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Species diversity of socio-economic importance in the Kebe Block Forest, Cameroon: Local perceptions and conservation implications

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Abstract. *Inimbock SL, Chimi CD, Ngomeni AF, Enamba CY, Pouomogne YG, Caspa RG, Tsemo DC, Ngueguim EC, Yonga G, Noutanewo P, Misse CA, Mala WA. 2023. Species diversity of socio-economic importance in the Kebe Block Forest, Cameroon: Local perceptions and conservation implications. Asian J Ethnobiol 6: 153-160.* Forest areas dedicated to research and education, such as the Kebe Block Forest (KBF), Cameroon, have a high plant diversity, some of which are of socio-economic importance to local populations. Knowing that the objectives of the KBF are well defined, this study aimed to identify forest plant species of socio-economic importance to the local populations living around the KBF. Also, this study aimed to propose strategies that reconcile the local population's well-being and the preservation of the KBF. Given the high dependence of local communities on the forest, a socio-economic survey was carried out in 51 households. Therefore, 40 species of socio-economic importance were found, and six products and services, namely food, medicinal products, raw materials for handicrafts, edible caterpillar species, timber, and income generating, were identified. For 86% of the local people, the availability of these plant species has decreased significantly compared to 10 years ago; the main causes identified were illegal logging (32%) and agriculture (21%). According to occurrence frequency citation, *Baillonella toxisperma* Pierre (65%), *Irvingia gabonensis* (Aubry-Lecomte ex O'Rorke) Baill. (38%), and *Ricinodendron heudelotii* (Baill.) Heckel (30%) were identified as the flagship socio-economic plant species that local people would like to introduce into their farms to ensure their sustainability. Identifying plant species of socio-economic importance, their availability, and their threats provides substantial information that could help the authorities manage the KBF to plan conservation activities better, considering the local population's well-being.

Keywords: Availability, east Cameroon, Kebe Block Forest, local perception, socio-economic importance, sustainability

Abbreviations: IRAD: Institute of Agricultural Research for Development, KBF: Kebe Block Forest

INTRODUCTION

Cameroon's Forest expanse is known for its ecosystems' variability and high plant diversity (Onana 2018). These ecosystems are an essential source of goods and services for the population's well-being (Leakey et al. 2022). Indeed, they are a source of livelihood (food, timber, medicine and raw material) and support service to thousands of people living in and around the forests, who use them for their daily well-being (Inimbock et al. 2021; Chimi et al. 2022; Leakey et al. 2022; Ayoub et al. 2023; Chimi et al. 2023). The local population strongly depends on forest resources, while the availability of these natural resources is decreasing, and forest areas are shrinking (Zekeng et al. 2019). The main causes are converting forest areas into agricultural land, overexploitation, poor harvesting techniques and timber exploitation (Zekeng et al. 2019; Chimi et al. 2022). Like several other African countries, Cameroon has based its conservation policy on strategies to promote the conservation of its forest area, such as protected areas.

Cameroon's commitment to this vital requirement has created several protected areas, such as National parks. By 2021, the Ministry in charge of Cameroon's forests, in partnership with the World Resource Institute (WRI), designated more than 4.7 million hectares of its land as protected areas. In this context, for example, the Deng-Deng National Park in the East region of Cameroon was created under Decree No. 2010/0482/PM of 18/03/2010. This forest area, belonging to the Congolese domain (Letouzey 1985), is one of the richest in terms of biodiversity in Cameroon (Kabelong et al. 2018). It hosts a forest reserved for research and education, known as the Kebe Block Forest (KBF), managed by the Institute of Agricultural Research for Development (IRAD), especially the IRAD Belabo antenna. Like protected areas, these forests dedicated to teaching and research are, according to the forestry law, areas where all logging activities are prohibited. Unfortunately, the KBF is a victim of extensive human activity, impacting its future and achieving its basic objectives (Tchingsabe et al. 2016). This is also confirmed by the study of Chimi et al. (2023), who showed that KBF

provides 19 provisioning services to riparian people that include firewood, timber, caterpillars, mushrooms, snails, insects (termites and grasshoppers), *djansang* and *andok*, amend, liana, Marantaceae leaves, hazelnut, honey, *okok* (*Gnetum* spp.), livestock feed (pasture), medicinal plants, wine palm, river fishes and snakes. However, even if these services imply several plant species, information about the diversity of socio-economic plant importance for the local population needs to be more understood.

