

## SHORT COMMUNICATION

# Perception of the forest by the villagers of the Salonga National Park in the Democratic Republic of Congo

J. M. IBESOA

*Faculty of Forestry and Wood Technology, Mendel University of Agriculture and Forestry in Brno, Brno, Czech Republic*

**ABSTRACT:** Effective forest management demands detailed knowledge of resources. Local forest users are usually the best source of information. In the Democratic Republic of Congo forest management partnerships between local people and government staff have become more common. A proper understanding of local perceptions of the forest is needed. This study was designed and guided by a multidisciplinary team including a sociologist, a linguist and a forester. It identified and compared classification and management units. It also touched on the different uses of the forest products, the species that provided these products and the locations of these species.

**Keywords:** perception of forest; forest products; local villagers; Salonga National Park

The Salonga National Park (1°00'–3°20'S, 20°–22°30'E) covers approximately 36,000 km<sup>2</sup> and is located in an isolated area of the Congo basin. It is the second largest tropical rainforest reserve in the world. The Salonga National Park (hereafter referred to as SNP) is the habitat of many endemic endangered species. The most prominent animal species are:

- the dwarf chimpanzee (*Pan paniscus*), locally called *Bonobo*,
- the Congo peacock (*Afropavo congensis*), which are endemic to the Democratic Republic of Congo (OATES 1986) and listed as endangered species in the International Union for Conservation of Nature (IUCN) Red Data Book (BAILLIE, GROOBRIDGE 1996).

The SNP is divided into two parts, separated by an unprotected space of 50 km. There are nine villages within the park. In the northern part: *Kinki Botonganji*; in the southern part: *Iyamba, Luapa, Ila, Nsese, Ediki, Bosanja, Isambo Botongola and Bokumu Beke* (IBESOA 2008).

The native people, practicing slash-and-burn agriculture, fishing, hunting etc., were settled in the area before the creation of the park in 1970 and they refused to leave. The government tolerated their presence. Subsequently local people were hired as labourers, and they enjoyed the limited non-commercial right of use. Later, efforts were made to reorient management towards participatory multiple use and co-management. It became clear that foresters and villagers did not share the same perception of the forest and its management (IBESOA 2009). The forest is now threatened due to the presence of the villages within the park (WILKIE et al. 1992).

There is little scientific information about the forest or the utilization of forest products collected by the local people (HART 2002). The University of Maryland (UMD) produced global land cover classification with 14 categories (HANSEN et al. 2000). In the map of Tropical REsources and Environment monitoring by Satellite (TREES), only these classes were detected: lowland moist forest and secondary forest mosaic (ACHARD et al. 2001). LEBACQ'S et al.

Table 1. Categories of forest products

No.	Wood products
1	Fuelwood
2	Construction wood (mainly poles)
3	Saw timber
4	Artisanal wood (utensils, etc.)
<b>Products for livestock</b>	
5	Forage
<b>Other products</b>	
6	Animal products
7	Beverages
8	Dyes
9	Fibres
10	Gums and resins
11	Honey and wax
12	Oils
13	Chemical products (tannins, poisons, etc.)
14	Pharmaceutical products
15	Food
16	Recreation/toys
17	Religious/sacred uses products

(1967) forest inventory covered an extended area including the SNP. HUANG (2005) studied the Salonga forest using remote sensing.

Within the scope of my Ph.D. thesis I carried out a socio-economic study in the SNP. My aim was to get a better understanding of the local customs. Proposals to the government for a sustainable management of the park would follow, inviting the active participation of the local people into the process.

This paper puts a particular emphasis on how the local forest users perceive wooded areas. It focuses on identifying and comparing classification and management units. It also touches on the different products/uses of the forest, the species that provided these products/uses and their location. It was designed and conducted on the ground by a multi-disciplinary team including a sociologist, a linguist and a forester. The overall goal of this study was to find ways of improving the management of forests through a better integration of the villagers. Specific objectives included:

- identifying the descriptors used by local villagers for non-agricultural lands;
- explaining the classification units;

- describing the vegetation and use of each unit;
- describing the management of each unit;
- comparing the local classification with the “modern” classification;
- working out recommendations for forest management.

