

## UTILIZATION OF BAMBOO AS NON-TIMBER FOREST PRODUCTS BY KALAOADI VILLAGERS IN THE INDONESIAN ISLAND OF TIDORE

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### ABSTRACT

Tagafura protected forest situated in Tidore Island has a diverse of native non-timber forest products (NTFPs) including various species of bamboo trees. The present study was aimed at observing the types of bamboo growing in the forest and identifying the villagers' strategies in sustaining natural resource. The study was conducted from September to November 2018. The data of types of bamboo was collected through a field observation, whilst the data on villagers' strategies was gathered using an interview technique to the 30 respondents. A snowball sampling method was used for respondent selection. The result showed that there were about seven species of bamboo distributed across the forest that have been utilized by Kalaodi villagers, who have a direct access to the forest, as a raw material for making household furniture. Kalaodi villagers have their own traditional way to preserve bamboo trees from extinction. Also, the forest area has been divided into two categories of land use: the privately owned land and the protected forest. The villagers develop strategies to sustain bamboo vegetation by cultivating the plant in both the forest and their owned land; complying with the restriction of over-exploitation and destruction; utilizing bamboo for household needs, and passing the local wisdom to young generation.

**Keywords:** Types of bamboo, types of bamboo utilization, Kalaodi local wisdom.

### Abstrak

Hutan lindung Tagafura yang terletak di Pulau Tidore memiliki keanekaragaman hasil hutan bukan kayu termasuk bambu. Terdapat sekitar tujuh spesies bambu yang tersebar di hutan tersebut. Masyarakat desa Kalaodi yang menghuni hutan Tagafura telah memanfaatkan bambu untuk memenuhi keperluan hidup mereka. Mereka memiliki cara tradisional untuk melestarikan tanaman bambu agar tidak punah. Penelitian ini bertujuan untuk menginventarisasi jenis-jenis bambu yang ada di hutan tersebut dan mengidentifikasi strategi masyarakat dalam melestarikan tanaman bambu. Penelitian ini dilaksanakan pada Bulan September-November 2018. Data jenis bambu dikumpulkan dengan melakukan observasi lapangan, dan data tentang strategi masyarakat dikumpulkan melalui wawancara terhadap 30 responden. Pemilihan responden dilakukan menggunakan metode sampling bola salju. Hasil penelitian menunjukkan bahwa wilayah hutan Tagafura telah dibagi dalam dua kategori yaitu lahan milik pribadi dan wilayah hutan lindung. Masyarakat desa mengembangkan strategi melestarikan tanaman bambu dengan membudidayakan di wilayah hutan, menaati larangan pemanenan bambu secara

berlebihan, menggunakan bambu terutama untuk memenuhi kebutuhan rumah tangga, dan meneruskan nilai-nilai kearifan lokal kepada generasi muda.

**Kata kunci:** Jenis-jenis bambu, jenis pemanfaatan bambu, kearifan lokal

## INTRODUCTION

NTFPs are biological materials other than wood originating from forests and environmental services (Awono *et al.*, 2013). Whereas according to FRA (2010) Non-timber forest products (NTFPs) as goods are both biological and non-biological from forest resources (Undang-Undang-Undang Republik Indonesia Nomor 41 Tahun 1999) other than wood released from forests.

Non-timber forest products (NTFPs) are one of the important timber resources for people who live around forests other than wood. Undang-Undang Republik Indonesia Nomor 41 Tahun 1999 chapter 23<sup>rd</sup> explains that utilization of forest and the use of forest areas aim to obtain optimal benefits for the welfare of the entire community equitably while maintaining its sustainability.

Utilization of NTFPs in community empowerment was carried out while taking into account the functions of forests and aspects of forest sustainability. Non-timber forest products are generally a by-product of a

tree, for example; sap, leaves, skin, fruit, or in the form of plants that have special properties such as rattan and bamboo.

The potential of forest products such as Rattan, Resin, Bamboo, Sago, Aren, Honey, Nutmeg, Cinnamon, and Ornamental Plants and medicinal plants is a potential NTFP in the North Maluku Province. Bamboo is one of the potential NTFP commodities in Tidore Kepulauan City (BPDAS Ake Malamo, 2012).

According to that the excess utilization of NTFPs (Non-Timber Forest Products) can help communities obtain more diverse sources of livelihood without destroying forests. One form of local wisdom of the people of “Tidore Kepulauan City”, namely Kalaodi Village, inherited by their ancestors in seeking utilization, is the prohibition or *bobeto* (for violators who damage and take excessive forest/natural products), *legu dou* and *tola gumi* was traditions in preserving nature.