The objective of the Belabo research Antenna is to develop appropriate silvicultural tools for sustainable forest management in the east region of Cameroon, as recommended by Debroux (1998), who points out the urgent need to take practical measures to ensure the protection and sustainability of forest species. Given that population encroachment into the KBF has left the forest area considerably degraded (Tchingsabe et al. 2016), making it difficult for the KBF to achieve its set objectives, particular attention must be paid to reconciling the well-being of the local population with biodiversity conservation goals. Moreover, considering that one of IRAD's missions is to carry out actions in favor of the well-being of the local population and the conservation and sustainable management of biodiversity. The study aims to identify forest plant species of socio-economic importance to the local population to provide substantial information that could help IRAD support the local people in their conservation strategies. This will ensure that the resources of the KBF are preserved, thus attaining the objectives of its creation, and would be part of win-win solutions.

MATERIALS AND METHODS

Study area

This study was carried out from June to August 2022 in the villages adjacent to the Kebe Block Forest (KBF), located in the Belabo Sub-Division, Lom and Djerem Division of the East region of Cameroon (Figure 1). This block has a classified surface area of 3,689 ha under the joint supervision of the University of Dschang and the Belabo IRAD Research Antenna, which was set up in 1972. The average altitude of the study area varies between 600 to 800 m and is characterized by a few hills. The climate in this area is Guinea-Equatorial, with four seasons of unequal duration (a long dry season from mid-October to mid-March, a short dry season from July to August, and a long rainy season from mid-March to June, and a short rainy season from September to mid-October. The average rainfall is 1,600 mm/year, and the average annual temperature fluctuates from 23°C to 25°C. The hydrographic network is very dense and characterized by several tributaries. The soils are essentially ferritic, sandy-clay, or silty-clay, generally found on the plains, with lateritic cuirasses in places and some hydrographic soils found mainly in marshy areas and flood plains. The vegetation comprises phytogeographical units falling into two subsets: the Guinea-Sudanese with its different savannah facies and the semi-deciduous forest (Letouzey 1985). The main activities are logging, agriculture, hunting, and collecting non-timber forest products (NTFPs).

Data collection

Data were collected in five villages (Biombi, Yebi, Yanda, Ebaka, and Essandjane) of the seven villages bordering the KBF, Cameroon. These villages were selected based on their proximity to the boundaries of the KBF. The methodological approach used for data collection consisted of administering a questionnaire to the heads of households in the target villages, with or without other members of the household present. These people were selected based on the duration of their stay in the locality (the more time you spend in a village, the greater your knowledge of the socio-economic species (Ngoukwa et al. 2023), their dependence on forest products, and their hospitality.

