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Research article

## ASSESSMENT OF THE QUANTITIES OF SOLD GAMES IN THE MARKET OF A LUMBERING YARD IN THE NORTH CONGO. CASE OF THE MARKET OF NGOMBÉ

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**ABSTRACT:** To Congo, as in many countries rich in forest resources as the dense forests or plantations, the installation of a forest industry in a given zone, often drag a continuous growth of the human populations. People massive arrival often poses especially some problems for their provision in essential goods in products of raising that are practically inexistent in these forest zones. Also, on the one hand, to satisfy their flesh-colored needs more and more crescents and, on the other hand to have a substantial income thanks to the merchandising of the game, these populations are forced to exploit the wild fauna massively. But, what are the quantities of games that are appropriated in these forest concessions and poured really on the markets of these forest yards?. The present survey values the quantities of games marketed on the market of Ngombé therefore, a forest concession in the North Congo. The specific objectives aim to establish the list of the soldest animal species on the one hand on the market of Ngombé and on the other hand, the list of the most dejected species by class of age, by sex and the list of the species the more valued. The adopted methodology is the one based on the active method of research participative: talks and direct questioning of fifteen (15) sellers through the cards of investigation. This survey took place from November 2009 to March 2010, either five (5) month of follow-up by the identified sellers. According to the results of this survey, the quantities of games marketed vary considerably according to the species. Otherwise, the adult animal species are hunted more that the young and the old, whereas the males he/it is more that the females. Finally, five (5) species out of the thirteen recorded are sold dearer than all other.

**Key words:** Game, forest industry, natural resources, Ngombé

### INTRODUCTION

The needs increasingly crescents of the Congolese government to create some jobs through the national territory permitted the opening of several zones à the lumbering à the North Congo. Thus, several Forest Units of planning (UFA) have been assigned big industrial society à as the Industrial Congolese of Woods (CIB), MOKABI, the Forest industry of Ouesso (IFO) that exploit, transform and merchandise wood and the by-products. But, if these forest industries are of important sources of jobs and incomes in these farming zones, in default not less that they appear on the other hand as powerful means of destruction of the natural resources in general and of the wild fauna in particular (Auzel, 1995). indeed, these forest yards open some approach paths inside the forests and facilitate the entry of the hunters thus therefore in the depths of the forests closer to the animal caches (Auzel, 1999, Moukassa, 2004). on the other hand, these forest yards attract so much increasingly the populations farming that urban that that short à and medium term can pose some problems mainly for their provision in natural resources the proteins of animal origin (Moukassa, 2002). Also, one presumes that, among others, the growth of the population, the precariousness of the conditions of life in the bases life would be the inductors of the strong increase of the withdrawals of games in the forest concessions (Auzel, 1995). In these forest concessions, the common caches as the Cephalopheses, the gigantic Pangolins and of other small mammalian are the more attacked by the hunters and other actors of the hunt path meat (Moukassa, 2004). Situated once in the center of the complex ritual, the meat of hunt makes today integral part of the food and the local economy of the populations in the yards forest à the north Congo. Has shortcoming an established exchange network between the zones of lumbering, the bases life, the urban and out-of-town centers, the game became the source of a real economic path organized around a multitude of actors understanding: the hunters, the tradesmen and the consumers.

In order to satisfy the needs of the international community and those of the local collectivities, the Animal Production Laboratory and Biodiversity of the Farming Development institute at a time, undertook sets of investigations in the Forest Units of planning where are installed on the one hand of the forest industries in the optics to gather rigorous information from a scientific viewpoint on the size of the withdrawals of games in the forest concessions in order to inform the scientific community and the decision-makers of it and, on the other hand, it is necessary to produce and to distribute some useful information by the communities depending on the forestry products for their subsistence. In the case of the Forest unit of Ngombé planning, the objectives aimed à to establish the sold animal cash list on the one hand on the market of this forest concession and on the other hand, the most dejected cash list by class of age, by sex and the list of the cashes the more appraisals.

