

UTILIZATION OF MARANTACEAE PLANTS BY THE BAKA HUNTER-GATHERERS IN SOUTHEASTERN CAMEROON

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ABSTRACT The Baka hunter-gatherers of the Cameroonian rainforest use plants of the family Marantaceae for a variety of purposes, as food, in material culture, as “medicine” and as trading item. They account for as much as 40% of the total number of uses of plants in Baka material culture. The ecological background of such intensive uses in material culture reflects the abundance of Marantaceae plants in the African rainforest. This article describes the frequent and diversified uses of Marantaceae plants, which comprise a unique characteristic in the ethnobotany of the Baka hunter-gatherers and other forest dwellers in central Africa.

Key Words: Ethnobotany; Baka hunter-gatherers; Marantaceae; Multi-purpose plants; Rainforest.

INTRODUCTION

The family Marantaceae comprises 31 genera and 550 species, and most of them are widely distributed in the tropics (Cabezas et al., 2005). The African flora of the Marantaceae are not especially rich in species (30-35 species) compared with those of South East Asia and South America, but the people living in the central African rainforest frequently use Marantaceae plants in a variety of ways (Tanno, 1981; Burkill, 1997; Terashima & Ichikawa, 2003).

While several anthropologists have comprehensively studied the ethnobotany of the so-called “Pygmy” hunter-gatherers (Motte, 1980; Tanno, 1981; Terashima et al., 1989; Terashima et al. 1991; Terashima & Ichikawa, 2003), no study focused on the usefulness of Marantaceae plants. The ethnobotanical, pharmacological and anthropological studies of the Baka who belong to a group of “Pygmy” hunter-gatherers were also carried out by botanists and anthropologists (Letouzey, 1976; Wieckhorst, 2002; Betti, 2004), but there is neither a comprehensive ethnobotanical study of the Baka nor a study on the utilization of Marantaceae plants by the Baka. I will describe in detail the use of Marantaceae plants by the Baka and discuss the role of Marantaceae plants in Baka life and culture.

RESEARCH AREA

The study area is located in the northwestern part of the Congo Basin, and is part of the Guineo-Congolian regional center of endemism (White, 2001a). The

vegetation consists mainly of evergreen forest, semi-deciduous forest, and mixed forest (Letouzey, 1985).

The Baka people inhabit an area that is partly within Cameroon, the Republic of Congo, and the Central African Republic. Approximately 25,000 live in south eastern Cameroon (Joiris, 1998), together with 45,000 farmers of Bantu or of other language groups (Some, 2001). The Baka had been leading a nomadic life until 50 years ago like other “Pygmy” hunter-gatherers in central Africa. However, they began to move to village sites along the major roads since the 1950s under the policy of the colonial government (Althabe, 1965). Since then, the colonial and the post-independence Cameroonian governments have been encouraging the Baka to farm. As a result, the Baka now spend more than half of the year in the village, and stay at the forest camps far from the village for a few months (Yasuoka, 2006). However, they obtain food, material for building and making items of material culture, “medicine⁽¹⁾” and other subsistence needs as well as cash from hunting, fishing and gathering in the forest (Hattori, in press). They still strongly depend on forest products and have rich and varied knowledge of forest animals and plants.

I conducted research in the area around the village of Malea Ancien in the Boumba-Ngoko Division of East Province, Cameroon (Fig. 1). Malea Ancien is situated at 2.82° N latitude and 14.60° E longitude, about 600 m above sea level, and 113 km southwest of Yokadouma, the district capital. The population in Malea Ancien consists of the Baka hunter-gatherers and the Bantu-speaking Konabembe. The Konabembe amount to a total of 68 people (37 men and 31 women).⁽²⁾ The population of the Baka is 118 people (56 men and 62 women).⁽³⁾ The research was conducted from November 2003 to July 2004 for a total of 9 months. The Konabembe speak Bantu, and the Baka speak a language that belongs to the Adamwa East group (Greenberg, 1966).

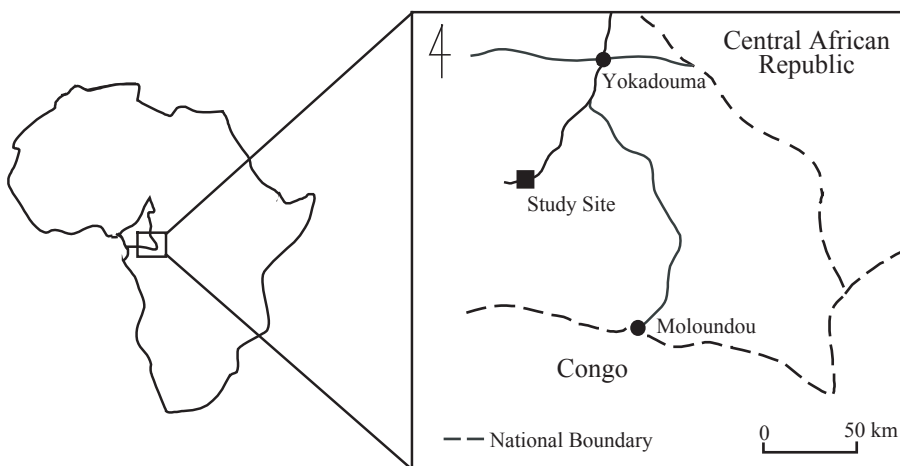


Fig. 1. Research Area (Southeastern Cameroon).

MARANTACEAE PLANTS IN CAMEROON

The flora of Cameroon includes 12 genera and 29 species of Marantaceae (Koechlin, 1965). *Ataenidia*, *Halopegia*, *Megaphrynium* and *Sarcophrynium* are unbranched herbs (grows to 1.0-2.5 m) with large oval leaves (20-60 cm long, 10-30 cm wide). *Megaphrynium* and *Sarcophrynium* have a fleshy red fruit. Most plants belonging to the *Marantochloa* are branching herbs (grows to 1.5-3.0 m) with oval leaves. *Trachyprynium* is an herbaceous species with bamboo-like stem (grows to 3 m). *Haumania* is a vine with a zig-zag wiry stem (grows to 10 m), and *Hypselodelphys* is a vine with widely branching stems (grows to 6 m). They are common in habitats ranging from shady places in the rainforest to the secondary forest in which they tend to be climbers (Cabezas et al., 2005). Eight genera and 15 species were recorded in the Lobéké National Park, south eastern Cameroon (Harris, 1999). I collected 8 genera, and 18 species in the study site.

