

**THE IMPACTS OF MINERAL EXPLOITATION AND ASSOCIATED TRADE ON WILDLIFE
IN THE DJA-BOUMBA MINING AREA EAST CAMEROON**



Local communities involved in non-animal protein and income activities © Nforbah.

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Progress Report, June, 2012



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1. COMMUNITY BASED ECOLOGICAL MONITORING PROGRAMME

The old hunters association, a formally recognised group of hunters and the community based village groups of the Dja-Boumba mining area, have been conducting wildlife surveys in the mining area since 2011. The need for this has been participatorily identified by the groups themselves as a way of gathering baseline data for the sustainable management of the wildlife resource in the mining area. The existing wildlife survey system involved regular visits to hunting camps, reconnaissance walk along snare lines and in the villages to register animals killed, traded and consumed locally on a monthly basis. The community based ecological monitoring system gathered information that have provided a regular overview of the trends in bushmeat harvest and trade in the Dja-Boumba mining area through proxy indicators.

1.2 Key issues to be addressed by the community based monitoring team

- The monitoring system must produce data that can be used to generate defensible estimates of changes in bushmeat trade;
- Information must be collected in such a way that builds local skills on sustainable management of natural resources;
- The data collected must be easily analysed and interpreted by the community;
- Information from the monitoring must generate results frequently in order to maintain a community interest in the work;
- The results must answer the management needs outlined in the objective.

1.3 METHODS

1.3.1 In the forest (hunting camps, snare lines)

Direct observation; the community based ecological monitoring team registered on site animals traps or shot by hunters.

1.3.2 In the villages

Direct observation; the team recorded all carcasses arriving the villages.

Indirect observation; information on bushmeat harvest and trade were also collected through channel of communication (mouth to mouth) from individuals of the community monitoring group.

2. RESULTS

Table 1. Monthly analysis of wildlife species harvested, consumed and traded in the project area

Month	Number Killed	% Killed	Sold	% Sold	Consumed	% Consumed
March	105	27.1	42	23.9	63	29.2
April	36	9.3	12	9.1	24	11.1
May	42	10.8	20	11.4	22	10.2
June	46	11.8	20	11.4	26	12
July	41	10.5	28	15.9	13	6
September	55	14.2	19	10.7	36	16.7
October	48	12.4	24	13.6	24	11.1
November	15	3.9	7	4	8	3.7
Total	388	100	172	100	216	100

Source: Field data, 2011/12

Table 2. List of wildlife species killed in the project area within eight months

Scientific names	Common names	Conservation status (IUCN,2002)	Cameroon legislation
<i>Thrynomys swinderianus</i>	Cane rat	DD	
<i>Atherurus africana</i>	Brush tail porcupine	DD	
<i>Cricetomys emini</i>	Giant rat	DD	
<i>Phatoginus tricuspis</i>	Tree pangolin	DD	
<i>Dendrohydrax arbereus</i>	Tree hydrax	EN,	A
<i>Cephalophus callipygus</i>	Peter's duiker	LRnt	
<i>Cephalophus leucogaster</i>	Gabon duiker	LRnt	
<i>Cercocebe agilis</i>	Crested mangabey	EN	A
<i>Veranus nilotinus</i>	Varan	EN	A
<i>Cercopithecus nictitans</i>	spot nose monkey	DD	
<i>Cephalophus nigrifons</i>	Black fronted duiker	LRnt	
<i>Cercopithecus cephus</i>	Moustached monkey	DD	
<i>Pan troglodytes</i>	Chimpanzee	EN	A
<i>Herpestes naso</i>	Long nose mongoose	DD	
<i>Profelus aurata</i>	Golden cat	EN	A
<i>Python sebae</i>	Python	DD	
<i>Dermochelys sp</i>	Turtle	DD	
<i>Viverra civetta</i>	African civet	DD	
<i>Hyemoschus aquaticus</i>	Water chevrotain	LRnt	A
<i>Periodicticus potto</i>	Potto	EN	A
<i>Tragelaphus spekii</i>	Sitatunga	LRnt	B
<i>Genetta servalina</i>	Servaline genet	DD	
<i>Atilax paludinosus</i>	Marsh mongoose	DD	
<i>Orteolaemus tetraspis</i>	Crocodile	EN	A

Source: Field data, 2011/12

2.1 Conservation status

The species identified as threatened by IUCN are assigned a category indicating the degree of threat as follows:

EN = Endangered;

LRnt = Lower risk, but near threatened;

DD = Data Deficient.

Cameroon Legislation (Law No. 0648 of 18 December 2006, Articles 2(1) and 3(1) laying down forestry and fauna regulations:

Class A = Rare or Endangered species with full protection.

Class B = Species where by hunting and export should be regulated or monitored.