Bamboo is a plant in the grass group that has many benefits both ecologically, socially and economically. Ecologically, the availability of bamboo can certainly affect the condition of

water availability, because bamboo is one of the plants that can bind and store water. Economically bamboo has added value and selling value that can compete with timber forest products that can be a source of income for the community. Socially, Indonesian people have known bamboo as part of lives from birth to death, bamboo was often used in traditional ceremonies and synonymous with people in Tidore Community.

Tidore community used bamboo as a traditional toy (*meriam* and *dodorobe*), traditional ceremonies (*Paca Goya*), skeletons of houses, cooking utensils and fences have been used for generations. Many households depend their lives primarily on non-timber forest products as a subsystem and/or as the main source of income. This study aims to identify the type of bamboo and the utilization of bamboo in the Kalaodi village at Tidore Isle.

## **MATERIALS AND METHODS**

### ***Materials***

Bamboo plantation located in Kalaodi Village, Tidore Isle North Maluku Province. The reason for choosing this place is that still there are bamboo plants, people still use bamboo in their daily lives and traditions from generation to generation. The study will

take place from September to November 2018<sup>th</sup>.

### ***Method of collecting data***

The collection of plantation data is carried out by measuring and observing the respective types of bamboo found in the field. Interviews (personal interviews) were conducted with informants regarding the use of bamboo. The population in this study were people who knew the use of bamboo in Kalaodi, Tidore Isle. Sampling in this study by means of purposive sampling, namely the technique of selecting informants with special considerations, which is someone who is considered the most knowledgeable about the use of bamboo. Sample in this study was 30 respondents consisting of; (1) people who are considered to know about utilization such as (craftsmen and traditional leaders) are at least 10 people; (2) 20 people in general such as (who have heard and used bamboo).

### ***Data analysis***

Field Data obtained were tabulated and analyzed descriptively. The data about types of bamboo be analyzed and grouped based on the morphological characteristics of

bamboo. Data related to the form of bamboo utilization that was collected be analyzed descriptively using the tabulated.

## RESULTS AND DISCUSSION

### *Bamboo Types*

The results of the study show that the area around the forest present types of bamboo in Kalaodi Village. Table 1 presented the types of bamboo in Kalaodi Village.

Table 1 shows the types of bamboo found in the Kalaodi Village forest area. There are 7 (seven) types of bamboo be discovered in the area. The bamboo species is Tutul Bamboo (*B. maculata* Widjaja) as called *Tabaliku Cina*, Ampel Bamboo (*B. vulgaris* Schard) as called *Lou*, Loleba Bamboo (*B. atra* Lindl) as called *Tui Biasa*, Atter Bamboo (*G.*

*atter*) as called *Tabaliku ake*, Tui Bamboo (*S. five*) as called *Gilou*, Talang Bamboo (*S. brachycladum*) as called *Lou van* and Betung Bamboo (*D. asper* (Schult.) Becker ex. Heyne) as called *Tui Jawa*.

The types of bamboo consist of 4 (four) genus, namely *Bambusa*, *Gigantochloa*, *Schizostachyum* and, *Dendrocalamus*. Genus *Bambusa* has 2 (two) types of bamboo, namely *B. maculata* and *B. vulgaris*. Genus *Gigantochloa* group only has one type, namely *G. atter*. Genus *Schizostachyum* group found 2 (two) types of bamboo, namely *S. five* and *S. brachycladum*. Genus *Dendrocalamus* genus was found only 1 (one) type of bamboo, namely *D. asper* (Table 1).

**Table 1. List of Types of Bamboo in Kalaodi Isle**

No	Local Name	Indonesia Name	Species	Genus
1	<i>Tabaliku Cina</i>	Bambu Tutul	<i>Bambusa maculate</i>	<i>Bambusa</i>
2	<i>Lou</i>	Bambu Ampel	<i>Bambusa vulgaris</i> Schard	<i>Bambusa</i>
3	<i>Tui biasa</i>	Loleba	<i>Bambusa atra</i> Lindl	<i>Bambusa</i>
4	<i>Tabaliku Ake</i>	Bambu Ater	<i>Gigantochloa atter</i>	<i>Gigantochloa</i>
5	<i>Gilou</i>	Bambu Tui	<i>Schizostachyum lima</i>	<i>Schizostachyum</i>
6	<i>Lou Van</i>	Bambu Talang	<i>Schizostachyum brachycladum</i>	<i>Schizostachyum</i>
7	<i>Tui Jawa</i>	Bambu Betung	<i>Dendrocalamus asper</i> (Schult.) Becker ex. Heyne	<i>Dendrocalamus</i>

**Utilization of Bamboo**

The results of the study show that the community around the Kalaodi

Forest uses bamboo in various uses. In general, the use of bamboo by the community is presented in Table 2.