METHODS

I used the Baka language in the research, and collected 653 plant types, with Baka vernacular names and etymology, uses, folktales and other ethnographic information from an old experienced woman. Her estimated age was between 55 and 65. Baka plant types, as defined here, are different from the scientific species, and are based on Baka classification.⁽⁴⁾ When a plant type has different vernacular names (synonyms) but regarded as one type by the Baka, I treated it as one plant type. The Baka do not have a generic term for plants. They call the tree *lo*, and the liana *kpo*. They do not have a generic term for herbs, and explain that an herb is neither *lo* nor *kpo*. Among the 653 plant types recorded, there were 372 *lo*, 167 *kpo*, and 114 of other types. Most of the plant types collected were wild plants, and I excluded domesticated plants from the present study.⁽⁵⁾

After fieldwork, I asked for the identification of the collected specimens at the National Herbarium in Yaoundé and at the Botanical Garden in Limbe, and I participated in the identification process, providing the information obtained in the field, to help with the identification. Five hundred and eighty-nine plant types were identified at the level of species, and 58 at the genus level. Twenty of the plant types (18 scientific species), comprising 3% of the total collected Baka plant types (Fig. 2), were classified as Marantaceae (Table 1). These comprised three *kpo* (liana species), and 17 others (of which 15 were apparently herbal species).

I observed the uses of Marantaceae plants by the Baka in the study site and interviewed 6 informants about vernacular names and etymology, uses, folktales and other ethnographic information. I showed the informants the whole plant collected by a research assistant and myself on the day of the interview. Interviews were new to the Baka, and It was almost impossible to get all the

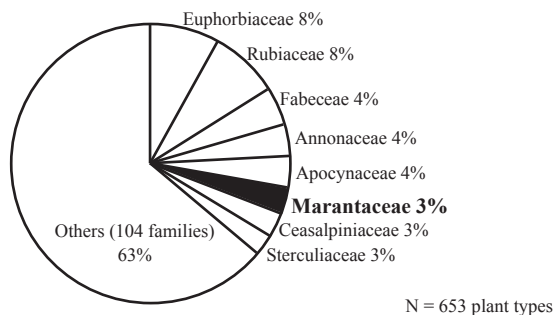


Fig. 2. The Proportion of Plant Families Collected by the Author.

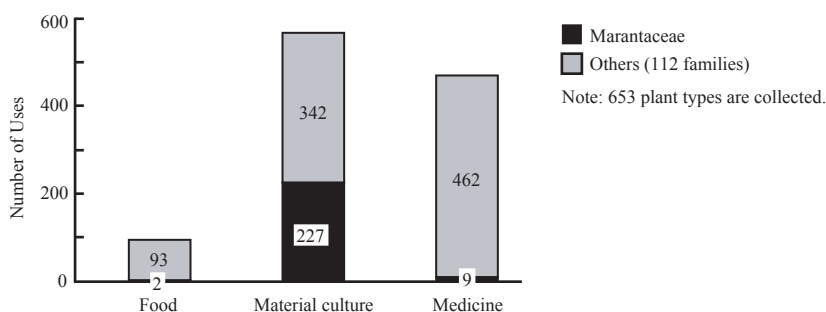


Fig. 3. Number of Uses of Marantaceae Plants in Each Use Category.

information on the uses of Marantaceae plant types from the informants in an interview. I exhaustively interviewed the informants, naming use categories and the items made of Marantaceae plants to get as much information as possible.⁽⁶⁾ The informants were 3 women and 3 men, and their estimated ages were from 35 to 55 (Appendix 2).⁽⁷⁾

SUMMARY OF RESULTS

The old female informant provided the vernacular names for 602 plant types (92 percent of the 653 plant types). Eighty three plant types (14%) were eaten, 237 plant types (36%) were used in material culture, and 392 plant types (60%) for “medicinal” purposes. Adding other uses such as poison for hunting and fishing activities, and trading items with buyers from outside the forest, the plant types considered “useful”⁽⁸⁾ by the informant amounted to 497 plant types (76%). In addition, some plants appeared in the Baka folktales, often in combination with anthropomorphic forest animals to play important supporting roles in them. In these ways, the Baka heavily depend materially and economically on forest plants, and that are also important to their spiritual aspects of life.

Of 653 plant types, 20 plant types belonged to the Marantaceae family, and all of them are provided vernacular names (Table 1, Appendix 2). Two plant types of Marantaceae (10% of the 20 plant types) were used as food, 20 types (100%) in material culture, and 9 types (45%) for “medicine” (Fig. 3). Also, two plant types are traded and one is used as narcotics. There is no Marantaceae plant without any use.

Different parts of Marantaceae plants are used in a variety of ways (Table 2, Appendix 2). They roast seeds of *kpasele* (*Haumania denckelmanniana* (J. Braun & K. Schum.) M.-Redh.) and *ndikasende* (*Trachypyrnium braunianum* (K. Schum.) Bak.), and eat them as snack. They use in material culture leaves of 13 plant types (129 uses), the skins of leafstalks of 14 plant types (72 uses), fruits of 12 plant types (12 uses) and other parts of Marantaceae plants. Large unbreakable leaves of *Ataenidia* and *Sarcophrynium* are used as materials for thatching traditional huts and various kinds of household utensils, and use long and strong leafstalk of *Marantochloa*⁽⁹⁾ for weaving various daily necessities. While the plants of *Marantochloa* look similar to one another, informants can distinguish them from one another by the color of the skin, differences of which (white, black and red) are used for designing the color pattern of the mats and baskets made of *Marantochloa* skins. Also, they use fruits of *Marantochloa*, *Megaphrynium* and *Sarcophrynium* as accessories.

