

**NATURAL AVAILABILITY OF MEDICINAL PLANTS UNSUSTAINABLE HARVESTED
IN THE KOM-MENGAME FOREST CONSERVATION COMPLEX, SOUTH
CAMEROON**

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ABSTRACT

The natural availability of medicinal plants depends on their habitats, the type of forests, their degree of exploitation and their medicinal value for riparian population and local markets. Animals like elephants destroyed forests and transformed them in grassy areas, sometimes with scattered trees, in tropical or subtropical forests. These activities rarify trees in such forests. The objective of this study was to identify and document the ecological importance of medicinal plants more exploited in Kom-Mengame forest conservation complex. To achieve this objective we have selected and identified trees with stem bark awfully harvested, during the botanical inventory of this reserve in 2003. The important value index of recorded medicinal plants was extracted from the general list of the importance value index of all inventoried plants to evaluate their ecological importance. A total of 41 plants awfully harvested were recorded. The quantitative ecological study of these plants revealed that *Petersianthus macrocarpus* with the highest important value index (7,142) was the most important tree, following by *Pycnanthus angolensis* (6,791), *Desbordesia glauscescens* (5,655), *Distemonanthus benthamianus* (5,077) and *Myrianthus arboreus* (4,371). *Pteleopsis hylodendron* (3,967), *Tetrapleura tetraptera* (2,017) and *Celtis mildbraedii* (1,994) were Medium-sized important trees. *Symphonia globulifera* (0,933) was among the less important trees and finally the very less important species was represented by *Harunga madagascariensis* (0,095) and *Ficus conraui* (0,030). The present set of ecological information is important with regards of the sustainable management of forest resources and particularly medicinal plants.

KEYWORDS: Unsustainable exploitation of trees, medicinal plants, important value index, quantitative ecological study of recorded plants, Kom-Megame forest conservation complex, Cameroon.

INTRODUCTION

The Central African rain forests of the Congo Basin possess an extremely high biodiversity that includes a unique assemblage of plant and animal species. Many of these species are endemic and endangered due to various threats ranging from local anthropogenic effects to more global climate change. Thus, Cameroon is a unique reservoir of plant genetic resources, with about 7850 species of vascular plants already described in the National Herbarium giving the country a privileged place among the tropical forest countries. However, the Cameroonian medicinal flora remains little known until

today. Among the 7850 species of vascular plants identified in Cameroon, the number of species that have been ethno botanically referenced to date do not exceed 1500.^[1-10]

Kom-Mengame forest conservation complex is a protected area located at the extreme south of Cameroon, at the border with Gabon, with a surface of 94920 ha. With accelerated destruction of natural areas documenting useful medicinal plants and associated indigenous knowledge has become of paramount importance. This study aims to contribute the ecological

Quantitative ecological method of plant evaluation

A botanical survey was conducted within the reserve using 56 transects covering 68.3 ha.^[12] The following device was used for inventory.

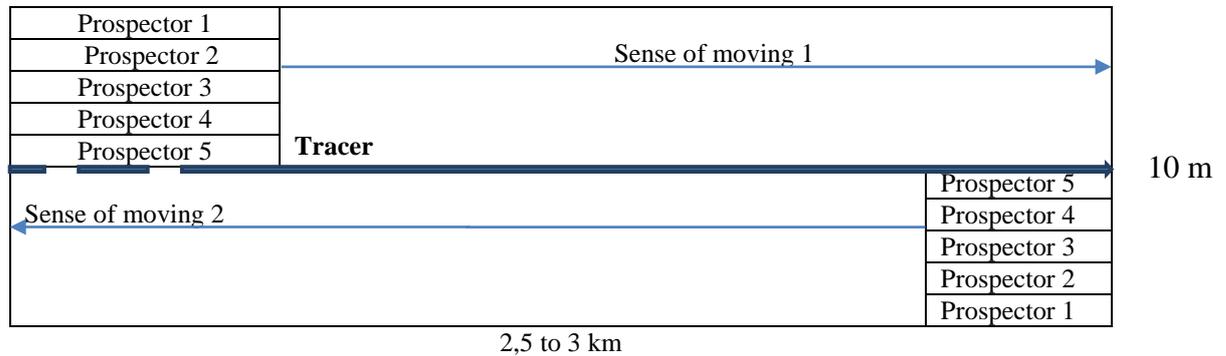


Fig. 2: Improved device of trees inventory.

Plant species were identified using floras of vascular plants of Cameroon and other central African countries.^[15-19] Voucher specimens of unknown species were collected and preserved using standard herbarium techniques, and their identification was confirmed at the National Herbarium of Cameroon.

