Human wildlife conflicts: the case of the olive baboon (*Papio anubis*) in the Mbam and Djerem National Park and the implications for conservation attention.

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Abstract:

In Cameroon, studies on adverse conflicts between humans and wildlife have focused mainly on elephants and great apes. The lack of information on monkey conflicts motivated the present study in the periphery of the Mbam Djerem National Park (MDNP) where human-olive baboon conflicts exist (*Papio anubis)* due to the extension of agricultural land around the park. This study was carried out in two phases: questionnaire survey and field visits for verification. From July 2021 to August 2022, we administered a questionnaire to 171 people, 74 of whom were farmers around the MDNP to examine the human-olive baboon conflicts. Results obtained indicated that Human-olive baboons exist, we have: crop raiding, hunting of olive baboons, bullying, disturbances caused by olive baboons, and domestic animals predation by baboons. Although ecotourism and leisure were cited as other interactions. The crop raided by olive baboons is the origin of the conflicts with Human. Cassava (*Manihot esculenta*) is the crop most frequently raided by olive baboons in the dry season, followed by maize (*Zea mays*) and groundnut (*Arachis hypogaea*) in the rainy season. Despite the use of control strategies such as field patrols, the installation of scarecrows, the use of traps and guns, the guarding of straw huts, and the guarding of dogs. 83% of the respondents lost approximately 25% of their crop annually due to olive baboons, and 5% of the respondents lost 25 to 50% of their crop annually, 4% of the respondents lost approximately 75% of their crop and 8% lost almost nothing. Economic losses were estimated on average at 150.647 ± 21.695 FCFA with a maximum loss of 1.058.000 FCFA [1.765 USD] and a minimum loss of 16.000 FCFA [about 27 USD]. The surface areas damaged annually by olive baboons ranged from 0.2 ha to 2.3 ha. These results showed that the crop raided by olive baboons created a conflict between humans and nature that had a negative impact on the conservation of this monkey and the survival of the local population in this region. To mitigate these conflicts, we suggest sensitizing local population on the use of the gun in the inspection of crop fields and strengthening of day and night field inspection during the crop maturity period.

Comment [U2]: In the abstract, briefly provide the method used

Keywords: Mbam and Djerem National Park, Conservation, Crop raiding, Human-Olive baboon conflicts, Olive baboons.

1. Introduction

The African demography is already growing, it will continue and the population will double by 2050 [17].To meet the food and financial needs of this growing population [31,65,15, 62]. Africans have begun to create crop fields, some of which border protected areas; unfortunately, this extension of agricultural land will be the source of human-wildlife conflicts [11,30]. In 2005, WWF defined the Human-Wildlife Conflict (HWC) as any interaction between humans and wild animals that results in negative impacts on the economic, social, and cultural life of humans and on the conservation of animal species or on the environment. HWC exists throughout the world, but is especially prevalent in Africa [22,30]. Several behaviors at the origin of these conflicts are: the intrusion of animals into human dwellings, the raiding of crops, the attack of food supplies and damage to water sources and other human structures, death or injury to populations [17]. These conflicts have worsened with the settlement of human populations on the

Comment [U3]: Previous research related to this problem can be added so that the state of the art of the research can be seen

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outskirts of protected areas in search of available land. Consequently, local populations and wildlife share in a conflicting way the same spaces and vital natural resources **[44,26,3,58].** HWC manifests itself in many forms including: crop raiding, loss of livestock by predation, disease transmission, and human mortality around protected areas can pose a significant risk to biodiversity by reducing support for conservation efforts **[*1,13, 38,42, 47, 52, 50*].** Crop raiding has been identified as a key form of HWC and the most significant disadvantage of practicing farming near protected areas **[*20*].**

Currently, studies on wild HWC in Central Africa remain limited. Most studies have focused on the savannahs of southern and eastern Africa (especially savannah elephants, *Loxodonta africana*, large carnivores, and large primates, including gorillas and chimpanzees), from which various losses have occurred **[*58, 24, 48,20,49*].** However, many species are involved: buffaloes (*Syncerus caffer*) **[54, 21,53]**, or olive baboons (*Papio anubis*) which attack crops, up to predation of livestock by lions (*Panthera leo*) and other large carnivores **[*59,5*].**