The *Megaphrynium* has a strong leafstalk, large leaves and red fruits, and informants most frequently use *ngongo* (*Megaphrynium macrostachyum* (Benth.) M.-Redh.) for multiple purposes.⁽¹⁰⁾ The total number of different uses for *ngongo* in material culture alone counted 23 (Table 1). With *ngongo* leafstalks the Baka make mats (Fig. 4), carrying and other kinds of baskets, binding cords, brooms and others utensils. Leaves of *ngongo* are used for roof thatching, cushioning put under sleeping mats, and other utensils made on the spot and abandoned immediately after use. There are numerous examples of such disposable utensils made of *ngongo*: the leaves are used as instant containers for carrying forest products (Fig. 5), and as substitute for pots, cooking sheets, plates, cups, and funnels. *Ngongo* leaves are also used for bailing water to catch fish in the water pools, as eyedroppers, fans to build a fire, dustpans, parasols for a baby (Fig. 6) and tobacco rollers. *Ngongo* plants provide exactly the “multi-purpose household utensils (Ichikawa, 1993)” in the life of the Baka. Moreover, the Baka use *ngongo* not only for daily necessities but also for accessories and toys. The Baka women wear the fleshy red fruit of *ngongo* in the hole opened above the upper lip, and put a piece of the leafstalk (about 5 cm long) in the pierced nose. The Baka like to wear cords made of skin of *ngongo* stalks as bracelets and anklets, and the young boys trap forest rats with cords made of skin of *ngongo* stalks.

The noteworthy points about the use of Marantaceae plants are the wide variety of uses⁽¹¹⁾, as well as its instant manner of use to meet immediate material needs. Disposable utensils mentioned above are examples of such instant uses, and instant uses may lead to the creation of more new uses. I observed such a newly invented use for Marantaceae leaves: young boys made

Table 1. List of Plant Types Belonging to Marantaceae and the Number of the Different Uses in Each Use Category.

No.	Vernacular	Scientific name	A: Medicine	B: Food	C: Material	D: Narcotics	E: Folk tale	F: Others	Total
1	<i>boboko</i>	<i>Atenidia conferta</i>	4		16			1	21
2	<i>tolu</i>	<i>Halopogon azurea</i>	2		15				17
3	<i>kpasele</i>	<i>Haumania denckelmanniana</i>	4	1	10	1			16
4	<i>hoso</i>	<i>Hypselodelphys scandens</i>	3		12				15
5	<i>lingombe</i>	<i>H. zenkeri</i>	1		2				3
6	<i>mbili na te (bibili)</i>	<i>Marantochloa congensis</i>	1		7				8
7	<i>mbili na te (njene)</i>	<i>M. congensis</i>			7				7
8	<i>mbili na te (buba)</i>	<i>M. ramosissima</i>			7				7
9	<i>mbili na ngbegbe (bibili)</i>	<i>M. leucantha</i>			10				10
10	<i>mbili na ngbegbe (buba)</i>	<i>M. mannii</i>			10				10
11	<i>joanjean</i>	<i>M. cordifolia</i>			9				9
12	<i>nokembe</i>	<i>M. holostachya</i>			2				2
13	<i>fondo (buba)</i>	<i>M. purpurea</i>			24				24
14	<i>fondo (njene)</i>	<i>M. purpurea</i>			24				24
15	<i>ngongo</i>	<i>Megaphrynium macrostachyum</i>			23		2	2	27
16	<i>kasa</i>	<i>M. trichogynium</i>			22			1	23
17	<i>ngwasa na ngo</i>	<i>Sarcophrynium brachystachyum</i>			17			1	18
18	<i>ngwasa na fasa</i>	<i>S. prionogonium</i>	3		17			1	21
19	<i>mokondi</i>	<i>S. schweinfurthianum</i>	1		15			1	17
20	<i>ndikasende</i>	<i>Trachyprynium braunianum</i>	1	1	1				3
Total			20	2	250	1	2	7	282

Note: The most of informants distinguished some plant types of Marantaceae from one another by adding the color of the plant. I provided the plant color which the informants answered as an indicator of difference in parentheses (See etymology, Appendix 2). Use categories are mainly based on classification by the informants (See Appendix 2). I counted each way that a plant part was used as one use. The number of uses are based on the knowledge of 6 informants for each use category. The numbers of informants who share knowledge of the uses are ignored in this table. However, informants have almost a similar knowledge on vernacular name, food, material culture and narcotics but medicine and folk tale (See Appendix 2).

Table 2. Use Categories and the Number of the Different Uses in Each Use Part of Marantaceae Plant Types.

No.	Vernacular	Scientific name	1: Seed	2: Fruit & flower	3: Leaf	4: Leafstalk	5: Root	6: Skin	7: Vine	8: Pith	Total
1	<i>boboko</i>	<i>Ataenidia conferta</i>		A*(2), C*(1)	C(13), C**(1), F(1)	C(1)	A(2)				21
2	<i>tolu</i>	<i>Halopogon azurea</i>			A(1), C(13), C**(1)	A(1), C(1)					17
3	<i>kpasele</i>	<i>Haumania denckelmanniana</i>	B(1)		A(1), C(5)		A(3)	C(2), D(1)	C(2)	C(1)	16
4	<i>hoso</i>	<i>Hypselodelphys scandens</i>		C(1)	C(9)		A(3)		C(2)		15
5	<i>lingombe</i>	<i>H. zenkeri</i>					A(1)		C(2)		3
6	<i>mbili na te (bibi)</i>	<i>Marantochloa congensis</i>				C(1)		A(1), C(6)			8
7	<i>mbili na te (njene)</i>	<i>M. congensis</i>				C(1)		C(6)			7
8	<i>mbili na te (buba)</i>	<i>M. ramosissima</i>				C(1)		C(6)			7
9	<i>mbili na ngbegbe (bibi)</i>	<i>M. leucantha</i>		C(1)	C3(1)			C(7)		C(1)	10
10	<i>mbili na ngbegbe (buba)</i>	<i>M. mannii</i>		C(1)	C3(1)	C(1)		C(7)		C(1)	10
11	<i>joanjean</i>	<i>M. cordifolia</i>		C(1)		C(1)		C(7)		C(1)	9
12	<i>nokembe</i>	<i>M. holostachya</i>						C(1)			2
13	<i>fondo (buba)</i>	<i>M. purpurea</i>		C(1)	C(13), C**(1)	C(1)		C(7)		C(1)	24
14	<i>fondo (njene)</i>	<i>M. purpurea</i>		C(1)	C(13), C**(1)	C(1)		C(7)		C(1)	24
15	<i>ngongo</i>	<i>Megaphrynium macrostachyum</i>		C(1), F(1)	C(13), C**(1), E**(2), F(1)	C(1)		C(6)		C(1)	27
16	<i>kasa</i>	<i>M. trichogynium</i>		C(1), F(1)	C(12), C**(1)	C(1)		C(6)		C(1)	23
17	<i>ngwasa na ngo</i>	<i>Sarcophrynium brachystachyum</i>		C(1), F(1)	C(12), C**(1)	C(1)		C(2)			18
18	<i>ngwasa na fasa</i>	<i>S. prionogonium</i>		C(1), F(1)	A(1), C(12), C**(1)	A(1), C(1)	A(1)	C(2)			21
19	<i>mokondi</i>	<i>S. schweinfurthianum</i>		C(1), F(1)	C(12), C**(1)	A(1), C(1)					17
20	<i>ndikasende</i>	<i>Trachyprynium braunianum</i>	B(1)			C(1)	A(1)				3
Total number of the different uses			2	19	145	17	11	74	6	8	282