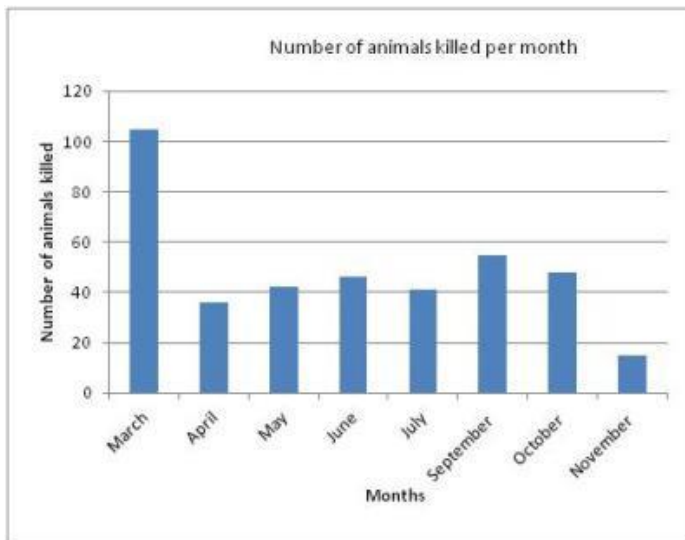


Fig. 1. Total number of animals killed per month

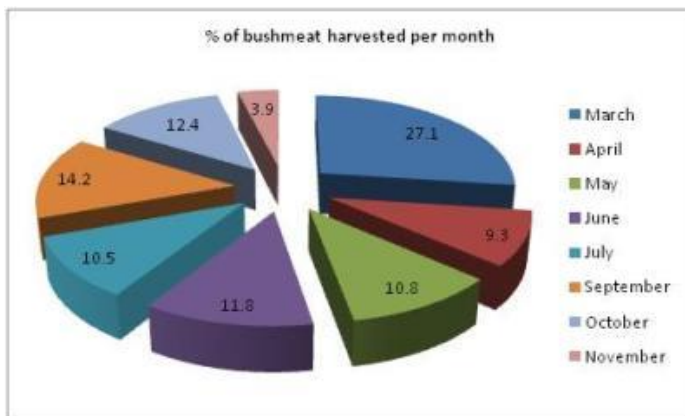


Fig. 2. Percentage of bushmeat harvested per month

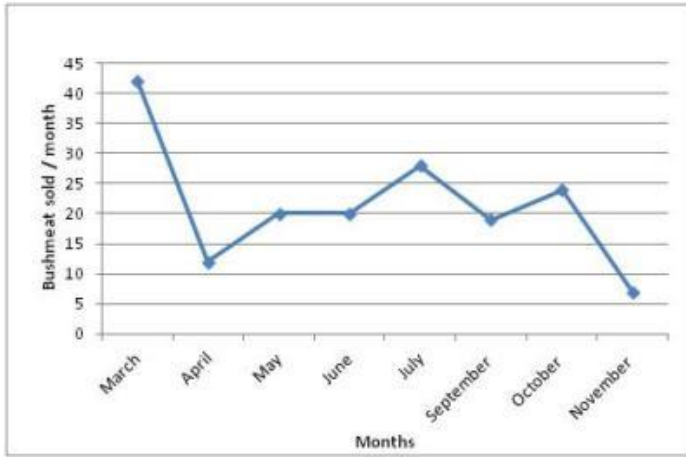


Fig 3. Bushmeat sold per month in the project area

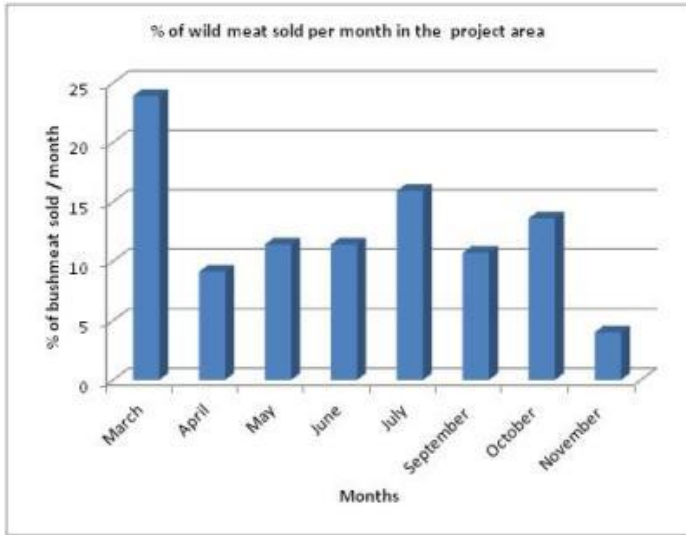


Fig. 4. Percentage of bushmeat sold in the project area

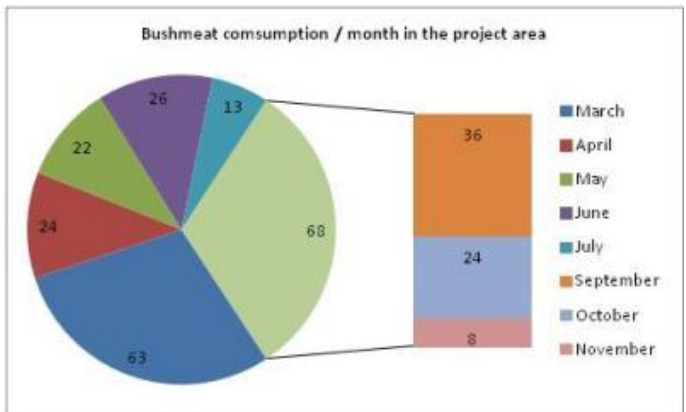


Fig. 5. Bushmeat consumed in the project area

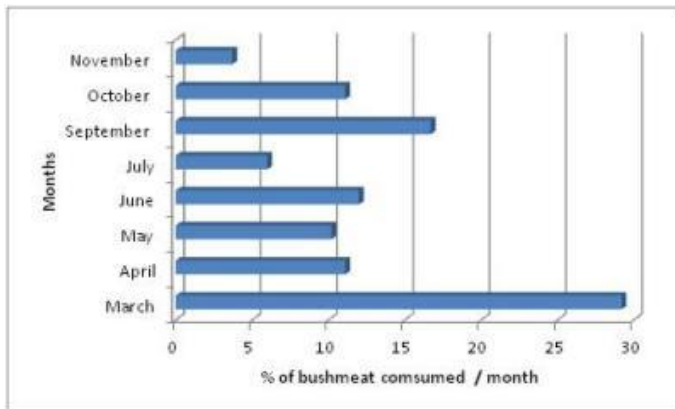


Fig. 6. Percentage of bushmeat consumed per month in the project area

2.2 INTERPRETATION OF RESULTS

From March to November, 2011 except August, community based ecological monitoring programme was carried out in the Dja-Boumba mining area to check trends in bushmeat harvest and trade overtime (mining period) and to have knowledge of the type of species killed. This empirical information was:

- translated into management device,
- provided pressure level and state of indicators.
- drivers of indicators (economic, social, ecological and governance context).
- responded indicators (policy changes undertaken to promote sustainable use of wildlife for food).

In the project area, 388 animals were extracted in eight months; 55.7 percent were consumed locally and 44.3percent were sold as source of income. In general, the consumption of bushmeat (figure five) by villagers in the project area was more important than their sale. The results showed that more wild meat were killed in March and September. This is shown in table one and in figures one and two. However, within the remaining six months variation in kills were not significant except in the month of November that has kills twice as low as the other months. These include April, May, June, July, October and November.

The month of March has the highest percentage impact on wildlife than any other month (80%) in the study area. This is followed in descending order by September (41.6%), October (37.1%),

