

A note on recent flowering in *Thamnocalamus aristatus* (Gamble) E. G Camus (Poaceae: Bambusoideae) in East Sikkim

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Abstract: The flowering in *Thamnocalamus aristatus* is generally gregarious flowering and it was gregariously flowered earlier in 1989-90. The species is much economically important especially for rural economy of Himalayan region. The gregarious flowering has been witnessed in recent survey (2011-12) from the middle hills of east Sikkim of India.

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1. Introduction

The Bamboo flowering is an enigma of botany and still is a curious case for workers all around. The uniqueness of the bamboo flowering is that in most of the species, it is synchronous, whatever the age of sister plants, which belongs to same genetic resource (Ramanayake, 2006; Sertse, 2011). Several northeastern states of India witnessed this natural phenomenon especially the flowering of *Melocann baccifera* in Mizoram (Jeeva *et al.*, 2009). It is still doubtful that how the bamboos flowers only once and die immediately after the flowering to regenerate next generation from seeds? (John and Nadgauda, 2002).

The East Sikkim District is a part of small Himalyan state of Sikkim, hosting varying type of Forest Type viz. East Himalayan Sub-alpine Birch/Fir Forest, Buk Oak Forest, East Himalayan Mixed Coniferous Forest, East Himalayan Sub-Tropical Wet Hill, Dwarf Juniper Scrub, Birch/*Rhodendron* Scrub Forest, East Himalayan Moist Mixed Deciduous Forest and Montane Bamboo Brakes (Champion and Seth, 1968). In which the Bamboo resource is the source of rural economy of the area.

Bamboo commonly known as 'green gold' or 'poor mans timber', is sufficiently cheap and plentiful to meet the vast needs of human populace in general and in Himalayas particular from the "child's cradle to the dead man's bier". The bamboo play significant role in economy of Asian, African and Latin American countries especially in rural areas. Asia is the centre of diversification of Bamboo taxa, while India, being a part of it, is sharing about 12.8% of total bamboo resource of the world with *ca.* 125 taxa (Tewari, 1992; Tomar *et al.* 2009).

The '*Thamnocalamus*' group commonly known

as Alpine Bamboo and comes under woody bamboo group, mainly distributed in Eastern Himalayas and other mountain ranges of Asia especially from China and India (Li, 1997). It is also reported from African continent, Sri Lanka and Philippines (Guo *et al.* 2002). In East Sikkim the group hosted with *Arundinaria maling*, *Thamnocalamus aristatus* and *Chimnobambusa hookerana* spread large area between subalpine to alpine zones of 4th Mile to 17th Mile. These Bamboo diversity forms as Montane Bamboo break is integrated part of landslide prone zone of East Sikkim.

Thamnocalamus aristatus (Gamble) E. G Camus, or dwarf shrubby bamboo, is an evergreen monocarpic bamboo and one of the most delicate looking species available in India. As other Bamboo *T. aristatus* woody grass belonging to the sub-family Bambusoideae of the family Poaceae (Stapleton 1994; Shu, 2006). The genera comprises 21 valid species viz. *Thamnocalamus aristatus*, *T. collaris*, *T. crassinodus*, *T. cuspidatus*, *T. denudatus*, *T. dracocephalus*, *T. falconeri*, *T. falconerii*, *T. hindsi*, *T. ibityensis*, *T. murielae*, *T. nitida*, *T. nitidus*, *T. ringala*, *T. robustus*, *T. sparsiflorus*, *T. spathaceus*, *T. spathiflorus*, *T. tenellatus*, *T. tessellates* and *T. vaginatus* (<http://en.wikipedia.org>).

Thamnocalamus aristatus is growing up to 6 m culms especially in semi shaded locations, and occasionally in exposed sunny locations too. The species is very beautiful and lacy. Culms at first appear mealy white, then green, turning to shining yellow when mature, while branches are often rosy. The plant reaches height up to 5.5 M; the leaf is simple, oblong to lanceolate and opposite in arrangement; internodes 8-10 cm long. The flowers are

hermaphrodite, pale yellow, organized in spikes and pollinated by wind. The species is implements and pipes for Hookahs even as hedges and in the garden for holding up plants. The seed and stem are the edible parts and used by indigenous peoples. The cattle's also it's used as fodder. The regeneration is profusely natural comes up after the occurrence of gregarious flowering.

In Sikkim *Thamnocalamus aristatus* locally called as Pereng, Babam and Babin, while in hills of north Bengal it is called Nigalo as well as Rato. The species is growing with luxuriance in upper hilly region of Sikkim especially in East Sikkim (8th Mile to 15th Mile), and Mangan, Pelling, Yukosom and Gyalzing area of North Sikkim (at an altitude 2100m to 3500m) to high altitude of Arunachal Pradesh with dense thickets. It is also extended to nebouring countries in eastern Nepal and Bhutan in the moist mountain slopes and ravines, regularly under broken forest cover at an elevation of 2,700-3700 m. The

species also prevent soil erosions specially landslide prone zones.

The flowering in *Thamnocalamus aristatus* is generally gregarious and flowering cycle is generally 20 years. In 18th Century (1868, 1869, 1890 and 1895) it was gregariously flowered in upper hills of North Bengal (Darjeeling and Sikkim) and then in Darjeeling during 1949-50. Naithani and Biswas (1990) reported its gregarious flowering in Sikkim Himalayas during 1989-90. Once again after more than 20 years, in 2011 and 2012, we have observed the species flowering gregariously during our recent visits of East Sikkim. The whole area becomes yellow in appearance and seeded vigorously. After seed-setting, mature seeds fall over a large area. As the population prefers slopes to flourish, the seeds fell down in deep valleys and most of them are swept away during rains. The remaining seeds germinate to give rise next generation.



Figure 1. *Thamnocalamus aristatus*: a & b, Natural Population of *T. aristatus* in East Sikkim; c, Flowering clumps; d, Seeds

2. Conservation:

The Sikkim State Departments and other organizations related with conservation of Ecosystem must collect seeds of this important bamboo as the species is very suitable for soil conservation. The regeneration of the species is quite fast and grow after old clumps die after winter (April to October) to conserve itself *in-situ*. The seedlings of the species, usually destroyed mostly by competition or adverse site of germination, can be relocated and planted on abandoned land or landslide prone zone to prevent the area from natural disasters. The in-situ conservation of bamboo can also be an indirect measure to prevent the habitat of Red Panda, the state animal of Sikkim, which relies heavily on bamboos for its survival.

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