Note: Use type codes using use categories and the used parts are mainly based on classification by informants (see Appendix 2).

Use categories; A: medicine, B: food, C: material culture, D: narcotics, E: folktales, F: others.

* Used part is flower.

** Used with leafstalks.

a toy drum from leaves of *ngongo* (substituting for a piece of dried duiker leather) and a papaya stalk (as substitute for a trunk) (Fig. 7). The diverse potential utility of Marantaceae leaves could not be simply counted.

Use of *ngongo* is just one example of diverse uses of Marantaceae plant types by the Baka. The total number of different uses of the 20 Marantaceae plants in material culture amounted to 250 (Table 1). The old female informant, in particular, knew a total of 227 uses for the Marantaceae plants in material culture which was 40% of all her recounted uses in material culture (Fig. 3), whereas the Marantaceae plants accounted for only 20 plant types (3%) in the 653 plant types (Fig. 2, Appendix 1). Actually, the intensive as well as extensive uses of Marantaceae plants in material culture comprise one of the most important characteristics of the Baka ethnobotany.

Marantaceae plants are also used as “medicine” and trading item. They use the roots of six plant types (11 uses), leaves of three plants types (three uses), leafstalks of three plant types (three uses), flower of one plant type (two uses) and skin of leafstalk of one plant for “medicinal” purpose. For example, one Baka woman said that she uses root of *kpasele* as “medicine” for sore, whereas another woman uses root of *hosso* (*Hypselodelphys scandens* Louis & Mullend.) as “medicine” for headache. Also, flowers of *boboko* (*Ataenidia conferta* (Benth.) M.-Redh.) are used as “medicine” for collecting honey, and the root of *ndikasende* as “medicine” for sickness caused by *behe*, an unidentified fish species (see, Appendix 2). As for trading of Marantaceae plants, they exchange a bunch of *ngongo* and *boboko* leaves for plantain, cassava, and occasionally for money with the neighboring farmers (Fig. 8).

Moreover, there is a folktale that starts off with the Baka women collecting *ngongo* coming across gorillas in the Marantaceae forest. In the climax of another folktale, *Komba*,⁽¹²⁾ the God of the forest sticks an *ngongo* leaf into the anus of a Baka man, who is transformed into a yellow-backed duiker (*bemba*; *Cephalophus silvicultor* (Afzelius)) with an oval-shaped tail resembling a *ngongo* leaf.



Fig. 4. Baka women scraping pith of *ngongo* leafstalks to weave mats.



Fig. 5. A young Baka boy carrying the instant container made of *ngongo* leafstalks and leaves.



Fig. 6. A Baka baby covered with *ngongo* leaves.



Fig. 7. A young Baka boy playing with an instant drum made of *ngongo* leaves and a papaya stalk.



Fig. 8. A Baka woman bringing back *ngongo* leaves.

DISCUSSION: IMPORTANCE OF MARANTACEAE PLANTS FOR THE AFRICAN FOREST DWELLERS

Marantaceae plants play a key role in Baka life and culture, and it even seems difficult for the Baka to live in the forest environment without them. The frequent and intensive use of Marantaceae plants in material culture is unique to central African hunter-gatherers (Tanno, 1981; Burkill, 1997; Terashima &

Ichikawa, 2003). The forest dwellers (e.g. Balée, 1994; Christensen, 2002; Koizumi, 2003) in the other tropical areas do not use Marantaceae plants as much as the central African peoples do, although they share the great diversity of the Marantaceae. Peoples outside Africa mainly use plants belonging to Palmae and other families for roof thatching, sleeping mats, hammocks and baskets. Marantaceae leaves used as wrapping, plates and cups have been reported but not other uses of Marantaceae plants⁽¹³⁾. According to Miyako Koizumi who is studying the ethnobotany of the Penan Benalui of Borneo, palms in Borneo play a similar role to Marantaceae plants in Africa (personal communication).

The diverse uses of Marantaceae plants by the peoples of the African rainforest owe to the fact that the Marantaceae forest (forest with ground floor covered with Marantaceae plants) is a common forest type in west and central Africa (White, 2001b) with abundant Marantaceae plants.

The “Pygmy” hunter-gatherers are thought to have lived in the tropical rainforest of Africa for at least 5000 years (Turnbull, 1965), whether or not side by side with the agricultural neighbors. One old female informant said, “Long time ago, our ancestors did not know pots, and used *ngongo* and other leaves of Marantaceae for cooking food.” Her story suggests that the Baka used Marantaceae plants as cooking utensils before they had the use of ceramic pots. The Baka probably have been utilizing these plants for thousands of years and created and accumulated the diverse uses for them. She also said, “I gave birth to my first daughter on *ngongo* leaves in a forest camp”. The Efe who also belong to the central African hunter-gatherer group used to wrap a dead person’s body with leaves of one Maranraceae plant (*Ataenidia conferta* (Benth.) M.-Redh.) (Terashima & Ichikawa, 2003). The hunter-gatherers in central Africa go through their life with using Marantaceae plants in many aspects of daily life from the cradle to the grave.