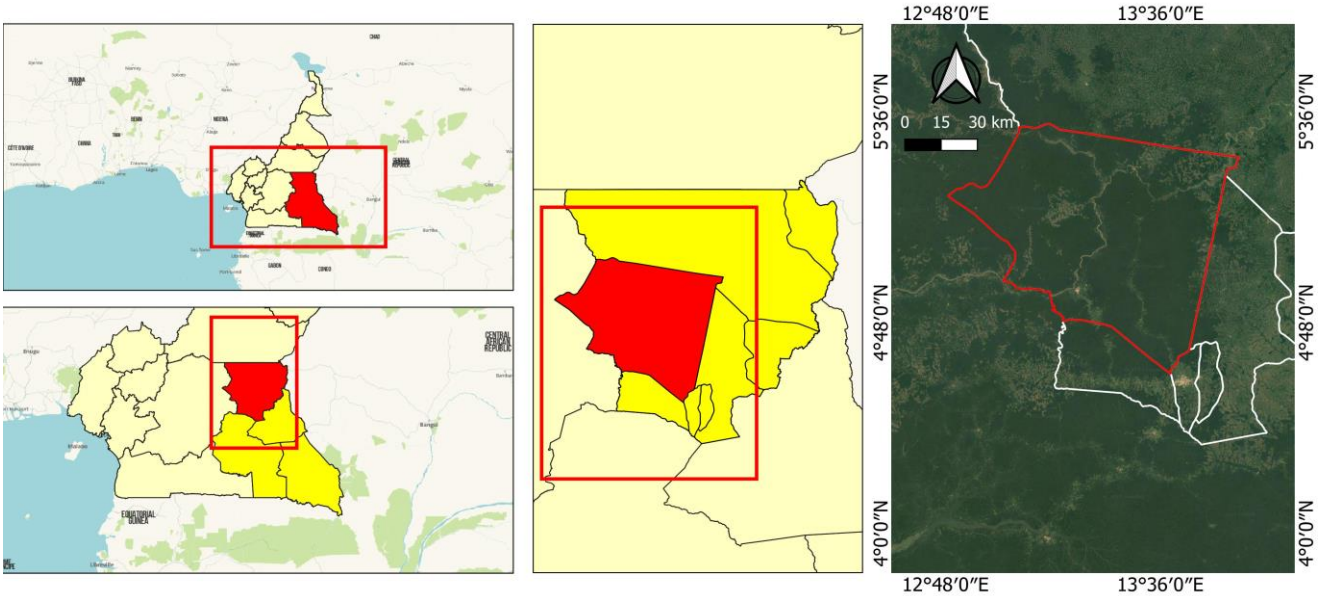

Figure 1. Study area in Kebe Block Forest, in the Belabo Sub-Division, Lom and Djerem Division of the East of Cameroon

Given the language barrier, a translator (local language to French and vice versa) was recruited to facilitate the administration of the questionnaire. The questions essentially concerned the forest species of importance to them, their uses, the harvesting methods, the plant parts collected, approximate walking distance from their villages to the resource collection points and the degree of importance value The botanical forms of each plant species listed were identified through literature reviews (Onana and Mezili 2018). Information on the perception of local people concerning the level of threats and availability of these natural resources in the villages was also collected. Notably, out of the 60 households retained for this study in the five target villages (Chimi et al. 2023), 51 heads of household were surveyed (representing 85% of all households living in the KBF).

Data analysis

The collected data were encoded in a Microsoft Excel spreadsheet, and descriptive analyses based on the frequency of quotations (%) obtained were calculated to assess local populations' perceptions of socio-economic plant species. On the other hand, local people of each species' occurrence frequency citation (in percentage %) was done to appreciate the number of species according to different parts used, harvesting techniques, distance, consumption level, and then the socio-economic interest of these species.

RESULTS AND DISCUSSION

Diversity of species of socio-economic importance to local people in the periphery of the Kebe Block Forest

Surveys of local people living near the KBF reveal that all respondents (100%) rely on resources derived from the forest for their well-being, given the socio-economic potential that these forest species provide. A total of 40 plant species of socio-economic importance to local people were identified (Table 1). According to their forms, 81% are trees, 1% is shrubs, 10% herbaceous plants and 8% liana.

These plant species provide people with goods and services such as food, traditional medicine, handicrafts, timber, raw materials for handicrafts, and edible caterpillars found on some specific tree species. For the six services identified (food, traditional medicine, handicrafts, timber, caterpillars, and income generating (products collected for sale), four plant species were identified as providing four services each (representing 10% of the total species identified); 17 provide three services each (43%); 10 provide two services each (25%), and only nine plant species provide a single service each (23%) (Table 1).

The population traveled from less than 1 to nearly 25 km (distance from the village) to collect forest products from the plant species identified. For 73% of these species, riparian people traveled 10 or less than 10 km to collect these resources. These consist essentially of plant parts such as bark, seeds, fruit, flowers, leaves, and roots for both food and traditional medicine; timber, raw material for handicrafts (rattan, petioles from the palms of *Raphia* sp.); palm wine, caterpillars from certain forest tree species such as *Entandrophragma* spp. (Table 1). For most plant species (23%), the parts collected are bark and trunk; for 18% and 13%, fruit and trunk caterpillars are collected, respectively. Leaves, trunk and bark-fruit are collected by 8% of plant species. The bark is collected for 5% of these plant species. The others are represented by 3% of plant species each; these include bark-chenille-trunk, bark-fruit-leaves, bark-fruit-sap, bark-sap, flowers and leaves-sap.

