

## Bamboos (Poaceae: Bambusoideae) of Papua, Indonesia

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Diterima: 09 September 2016 – Disetujui: 07 Oktober 2016  
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### ABSTRAK

Tujuan penelitian ini adalah untuk mendata jenis-jenis bambu yang ada di Papua, Indonesia berikut distribusinya. Catatan penting terkait bambu ini juga diberikan. Terdapat 26 jenis dari 12 marga bambu yang dikenali di Papua, antara lain *Bambusa*, *Buergersiochloa*, *Dendrocalamus*, *Fimbribambusa*, *Gigantochloa*, *Nastus*, *Neololeba*, *Parabambusa*, *Phyllostachys*, *Pinga*, *Racemobambos* dan *Schizostachyum*. Bambu tersebut tumbuh tersebar di daerah Provinsi Papua dan Papua Barat. Bambu tegak dengan diameter besar jarang dijumpai di Papua. Bambu yang mendominasi adalah bambu yang menyebar (*scrambling*) seperti *Nastus* dan *Racemobambos*. Jenis endemik yang tumbuh liar di Papua adalah jenis *Bambusa*, *Nastus*, *Neololeba*, *Parabambusa*, *Pinga*, dan *Racemobambos*.

**Kata kunci:** jenis bambu, catatan penting, Papua, Indonesia.

### INTRODUCTION

Bamboo is a useful plant that has been utilized for many centuries in various activities and culture of local communities in Indonesia. Bamboo is widely used for traditional birth ceremony and funeral such a cutting the umbilical cord, circumcision, and cremation. It is economically important, producing valuable materials for make a container, building materials, furniture, webbing, food (shoot), medicine (*biga*), fiber for clothes, composites, household appliances, paper pulp, charcoal, materials for making shampoo, biofuel, etc.

Indonesia becomes one of the center of diversity of bamboos in South East Asia with 161 species, including 126 native species. It is about 15.5% species from total bamboo species of the

world (Widjaja *et al.*, 2014). Bamboo grows throughout the Indonesia archipelago either in the wild or cultivation. Widjaja (2001a) reported that bamboo of Java had been studied long time ago by Kurz (1876), Heyne (1927), and Backer (1928). Widjaja also had studied bamboo in Lesser Sunda Island (2001b) and Bali (Widjaja, 2005 and Widjaja *et al.*, 2004).

Unlike bamboo in other, Bamboo in Papua has not been surveyed and studied because of access difficulty and less bamboo exploration. Currently, there are no accurate data on the diversity of bamboo and its distribution in Papua. Since Papua has a high indigenous plants, a number of unique and different species of bamboo have been predicted to be found in the island. In the other hand, the Papua rainforest habitat of bamboo and other plant groups is facing unprecedented levels of threat from development. Thus, observation and study of bamboo of Papua are necessary to do to support the future production of accounts for these subfamily. The purpose of this research was to identify the species of bamboos in Papua, Indonesia and its distribution. The important notes of these bamboos are also be given.

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Table 1. List of bamboos in Papua, Indonesia based on Herbarium Bogoriense specimens and its distribution (several data based on references).