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NOTES

- (1) The Baka call their “medicine” *ma*. *Ma* includes not only medicine for physical sickness but also for ritual and magical effects including successful subsistence activities or a charm against various misfortunes.
- (2) The population data of Konabembe was collected in February 2002.
- (3) The population data of the Baka was collected in July 2004.
- (4) Recent studies in ethnobotany criticize the validity of the folk knowledge based on information obtained from only one or a few informants, as the informants belonging to different sex and life stage may not represent a whole people. However, the research on the vernacular names on 90 plant types among 10 adult informants (5 women and 5 men whose estimated ages were from 35 to 45) showed that they shared most of the vernacular names for these plants. As far as the vernacular names are concerned, it is likely that the adult Baka in study site have a similar knowledge of plants.
- (5) However, I included some semi-wild plant types such as oil palm (*mbila*; *Elaeis guineensis* Jacq.), and protected plants such as raffia palm (*peke*; *Raphia monbuttorum* Drude.).
- (6) First of all, I asked an interview the vernacular name, followed by the question, “What do you do with this (vernacular plant name)?” Then, “Do you use this (vernacular plant name) for (one or another use category)?” The categories I mentioned were food, item of material culture, “medicine,” narcotics and trading item. Next I asked, “Do you use this (vernacular plant name) for (one or another item in material culture)?” The items I mentioned in the series of questions were the hut, cushioning under the sleeping mat, instant container, pot, cooking sheet, plate, cup, funnel, eyedropper, fish-bailer, fan, dust pan, parasol, tobacco roller, basket, carrying basket, man’s carrying device, knife sheath, cord, accessory, cosmetics, broom, fishing rod, grater, comb, marker for a forest trail and marker for the owner of a forest product. I finally asked, “Do you know a folktale for (a vernacular plant name)?” Most uses were observed in the study site. However, the uses for “medicine” were not observed, but were collected from the informants.
- (7) There are some interesting points for differences of knowledge among my 6 informants. The oldest female informant had the richest knowledge and female informants knew more Marantaceae plant types and the uses than male informants. However, most of the informants had almost a similar knowledge on food, material culture and narcotics but different knowledge on “medicine” and folktales. The differences of knowledge among my informants are not the main subject of this paper, and I will deal with the topic in a forthcoming paper.
- (8) Trees used as material for building houses, those used for digging wild yams and firewood were excluded. The informant neither selected specific trees for these purposes nor explained trees used for these purposes as “useful” plants.
- (9) *Fondo* (*Marantochloa purpurea* (Ridley) M.-Redh.) has both a strong leafstalk and large leaves.
- (10) *Fondo* (*Marantochloa purpurea* (Ridley) M.-Redh.) is an also useful plant, but actually ngongo is the most frequently used plant for the reason of availability.
- (11) Smaller but similar leaves of *Ataenidia conferta* (Benth.) M.-Redh. are used as a marker for a forest trail and that for the owner of a forest product by the Mbuti hunter-gatherers in the Ituri forest of the northeastern part of the Democratic Republic of Congo (Tanno, 1981). The Mbuti sometimes use the leaves of the totemic plant of his clan to show that a clansman passed there, or to mark some forest products such as honey and wild yams. The Mbuti make simple mats with the leaves by doubling them along the midrib and alternately folding them in succession. These uses are not confirmed in my

interviews and observations in the study site.

- (12) It is unclear whether or not the Baka had the concept of *Komba* as God of the forest before Christianity was introduced to the area.
- (13) However, forest people in other tropics have one unique use of eating the rhizome and shoot. Use of rhizome and shoot as food is not commonly reported in the African rainforest.

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Appendix 1. Rank of Plant Families in Number of Collected Baka Plant Types and in Number of Different Uses for Food, Material Culture and Medicine.

Collected Baka plant types		Uses for food		Uses for material culture		Uses for medicine	
Euphorbiaceae	53	Dioscoriaceae	10	Marantaceae	227	Euphorbiaceae	31
Rubiaceae	53	Euphorbiaceae	7	Arecaceae	48	Rubiaceae	29
Fabaceae	29	Irvingiaceae	7	Euphorbiaceae	28	Annonaceae	24
Annonaceae	23	Arecaceae	5	Annonaceae	20	Apocynaceae	23
Apocynaceae	23	Moraceae	4	Apocynaceae	19	Fabaceae	22
Marantaceae	20	Sapotaceae	4	Fabaceae	14	Acanthaceae	16
Caesalpinaceae	18	Sterculiaceae	4	Moraceae	14	Caesalpinaceae	13
Sterculiaceae	17	Apocynaceae	3	Rubiaceae	14	Mimosaceae	12
Sapindaceae	15	Araceae	3	Graminae	12	Moraceae	11
Moraceae	14	Cecropiaceae	3	Zingiberaceae	12	Loganiaceae	10
Sapotaceae	14	Fabaceae	3	Celastraceae	8	Verbenaceae	10
Celastraceae	13	Menispermaceae	3	Ebenaceae	8	Araceae	9
Mimosaceae	13	Acanthaceae	2	Sterculiaceae	8	Marantaceae	9
Acanthaceae	12	Anacardiaceae	2	Caesalpinaceae	5	Myristicaceae	9
Loganiaceae	12	Annonaceae	2	Combretaceae	5	Sapindaceae	9
Graminae	11	Dilleniaceae	2	Loganiaceae	5	Sapotaceae	9
Araceae	10	Gnetaceae	2	Olacaceae	5	Sterculiaceae	9
Compositae	10	Huaceae	2	Pandaceae	5	Zingiberaceae	9
Dioscoriaceae	10	Marantaceae	2	Other 54 families	112	Dioscoriaceae	8
Meliaceae	10	Olacaceae	2			Irvingiaceae	8
Verbenaceae	10	Pandaceae	2			Other 66 families	163
Other 89 families	245	Sapindaceae	2				
		Zingiberaceae	2				
		Other 17 families	17				
Total	653		95		569		471

Appendix 2. Description of Use of Marantaceae Plants by the Baka Hunter-Gatherers.