## **MATERIAL AND METHODS**

### **Localization and characterization of the survey zone**

#### **Presentation of the Forest unit of Ngombé planning**

##### **Geographical situation**

The survey has been driven on the market of the forest concession of the Forest industry of Ouessou (IFO) situated in the Forest unit of planning (UFA) Ngombé. The Forest unit of planning (UFA) Ngombé is situated à the north of Republic of Congo, in the Department of the Sangha (Face 1). She is astride the districts of Mokéko and Pikoundas, and makes part of the North Forest Sector, zone 2.

This UFA makes border with the Cameroon à the north and is surrounded by:

“The National Park of Odzala Kokoua à the west;

“The UFA Pokola à the East;

“The UFA Bruised Bruised à the northwest;

“The Mambili river and the Forest unit of exploitation (UFE) Pikounda à the south.

##### **Climatic characteristic**

The Ngombé UFA is part of the zone à equatorial climate semi humid that covers the whole part North Congo, situated à the north of the equator. The main features of this zone are: two dry seasons and two rainy seasons per annum whose middle annual pluviométry is of 1900 mm with an average temperature of 26°C.

##### **Demographic situation**

The population of Ngombé is of 13.000 inhabitants in young majority who retorted themselves in several sites à knowledge:

Ngombé - Centre that is the former basis life of the Society Congolese of the Woods of Ouessou. Ngombé - Centre is the present industrial site of IFO around of which is developed itself the allochtonous inhabitant district; (Figure-1).

Basis life of the expatriates;

Ngombé crossroads, a district developed à the periphery following the numerous family installation in search of the jobs;

Ngombé village that is the district of the original of the Department of the Sangha.

##### **Material**

For the collection of the information, we used the material next one: two balances of Pesola mark of which one capable to measure until 50kg for the whole games or in district and the other of 1000grammes for meat sold in heap.

##### **Method of collection**

In all survey, the reliability of the information depends on the applied methodology. The observations were made between 7 hours and 12 hours. We used a method including two stages that permitted us to collect qualitative and quantitative information. The first step is related to the qualitative information. Here, we take all biologic information on the games, à knowledge,: the name of the species, the weight (kg), age and the sex. A special mention is made on the axis of source of the game, the means of transportation.