The Mbam Djerem national park (MDNP) and the peripheral zones are characterized by a great diversity of habitats, sheltering an exceptionally rich and varied fauna, including species characteristic of the forest or savannah, as well as a complex of species that are generally associated with transition mosaics between forest and savannah **[*39*].** An assessment of changes in vegetation cover in and around MDNP between 2000 and 2018 showed that 15% of the forest cover and 5% of the savanna area around the park were converted to cultivable and fallen land **[*18*],** a consequence of rapid population growth. Approximately 50.000 people live in 75 villages limited to the park **[*40*],** the resurgence of crop raiding has favored HWCs on land bordering protected areas, which is recognized as a long-term threat to the conservation of biodiversity **[*28,4*]** and as is the case with olive baboons that damage the crop around MDNP. Primates also cause significant damage in forest plantations, debarking, and uprooting young plants. Olive baboons are experts in attacking crops such as potatoes (*Solanum tuberosum*), maize (*Zea mays*), beans (*Vicia faba*), peanuts (*Arachis hypogaea*), cotton (*Gossypium hirsutum*), cassava (*Manihot esculenta*), sorghum (Sorghum sp.) and bananas (*Musa sp.*) **[*9,2*].**

Although there is a human-primate conflict in Cameroon, detailed studies on the mitigation of the problem have not been published. Studies have been carried out on Human-Primate conflicts in several African countries, particularly in Cameroon **[*58*]**, in Uganda **[22,23 ,*43*]**, in Ethiopia **[*63*],** in Benin **[*2*],** in Ivory Coast **[30],**just to name a few. Studies have been carried out on human-monkey conflicts in Cameroon **[58,*29*]**and for that reason, this extent of conflict is poorly documented in the country and is fundamental for the development of effective conservation management plans **[*27*].** Therefore, the objectives of this study were to determine the crop consumed by olive baboons in the fields, to determine the control strategies used by farmers to fight crop raiding, and to assess the loss rate of farmers who are victims of crop raiding, and to propose control solutions to fight crop raiding.

2. Materials and Methods

2.1 Description of the study area

The Mbam Djerem National Park was created on 6 January 2000 by Decree No. 2000/005/PM to compensate for the damage caused to the savannah and forest ecosystems by the Chad-Cameroon pipeline project. Located between 5 °

30' and 6 ° 13' north latitude and 12 ° 13' and 13 ° 10' east longitude in the forest-savannah transition zone, MDNP is the largest protected area in Cameroon with an area of 416512 ha. Located at the intersection of the Adamawa, Center and East regions, this particular ecosystem, originally populated by the *Mvute*, *Gbaya* and *Peulhs*, today experiences in its periphery significant migratory flows of populations from other regions of Cameroon and neighboring countries as well as a proliferation of economic activities and actors.

The MDNP is home to about 60 species of mammals, belonging to ten major orders, twenty-six families, and 34 subfamilies, including primates, insectivores, lagomorphs, rodents, carnivores, pholidotes, tubulidents, proboscideans and artiodactyls **[*33*]**with a dozen medium primates including olive baboons (*Papio anubis*), nut-nosed monkeys (*Cercopithecus nictitans), etc.***[*12*]*.** The MDNP has a Sudano-Guinean climate with a rainfall of 1900mm/year and a temperature that varies from 23 to 24 ° C **[*7, 29*].**