Arrangement of the Records:

The records are arranged in alphabetical order of genus. A serial number is given to each record of Baka plant types belonging to Marantaceae. The plant types are different from scientific species, and based on the classification by the informants. Each vernacular name and use reflects the knowledge of the 6 following informants.

Informants

ID	Name	Sex	Age	Village of origin
f1	Moboli	Female	55-65	Malea Ancien (study site)
f2	Agole	Female	40-50	Malea Ancien (study site)
f3	Mama	Female	40-50	Zoulabot Ancien (7 km far from study site)
m1	Liakom	Male	45-55	Malea Ancien (study site)
m2	Amambo	Male	35-45	Song Ancien (23km far from study site)
m3	Nola	Male	35-45	Ngato Ancien (12km far from study site)

Arrangement of the Description in Each Record:

The information is sorted in the following order:

1. Vernacular name(s) and specimen ID number(s).
2. Scientific name.
3. Use: Type codes using use categories and the used parts, which are mainly based on classification by informants.
 - Some uses are categorized into two or more use categories. For instance, one informant wore a piece of the skin of *mbili na te (bibi)* as a “medicine” and accessory. I counted each use for descriptive purposes.
 - If the same parts of different plants are used for the same purpose, I omitted the same description the second time.
 - I provide ID for the informants who gave me the same answers in parentheses. When all 6 informants gave me the same answer, I have no parenthesis.

Classification of Use Categories and the Used Parts

Use categories	Used parts
A Medicine (<i>ma</i>)	1 Seed (<i>la leka</i>)
B Food (<i>jo</i>)	2 Fruit & Flower (<i>leka</i>)
C Material culture	3 Leaf (<i>kpa</i>)
D Narcotics (<i>yua</i>)	4 Leafstalk (<i>no</i>)
E Folktale (<i>likano</i>)	5 Root (<i>lie</i>)
F Others	6 Skin (<i>su</i>)
	7 Vine (<i>kpo</i>)
	8 Pith (<i>buma</i>)

4. Etymology.
5. Notes: Other ethnographic and useful information.

SPERMATOPHYTES

#1

boboko (ID No.650)*Ataenidia conferta* (Benth.) M.-Redh.

A2: "Medicine" for honey collecting (f1/m1/m2/m3), "medicine" for foot (f1). Informants rub juice pressed from flowers of *boboko* onto their axe blade as "medicine" for good luck when collecting honey. One informant rubs it on her knee in hope of walking in the forest for a long time.

A5: "Medicine" for headache (m1), "medicine" for sore (m2). Informants burn the root of *boboko* and pound it with a wooden pestle. They add palm oil to this and rub it onto the temple area, or the sore cut with a razor on the affected part of the body.

C2: Cosmetic. Young Baka girls decorate their forehead and face with the red juice of *boboko* flower.

C3: Roof thatching for the traditional hut (*mongulu*), cushioning under sleeping mats, pot, cooking sheet, plate, cup, funnel, eyedropper, fish-bailer, fan, dust pan, parasol, tobacco roller. Baka women make a framework of the traditional hut by bending slender trees and intertwining them to one another. They thatch the framework with *boboko* and other leaves of Marantaceae from the bottom to the top. They use frequently *boboko* leaves for cooking and as various kinds of household utensils. Grated cassava and fish wrapped with the leaves of *boboko* are baked over a fire. The leaves are also used to separate gooey food such as plantain and banana from the pot. The *boboko* leaves give the foods a good aroma and the Baka enjoy it very much. The leaves are dried over a fire, and the Baka roll tobacco with it.

C3/4: Instant container. Forest products (mushroom, fish and honey) are wrapped in leaves and leafstalks of *boboko* to carry to the village.

C4: Accessory for the nose sticks (f1/f2/m1). The Baka women wear a piece of the leafstalks of *boboko* in the pierced

nose.

F3: Trading item. The Baka women exchange a bunch of *boboko* leaves for plantain, cassava and money with the neighboring Bantu farmers.

Note: Leaves of *boboko* are one of the most common materials for household utensils, because *boboko* is easily found in clusters in the forest. The Baka bring back the leaves from the forest almost everyday.

#2

tolu (ID No. 661)*Halopegia azurea* (K. Schum.) K. Schum.

A3: "Medicine" for fish bailing (f1). One informant has a leaf of *tolu* with her for a good catch when fish bailing.

A4: "Medicine" for fish bailing (f1). One informant wears a piece of the leafstalk of *tolu* in the pierced nose for a good catch when fish bailing.

C3: Roof thatching (f1), cushioning put under sleeping mats, and pot (f1/f3/m1, m2/m3), cooking sheet (f1/f3/m1/m2/m3), plate (f1/f3/m1/m2/m3), cup, funnel, eyedropper, fish-bailer, fan, dust pan (f1), parasol, tobacco roller.

C3/4: Instant container.

C4: Accessory for nose sticks (f1/f2/f3).

#3

kpasele (ID No. 645)*Haumania denckelmanniana* (J. Braun & K. Schum.) M.-Redh.

A3: "Medicine" for fortifying fire-making instruments. The Baka wrap the fire making iron instruments and salt with the dried leaves of *kpasele*. The instruments are placed in a fire for a while and then cooled with water for tempering.

A5: "Medicine" for sore (f1), "medicine" for skin (m1/f2), "medicine" for teeth (f3). The root of *kpasele* is burned and pounded with a wooden pestle. One informant adds palm oil and rubs it onto

a sore cut with a razor on the affected part of the body. Other informants apply the powder to skin and teeth.

B1: The Baka call a fruit of *kpasele likenye*. Seeds of *likenye* are roasted and eaten as a snack. They say that *likenye* is the peanuts of the forest.

C3: Cup (f1/f3), funnel (f1/f3), eyedropper, fan (f3), tobacco roller.

C6: Basket, knife sheath (f2/f3/m1/m2/m3). The Baka cut off the thorn with a vine of *kpasele*, split the vine, and scrape off the pith. The Baka women weave baskets with the skin of *kpasele*, while the men weave knife sheaths.

C7: Frames for the hut (m1/m2), man's carrying device, grater. Vine of *kpasele* is used for the frames of traditional hut and a man's carrying device after the thorns are cut off. The hard thorns of *kpasele* vine are useful for grating cassava and wild yam. Grated cassava and wild yam are mixed with wild vegetable and medicinal plants, wrapped in the *ngongo* and *boboko* leaves, and baked in a fire.