No.	Genus/Species	Distribution
	<b><i>Bambusa</i> Schreb.</b>	
1.	<i>B. bambos</i> (L.) Voss <sup>1</sup>	<b>West Papua Province:</b> Manokwari (Mansinam Island).
2.	<i>B. viridis</i> Widjaja	<b>West Papua Province:</b> Manokwari (Waropi).
3.	<i>B. vulgaris</i> Schrad. ex. Wendl.	<b>Papua Province:</b> Jayapura (Mt. Cyclops), Merauke (Kali Maro; Wasur National Park; Buti, Samkai). <b>West Papua Province:</b> Wasior (Rado), Manokwari (Ransiki; Mt. Meja).
	<b><i>Buergersiochloa</i> Pilg.</b>	
4.	<i>Bc. bambusoides</i> Pilg. <sup>2</sup>	<b>West Papua Province:</b> Raja Ampat Islands.
	<b><i>Dendrocalamus</i> Nees</b>	
5.	<i>D. asper</i> (Schult.) Backer ex. Heyne	<b>West Papua Province:</b> Manokwari (Amban).
	<b><i>Fimbribambusa</i> Widjaja</b>	
6.	<i>F. microcephala</i> (Pilg.) Widjaja	<b>West Papua Province:</b> Manokwari (Sesum, Ransiki; Rado), Wasior, Watut (Manke). <b>Papua Province:</b> Jayapura (Waibron, West of Sentani).
	<b><i>Gigantochloa</i> Kurz ex Munro</b>	
7.	<i>G. atter</i> (Hassk.) Kurz	<b>Papua Province:</b> Yapen (South Yapen), Jayapura (Mt. Cyclops). <b>West Papua Province:</b> Fakfak, Timika, East Mimika, Manokwari (Subsai, Warmare; Anggori, Amban; Wasior; Mt. Meja).
	<b><i>Nastus</i> Juss.</b>	
8.	<i>N. elatoides</i> Widjaja	<b>Papua Province:</b> Paniai (Kamu).
9.	<i>N. glaucus</i> Widjaja	<b>Papua Province:</b> Jayawijaya (Kurulu).
10.	<i>N. holttumianus</i> Bor	<b>Papua Province:</b> Tembagapura, Timika. <b>West Papua Province:</b> Fakfak.
11.	<i>N. productus</i> (Pilg.) Holttum	<b>Papua Province:</b> Nabire. <b>West Papua Province:</b> Manokwari (Anggi).
	<b><i>Neololeba</i> Widjaja</b>	
12.	<i>Nb. atra</i> (Lindl.) Widjaja	<b>Papua Province:</b> Jayawijaya (Tiom), Timika, Jayapura (Sentani), Tembagapura, Biak (Adibai) <b>West Papua Province:</b> Manokwari (Mt. Meja).
13.	<i>Nb. glabra</i> Widjaja	<b>Papua Province:</b> Tembagapura, <b>West Papua Province:</b> Fakfak.
14.	<i>Nb. hirsuta</i> (Holttum) Widjaja	<b>Papua Province:</b> Nabire (Toppo), Jayapura.
15.	<i>Nb. inaurita</i> Widjaja	<b>West Papua Province:</b> Fakfak.

## MATERIALS AND METHODS

This study was conducted at the Herbarium Bogoriense (BO) by observing and recording the bamboo's specimens which were collected in

Papua, Indonesia. Furthermore, some of the related literatures are used to complete the data such as Widjaja (1997), Heatubun & Wally (2000), and Iwan *et al.* (2000), Widjaja *et al.* (2005), and Widjaja *et al.* (2014).

Table 1. List of bamboos in Papua, Indonesia.....continued.

No.	Genus/Species	Distribution
	<b><i>Parabambusa</i> Widjaja</b>	
16	<i>P. kaini</i> Widjaja	<b>Papua Province:</b> Yapen Island.
	<b><i>Phyllostachys</i> Siebold &amp; Zucc.</b>	
17	<i>Ph. aurea</i> Carr. ex Riv. & C.Riv. <sup>3</sup>	<b>West Papua Province:</b> Manokwari (Amban).
	<b><i>Pinga</i> Widjaja</b>	
18	<i>Pg. marginata</i> Widjaja	<b>West Papua Province:</b> Manokwari (Ransiki)
	<b><i>Racemobambos</i> Holttum</b>	
19	<i>R. rupicola</i> Widjaja	<b>Papua Province:</b> Nabire.
20	<i>R. raynalii</i> Holttum	<b>Papua Province:</b> Jayawijaya (Jiwimika; Kurulu; Uwosilimo), Nabire, Yalimo, Tembagapura, Jayapura.
		<b>West Papua Province:</b> Fakfak.
21	<i>R. sessilis</i> Widjaja	<b>Papua Province:</b> Jayawijaya (Pass Valley), Nabire.
	<b><i>Schizostachyum</i> Nees</b>	
22	<i>S. blumei</i> Ness <sup>1</sup>	<b>West Papua Province:</b> Manokwari (Mansinam Island).
23	<i>S. brachycladum</i> Kurz	<b>Papua Province:</b> Jayawijaya (Hubikosi), <b>West Papua Province:</b> Manokwari (Mt. Meja; Wasior; Ransiki), Fakfak (Torea), Tambrau.
24	<i>S. glaucifolium</i> (Rupr.) Munro	<b>West Papua Province:</b> Manokwari (Wasior), Fakfak.
25	<i>S. lima</i> (Blanco) Merr.	<b>West Papua Province:</b> Manokwari (Wasior; Ransiki), Fakfak, Warmare, Tambrau.
		<b>Papua Province:</b> Jayapura (Sentani; Mt. Cyclops), South Yapen.
26	<i>S. zollingeri</i> Steud. <sup>1&amp;3</sup>	<b>West Papua Province:</b> Manokwari (Amban).

From: <sup>1</sup>Heatubun & Wally (2000), <sup>2</sup>Widjaja *et al.* (2014), <sup>3</sup>Iwan *et al.* (2000).