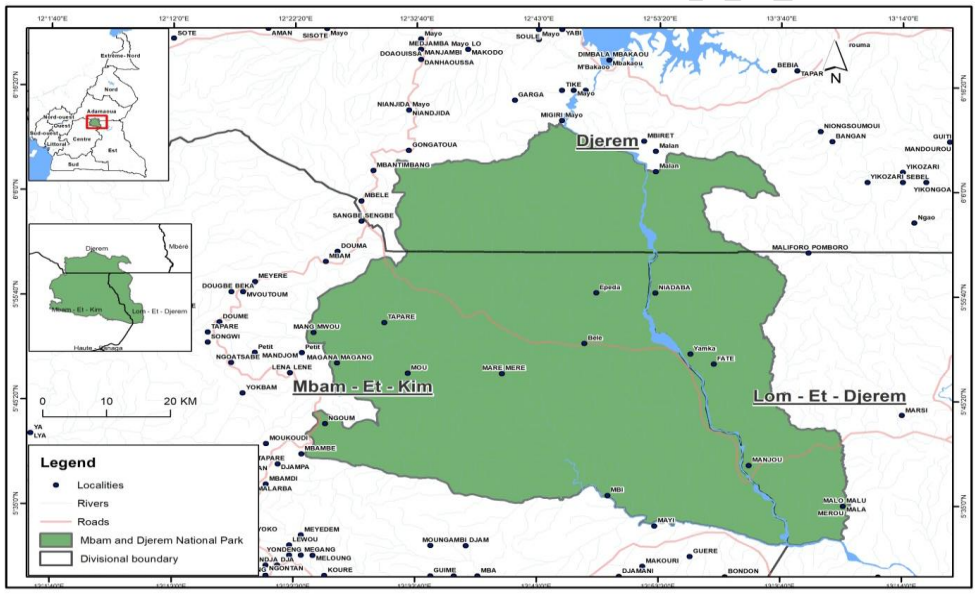

Figure 1: Study site (Forest Atlas 2022, coupled with field data (GPS))

2.2 Study design and selection of survey site

To administer the questionnaire in the villages, we first met the village chief or his representative to obtain his permission to question his population. The choice of this study site is due to the proximity of crop fields to the park and the presence of olive baboons both in the fields and in the park. The latter is one of the most devastating crops than any other wild animal **[*6, 46*].** The number of respondents varied according to the density of the population (50 minimum people), the proximity of the village to the park (located less than 20 km) and the presence of a large number of farmers (at least 20 farmers). Two types of data were collected as part of this study: (a) direct observations in crop fields based on the approach of **[3]**and (b) a combination of interviews with communities bordering the

MDNP adapted according to **[34].** These investigations were carried out in the 16 villages (*Carriere, Debiro, Doume, Doyolokoro, Gongotoua, Lena, Mba'am, Mbakaou, Mbangsiri, Mbang-Timbang, Mbitom Conseiller, Miyere, Mousseren, Ngoum, Sengbe and Soulewa*) that border the park.

2.*3 Methods of data collection*

The empirical phase of this study occurred from July 2021 to August 2022 in the periphery of the MDNP, generally corresponding to periods of crop maturity. Data were collected through structured interviews using semistructured questionnaires with the assistance of the interview guide, who was a local person who spoke French and the local language. These interviews were reinforced by direct observations during visits to crop fields, assisted by the field owner. An identification key for the monkeys present in the MDNP ((sheet presenting all primate species of the MDNP drawn from the West African Primate Guide according to **[46]**, and the studies carried out by **[12]**was presented in order to reassure themselves that they would recognize the olive baboons.

The sampling technique consisted of identifying a farmer who had suffered crop damage and/or who implemented a strategy to combat the attacks or not and then asking him to indicate another farmer with the same characteristics (snowball method). Thus, 107 farmers were interviewed throughout the study area and 78 fields were visited. The choice of these values also took into account field conditions, in particular the presence of damage or olive baboons and the availability of farmers during the survey. The visit to the fields made it possible to measure the area of the field, measure the area of the most damaged plots, photograph the crop eaten by the olive baboons, assess the damage caused, and identify the local crop protection methods used in the management of attacks against olive baboons.