C8: Broom. Pith of *kpasele* scraped from vine is used for broom.

D6: Narcotic to add to tobacco. The Baka add whittled skin of the *kpasele* vine to tobacco when the Baka men puff at their pipes. They say that *kpasele* draw out strong taste of tobacco.

Note: The Baka say that skin of *kpasele* is so strong that it is proper material to weave a sheath of knife. One informant says "*kpasele* with robust thorn is like a gun" (m1).

#4

hoso (ID No.644)

Hypselodelphys scandens Louis & Mullend.

A5: "Medicine" for sore (f1/m2), "medicine" for headache (f3), "medicine" for heart (m3). The root of *hoso* is burned, pounded with a wooden pestle, and the water decoction of the powder is drunk as a "medicine" for the heart.

C2: Comb. *Hoso* have white fruits with a projection resembling a comb and the

Baka brush their hair with it.

C3: Roof thatching (m1), cushioning under the sleeping mats (m1), cup, funnel, fish-bailer, eyedropper, fan, dustpans and parasol.

C7: Frames for the hut, man's carrying device (m1/m3).

#5

lingombe (ID No. 654)

Hypselodelphys zenkeri (K. Schum.) M.-Redh.

A5: "Medicine" for sore (f1).

C7: Frames for the hut, carriers (m1/m3)

Note: The vine of *lingombe* is so flexible that the Baka most frequently use this for the poles in the traditional hut, *mongulu*.

#6

mbili na te (bibi) (ID No.658)

Marantochloa congensis (K. Schum.) J. Leonard & Mullend.

A6: "Medicine" for headache (m1). One informant wears a cord of *mbili na te (bibi)* skin on the forehead in hope of recovering from a headache.

C4: Accessory for the nose sticks (m3).

C6: Mat (f1/f3), dust pan (f1/f3), carrying basket (f1), basket (f1/f2/f3), cord (f3), accessory (f3). Young Baka girls split leafstalks of *mbili na te (bibi)* and scrape off the pith to weave small-sized utensils. Small mats are also used as dust pans to throw away leftover food such as plantain and cassava peels.

Etymology: *Mbili na te* means small *mbili*. In contrast, there is *mbili na ngbengbe* (#9, #10), the large *mbili*. They recognize that there are three types of *mbili na te*, and classify them by the color of the plant body, black (*bibi*), red (#7, *njene*), and white (#8, *buba*). However, the color of *bibi*, *njene*, and *buba* is respectively dark green, reddish green, and light green.

#7

mbili na te (njene) (f1/f2/f3/m1/m2) (ID No. 657)

Marantochloa congestis (K. Schum.) J. Leonard & Mullend.

Etymology: See #6.

Notes: The use of *mbili na te (njene)* and that of *mbili na te (bibi)* (#6) overlapped, except for a “medicinal” use by one informant.

#8

mbili na te (buba) (f1/f2/f3/m1/m2) (ID No. 659)

Marantochloa ramosissima (Benth.) Hutch.

Etymology: See #6.

Note: The use of *mbili na te (buba)* and that of *mbili na te (bibi)* (#6) overlapped, except for a “medicinal” use by one informant.

#9

mbili na ngbengbe (bibi) (ID No. 656)

Marantochloa leucantha (K. Schum.) M.-Redh.

C2: Accessory of the hole opened above the upper lip (f1/f2).

C3: Fan (f3).

C6: Mat, dust pan, carrying basket, basket, knife sheath, cord, accessory.

C8: Broom.

Etymology: See #6. Informants call this plant *mbili na ngbengbe*, and the two types are classified by the color of the plant body: black (*bibi*) and white (#10, *buba*). They also call this plant *mbili na bibi*.

#10

mbili na ngbengbe (buba) (ID No. 655)

Marantochloa mannii (Benth.) M.-Redh.

Etymology: See #6, #9.

Note: The use of *mbili na te (buba)* is

the same as that of *mbili na te (bibi)*, #9). The Baka women adorn their mats with the white skin of *mbili na ngbengbe (buba)* and the black skin of *mbili na ngbengbe (bibi)*.

#11

joanjoan (f1/f2/f3/m1) (ID No. 653)

Marantochloa cordifolia (K. Schum.) J. Koechlin.

C2: Accessory of the hole opened over the upper lip of women (f1).

C6: Mat (f1/f2/f3/m1), dust pan (f1/f2/f3/m1), carrying basket (f1/f2/m1), basket (f1/f2/m1), knife sheath (f1/f3/m1), cord (f1/f2/m1), accessory (f1/f2/m1).

C8: Broom (f1/f2/m1).

Note: Informants said that neighboring farmers, Konabembe, plant *joanjoan* in their fields and near their house.

#12

nokembe (ID No. 643)

Marantochloa holostachya (Baker) Hutch.

C4: Accessory for the nose stick.

C6: Accessory.

Etymology: The meaning of *nokembe* is “legs (*no*) of *kembe*.” *Kembe* is an unidentified forest bird that has long “red” legs. Informants said that the leafstalk of *nokembe* is red like “legs (*no*) of *kembe*.” However, the color of leafstalk of *nokembe* is reddish brown.

Note: The red leafstalk of *nokembe* is a popular material for accessories.

#13 *fondo (buba)* (ID No. 651)

Marantochloa purpurea (Ridley) M.-Redh.

C2: Accessory of the hole opened above the upper lip (f1/f2).

C3: Roof thatching (f3/m1), cushioning under the sleeping mats (f1/f3), pot (f1/f3/m1/m2/m3), cooking sheet (f1/f3/m1/m2/m3), plate (f1/f3/m1/m2/m3), cup, funnel, fish-bailer, eyedropper, fan, dust pan, parasol, tobacco roller (m1).

C3/4: Instant container (f1/f3/m1/m2/m3).

C4: Fishing rod (f2).

C6: Mat (f1/f2/m2), dust pan (f1/f2/m2), carrying basket (f1/f2/m1/m2/m3), basket, knife sheath (f1), cord (f1/f2/m1/m2/m3), accessory (f1/f2/m1/m2/m3).