## METHODS

The study tools included a survey conducted by interviewers using a series of questions and a three-day village workshop exchange session. Interviewers who had experience with socio-economic studies conducted the surveys. All interviewers spoke *Lingala*, a local language. Twenty villagers were interviewed in each village. For the investigation of tree species, the approach was to identify use categories at first and then to query villagers about which species were used in each category. POULSEN (1981) defined the following categories in Table 1. In Fig. 1 see map of the Salonga Park.

The approach of working from category to species was more appropriate for the needs of the study. Showing a villager a sample of the tree species and

Table 2. Total number of tree species mentioned in this study by use/product category

Use/product category	
Pharmaceutical products	67
Beverages	53
Fuelwood	50
Wood	33
Fibres	30
Construction wood	30
Browse	27
Animal products	27
Honey and beeswax	25
Religious & traditional rites and ceremonies	24
Dyes	21
Entertainment/recreation/toys	19
Gums and resins	19
Chemical products	19
Saw timber	17
Artisanal wood	12
Oils	6
Total	110

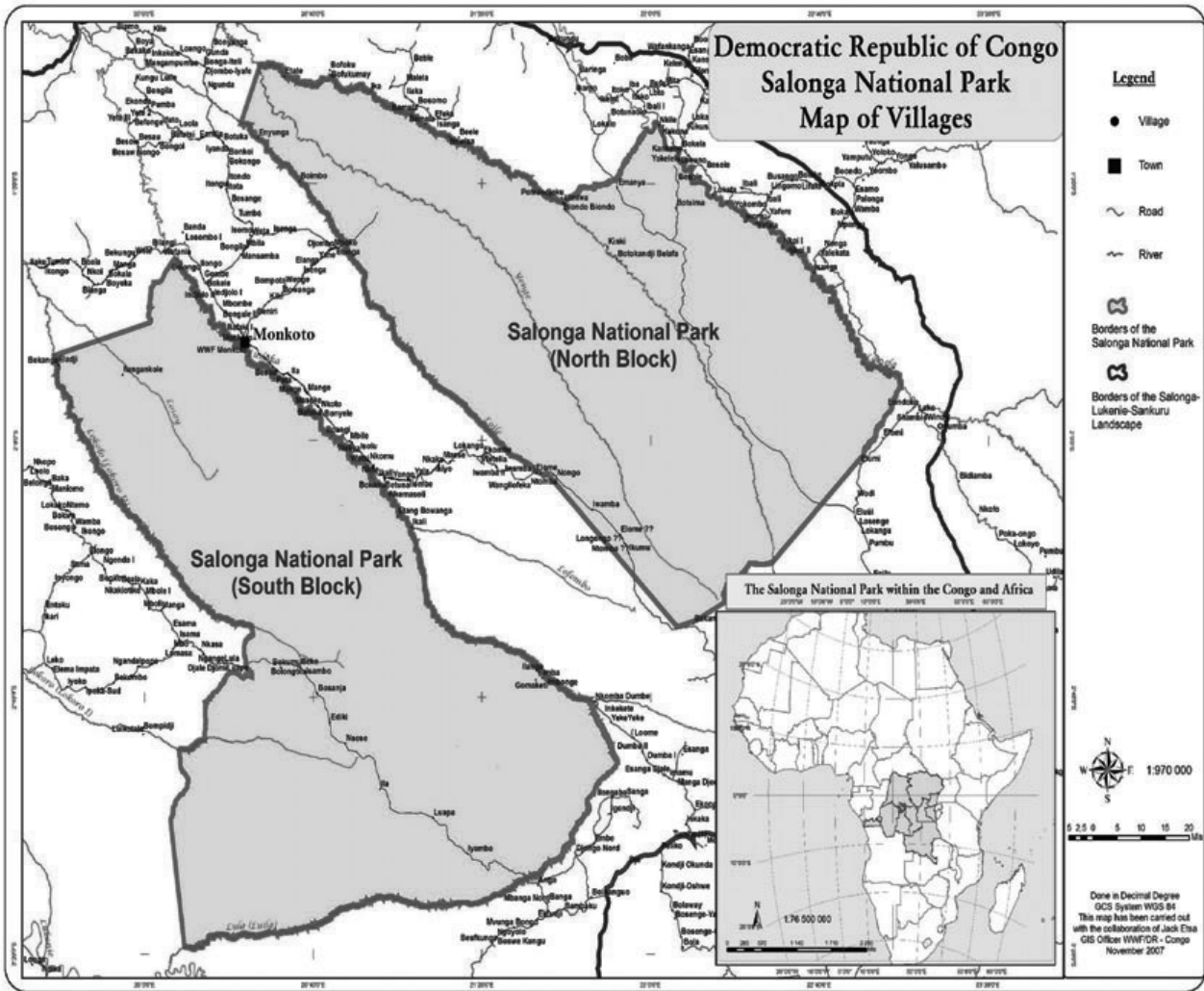


Fig. 1. Map of the Salonga National Park

asking for uses encouraged the invention of uses. While talking about uses, this approach also gave the interviewers the opportunity to ask where these

species were found in the forest; to get an idea of “use stands”. A use stand was considered as a unit of the forest where there was one predominant use. Typical questions were: Are there fuelwood stands, medicinal stands, dye stands, tree fruit stands and melliferous stands? And, if so, how do they exploit these stands? What are the characteristics of these stands and how are they managed? The responses were compiled and compared. Data was presented to representatives from all the four villages during a three-day information exchange held in the village of Mpoko (Fig. 2).



Fig. 2. Forest dwellers in the Salonga National Park

## RESULTS AND DISCUSSION

### Socio-linguistic aspects

The interviews revealed that the forest is viewed as a disorganized and unstructured space. One in-