**Table 2. Utilization Bambo of Kalaodi Community**

Local Name	Botanical Name	Use For
<i>Tabaliku Cina</i>	<i>Bambusa maculata</i>	Table, Chair, Trash can, Wall, Fence, Traditional Ceremony, Gerbang
<i>Lou</i>	<i>Bambusa vulgaris</i> Schard	<i>Obor</i> , Craft, Bamboo shoot
<i>Tui biasa</i>	<i>Bambusa atra</i> Lindl	Saloi, fishing rod, Wicker, <i>dodorobe</i> (Traditional toy)
<i>Tabaliku Ake</i>	<i>Gigantochloa atter</i>	Wicker basket, lemang, Fence, Traditional Ceremony (mug)
<i>Gilou</i>	<i>Schizostachyum lima</i>	Lanjaran
<i>Lou Van</i>	<i>Schizostachyum brachycladum</i>	Raw <i>Nasi Jaha</i> , Craft, traditional ceremony
<i>Tui Jawa</i>	<i>Dendrocalamus asper</i> (Schult.) Becker ex. Heyne	<i>Knock Down</i> , Pole, Bamboo shoot, Traditional ceremony ( <i>Fola ma katu</i> , <i>Rumah Ritual Buku se dou</i> )

Table 2 shows the forms of bamboo use based on species by the Kalaodi community. The form of utilization of the type of Tutul Bamboo (*Tabaliku Cina*) was used for making home walls, fences, tables, chairs, and trash bins and traditional ceremonies. Ampel Bamboo (*Lou*) was used for torches, crafts, bamboo shoots. Form of Utilization of the type of Loleba Bamboo (*Tui Biasa*) was used as an ingredient in making saloi, wicker and traditional games (*dodorobe*). Ater Bamboo (*Tabaliku Ake*) was used for making

Basket, young culm for making *nasi jaha*, fences and traditional ceremonies. Tui Bamboo (*Gilou*) was used to support horticulture plants (trajectory). The form of utilization of the type of Talang Bamboo (*Lou Van*) was used as a building material (skeleton hood/roof frame) and food container (*Nasi Jaha*). Utilization of Betung Bamboo (*tui bamboo*) is used as a household construction (building frame/pole) and food ingredients (bamboo shoot).

Bamboo material known by the community has good properties to be

utilized, including strong, resilient, straight, flat, hard, easy to split, easy to work and lightweight so it is easy to transport. In addition, bamboo is also relatively inexpensive compared to other building materials because it is found in the surrounding forests (Arinasa and Peneng, 2013). Bamboo was a versatile plant for the people of Kalaodi.

### **Discussion**

#### **Types of Bamboo**

Kalaodi was one of the Kelurahan in East Tidore Sub-District located in the hills. Kalaodi consists of 4 (four) hills, namely the hill Tagafura, Kulili, Bukumen, and Pululu. Kalaodi was one area that functions as a catchment area of precipitation. Kalaodi has many bamboo plants. According to Balittri (2011) bamboo plants have the advantage of repairing very good water catchments, so they can increase water storage.

Bamboo plants grow and develop naturally without intensive care. These types of bamboo have been growing and developing for a long time in the Kalaodi area. However, some informants stated that they had planted. Seeds used for planting are made from bamboo shoots or rhizome cuttings.

The results showed that 7 (seven) types of bamboo were utilized by the community around the Kalaodi Village forest area, namely *Tabaliku Cina*, *Lou*, *Tui Biasa*, *Tabaliku Ake*, *Gilou*, *Lou Van*, *Lou Van*, and *Tui Jawa*. It was found to consist of 2 (two) genus *Bambusa*, 1 (one) genus *Gigantochloa*, 2 (two) genus *Schizostachyum* and 1 (one) genus *Dendrocalamus* (Table 1).

This condition is in line with the research of Huzaemah (2016) which found 9 types and 1 bamboo variety included in 5 (five) genera in the Blowupus Watershed of North Lombok Regency, namely *D. asper*, *T. siamensis*, *S. jaculans*, *G. atter*, *G. apus*, *B. glaucophylla*, *B. multiplex*, *B. maculata*, *B. vulgaris*, and *B. vulgaris* var. *vittata*.