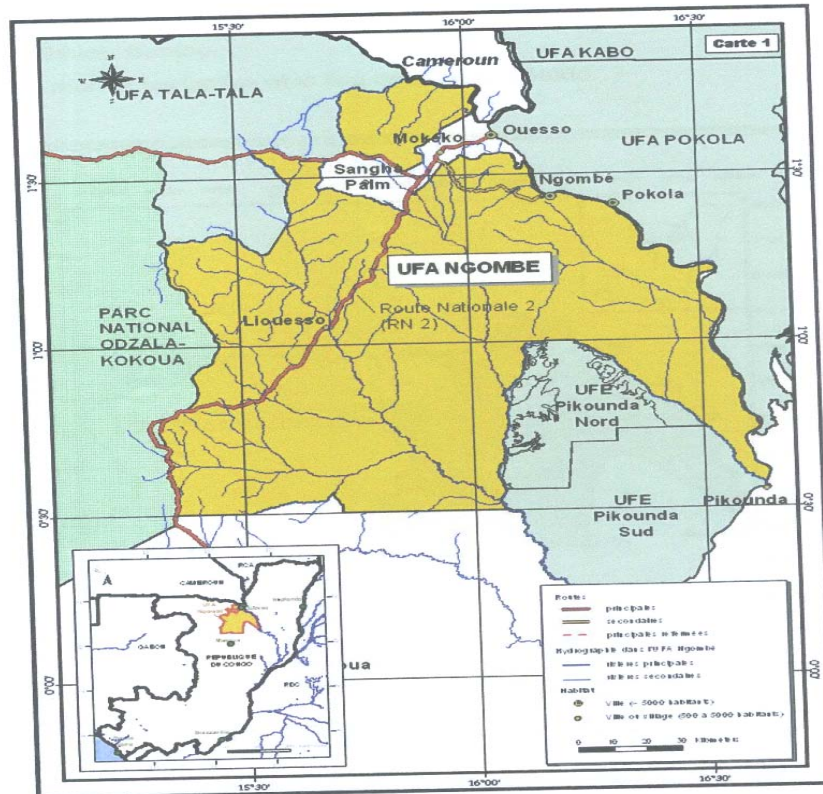


Figure 1: Localization of the survey zone

Information on the age of the game concerned all cashes and the classification has been made thanks to the reference manual. The second stage consists à to follow the sale of the hunt meat in detail in the market with the sellers. With the help of a Pésola, we raised the weights, the number of cash. We also raised the purchase price of the whole game and the selling price in heap.

### Data processing

With the help of the computer tool, all collected information have been seized and treated while using the System of information Geographical Bow View 3.2a (ESRI, Redlands California, 2002).

## RESULTS

### Distribution of the stock appropriated by order and by species

The most deducted animal list by order and by cash is consigned in him (Table 1). The exam of him (table 1) relief that the withdrawals have been done in five (05) order à knowledge: the Artiodactyleses, the Primates, the Rodents, the Crocodilienses and finally the Pholidoteses. Among the five (5) order, one notes that there are two of them (2) whose withdrawals are the most elevated. It is about the Artiodactyleses ( $n = 299$ ) and the Rodents ( $n = 42$ ). Three other orders à knowledge: the Crocodilienses, the Pholidoteses and the Primates have the relatively weak withdrawals not reaching fifteen (10) individuals.

À the breast of every order, one notes that the withdrawals vary considerably according to the cashes. For example, at the Artiodactyleses, it is the blue Céphalophe ( $n = 136$ ) that is the species the more captured consistent of the Céphalophe of Peter ( $n = 85$ ), of the bay Céphalophe ( $n = 20$ ), of the Céphalophe black straightforward à ( $n = 19$ ), of the Céphalophe à yellow back ( $n = 10$ ) come then the Potamochère ( $n = 19$ ), the Sitatunga ( $n = 8$ ).

At the Rodents, it is the African Athérure ( $n = 42$ ) that is the species the more captured.

At the Primates, Hocheur ( $n = 2$ ) and the Moustack ( $n = 2$ ), have all been captured two times only. Finally the Pholidoteses and the Crocodilienses, the gigantic Pangolin and the dwarf Crocodile have been captured 5 and 6 times respectively.

### Distribution of the cashes sold by class of age

We distributed the cashes in three classes of age: the young, the adults and the old (Table 2).

The exam of him (Table 2) relief that globally, one sold on the market of Ngombé, more of adults (74,15%) that of youngsters (20,23%) and the old (5,62%) different cash animal. The analysis deepened of the sales species by species shows that the adults of five (5) cashes are sold more than those of other cashes. It is about the blue Céphalophe (n = 111), of the Céphalophe of Peter (n = 67), of the African Athérure (n = 34), of the bay Céphalophe (n = 11) and of the Potamochère (n = 11).

