The Future Prospect of Rattan as Food Resources in Central Kalimantan

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Abstract

Rattan plays an important role as food resources in the culture of the Dayak communities living near forest areas. Shoot of rattan is cooked by the Dayaks to make a dish "sayur umbut rotan". This stir-fried rattan shoot cuisine is always served in the event of Dayak traditional ceremonies. The aim of this study was to identify and inventory of rattan species that uses in the Dayak food. The study was carried out at the villages of Mantangai Hulu, Kalumpang, Katimpun, Sei Ahaz and Katunjung, in the Kapuas District, Central Kalimantan Province. The method used were interviewing local community, making field observation and collecting voucher specimen of rattan for identification in the Herbarium of Center for Conservation and Rehabilitation Research and Development. Result of the study was revealed that six species of rattan were used in the Dayak foods which are Calamus caesius Blume, C. trachycoles Beccari, C. ornatus Blume ex Schult. & Schult., Daemonorops crinita Blume, D. fissa Blume, and Plectocomiopsis geminiflora (Griff.) Beccari. It is recommended that these six species of rattan should be cultivated in their garden to lessen disturbance to the natural population.

Key words: Dayak; local communities; rattan; traditional food

1. Introduction

Forests are a source of materials to fulfill human needs such as shelter, food and medicine. Today most people depend on forests for their life, either to take the benefits directly or indirectly. One of the direct benefits taken from the forest is non-timber forest products such as food plants, medicinal plants, plants for traditional crafts, honey bees, as well as game animals. Food plant is considered as anything that grows, life, trunked, roots, leaves, and it can be eaten or consumed by humans. It consists of staple food, additives, beverages, cooking spices and herbs [1]. Uluk [2] stated that at least 139 species of forest products are used by Dayak communities living around Kayan Mentarang National Park. One of non-timber forest products source used by local communities is rattan species that commonly used for rigging and matting. Communities around Kayan Mentarang National Park use rattan as a food ingredient i.e. Areca catechu, Calamus ornatus, Calamus sp 1, Calamus sp.2, Daemonorops semule, and D. hallerianus [3]. Uluk [2] stated that young stem shoot of most rattan species could be serves as vegetable in the traditional cuisine.

Rattan as a commodity is quite important to bring revenues for Indonesia [4]. Rattan is generally managed by the communities living around the forest. Therefore, besides being a source of revenue for the country, rattan is a source of livelihood for millions of people living in and around forest areas including indigenous ethnic groups that still living in traditional way [5]. In this regard, the aim of this study was to examine the use of rattan species especially to make food by local communities around the forest area along the Kapuas River.

2. Material and Methods

Field data collection was conducted in July and September 2012. Ratan inventory was conducted at the peat swamp forest along the Kapuas River from Mantangai Hulu village to Bagantung camp. Using small bout driving up stream, a researcher looked for rattan in the left and right of the river bank. All rattan found in the sight distance were enumerated and sample herbarium were collected. The method collection of rattan plant samples in the field refer to [6], [7] and [8]. Herbarium was collected as complete as possible to identification need up to at least genus level. The rattan herbarium gathered should be included their habitus, stem diameter, spines position on the sheath, presence or absence of the knee on the base of the stem, climber organ as flagelum or Cirus, ocrea, and inflorescence. Finally, these rattan herbarium vouchers were identified at the Herbarium of Center for Conservation and Rehabilitation Research and Development in Bogor.

Local communities are interviewed to get information on what species of rattan they use in their food and how they cook it. Respondent chosen are communities of several villages found along the way upstream to Bagantung camp. Five villages were visited i.e. Mantangai Hulu, Kalumpang, Katimpun, Sei Ahaz and Katunjung, in the Kapuas District, Central Kalimantan Province (Figure 1). The first two villages were chosen since a lot of local people, especially the Dayak tribes know well traditional knowledge associated with biological resources utilization (plant cane) in their life. Interviews conducted to 34 respondents in two villages namely Mantangai Hulu (10 respondents) and Kalumpang (24 respondents). Observation also carried out to the market to see what rattan sold. Literature studies also conducted to enhance the study.
3. Results and Discussion

In Central Kalimantan, rattan as food plant is mostly observed in the gardens, swamp, forests and in the riverbank of Kapuas and Mantangai rivers. Young rattan cane is widely available in rural areas, especially surrounding area of the Dayak communities as shown in the village of Katunjung and Kalumpang, Sei Ahaz, Katimpun, and Mantangai Hulu, Kapuas District. Another rattan species found are *Korthalsia echinometra* and *Plectocomia elongata*. Local people living around the forest take the rattan young shoot carefully since rattan plants grown spines on the leaf midrib. Based on the analysis, rattan species used as food for about 75 percent of the eight species of rattan found in the field. Furthermore, 22.2 percent of which are taken from the nine gardens planted sega and irit rattan. Young shoot of rattan is commonly taken one meter long up to the top of the stem tip.