interviewee said the real name of the woodland was “Ngonda” and “zamba” in *Lingombe* and *Lingala* languages, respectively. These words are used to describe a jumble of things. The idea of “disorganization” contributes to the perception of the forest as frightening. When asked to describe what the woodland contained one interviewee said “evil spirits” (*milimo mabe*) that inhabit forests and attempt to frighten those who venture there. To villagers the forest is a world of disorder before human intervention. There are unusual happenings. “You walk in the forest. When you get to a certain place your hair stands on end and you shiver. You see nothing but you are afraid.” “You suddenly get hot for no reason.” The forest is perceived as a habitat for evil spirits.

It becomes structured, organized and safe only when transformed by humans. Therefore it is contradictory to talk about a classification system, which implies a certain kind of structure. However, the analysis of words used in *Lingombe* and *Lingala* languages to describe the forest reveals a rich lexicon of more than 30 words. This lexicon has two characteristics. First, it is mainly composed of words relating to agriculture, which do not describe the forest cover but soil and topography and second, those referring to the forest cover. Hence they do not describe a vegetative formation. There were no similarities between the two classification systems used.

### Forestry aspects

#### *Harvest and use of forest products*

This study underlined the villagers’ knowledge of tree species. The harvest covers a range of products from the Salonga National Park. The most commonly used are fruits, leaves and wild shoots. The villagers have provided a list of the 40 most heavily harvested tree fruit species. This includes 37 species for meliferous species (harvest of honey), 40 species used in traditional medicine and 37 species for firewood. The villagers use both traditional and modern medicines, though they find traditional treatment the most efficient. They believe that traditional medicine has a sacred character, conferring a certain social prestige and power. Through incantations, prayers and blessings, traditional medicine is connected to animistic religion.