The methods used to collect these plant species depend on the services provided: picking off the leaves (medicinal), tree felling (timber and in some cases for edible caterpillars), picking (seeds, fruits and caterpillars: food and raw material), and debarking (bark: medicinal). It should be noted that several collection methods are applied for some plant species depending on the part collected (Table 1). We found that for 8% of these plant species, the harvesting method consists of Picking leaves and debarking-felling each. For harvesting methods like debarking, felling, picking-felling and picking leaves-debarking, they are represented by 3% of plant species each. Debarking-picking, debarking-picking leaves, picking, picking-picking-leaves and picking-debarking-dealing are represented by 2% of plant species. Debarking-picking-felling, debarking-picking, leave-picking, felling-picking, picking, picking leaves-picking represented each 1%. It should also be noted that woody forest resources provide local residents with the fuelwood they need for cooking. However, there is no specific choice of woody species for this service.

According to the perception of local people concerning the socio-economic importance of the plant species, only those of 29 plant species were provided (73%), and they still need to provide information concerning the socio-economic importance of 11 plant species. However, for these 29 plant species where information was provided, 55% of respondents think that their economic value is low despite their interest in these plant species, 21% think it is medium, and 24% think it is high. According to the consumption level perception of local people, we found that 53% have a low consumption; 28% a moderate consumption and 20% a high consumption. For each plant species, the economic value and consumption level provided were mentioned in Table 1.

Availability of plant species of socio-economic importance in the zone

Nearly 86% of household respondents perceived a decrease in the availability of plant species of socio-economic importance compared to 10 years ago. However, 11% and 3% thought these species had remained constant and increased. On the question of which plant species they are interested in, even though they have become rare in the area, 29 forest plant species were identified. The frequency of occurrence (%) of these plant species according to the respondents (indicating the socio-economic importance of the plant species despite the decline in their densities) is shown in Figure 2. *Baillonella toxisperma, Triplochiton scleroxylon, Entandrophragma cylindricum,* and *Milicia*

excelsa were the plant species most frequently cited by households as having a high economic potential, although they are disappearing in the area.

When asked whether local people would like to introduce forest plant species into their plots (fields, plantations, home gardens and cocoa agroforest, 100% of respondents expressed an interest in introducing forest plant species of their choice into their plots if the plants were available and accessible to them. In their opinion, the selected plant species to be introduced is a function of these plant species' socio-economic importance. Figure 3 shows, in order of relative frequency of occurrence, the 28 flagship plant species in which people have shown an interest. The *B. toxisperma* (65%), *Irvingia gabonensis* (38%), *Ricinodendron heudelotii* (30%), and *E. cylindricum*, (24%) were selected because they preferred of more frequently exceed 20%.

Factors affecting the availability of these plant species

Several factors have been identified as being the cause of the decline or even scarcity of plant species of socio-economic importance. Figure 4 shows the various causes, and it can be seen that the main anthropogenic causes are illegal logging (32%) and agriculture (21%). High market demand and domestic and medicinal needs were also mentioned to a lesser extent, below 5% each.

Discussion

The survey results identified 40 plant species with socio-economic importance for the local people living along the KBF. The various uses to which these species are put are mainly for food, medicinal purposes, and timber. Ingram et al. (2010) showed that priority species in countries of Central Africa such as Cameroon, the Democratic Republic of Congo, and the Central African Republic have multiple uses, mainly for food, medicine, and fuel. However, the people who make up the population of the KBF are not specific in the plant species used as an energy source, which is why this service in terms of plant diversity was not directly considered in this study.