Determination of important value index

The following formulas were used to calculate the relative frequency, abundance and dominance of recorded species with circumference at the breast high (CDH) ≥ 32 cm.

$$\text{Relative Frequency} = (\text{Frequency of a species}) / (\text{Total sum of frequencies}) \times 100$$

NB: frequency = number of transects in which the species is found.

Basal surface: $S_b = \pi \times (D/2)^2$, with S_b = surface basal and D = diameter. For a given family or species it corresponds to the sum of basal surface of different individuals of this family or species. Abundance of taxa: $AR = (\text{number of individuals of a species or of a family}) \times 100 / \text{total number of recorded individuals}$. Dominance of taxa: $DR = (\text{basal surface of a species or a family}) \times 100 / \text{total basal surface of all recorded individuals}$. $IVI = \text{Relative Density} + \text{Relative Dominance} + \text{Relative Frequency}$.^[20-22]

RESULTS

In the present article we are going to describe only the natural availability of 41 plants awfully harvested in Kom-Megame forest conservation complex. Plants are not always naturally present in the forest. Therefore the conservation of these 41 selected medicinal plants for long time uses is very important. The important value index, the dominance and the abundance of trees were calculated. These quantitative ecological parameters help to identify plants which need protection even in the reserve. These plants are characterized by low ecological parameters.

Quantitative ecological study of the 41 selected plants

These plants are presented in Fig. 3. The number in brackets represents the value of the important value index which gives the importance of the plant species in the reserve. The quantitative ecological study of these plant species demonstrated the following:

The most important tree species: *Petersianthus macrocarpus* (7,142), following by *Pycnanthus angolensis* (6,791), *Desbordesia glaucescens* (5,655), *Distemonanthus benthamianus* (5,077) and *Myrianthus arboreus* 4,371) (Fig 3 and 4).

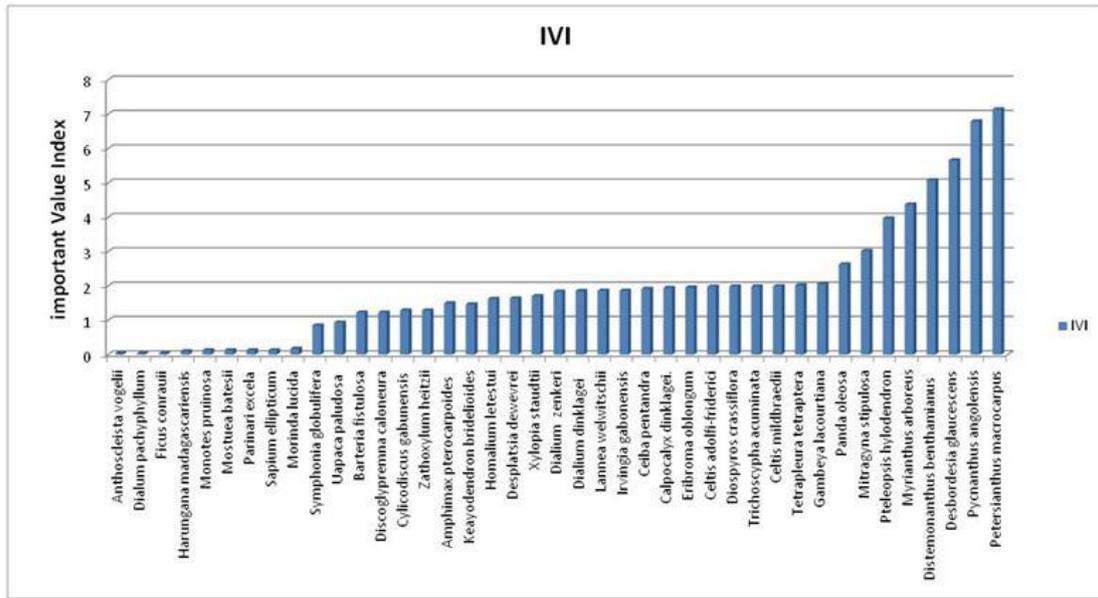


Fig. 3: Important value index of abusively harvested plants in Kom-Mengame forest conservation Complex.