June (35.2%), July (32.5), May (32.4), April (29.5%) and November (11.6%). See figures two, three and six.

Twenty four wildlife species were killed in the study area; seven were listed in the 2010 IUCN Red List of threatened species (www.redlist.org). Eight species were listed in class A and one in class B of the Cameroon Wildlife Legislation (MINFOF, 2010). Five species were listed as lower risk, but near threatened and twelve as data deficient (Table 2).

2.3 DISCUSSIONS

The results of the community based ecological monitoring programme suggest that there is strong linkage (44.3% and 55.7%) between harvest and trade in bushmeat and mining activities in the study area. This implies that mining activities in the study area is highly linked with the harvest and trade of bushmeat. This tally with the work *Froment et al. (1996)* who asserted that wildlife provides significant calories to rural communities, as well as essential protein and fats. These proteins cannot be substituted by available protein of vegetal origin, such as cassava or gnetum leaves, as they are poorer in amino acid (Pagezy, 1996). They could be replaced by other vegetal sources and meat from domesticated animals (Makazi, 2011).

Wildlife in the project area is adversely affected by industrial mining because in the course of their activities critical habitat are destroyed, movement patterns are disturbed and the building of roads facilitate hunting by providing hunters transportation. Salaried employees and their extended families that live in mining camps within drilling sites constitute a significant local source of demand for proteins (and therefore bushmeat). The establishments of camps with better living standards than surrounding villages (Melen, Kongo and Achip) have created an immigration flux and locally increase in population density. The present of a large cash-rich population have generated a cascade of changes within the local communities that further exacerbate the impact on wildlife and increase the volume of the harvest and trade in bush meat.