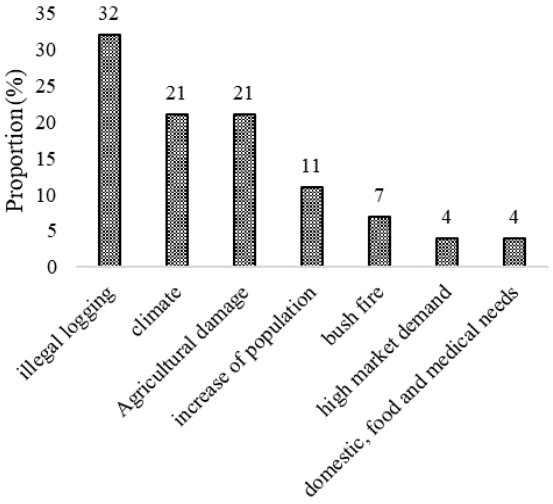

Figure 4. Factors explaining the reduction in plant species in and around the Kebe block forest

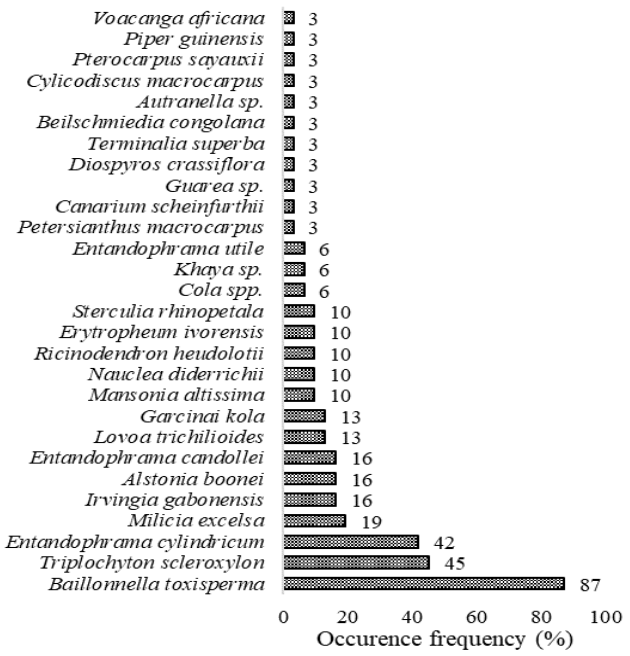

Figure 2. List of plant species that have become rare in the area

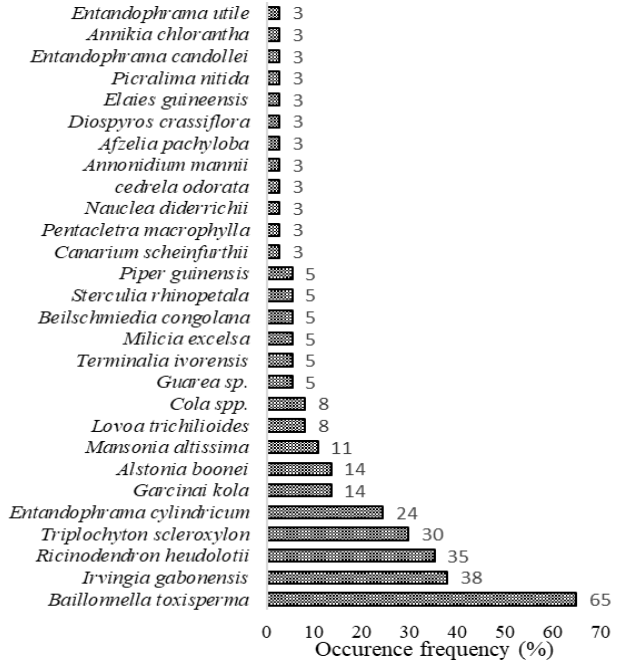

Figure 3. Plant species whose populations are interested in introducing into their plots or fields by frequency of occurrence

Table 1. List of forest plant species of socio-economic value to local populations around the KBF for their multi-use value