A questionnaire was administered to him to collect information such as: the monkeys involved in crop damage, the types of crop damaged, the area of the field damaged in hectares, the phrenological stage of the attacks, the type of help received from the leaders of the park, economic loss, local methods of protection as well as their effectiveness, and the number of times the respondent has already killed olive baboons in the implementation of local management methods. After interviewing at least 10 people per village, some farmers surveyed who were victims of crop raiding, using olive baboon control strategies or not, and whose fields were located at least 30 minutes' walk and at least 20 km from the park, were selected for a visit to their crop field. Returned to their field, we began by measuring the area of the field using GPS by a walk; then we enter the field assisted by the owner to measure the most destroyed plots by observing the control strategies employed.

2.4 Data analysis

All data was processed and analyzed with R software, version 4.1.0 (R Core Team, 2021). Before analysis, some factor levels were grouped for statistical convenience. The threshold for all statistical significance was set at a probability of 5%. For categorical variables, the Chi-squared homogeneity test was used to compare the frequencies of responses where multivariate analysis was not possible due to the inadequate size of the sample. After recoding the response variable as binary (1=annual loss; 0=no annual loss) and assuming that the respondent's village was random, the data was modelled using a generalized linear mixed model (GLMM) with binomial error and logic link

function. Thus, the model included both random effect (respondent's village) and fixed effects (deterrent strategies, dominant crop planted, socioeconomic factors, and park location of respondents), which were tested as potential predictors of respondent's acknowledgement or not of annual crop loss due to baboons. For model selection, the multicolinearity of the explanatory variables was first checked using the package 'performance'. The 'ethnic group' and 'region of origin' of the respondents were found to be highly correlated (variance inflation factor, VIF>20), hence were excluded from the model.

3.Results

3.1 Crop raiding due to olive baboons and other animals

3.1.1 Local opinions on crop raiding due to olive baboons

Approximately half of the respondents (43%, n=74) reported crop raids by olive baboons locally called *Doro* (by *Mvute*and non-natives) or *Dourou* (by Foufoulbé) or *Gbada (in Gbaya)* and *Miopithecus talapoin* called *Silon Djàhnè (in Mvute) or Bouda (in Gbaya).*Twelve other species of animals were mildly evoked responsible for crop raiding: Potamocher (*Potamochoerus porcus*), Putty-nosed monkey (*Cercopithecus nictitans)*, Tantalus monkey (*Chlorocebus aethiops tantalus*), Hedgehog (*Erinaceus sp*), Porcupine (*Erithizon dorsatum*), Chimpanzee (*Pan troglodytes*), De Brazza monkey (*Cercopithecus neglectus*), Red-eared guenon (*Cercopithecus erythrotis)*, Crowned monkey (*Cercopithecus pogonias)*, Mangabey (*Lophocebus albigena)* and Black-and-White colobus (*Colobus guereza)* (See Figure 2).