The increased harvest and trade in bushmeat within the months of March and September could be linked to the fact that the indigenous Nzime and the Baka pygmies used wild meat as a means to gain additional income for school fees. These two months are holidays, which parents are preparing for the next academic year and the end of the first semester. Parents must increase their hunting pressure in order to meet up with the institutional demand.

Human population densities in the households during the holidays influence hunting sustainability through their impact on demand and harvest level; the more people using the resource, the less likelihood of sustainable harvesting. During the holidays in the project area, each household contains 5-8 persons. According to Robinson and Bennett (2000) sustainable hunting cannot be more than three persons per household. This estimate based on an average sustainable production of 150kg/km²/year of which 65 % is edible and a daily need of 0.28kg of meat per capita.

The reduction in bushmeat harvest and trade during the month of November and properly nothing recorded in December implies that the local communities are involved in intensive agricultural activity at this period of the year. They cultivate food crops mainly cocoyam, cassava, maize and yam. All crops are cultivated in mixture. The dominant perennial crops as cocoa, coffee and palms are the main cash crops cultivated during this period. The implication of this result is that agriculture is a significant factor in the mining area that influences bushmeat harvest and trade. Agriculture enhanced sustainability of hunting in the mining area.

Financial, material and training resources are insufficient to allow law enforcement personnel to adequately address the commercial trade in bushmeat by the illegal immigrants and this deficiency decreases the capacity for control of illegal activities.

3. NEW SKILLS ENRICH HOME GARDENS AND ENHANCE LIVELIHOOD OF THE LOCAL COMMUNITIES

The project has empowered the women groups and some farmers on how to manage nurseries and how to deal with pests and diseases in home gardens in the mining area. As a result, families now grow vegetables in home gardens all year round.

Home gardens play an important role in fulfilling dietary, alternative source of protein and income. Home gardens supplies up to 60% of vegetables requirements and have added benefits of being free from chemicals and pesticides. The Dja-Boumba mining area home gardens are seasonally dynamic, with farmers and women groups growing a variety of crops with different harvest times to ensure a constant supply of livelihood to reduce pressure on wildlife. A sort of nutrition calendar has been drawn up to help identify species to suit seasonal and local conditions. A nutrition calendar has indicated that the introduction of vegetable and perennial climbers in combination with the rabbits contribute to balanced nutrition for families in Melen, Kongo and Achip villages. This has helped to blend the current agricultural skills and cultural

practices, thereby taking better advantage of the potential of home gardens to improve the local communities' livelihood and increase ability of the communities to implement sustainable community wildlife management.

3.1 Mrs Langa's tale on home gardens

Mrs Langa's tale is instructive: through simple training in home gardening, many people have improved their nutrition and health, their economic situation and their lives generally. Mrs Langa testified how she sells the surplus vegetable products at the markets weekly, because of her new skills. She earned five thousand (5000) Francs CFA weekly from selling vegetables in the local markets. Thanks to the alternative source of protein and income integrated into the project.

3.2 PUPILS' PARTICIPATION IN THE NATIONAL DAY CELEBRATION

The wildlife clubs have embarked on environmental education campaigns during the national day celebration. The aim was to enable the pupils, students, parents and stakeholders of the mining sector to develop an environmental culture through the development of songs, traditional displays and stories on livelihood alternatives for the unsustainable use of bushmeat.

Some of the traditional displays and songs included traditional hunting, the best method of hunting sustainability and hunting for sustains not to comprise for the future generation.

4. LESSONS LEARNED

1. Members of the local communities trained to conduct their own wildlife resource assessment and monitoring are active and are working in participatory manner. Local empowerment of wildlife resource users is the potential key strategy to achieve long-term sustainability.
2. A potential challenge is to add value to the data collected by disseminating results and react promptly to negative trends.
3. The local communities are fast gaining knowledge, attitude and practices towards the sustainable management of wildlife.
4. An alternative to grow non-animal and animal sources of protein and income would remove the need to hunt wild meat, alleviate poverty and improve livelihoods.

5. Illegal immigrants population has be monitored with caution as they increase hunting pressure in the area either directly or by employment of, or purchase of bushmeat from, local hunters.

4.1 CONCLUSIONS

This report is meant to serve to alert all stakeholders and the local communities that the project has a system to assess trend in the harvest and trade in bushmeat over time in the mining area. Although the figures may lead to the conclusion that bushmeat harvest and trade is below sustainability threshold in the mining area but the current situation of bushmeat hunting in the Congo Basin is more precarious than previously thought. The data derived by the community based monitoring team is an initial step to provide a means of wildlife management system in the Dja-Boumba mining area. The most realistic approach to supply the local communities' protein needs is the farming of plant-based proteins and domestic livestock which is ongoing. Progress is positive related to local community awareness and support of wildlife management.

5. REFERENCES

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The monitoring team analysing the data © Nforbah Ernest



Wildlife clubs members display on the national day celebration © Nforbah Ernest