Common/Vernacular Names	Scientific Names (Plants)	Socio-economic Value/ Use						Part Used	Harvesting Method	Consumption Level (+++, ++, +)	Collection Distance (km)	Economic Importance
		Fo	Me	Ti	Cra	Ct	In					
Liana												
Bamboo	*Bambusa* spp.				X			Le	PickLe	+	Less than 5	Low
Rattan	*Calamus* spp.				X			Tr	Fel	+	5 to 10	Low
	Eremosphata spp.				x			Tr	Fel	+	5 to 10	Low
	Lacosperma spp.				x			Tr	Fel	+	5 to 10	Low
Ndonkol	*Piper guineense*	x					x	Fr	PickLe	++	3 to 8	Average
Herbaceous												
Atanga	*Aframomum* spp.	X	x				x	Fr	PickLe	++	3 to 8	Low
Ba'a	*Elaeis guineensis* Jacq.	X	x		x		x	Le, Sa	PickLe	+++	1 to 6	Strong
Junc leaves	*Marantochloa cordifolia* (K. Schum.) Koechlin	x					x	Le	PickLe	+++	5 to 15	Strong
	Raphia sp.				x			Le	PickLe	+	variable	Low
Trees												
Ikouk	*Alstonia boonei* De Wild.		X	x			x	Ba, Tr	Deb, Fel	+++	Up to 8	Low
Pol	*Annickia chlorantha* (Oliv.) Setten & Maas		x					Ba	Deb	+	5 to 8	
Corossol wild	*Anonidium mannii* (Oliv.) Engl. & Diels	x	x				x	Ba, Fr	Deb, Pick	++	3 to 8	Low
Moabi	*Baillonella toxisperma* Pierre	x	x					Fr, Se, Tr	Fell, pick	++	5 to 25	Strong
Kanda	*Beilschmiedia congolana* Engl. Ex Stapf	x					x	Fr	Deb	+++	1 to 3	
Ayele	*Canarium schweinfurthii* Engl.	X	x	x			x	Ba, Tr	Pick, Fel	++	Up to 5	
fromagier	*Ceiba pentandra* (L.) Gaertn.	X						Flo	Pick	+	less than 5	
Cola/Baa/Goro	*Cola* spp.	X	x				x	Ba, Fr	Deb, PickLe, Pick	++	up to 5	Low
Okan	*Cylicodiscus gabunensis* Harms		x	x			x	Ba, Tr	Deb, Fel	+	5 to 6	
Sapelii/tiama/kossipo	*Entandrophragma* spp.		X	x		x	x	Ba, Cart, Tr	Pick, Deb, Fel	+++	5 to 15	Average
Tali	*Erythrophleum ivoreense* A. Chev.		x	x			x	Ba, Tr	Deb, Fel	+		Low
Yieul/bitter cola	*Garcinia kola* Heckel	x	x					Ba, Fr	Deb, Pick	+++	2 to 8	
Bosse	*Guarea* spp.		x	x			x	Ba, Tr	Deb, Fel	+	5 to 7	Low
Adok	*Irvingia gobonensis* Baill. ex Lanen.	x	x	x			x	Fr	Pick	+++	1 to 15	Strong
Bete	*Mansonia altissima* A. Chevalier			x		x	x	Cart, Tr	Pick, PickLe	+	5 to 8	Average
Iroko	*Milicia excelsa* (Welw.) C.C. Berg		x	x			x	Ba, Tr	Deb, Fel	++	5 to 10	Low
Monkeys pineapple	*Myrianthus arboreus* Beauv.	x	x				x	Ba, Sa	Deb, PickLe	+	1 to 9	Low
Iza/bilinga	*Nauclea diderrichii* (De Wild. & T.Durand) Merrill		x				x	Ba, Fr, Tr	Deb, Pick, Fel	+	Up to10	Low
Ibai	*Pentaclethra macrophylla* De Wild. & T.Durand	x						Fr	PickLe	+		Low
Abale	*Petersianthus macrocarpus* (P.Beauv.) Liben			x		x	x	Cart, Tr	PickLe, Pick	+		Average
Ibam	*Picralima nitida* (Stapf) Th. & H. Durand		x					Ba, Fr, Le	Deb, PickLe	+	5 to 15	Low
Dabéma	*Piptadeniastrum africanum* (Hook.f.) Brenan		x	x			x	Ba, Tr	Deb, Fel	++	1 to 8	
Faux padouk	*Pterocarpus milbradii* Harms			x		x	x	Cart, Tr	Pick, PickLe	+		Average
Padouk	*Pterocarpus soyauxii* Taub.		x	x			x	Ba, Tr	Deb, Fel	+		