C8: Broom (f1/f2/m1/m2/m3).

Etymology: Informants normally call this plant *fondo*, and the two types of *fondo* are classified by the color of plant body: white (*buba*) and red (*njene*). Sometimes this plant is called *fondo na buba* which means white *fondo*, and the other, *fondo na njene* which means red *fondo*.

#14 *fondo (njene)* (ID No. 652)

Marantochloa purpurea (Ridley) M.-Redh.

Etymology: See #12.

Note: The use of *fondo (njene)* is same as that of *fondo (buba)*, #13).

#15

ngongo (ID No. 641)

Megaphrynium macrostachyum (Benth.)

M.-Redh.

C2: Accessory of the hole opened above the upper lip (f1/m1).

C3: Roof thatching, cushioning under the sleeping mats (f1/m1), pot, cooking sheet, plate, cup, funnel, bailer, eyedropper, fan, dust pan, parasol, tobacco roller (f1).

C3/4: Instant container.

C4: Accessory for the nose sticks (f1/f2).

C6: Mat, dust pan, carrying basket, basket (f1/f2), cord, accessory. Carrying baskets made of *ngongo* are especially called *sangi*, and the Baka women go fish bailing with it.

C8: Broom.

E3/4: Folktales of forest animals. In one folktale, the Marantaceae forest is described as the place where the Baka women collecting leaves and leafstalks of *ngongo* come across gorillas (f1). In another folktale, *Komba*, God of the forest, put the leaf into the anus of the Baka, and the man transforms himself into yellow-backed duiker that has an

oval tail like the leaf of *ngongo*.

F2: Pacifier (f1). One informant and her children suck on a piece of red fleshy fruits such as *ngongo*, *kasa*, *ngwasa*, and *mokondi* when they are starving in the forest.

F3: Trading item.

Note: One informant said that Baka children like to play with *ngongo* fruits, and often pacifies a crying child with them (f1). Leaves of *ngongo* are one of the most common materials used for household utensils, similar to that of *boboko*. *Ngongo* leaves are larger than those of other plants of Marantaceae, and the Baka prefer to use leaves of *ngongo* for roof thatching. Some informants say that ticks (*kuwa*) inhabit the abaxial side of the leaves, and avoid using them for cushioning under the sleeping mats. One informant gave birth to her first daughter on *ngongo* leaves in a forest camp (f1). She said "Long time ago, our ancestors did not know ceramic pot and used leaves of *ngongo* for cooking food".

#16

kasa (f1/f2/f3/m1) (ID No. 642)

Megaphrynium trichogynium J. Koechlin

C2: Accessory of the hole opened above the upper lip (f1/m1).

C3: Roof thatching (f1/f2/f3/m1), cushioning under the mats (f1/m1), pot (f1/f3/m1), cooking sheet (f1/f3/m1), plate (f1/f3/m1), cup (f1/f2/f3/m1), funnel (f1/f2/f3/m1), fish-bailer (f1/f2/f3/m1), eyedropper (f1/f2/f3/m1), fan (f1/f2/f3/m1), dust pan (f1/f2/f3/m1), parasol (f1/f2/f3/m1).

C3/4: Instant container (f1/f2/f3/m1).

C4: Accessory for the nose sticks (f1/m1).

C6: Mat (f1/m1), dust pan (f1/m1), carrying basket (m1), basket (m1), cord (m1), accessory (m1).

C8: Broom (f1/m1).

F2: Pacifier (f1).

Note: Some informants do not use *kasa* for cushioning under the sleeping mats for fear of ticks. One informant says that

kasa is the small brother of *ngongo* (f1).

#17

ngwasa na ngo (ID No. 648)

Sarcophrynium brachystachyum (Benth.)
K. Schum.

C2: Accessory of the hole opened above the upper lip (f1/f2/f3/m1).

C3: Roof thatching, cushioning under the sleeping mats, pot, cooking sheet, plate, cup, funnel, fish-bailer, eyedropper, fan, dust pan (f1/f3/m1), parasol (f1/f3/m1).

C3/4: Instant container.

C4: Accessory for the nose sticks (f1/f2).

C6: Cord (m3), accessory (m3).

F2: Pacifier (f1).

Etymology: *Ngwasa na ngo* means *ngwasa* occurring near the water. In contrast, there is *ngwasa na fasa* (#18) which means terrestrial *ngwasa*.

#18

ngwasa na fasa (ID No. 649)

Sarcophrynium prionogonium (K. Schum.)
K. Schum.

A3: "Medicine" for honey collecting (m3).

A4: "Medicine" for yam collecting (f1).

A5: "Medicine" for yam collecting (f1).

The root of *ngwasa na fasa* is burned, pounded with a wooden pestle, added with palm oil to rub onto the center of forehead and back of the hand for hope of finding and collecting plenty of wild yam.

Etymology: See #17.

Note: The use of *ngwasa na fasa* and that of *ngwasa na ngo* (#17) overlapped, except for a "medicinal" use by some informants.

#19

mokondi (ID No. 647)

Sarcophrynium schweinfurthianum
(Kuntze) M.-Redhead.

A4: "Medicine" for honey collecting

(m1).

C2: Accessory of the hole opened above the upper lip (f1/f2/m1).

C3: Roof thatching (f1/m1), cushioning under the sleeping mats (f2/m3), pot (f1/f3), cooking sheet (f1/f3), plate (f1/f3), cup, funnel, fish-bailer, eyedropper, fan, dust pan, parasol.

C3/4: Instant container (f1/f2).

C4: Accessory for the nose sticks (f1/f2).

F2: Pacifier (f1).

#20

ndikasende (ID No. 646)

Trachyphrynium braunianum (K.Schum.)
Bak.

A5: "Medicine" for sickness caused by the fish, *behe* (f1). The root of *ndikasende* is burned, pounded with a wooden pestle, and added with palm oil. Temple areas, neck, back, elbows, knees and insteps are cut with a razor and the powder is rubbed on these body parts. *Behe* is an unidentified fish which brings sickness to children when the parents eat it. Children with the sickness of *behe* develop a fever and wheeze.

B1: Roasted over a fire and eaten for a snack (f1).

C4: Accessory for the nose sticks (f1/f2).