**Table 1: Distribution of the animals captured by order and by species**

Order	Families	Species	Common names	Number individuals captured by species	Number of individuals captured by order
		<i>Cephalophus sylvicultor</i>	Céphalophe à dos jaune	10	
		<i>Cephalophus monticola</i>	Céphalophe bleu	136	
		<i>Cephalophus nigrifon</i>	Céphalophe à franc noir	19	
	Bovidés	<i>Cephalophus callipygus</i>	Céphalophe de Peters	85	
Artiodactyles		<i>Cephalophus dorsalis</i>	Céphalophe bai	20	299
		<i>Tragelaphus speckey</i>	Sititunga	8	
	Suidés	<i>Potamochoerus porcus</i>	Potamochère	19	
	Tragulidés	<i>Hyemoscus aquaticus</i>	Chevrotain aquatique	2	
		<i>Cercopithecus nictitans</i>	Hocheur	2	4
Primates	Cercopithécidés	<i>Cercopithecus cephus</i>	Moustack	2	
Rongeurs	Hystricidés	<i>Atherus africana</i>	Athérure africain	42	42
Pholidotes	Mamidés	<i>Manis gigantea</i>	Pangolin géant	5	5
Crocodyliens	Crocodylidés	<i>Osteolaemus tetrapis</i>	Crocodile nain	6	6
Total				356	356

**Table 2: Distribution of the cashes sold by class of age**

S.No	Species	Youngsters	Adult	Old	Strength	Percentage
1	Céphalophe à dos jaune	4	6	0	10	2,81
2	Céphalophe bleu	12	111	13	136	38,20
3	Céphalophe à franc noir	10	9	0	19	5,34
4	Céphalophe de Peters	15	67	3	85	23,88
5	Céphalophe bai	9	11	0	20	5,62
6	Sititunga	0	4	4	8	2,25
7	Potamochère	6	11	2	19	5,34
8	Chevrotain aquatique	0	2	0	2	0,56
9	Hocheur	1	1	0	2	0,56
10	Moustack	0	2	0	2	0,56
11	Athérure africain	6	34	2	42	11,80
12	Pangolin géant	3	2	0	5	1,40
13	Crocodile nain	2	4	0	6	1,69
Total		72	264	20	356	100
Percentage		20,23	74,15	5,62		

### Distribution of the cashes sold by sex

Table 3 gives an indication on the relative importance of the dejected and sold game sex.

The exam of him (Table 3) watch that, on a total of 356 dejected and sold games on the market of Ngombé, 52% were the male animals and 48% of females. À the look of these results, one can conclude to the point that in the Forest unit of Ngombé planning, the males are hunted more that the females.

### Middle selling price by species

In order to value the catches the more appraisals on the market of Ngombé, we calculated the middle selling price by species, (Table 4). The exam of him (table 4) watch that on the thirteen dejected catches in the Forest unit of Ngombé planning, five (5) catches are sold à a very elevated average price. It is about the Sitatunga (17.125) follow-up of the Potamochère (15.790), of the Céphalophe à yellow back (14.150) of the bay Céphalophe (10.675) and finally the Céphalophe of Peter (10.170). The eight (8) other catches are apparently catches of least value since they are sold with average prices lower à 10.000 FCFA.

**Table 3: Distribution of the catches sold by sex**

Sex	Quantity (kg)	Percentage
Male	185	52
Female	171	48
Total	356	100

**Table 4: Middle selling price by species.**

S.No	Species	Middle selling price (FCFA)
1	Céphalophe à dos jaune	14.150
2	Céphalophe bleu	2.900
3	Céphalophe à franc noir	8.550
4	Céphalophe de Peters	10.170
5	Céphalophe bai	10.675
6	Sitatunga	17.125
7	Potamochère	15.790
8	Chevrotain aquatique	8.000
9	Hocheur	2.250
10	Moustack	4.250
11	Athérure africain	2.860
12	Pangolin géant	4.800
13	Crocodile nain	5.500