Firewood is the main source of energy for the villagers, who have no access to electricity, and this leads to the destruction of an extensive amount of forest. The use of forest resources should have limits because their misuse can cause serious consequences leading to forest degradation.

#### *For many product categories the number of species is quite large*

Table 1 summarizes the species in each category as cited by local villagers. The number of species per category seems high. Only for oils is the class size less than 10% of the total. Two-thirds of the total numbers of species are used as pharmaceutical products. This fraction might have been much higher had respondents not been limited to five species. Confirming the list of pharmaceutical species, the local traditional healers stated that all have a use in traditional healing, although some individuals might not know the specific use for a particular species. Perhaps one-half of the species available are used to make potions; nearly one-third provides food, fibres or building poles. One-quarter provides forage, bee products and enters into religious ceremonies or has religious significance.

***There is no worthless tree species.*** Therefore, from a villager’s perspective all tree species have a use.

***Nearly half the species are multipurpose.*** Nearly 50 species were cited in more than one category. Six species are mentioned in over ten categories (Table 2).

***Some tree species are multipurpose species.*** Some species are considered multipurpose by foresters, such as *Vittelaria paradoxa* (mentioned in 13 categories) and *Parkia biglobosa* (9). The list of the top ten multipurpose species (by number of uses) includes some species that are usually viewed by the forester as being largely wood or timber species. These are *Pterocarpus erinaceus* (12), *Isobertinia doka* (11), *Azelia africana* (10) and *Daniellia oliveri* (9).

The survey revealed significant differences in the way men and women perceive the forest. The men’s perception and classification of forest are focused on spatial units, agricultural potential and soil type. This is logical given that men are culturally responsible for providing the primary needs of the family. The women’s perception was based more on products and with individual species as the classification unit. It included different marks for different species, and various marks depicting various forest products. This is because women have limited access to agricultural land, and think less in terms of agricultural potential than forest products.

However, the attempt to relate species to vegetation types brought vague responses. The management of forest resources by villagers seems to be based on the species as the management unit. Local knowledge is oriented to smaller units in line with the daily activities of the villages. A villager understands only partially the larger perspectives. Fuelwood as a “management objective” is reflected

in the species choice and not in the choice of vegetative formation. The villagers consider probably that forest management based on the type of vegetation is less diversified than a differentiated management system for each tree species.

It is difficult to compare the two forest classification systems – there is no easy translation from one to the other. Each seems to have its own concept. One system seems to reflect an empirical and subsistence dynamic, the other a theoretical and “economics of scale” dynamic. The extent to which the villagers undertake activities in the forest to use the species composition and encourage the regeneration of preferred species is unclear.

### CONCLUSIONS

The forester and the local forest user do not agree regarding forest management units. The forester uses management units providing efficient management based on the production of a limited number of products, the units being defined spatially. In contrast, the local users have opted for the species as the management unit. Species providing the same types of product are disseminated throughout the forest and are not classifiable.

In the case of fuelwood, it seems clear that although 37 species were cited, there is a limited number of preferred fuelwood species just as there is of fruit species – not all species are used for fuelwood. The traditional search for fuelwood is for wood species disseminated throughout the forest landscape; it does not appear to be the harvesting of fuelwood areas. Management of these forests with the main objective of maintaining the production of all non-wood forest products currently utilized by local users means managing species by species. For the forester this requires an amazing level of detailed knowledge of all the species, their uses and their biology and sustainable harvesting techniques. The villagers’ perception of the forest goes against the conventional wisdom that their view is in harmony with nature. Although dependent on the forest, the villagers consider that it carries a threat. It appears disorganized to them, even though species are well known and much used. The forest becomes useful only as it is changed into a humanized space. For the villagers, the forest obeys some kind of supernatural law; which perhaps only a few initiates, such as hunters, can understand; conservation is not a priority. The pressure to transform the forest, despite the many products and services that it provides, is intense.