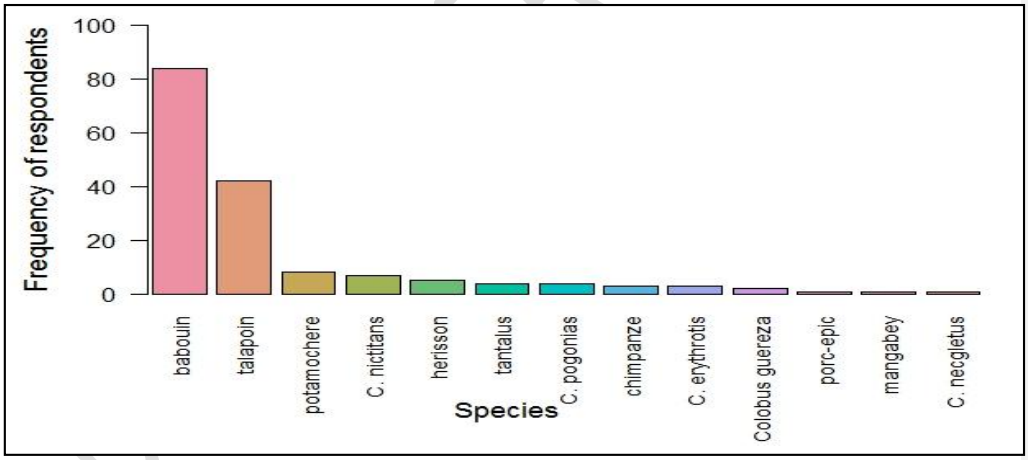

Figure 2: Species reported to raid crops

3.1.2 Crop consumption by olive baboons

Maize (46%, n=79) and cassava (46%, n=79) were the dominant crop grown in the area. Minor crop included: groundnuts (5%, n=9), sweet potatoes (2%, n=2), yams (0.5%, n=1) and pepper (0.5%, n=1). Among the 13 crops (see Figure 3) reported consumed by olive baboons, cassava (tubers) (50% of responses) and maize (31% of responses) were the most declared. Furthermore, the consumption of cassava in the dry season and the consumption

of maize and groundnuts (grains) in the wet season were commoner compared to the consumption of the wet and dry season, respectively. The consumption of potatoes (tubers) in the dry and wet season was reported equally by the respondents. While five people reported consumption of beans (grain) solely in the wet season, consumption of yams (tubers) and fruits of okra, plantains, peppers, bananas, mango, egussi, and cucumbers was very uncommon according to respondents. The crops were consumed in the fructification (90 respondents) and maturity (81 respondents) stages.

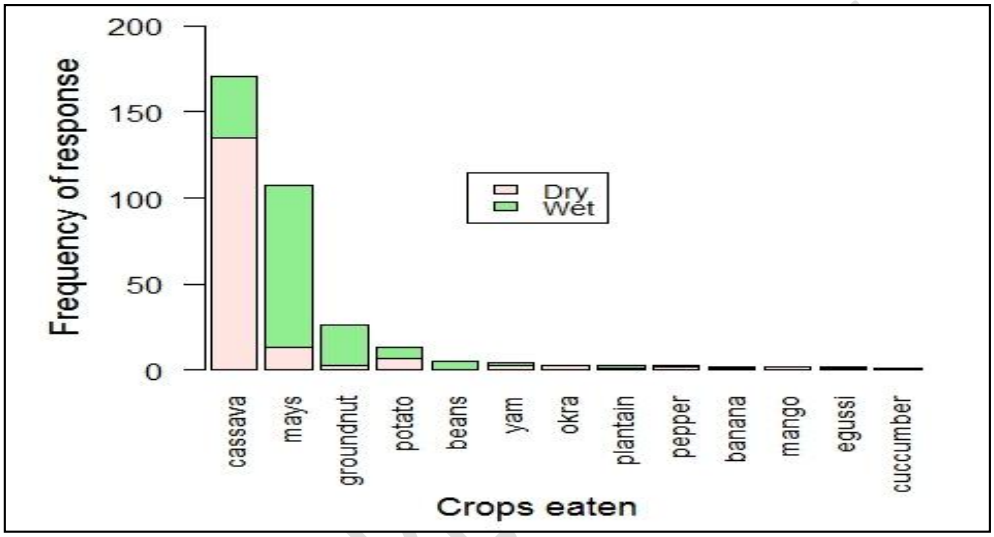

Figure 3: Opinions of the respondents on the crop raided and consumed by olive baboons

3.2 Identify the damage caused by olive baboons

The practice of agriculture in the vicinity of the Mbam and Djerem national parks is the origin of several types of interactions.Of the 171 respondents interviewed, it emerges that five types of relationships exist between the local population and the olive baboons: 74% for crop raiding (crop destruction), 12% for bullying of which the monkeys are not afraid women and young children who guard the fields, 9% for food; some farmers hunt the species in response to the crop raiding of their crop, 1% ecotourism, 1% think that the species brings pleasure to populations, 1% for disturbances and 2% for predation the olive baboons hunts some animals, in particular dogs and torture.