Young shoots of rattan are sold in the traditional markets or even in the modern markets (Figure 2). Five to ten small rods of peeled rattan tied together and sold at an average price of five thousand rupiah (Rp. 5,000) per bundle (Figure 3). Six rattan species from three genus are used as food resources by local communities which are *Calamus caesius*, *C. ornatus*, *C. trachycoleus*, *Daemonorops crinitus*, *D. fissus*, and *Plectocomiopsis geminiflora*.

3.1. Rattan utilization by local communities

Rattans are also a natural source of nutrients for the Dayak community. The following species are taken for young shoot and fruit i.e.: sega rattan (*Calamus caesius*), marau rattan (*Calamus ornatus*), irit rattan (*Calamus trachycoleus*), bulu rattan (*Daemonorops crinita*), getah rattan (*Daemonorops fissa*), and Iyaa rattan (*Plectocomiopsis geminiflora*). Young shoot rattan are considered vegetable, locally called sayur umbut rotan. It is cooked mixed with sour eggplant (*Solanum* sp.), taro tuber (*Colocasia esculenta*), that has been cut into pieces, and mixed with vegetables spices. This traditional vegetable called locally “sayur juhu singkah” or “sayur asam umbut rotan”. Based on personal field experiences [9], “sayur asam umbut rotan” is on menu list of Samba Kalimantan cuisine restaurant located in the city of Palangkaraya Kalimantan (Figures 4). Description of each species of rattan is explained below.
a. Sega rattan (*Calamus caesius* Blume)

Clustering moderate rattan with stems up to 100 m long, stem with sheaths to 25 mm in diameter, without sheath variable but 7-12 mm in diameter. Internodes 15-30 cm long. Sheaths dull green armed with sparse triangular pale spines to 10 mm long, covered with sparse grey indumentums and sometime with scattered brown scales. Knee prominent. Leaves 75 cm long, cirrus 75 cm long. Petiole length 2 cm. Leaflets is limestone white and the upperparts glossy green. Fruit is oval-shape 15 x 10 mm covered with 15-21 vertical scale, green and will turn yellowish brown when ripe (Figure 5).

b. Marau Rattan (*Calamus ornatus* Blume ex Schult. & Schult.)

Clustering rattan climbing up to 40 m tall. Stem with sheath 40-50 mm in diameter, without sheath to 20-30 mm, internodes to about 30 cm. Sheath dark green armed with large triangular, flattened yellowish based black spines to 4 cm long, and scattered dull brown scaly indumentums. Knees conspicuous covered by sparsely large triangular thorn. Ocrea short. Flagellum length 2.8 - 6 m, armed with short black yellow-based spines in partial whorls. Leaves up to 2.5 to 3.2 m long, 70-151 cm long petiole. Leaflet arranged regularly pinnate of about 16 -26 on each side of rachis, oblong-shaped elip, 43-75 x 4-9 cm, dark green (Figure 6).
c. Irit Rattan (*Calamus trachycoleus* Beccari)

Clustering moderate rattan with stems up to 100 m long. Stem with sheaths to 20 mm in diameter, without sheath 15 mm in diameter. Sheaths are dark green, overgrown thorn type 2 short spines that meetings are spread and a single Thorn, rarely a triangular shape. The length of a thorn 1 mm-10 mm, color black spines. There is obviously a knee, the color green, prickly short meetings. Ocrea obviously, not spiked. Leaves with sirus 153 cm, overgrown with thorns. Petiole 2 cm in length. Lancet-shaped leaf sheet, measuring 21-32 cm x 2.8 cm, 1.5 – the surface of the leaf sheet of green color, the older leaves are overgrown thorn short, black color, the number of older leaves 31 rachis, left-right edge and the bottom of the rachis spiked short and sparse, leaflet at the base of the leaf stem, leaf sheath circling the stem (Figure 7).

![Figure 7. A.Habitus and B. Leafsheath of *Calamus trachycoleus*](image)

d. Red rattan (*Daemonorops crinita* Blume)

Growing in clump, climbing up to 30-40 m, stem diameter with sheath is 8-10 mm, stem without sheath is 3-5 mm, internodes length is 15-25 cm. Green sheath, covered with black spines. Leaves is green, pinnate leaflets arranged regularly 27-33 cm long, up to about 10-39 on each side of rachis (Figure 8).

![Figure 8. Natural regeneration of *Daemonorops crinita*](image)

e. Getah rattan (*Daemonorops fissa* Blume)

Clustering moderately robust high climbing to 40 m high. Stem with sheath to 40 mm in diameter and 25 mm without sheath, internodes length 35 cm. Sheaths greenish brown over grown thorn black triangles (measuring 25 x 5 mm) color brownish red spines. Knee present, ocrea undeveloped. Whole leaf to 3.5 m long including petiole to 30 cm and cirrus 1.25 m. Petiole armed with black spines along edges and near edges on upper surface, and along the mid-line below. Leaflet up to about 100 on each side of rachis, leaflet up to 35 x 1.5 cm, armed with bristles on three nerves above and main nerve below (Figure 9).
3.2. Young shoot rattan processing by local communities

From the interview to the local people revealed that the process of making Dayak food from young shoot rattan are as follows. Young rattan cane is clean after thorn and skin are removed. To eliminate bitter taste, young rattans are boiled. Subsequently the tender white part inside are taken and cut into small pieces and used as vegetable. Small pieces of young rattan shoot usually mix-cooked with fish, sweet potato and sour eggplant. Processing Method: fish coated with salt and sour water, let stand for 10 minutes. Then stir fry garlic, onion, red large chili, lemongrass, galangal, turmeric and bay leaves until smelling. After that add eggs and stir, then add the water, salt, sugar and cook until boiling. Finally put in fish and young rattan shoot, cook until done. The young shoot rattan cuisine has savory, sour, and somewhat bitter blend with the sweet taste from the fish creating its own unique taste.