Medium-sized important tree species are: *Pteleopsis hyloendron* (3,967), *Mitragyna stipulosa* (3,017), *Panda oleosa* (2,624), *Gambeya lacourtiana* (2,062), *Tetrapleura tetraptera* (2,017), *Celtis mildbraedii* (1,994), *Diospyros crassiflora* (1,982), *Trichoscypha acuminata* (1,985), *Celtis adolfi-friderici* (1,979), *Eriobroma oblongum* (1,954), *Calpocalyx dinklagei* (1,941), *Ceiba pentandra* (1,914), *Lanea welwitschii* (1,858), *Dalium* spp (1,863) and *Amphimax pterocarpoides* (1,491) and *Parinari excelsa* (1,126).

Less important species are: *Symphonia globulifera* (0,933), *Morinda lucida* (0,168), *Mostuea batesii* (0,126), *Manotes pruinosa* (0,126) and *Sapium ellipticum* (0,126).

Very less important plant species are; *Harunga madagascariensis* (0,095), *Ficus conraui* (0,030),

Anthocleista vogelii (0,026) and *Dialium pachyphyllum* (0,026). Plant species of these two last groups must be more protected in the reserve (Fig. 3 and 4) for long time exploitation.

The most abundant plants are *Petersianthus macrocarpus*, *Desbordesia glaucescens*, *Myrianthus arboreus* and *Distemonanthus benthamianus*. **The most dominant plants are:** *Petersianthus macrocarpus*, *Desbordesia glaucescens* and *Distemonanthus benthamianus* (Fig 4).

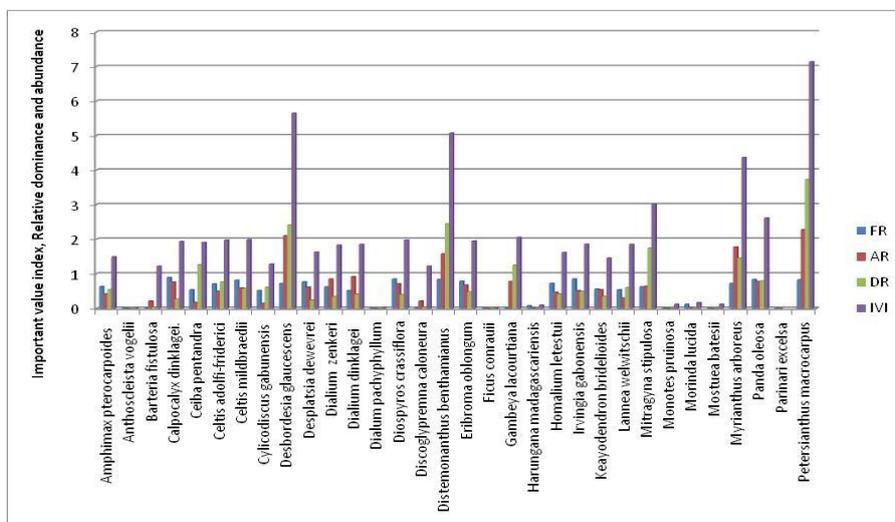


Fig. 4: Relative frequency, relative abundance, relative dominance and Important Value Index of abusively exploited plants.

FR: Frequency; RA: Relative abundance; RD: Relative density; IVI: Important Value Index

DISCUSSION

Manifold plant species selected with stem bark awfully harvested are poorly represented (weak important value index) in Kom-Mengame forest conservation complex.^[23] Therefore, the frequent anthropogenic activities and the illegal timber exploitation in the habitat of these species will be a strong threat for their long time uses. This study was undertaken to contribute to the conservation of medicinal plants used by the local population in the Kom-Mengame forest conservation complex. All the more frequent plants used for the treatment of diseases by a large proportion of the population are under pressure, especially around villages.^[24,25] Availability and accessibility of these bioresources are important factors for population dependence on plants.^[23] Therefore, wild plant species need to be protected for their long term utilization. It is the case of *Petersianthus macrocarpus* used against tuberculosis and sexual transmissible diseases and *Lannea welwitschii* used in the treatment of skin infections.^[26]

In order for these important species to be rationally used, the protection of Megame forest conservation complex must be strengthened to enable it to participate fully in the sequestration of greenhouse gases, the ultimate solution to the global warming. Indeed, the planet earth is undergoing a progressive overexploitation of its resources and the effects of climate change. Nowadays the tropical forests must be exploited sustainably. This must prevent the increasingly human exploitation from dispossessing the earth of what it still valuable for the economies of the actual and the future generations.

CONCLUSION

Findings from this research revealed that 41 plant species, awfully harvested were identified in Kom-Mengame forest conservation complex during the botanical inventory. Many trees with stem bark strongly collected did not have the high important value index. The frequent anthropogenic activities in the habitat of these species will be a strong threat for their long time uses. The importance of these plants needs to be highlighted within conservation strategies of the reserve.

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