Villagers and foresters classify the forest differently. The proper integration of villagers into forest

management requires a synthesis of these two perceptions. This may be achieved through the better integration of the forest into local rural production systems together with the promotion of positive cognitive appropriation of the forest through activities which “humanize and socialize the forest” while conserving it.

### References

- ACHARD F., EVA H., MAYAUX P., 2001. Tropical forest mapping from coarse spatial resolution satellite data: production and accuracy assessment issues. *International Journal of Remote Sensing*, 22: 2741–2762.
- BAILLIE J., GROOBRIDGE B., 1996. IUCN Red List of Threatened Animals. IUCN Gland: 378.
- HANSEN M.C., DeFRIES R.S., TOWNSHEND J.R.G., SOHLBERG R., 2000. Global land cover classification at 1km spatial resolution using a classification tree approach. *International Journal of Remote Sensing*, 21: 1331–1364.
- HART T., 2002. Conservation in Anarchy: Key conditions for Successful Conservation of Okapi Faunal Reserve. In: TERBORGGH J., SCHAIK V.C., DAVENPORT L. (eds), *Making Parks Work, Strategies for Preserving Tropical Nature*. Island Press: 76–85.
- HUANG S., 2005. Multisource data combination for the assessment of Salonga National Park in the importance of multi-sensor satellite data applications for environmental monitoring with special emphasis on land cover mapping, desertification monitoring and fire detection. Munich, Ludwig-Maximilians-Universität München: 24–37.
- IBESOA J.M., 2008. Proposal of a sustainable management of the Salonga National Park in the Democratic Republic of Congo. [Ph.D. Thesis.] Brno, MUAF: 127.
- IBESOA J.M., 2009. Use of the forest products by the native people of the Salonga National Park, in the D.R. Congo. Brno, Acta Universitatis Agriculturae et Silviculturae, LVII: 51–60.
- LEBACQ L., DESCHAMPS R., LIBEN L., BRUNFAUT R., KATONDI J., 1967. Contribution à un inventaire de forêts du Nord-Kasaï. In: *Annales. Série 8, Sciences Economiques – Musée Royal de l’Afrique Centrale*, No. 5, Tervuren: 497.
- OATES J.F., 1986. Action Plan for African Primate: 1986–1990. IUCN/SSC Primate Specialist Group. New York, Stony Brook.
- POULSEN G., 1981. The Function of Trees in Small Farmer Production Systems. FAO/SIDA Forestry for Local Community Development Programme. FAO, Rome.
- WILKIE D.S., SIDLE J.G., BOUNDZANGA G.C., 1992. Mechanized logging, market hunting and bank loan in Congo. *Conservation Biology*, 6: 570–580.

Received for publication September 16, 2008

Accepted after corrections February 20, 2009

## Vnímání lesa domorodým obyvatelstvem v Národním parku Salonga v Demokratické republice Kongo

**ABSTRAKT:** Efektivní lesní hospodaření je založené jak na detailní znalosti lesa a zdrojů, které les zahrnuje, tak na účasti místních lidí, kteří jsou často o problematice lépe informováni. V Demokratické republice Kongo se zvyšuje úsilí o vytváření partnerství mezi místními obyvateli a lesními úřady pro obhospodařování lesa. K vývoji trvale udržitelného lesního hospodaření je žádoucí integrovat lokální komunity a dát jim prostředky k činnosti. Rovněž je důležité pochopit a osvojit si představy, které místní obyvatelé o lese mají, a které mají i o způsobu hodnocení lesem poskytovaných užitků.

**Klíčová slova:** vnímání lesa; lesní produkty; domorodé obyvatelstvo; Národní park Salonga

---

*Corresponding author:*

JOSÉ MBENGA IBESOA, Ph.D., Mendelova zemědělská a lesnická univerzita v Brně, Lesnická a dřevařská fakulta,  
Lesnická 37, 613 00 Brno, Česká republika  
tel.: + 420 545 134 052, fax: + 420 545 211 422, e-mail: jmbenga2@yahoo.fr

---