Young shoot rattan *D. fissa* are not only consumed as vegetable but also used as medicines. Young shoot rattan *D. fissa* are used to treat ulcer and as appetite enhancer. Young shoot rattan cuisine are commonly serve in Dayak traditional ceremonies. As with the Mandailing in South Tapunuli, North Sumatra, the people have different way to consume young shoot rattan. Young cane cut into pieces and burned in the oven for 1 hour and then the white part inside are taken and served with coconut milk and spiced grated coconut (“serundeng”). Unfortunately, this traditional cuisine can not be found every day. The dish is only served during the Moslem fasting month of Ramadan in the city of Medan. Even then, the price is quite high, reaching Rp. 5,000 to Rp. 8,000 per 30 cm young cane [10].

Besides being used for vegetables, the six rattan species were used as food seasonings. Astringent flavor of the rattan provides a distinctive taste in cuisine. Most rattan young shoot posses tanin that generate astringent flavor [11]. Medically tannin content has several benefits, among others are astringent, antibacterial, antioxidant, and...
antidotes. Astringents in medicine cause shrinkage of mucous membranes or exposed tissues and are often used internally to check discharge of blood serum or mucous secretions. This can happen with a sore throat, hemorrhages, diarrhea, or with peptic ulcers. Therefore, it seems sensible that traditionally dayak communities use young shoot rattan to cure sore throat coughs and colds, diarrhea, malaria, and bleeding. Cellulose content in rattan young shoot quite helpful for lowering cholesterol levels. While the content of lignin is useful to prevent cancers, especially breast cancer [12]. Table 1 summarized the chemical compound of the six rattan species

Table 1. Chemical compounds of six kinds of rattan

<table>
<thead>
<tr>
<th>Species</th>
<th>Selulosa (%)</th>
<th>Lignin (%)</th>
<th>Tanin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calamus ornatus</td>
<td>-</td>
<td>13.35</td>
<td>8.56</td>
</tr>
<tr>
<td>Calamus caesius</td>
<td>19.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calamus trachycoleus</td>
<td>-</td>
<td>42.80</td>
<td>21.85</td>
</tr>
<tr>
<td>Daemonorops crinita</td>
<td>-</td>
<td>22.90</td>
<td>46.49</td>
</tr>
<tr>
<td>Daemonorops fissa</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Plectocomiopsis geminiflora</td>
<td>61.85</td>
<td>21.94</td>
<td>-</td>
</tr>
</tbody>
</table>

Sumber : Winani and Jasni [11]; Jasni et al. [13]

3.3. The future prospect of rattan

Since long time ago human being has been interacting and brings impact to the forest. Due to increasing number of people interacting to the forest to fulfill human need for food, clothing, and shelter, the impacts are also increasing. On one hand we need to preserve the species but on the other hand we also require fulfilling the human need. Food supplies for human need are considered as a threat to the survival of plant species of rattan in the forest area. Sustainable forest management should be considered in the future in particular for non timber forests use in a region. Rattan should be conserve so that Dayak communities are able to keep their culture to cook young rattan shoot as their traditional cuisine. The dish has already become the character of the Dayak ethnic group of Central Kalimantan. Increased utilization of young shoot rattan will bring impact to the increasing farmer incomes, which is not limited to picking up old rattan stem for making woven. It is possible that young shoot rattan as vegetable become popular dish internationally, so that fresh young rattan shoot become an export commodity.

Excessive use of rattan will make the population of rattan decline. Genetic resource conservation and agroforestry can be practiced to conserve biodiversity, especially species of rattan as food [14]. Rattan conservation needs support from the user. For example, in Central Kalimantan Dayak communities established rattan garden planted with Calamus caesius and Calamus trachycoleus.

4. Conclusions

1. Forest area have six (6) species of rattan used as food i.e.: Calamus (3 species), Daemonorops (2 species), and Plectocomiopsis (1 species).
2. Rattan young shoot used as food serve as vegetable or “juhu singkah” is a unique character of Dayak cuisine in Central Kalimantan.
3. Most rattan young shoot possesses tannin, among others are astringent, antibacterial, antioxidant, and antidotes, Cellulose content for lowering cholesterol levels, lignin is useful to prevent cancers, especially breast cancer.
4. From the results of this study it is suggested to preserve rattan as food by making rattan cultivation in addition to cultivation of sega rattan (Calamus caesius) and Jahab rattan (Calamus trachycoleus).

References