Ilumba	*Pycnanthus angolensis* (Welw.) Exell		x	x		x	Ba, Tr	Deb, Fel	+		
Izol/djanssang	*Ricinodendron heudelotii* (Baill.) Heckel	x				x	Fr	Pick	+++	2 to 8	Strong
Nkannang	*Sterculia rhinopetala* K. Schum.			x			Tr	Fel	+		
Frake	*Terminalia superba* Engl. & Diels			x		x	Tr	Fel	+		Low
Ayous	*Triplochiton scleroxylon* K. Schum.			x	x	x	Cart, Tr	Pick, Fel	++	2 to 15	Strong
Ayous	*Triplochiton scleroxylon* K. Schum.			x	x	x	Cart, Tr	Pick, Fel	+	less than 8	Average
Amvout	*Trichoscypha acuminata* Engl.	x				x	Fr	PickLe	++	5 to 9	Low
Shurbs											
Gomde	*Rauvolfia vomitoria* Afzel.		x				Ba	Deb	+	1 to 5	
Voacanga	*Voacanga africana* Stapf ex Scott-Elliot		x			x	Ba, Fr, Sa	PickLe, Deb	++	1 to 9	Strong

Note: Socio-economic value: Al: Food, Me: Medicinal, Ti: Timber, Cra: Craft, Ct: Tree host caterpillar, In: Incomes. Part used: Fr: Fruits, St: Stem, le: Leaves, Flo: Flower, Se: Seeds, Cart: Caterpillars, Tr: Trunk, Ba: Bark, Sa: Sap. Harvesting methods: PickLe: Picking leaves, fel: Felling, Pick: Picking, Deb: Debarking. Consumption level perception: +++: Highly consumed, +++: Moderate consumption, +: Low consumption

Similar results relating to the potential diversity of plant species of interest and the multi-use of these species have been found by several authors who have conducted studies among rural populations in African tropical forests (e.g., Madountsap et al. 2019; Ngansop et al. 2019; Bosanza et al. 2021; Inimbock et al. 2021; Chimi et al. 2022; Ayoub et al. 2023; Ji et al. 2023). These authors noted, for example, the extensive use of bark from forest trees in the Eastern region by local people to treat certain diseases. This is the case, for example, of the uses of the bark of *I. gabonensis, Beilschmiedia congolana, Canarium schweinfurthii, Alstonia boonei, Annickia chlorantha, Anonidium mannii, Voacanga africana, R. heudelotii, Allanblackia floribunda* and *Antrocaryon klaineanum*, which were also identified as part of this study.

From a food service provision point of view, Chimi et al. (2022) showed the strong dependence of local populations on forest supply services, particularly those of food value. Indeed, forest dwellers are heavily dependent on forest resources for their day-to-day well-being because, in addition to the food resources that these provide, they are also an important income source since the resources they collect are not only intended for consumption but also to a large extent, for sale. For this reason, in the context of this study, economic value (sale) was considered forest utility for the populations. From our surveys, we found that the annual income from the sale of some specific forest products could vary from 20,000 XFA (33 USD) to nearly 200,000 XFA (330 USD) and 50,000 to 200,000 XFA (82 to 330 USD), respectively, for *I. gabonensis* and *R. heudelotii.* Ngome (2006) obtained similar results in the forest zone of Cameroon. In the case of caterpillar, which is one of the main ingredients in the diet of local people, as shown by several authors concerning the unit of NTFP marketing measurement (Ngome 2006; Ngansop et al. 2019), they used "kumbo" of two liters unit of NTFP marketing measurement and the price of one "kumbo" of caterpillar varied between 500 (0.82 USD) and 2000 XFA (3.3 USD) for an annual income of 20,000 to 50,000 XFA (33 to 82 USD). This price variation is attributable to the seasonal nature of the resource. During the period of caterpillar abundance, i.e., July-August, caterpillars are plentiful and less expensive. In periods of scarcity, those who have collected and preserved them, resell them at a higher price, hence the price fluctuations observed in the area for this resource. Ngome (2006) and Ngansop et al. (2019) obtained the same trends for several other NTFPs in forest areas. On the other hand, caterpillars resources are becoming increasingly scarce due to the decreasing density of their host tree species in the forest environment and, above all, because some people cut down trees to collect these caterpillars (unsustainable management). This poor management contributes to a reduction in the density of individuals of the target plant species. This reduction in the density of individuals of interest would also be due to poor notching methods for collecting bark because when it is not sustainable, the tree dies (Ngansop et al. 2019).