### DISCUSSION

The results gotten and that concern the distribution of the stock appropriated by order and by species as well as the middle selling price, show that for the five (5) orders and the thirteen (13) counted cash, the withdrawals, the sale and the selling prices means don't make themselves in an identical manner. The output processing shows that on 356 dejected and sold catches, we have 299 catches belonging à the order of the Artiodactyleses and forty two (42) individuals who belong à the order of the Rodents. These results permit to appreciate the pressure of hunt on these two orders and on the catches belonging à these orders. Several reasons can be à the origin of this situation. In the first place, one can think à abundance in our zone of survey of the individuals belonging à these orders. Indeed, he/it is obvious that thanks to their abundance, some catches are more easily visible that of others and as a consequence, can be dejected by the hunters. These catches will be therefore more available on the market that of others. À the delà of abundance, the quality of the game can also justify the abundance of some cash on the displays of the market of Ngombé in relation to the other catches. Indeed, the trade of the hunt meat makes intervene several actors among whom: the backers, the hunters, the sellers and the consumers. For reasons of profitability of their business, the backers scrutinize the different markets and according to the information received on the quantity, the practiced prices and the quality of the game that are appreciated more by the sellers and the consumers, they place their orders by the hunters who have the obligation to hunt what represents on their notebooks of order only. The catches as the Céphalophes bruise, Céphalophe of Peter, bay Céphalophe, Céphalophe black straightforward à, the African Athérure and the Potamochère, very appreciated in general by the Congolese households and those of the Department of the Sangha in particular, pay a heavy tribe thus for the quality of their meat. With regard to the distribution of the catches sold by class of age, he/it comes out again that the adults are the most dejected and among these, the adults of Céphalophes, all disconcerted catches are the more hunted. It proves à sufficiency that the hunt of the catches of Céphalophes is not lasting in our zone of survey. This situation risks à term to compromise the renewal of these catches very appreciated by the Congolese households.

Indeed, until the young arrive in maturity to assure the relay, these are these adults who guarantee reproduction and permit the new individual recruitment. The strong pressure that exercises itself therefore on them risk to make disappear them before they accomplished this mission with the risks to have some generations irregular resulting of interruption à the level of reproduction. Being about the distribution of the cashes sold by sex, one notes that the strength of distribution in relation to the sex, the male cashes are more dejected than the females. One can put itself then the question to know why the males are more dejected than the females.

Two fundamental reasons can justify these withdrawals.

In the first place, he/it is known well that the male, no matter the physiological state in which he/it is, reproduction or of sexual rest, is always more active than the female. It especially observes itself at the nomadic animals or that live in couple. So the male, head of a family, often explores the environment to satisfy the needs of the herd or the couple. Has this opportunity, becoming more visible, he/it can be taken easily in a trap or be dejected by the hunter. Then, the hunters à the look-out, often search for the beautiful specimens, the rare phenotypes. However often, these are the males who are carriers of the these sought-after characters. From where their strong rate of withdrawal. Here again, it is not necessary to forget that this strong pressure that exercises itself on the males can also compromise the numerous cash future in our zone of survey. indeed, while appropriating the males massively, one risks to meet solely with the females who will be à them only incapable to transmit the genetic heritage of this cash à the future generations.

## CONCLUSION AND PERSPECTIVES

Has shortcoming this survey, we have just shown that the installation of a forest industry entails a brewing important of the human populations and puts back in question the problems of their provision. On the other hand, the lumbering encourages the opening of the roads through the forest table setting what leads to à an increase of the situations of free access à the resource. The immediate consequences it is of course the massive exploitation of the natural resources of which the wild fauna. The problem of the management of the wild fauna puts itself therefore with acuteness in the yards of lumbering. What are the committed responsibilities or à to hire? He/it is true that with this continuous growth of the human populations in the forest yards, some animal cashes are going to disappear progressively so no action is taken to modify the bid and ask in meat of hunt. When one knows the role of fauna in the natural regeneration, these disappearances are going to drag the modifications of these ecosystems. One runs therefore backwards the risk of a development of these ecosystems. Considering what precedes, it is urgent to force the industries forest à not to facilitate hunt and the transportation of the game in their concessions; to finance concrete and realistic projects of the activities of substitution à the consumption of the hunt meat; to undertake actions of social marketing to tempt to direct the consumers' preferences toward animal proteins others that those of cash overexploited.

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