#### **Utilization of Bamboo**

Bamboo is one of the non-timber forest products that is widely used by the community because it is easy to find. The results showed that the people of Kalaodi use bamboo still traditionally and are subsistence. Bamboo is used in accordance with the knowledge, skills, abilities and local culture. The use of bamboo by the Kalaodi community that is;

### ***Building material***

In general, the Kalaodi community uses bamboo as a part of the house such as walls, house poles, roof truss, fences and making livestock pens. The type of bamboo that is suitable for home poles is Bamboo Betung or *Tui Jawa ( D. asper )*, for the roof frame is *Lou van* or Talang Bamboo (*S. brachycladum*) and *Gilou* or Tui Bamboo (*S. five*) are used for fencing.

According to the interview results, betung bamboo has a large diameter of bamboo stems, thick and strong walls. However, the lack of this bamboo is to have a heavier reed. Gutter and distilled bamboo are used as a roof and fence frame because the stems are strong, light and small in diameter.

### ***Furniture***

The Kalaodi community utilizes Tutul Bamboo and Tui Bamboo for the manufacture of crafts and furniture. Tutul bamboo stems are usually directly sold by the Kalaodi community (farmers) but are used directly by Kalaodi Craftsmen as the main raw material for making types of furniture such as chairs, tables, goblets and baby boxes. Whereas Tui Bamboo is used for making Saloi and wicker. Tutul bamboo is used as furniture because it has the

color of brownish spots on the surface of the bamboo stem (Arinasa and Peneng, 2013).

### ***Craft***

Handicraft materials usually use bamboo that is soft, flexible and easily formed and has aesthetic value. According to interviews with bamboo, which are usually used for making handicrafts, namely Tutul Bamboo, Tui Bamboo, Ampel Bamboo, Bamboo Ater, and Talang Bamboo. Tutul bamboo is used as a craft and furniture material because it has the color of brown spots on the surface of the bamboo stem (Arinasa and Peneng, 2013) and high aesthetic value. Tui bamboo is used for making saloi because it is hard, straight and easy to form. Ampel and Talang Bamboo are used for webbing such as baskets because of the distinctive color of the fiber. Atter bamboo is used for webbing because the color of the bamboo stem is shiny and easily shaped for woven baskets.

### ***Socio-cultural***

Bamboo is inseparable from people's lives, although along with the times, bamboo is still used in people's lives with low intensity. According to Widiana (2012) in the socio-cultural life of the community, bamboo is one of the

things that are not usually left behind, for example in traditional ceremonies, wedding ceremonies, family celebrations and even bamboo raw materials that are typical musical instruments of certain communities. Moreover, the socio-cultural development of the community is marked by the development of bamboo accessories in the manufacture of high-value household art and souvenirs. Some places of bamboo species are certainly a part of the myth and complete rituals of society that are worth magic.

The condition is proven because it is based on interviews of bamboo used by public ceremonies and the village party is always done by the Society Kalaodi after the harvest season is *Paca goya*, *Songa*, and *Salai Jin*. In addition, bamboo shoots can be used for food such as Betung Bamboo. The statement is like Sutyono *et al.* (2009), not all types of bamboo have bamboo shoots that are good for bamboo species whose bamboo shoots can be directly used as vegetable ingredients directly, namely petung bamboo (*D. asper*). While bamboo shoots from the type of Ampel Bamboo (*B. vulgaris*) can be used as vegetable ingredients after being processed first to

remove the bitter taste. Talang Bamboo used to make *nasi jaha*.

### **Environment**

Kalaodi's community has known the benefits of ecologically bamboo which can store and bind groundwater so that the springs around Kalaodi can be maintained. Bamboo as a plant for the conservation of soil and water forming watersheds binds grains of soil vulnerable to erosion. Studies show that one hectare of bamboo plants can absorb more than 12 tons of CO<sub>2</sub> from water (Widnyana, 2012). Bamboo is also more effective in water conservation where bamboo is permeable in 90% of rainwater, while trees are only 35–40%.

### **CONCLUSION**

The conclusion of this study that there are 7 (seven) types of bamboo used by people around the forest in Kalaodi namely Bamboo Tutul (*Tabaliku Cina*) Bamboo Ampel (*Lou*), Bamboo Loleba (*Tui Biasa*), Bamboo Ater (*Tabaliku Ake*), Bamboo Tui (*Gilou*), Bambu Talang (*Lou Van*), Bambu Betung (*Tui Jawa*) and utilization of bamboo by the community Kalaodi as building materials, furniture, craft materials, social-cultural activities, and environment.



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