## RESULTS AND DISCUSSION

### List of Bamboos in Papua

Based on the specimens of BO and the references, there are 26 species from 12 genus of bamboos was recognized in Papua, Indonesia. They are *Bambusa* Schreb consist of three species; *Buergersiochloa* Pilg., *Dendrocalamus* Nees, *Fimbriambusa* Widjaja and *Gigantochloa* Kurz ex Munro, each consist of one species; *Nastus* Juss. and *Neololeba* Widjaja, each consist of four species; *Parabambusa* Widjaja, *Phyllostachys* Siebold & Zucc. and *Pinga* Widjaja, each consist of one species; *Racemobambos* holttum consist of three species, and *Schizostachyum* Nees consist of five species. List of

Papua's bamboos and its distribution are provide on the Table 1.

### Notes of Bamboos in Papua

#### *Bamboos diversity*

Papua has the unique bamboos comparing with other Malesian region species. Erect bamboos with a large culm diameter are rarely found in Papua (Widjaja *et al.*, 2014). Some erect bamboos such as *D. apser* and *G. atter* are found in Papua, because these bamboos are cosmopolite. Bamboos in Papua are dominated by scrambling bamboos such as *Nastus* and *Racemobambos*. On other than, many endemic species grows wildly in this areas such as *B. viridis*, *N. elatoides*, *N. glaucus*, *Nb. glabra*,

*Nb. inaurita*, *P. kaini*, *Pg. marginata*, *R. rupicola*, and *R. sessilis* (Widjaja, 1997).

Distribution of *Nastus* is stretching from Madagascar, Reunion, Malesia, New Guinea, to Solomon Islands. Based on Dransfield (1998), *Nastus* was first described in 1789 by Gmelin as *N. borbonicus* that was collected in 1796. Holttum transferred *Chloothamnus* Büse (from Indonesia) and *Oreiostachys* Gamble (from New Guinea) to *Nastus* in 1956. According to Widjaja (pers. comm.), *Nastus* in Malesian is formerly confused with *Chloothamnus*. Wong & Dransfield (2016, in press) and Wong *et al.* (2016, in press) have clarified the distinction Malesian bamboo taxa that had been confused with *Nastus*. Then, Widjaja and Wong (in progress) are proposing a new combinations on *Chloothamnus* based on new findings/evidences. Therefore, the specimens collected from Papua remain in the genus *Nastus* before publication of the new combinations published.

*Buergersiochloa* is one of genus bamboo that have only one species member, *Bc. bambusoides*. This bamboos has a grass-like life form and found in Raja Ampat Islands (Widjaja, et al., 2014) and also in New Guinea. IUCN status in 1997 was stating this bamboos in the category of endangered species (Walter & Gillett, 1998). More explorations in Raja Ampat Islands are needed to find this species and to make sure the existence in the wild.

There are still many specimens that have not been determined to species level in BO because of unavailability the inflorescences such as genus *Bambusa*, *Nastus* and *Neololeba*. Discovery of a new species are still potentially, especially in remote areas in Papua.

#### *Bamboos utilization*

Local communities in Papua are already familiar with bamboos and have been accustomed to using bamboos for daily life. Based on Heatubun & Wally (2000), people in Mansinam Island use bamboo for building materials, raft, rice winnow (*tapihan*), torch, and a container for cooking rice, tubers, vegetables and meat. According to Haryanto *et al.* (2009), Marind peoples that live around in Wasur National Park,

Merauke, use the stems of bamboo to stop the bleeding. Sada & Tanjung (2010) also mention peoples in Nansfori, Supiori District, use the bark of *B. vulgaris* for cleaning the wounds. Tepin peoples in the Salawati Island, Sorong, use bamboos as a water container (Maturbongs *et al.*, 2000). Kokas peoples in Fakfak using bamboo to make fish trap or known as *sero* (Ubayanti *et al.*, 2016).

## CONCLUSION

There are 12 genus of bamboos was recognized in Papua. They are *Bambusa*, *Buergersiochloa*, *Dendrocalamus*, *Fimbribambusa*, *Gigantochloa*, *Nastus*, *Neololeba*, *Parabambusa*, *Phyllostachys*, *Pinga*, *Racemobambos* and *Schizo-stachyum*. Erect bamboos with a large culm diameter are rarely found in Papua, its areas are dominated by scrambling bamboos such as *Nastus* and *Racemobambos*. Endemic species grows wildly in this areas such as *Bambusa*, *Nastus*, *Neololeba*, *Parabambusa*, *Pinga*, and *Racemobambos*.

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