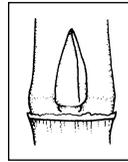
.... *Borinda grossa*  
(baa, rhui)

4b Leaves with only long veins (hold up to light)



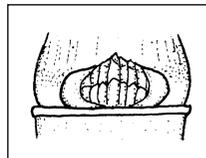
.... *Cephalostachyum latifolium*  
(ghopi bans)

5a Buds tall, chilli-shaped



.... *Thamnocalamus spathiflorus*  
(hum, rato nigalo)

5b Buds short, onion-shaped



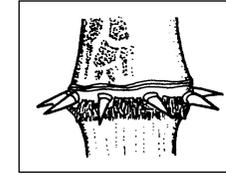
.... *Drepanostachyum* and *Himalayacalamus* spp  
(tite nigalo, ban nigalo)

## 1b SPREADING BAMBOOS

(culms growing separately or in groups of less than 10 culms)



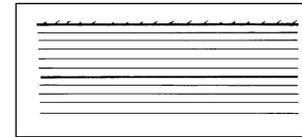
6a Culms with rings of thorns around the nodes



.... *Chimonobambusa callosa* (u, khare bans)

6b Culms with no thorns

7a Leaves with no cross-veins, only long veins



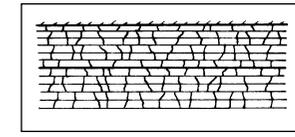
8a Max. culm diameter 2-4cm

.... *Pseudostachyum polymorphum*  
(dai, philim)

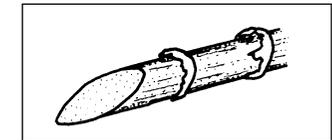
8b Max. culm diameter < 2cm

.... *Neomicrocalamus andropogonifolius*  
(ringshu, ula, langma)

7b Leaves with cross-veins as well as long veins

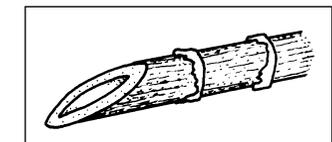


9a Rhizomes solid



.... *Yushania hirsuta*

9b Rhizomes hollow



.... *Yushania microphylla*

## NOTES ON SPECIES IN ILLUSTRATED KEY AND OTHER CLOSELY RELATED BAMBOOS

### 1a CLUMP-FORMING BAMBOOS

These have short rhizomes (less than 30cm), so that the culms always come up close together and then lean outwards. As there are gaps between the separate clumps, there is room for tree seedlings to grow. The clumps may be beneficial to tree seedlings, providing the shade which is necessary for germination of many shade-tolerant tree species, and most clump-forming bamboos also provide useful products.

#### *Dendrocalamus hamiltonii*

The large-diameter bamboos such as this are found in subtropical forests throughout the southern half of the country. They are used for the construction of house-roofs, and for making baskets and mats. They provide a cheap material for making many small implements, animal shelters, etc., using simple tools. The fodder can be fed to animals, and the shoots are edible. *Dendrocalamus hamiltonii* is the commonest species in the forest. Other similar species include *D. hookeri*, *D. sikkimensis*, *Bambusa nutans*, *B. tulda*, and *B. clavata*. They may be found in the forest or around cultivated areas.

#### *Borinda grossa*

This bamboo is found in central and eastern Bhutan, often in Hemlock forest. It is very widely used, especially for making fences and roofing mats. It is extracted in bundles, and split or crushed before being woven. It is an important minor forest product, and is also cultivated near high-altitude villages.

#### *Cephalostachyum latifolium*

This bamboo is found in the wetter warm broad-leaved forests from western to eastern Bhutan. The tops of the culms often hang over tree branches for support. It has large leaves, and long culms that are very useful for making mats and other woven articles, as they are very flexible. The main species is *C. latifolium*, but other similar species such as *Cephalostachyum capitatum* and *Ampelocalamus patellaris* may also be found.

#### *Thamnocalamus spathiflorus*

This frost-hardy bamboo is found from 2,800m up to the tree-line across the country. It is the highest altitude clump-forming bamboo in the Himalayas. It is too small for the culms to be of any use, except for making simple brushes, but it is very important for wildlife conservation, as many animals and birds use it for food and shelter, including pheasants and red pandas.

#### *Drepanostachyum* and *Himalayacalamus* species

*Drepanostachyum* species are useful bamboos found from 1,200m up to the frost line, especially in warm broad-leaved forest. They can be harvested and used for weaving when they are large enough, and are widely cultivated around farmland. Common species are *Drepanostachyum intermedium*, *D. khasianum*, and *D. annulatum*. *Himalayacalamus* species are very similar, but larger, and grow naturally in cool broad-leaved forest from 1,800-2,500m. Some species have edible shoots. *Himalayacalamus hookerianus* is planted around farmland in the South at lower altitudes.

### 1b SPREADING BAMBOOS

These bamboos have long rhizomes (up to 2m) so that the culms can come up separately or in small groups. The culms are upright, and when many rhizomes are in the soil these bamboos can form a very uniform and dense ground cover. The taller species cast a very dense shade and tree regeneration is often impossible under them unless gaps are created for the seedlings. Smaller species cast a lighter shade, and they are usually prevented from forming a dense thicket by the grazing of wildlife and domestic animals.

#### *Chimonobambusa callosa*

A thorny bamboo up to 6m tall that can be dense enough to prevent access and regeneration, found in wet cool broad-leaved forest. The culms are not very useful as the thorns make them unpleasant to cut, and the nodes are swollen and do not split easily.

#### *Pseudostachyum polymorphum*

A bamboo with extremely thin walls, up to 6m tall, and generally restricted to wet subtropical valleys. The tops of the culms often hang over tree branches. This bamboo is very useful for weaving as the culms split very easily, and it is said to provide very durable mats.

#### *Neomicrocalamus andropogonifolius*

This bamboo is almost a climber, and the culms are very flexible and strong. It is only found in the wettest subtropical forests in the east of the country. The culms are very thin but tall, with long internodes and long branches that can be the same size as the main culm. The surface of the culm is very hard and shiny. Split sections are used for making hats, bangchungs and other containers.

#### *Yushania hirsuta*

The largest *Yushania* species, up to 6m tall, this bamboo forms dense impenetrable thickets in Blue Pine or Spruce forest, especially when the trees are clear-felled. The rhizomes are very tough and quite deep, so that removing this bamboo completely is almost impossible. Larger culms are sometimes used for ecra walls and fencing. Management of forest containing this species should ideally avoid clear-felling, as the bamboo can prevent tree regeneration if it receives too much light, and can form a long-term secondary climax. *Yushania maling* and *Yushania pantlingii* are very similar to this species.

#### *Yushania microphylla*

A common bamboo, up to 3m tall in the forest, but often grazed down to a height of 1m or less with balls of small leaves in pastureland. It is found in central Bhutan from wet gullies in Blue Pine forest at 2,300m up to the tree-line. It is very important to livestock, especially yak and sheep in winter, and also to wildlife including black-necked cranes in waterlogged areas. It is usually too small to prevent regeneration of trees, and too small for most uses, except for making brushes and straws. *Yushania yadongensis* from W Bhutan has more ribbed culms, while *Sarocalamus racemosus*, which is often mixed with these species, has longer rhizomes with more roots and no culm wax.