The KBF belongs to the semi-deciduous forests, which are generally very rich from a floristic point of view (Kabelong et al. 2018). This site is surrounded by several forest management units and the Belabo communal forest, where several timber species are exploited (Temgoua et al. 2020), many of which have been identified by local people of the KBF. This could be the reason for the existence of illegal logging in the area, as local people are generally looking for timber for the construction of various tools, particularly for building houses and furniture (Chimi et al. 2023), and as a source of income (sale), even though it is illegal in the area and generally avoiding state control and monitoring (Cerutti and Tacconi 2006). According to the results of this study, logging is more pronounced in the area for plant species such as *B. toxisperma, A. boonei*, *M. excelsa, Sterculia rhinopetala, E. cylindricum, T. scleroxylon, Terminalia superba*, *Pterocarpus* sp., and *Nauclea diderrichii*. Removing these species impacts the conservation process, which is the mission of the KBF. In addition, the reduction of seed trees reduces their regeneration potential. This justifies the perception of a decrease in the abundance of these species compared to 10 years ago, as mentioned by nearly 86% of those surveyed. Guedje (2002) showed that removing non-timber forest products by felling or sawing reduces the forest's productive potential. Moreover, from the point of view of debarking, Guedje (2002) also showed that the commercial exploitation of *Garcinia lucida* bark consists of completely debarking the standing tree, thus causing its death and a sharp reduction in its density.

Two main factors cause deforestation and forest degradation in Cameroon. The first is slash-and-burn agriculture, responsible for 80-95% of forest cover loss (Cerutti and Tacconi 2006). Slash-and-burn farming is one of the crucial farming practices around the KBF, and as it continues to expand, it has even encroached on areas set aside for research and education. It is time for measures that meet the needs of the various stakeholders to be considered. To this end, the recommendations made to IRAD from the study include setting up buffer zones, which are located between the classified KBF and the local population areas. These areas could be used for domestication programs for flagship plant species identified by the local people so that they can obtain these services in these areas without entering the classified/protected forest. Similarly, local people should be supported in domesticating these forest species by making seedlings available, setting up nurseries with their help, and supporting local people in tree planting. In addition, with the intensification of sensitized actions done by IRAD around the KBF, local people should change their mentality by applying sustainable harvest methods and avoiding hindering the ecological balance of this forest. Therefore, it maintains its character, continuously fulfilling its purpose of research and education as its vision envisages. Better still, the inactivity of people in the forest will encourage the natural regeneration of this site and even appreciation of the ecological dynamics.

In conclusion, this study made it possible to identify 40 forest plant species of socio-economic importance to the local populations of the KBF, which are a source of food, timber, medicinal products, caterpillars, handicrafts, and income generators. However, local people's perception of

their current forest availability shows a decrease in these resources compared to 10 years ago, mainly due to uncontrolled logging and agriculture (expansion of agricultural land at the expense of forests). However, given their economic value, local people have shown great interest in several forest tree species, from which the goods and services collected not only provide them with food, raw materials and medicinal services, but also represent an essential source of income for them. They have expressed an interest in planting these plant species in their areas or fields if they were allowed to plant them. As a research and education site, it is therefore recommended to IRAD that measures be taken to preserve this site's mission. Knowing that its intervention is also aimed at the well-being of the local population, implementing a strategy to develop the buffer zone into domestication areas for the identified flagship species would be beneficial, coupled with providing seedlings to local people and support in their planting. In this way, we can ensure the local population's well-being and the resource's sustainability for the benefit of future generations.

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