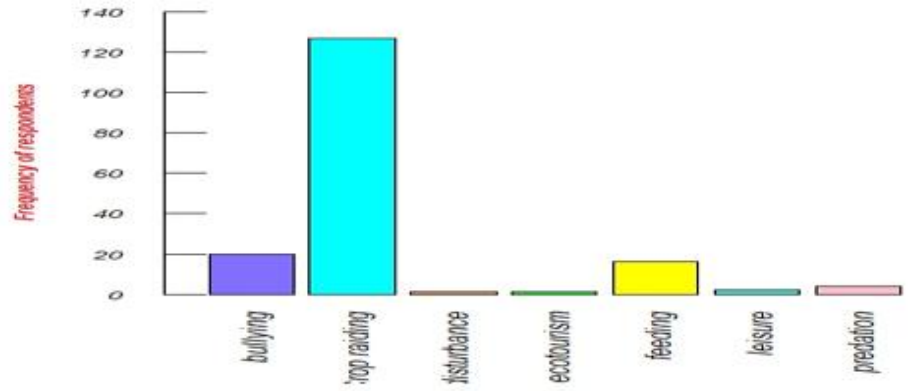

Figure 4: Opinions of respondents on the interactions between local population and olive baboons.

3.3. Annual crop loss

Many strategies were used to investigate olive baboon crop raids: gun (30%, n=51), guarding (18%, n=30), guarding dog (7%, n=13), guarding straw hut (3%, n=5), traps (17%, n=28), dog (1.5%, n=3), sound (2%, n=4), testentail (0.5%, n=1), fronds (1%, n=2), any (20%, n=34). Of the socioeconomic factors, we found that the education level (no schooling or primary+) was a good predictor of the reported annual crop loss due to olive baboons.

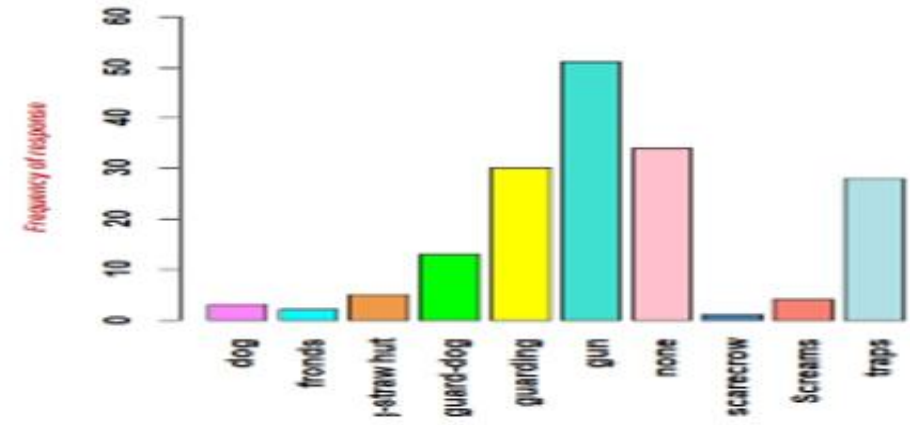

Figure 5: Opinions of the respondents on olive baboons control strategies

Note: g-straw hut: guard with straw hut;

Likewise, the use or non-use of scarecrows was among the reported deterrent strategies that could predict reported losses (see Table I).

Table I: Fitted binomial logistic regression model for fixed effects, showing the pattern of reported annual occurrence of crop loss due to olives, olive baboons.

Predictors	Estimates(SE)	Odds ratios (95%CI)	Z-values
(Intercept)	1.55 (0.74)	4.70 (1.11 – 19.91)	2.10*
Education Level [Primary+]	–1.77 (0.65)	0.17 (0.05 – 0.60)	–2.743**
Use of Scare crows [Yes]	–0.95 (0.46)	0.39 (0.16 – 0.95)	–2.064*

*, **, Significant at probability levels of 5% and 1%, respectively; CI=confidence intervals; intercept (no schooling and no scarecrows use); SE=Standard error; Tjur's R^2=0.31; conditional R^2=0.48

The odds of reported crop loss were significantly reduced by a factor of 0.2 if the respondent had attended primary+ education compared to the respondent without any formal education, while keeping the other predictor constant $(Oddsratio = 0.17 \pm 95\%\ CI: 0.05 - 0.60, P = 0.006)$. Similarly, respondents who acknowledged using scarecrows as a deterrent against crop marauding were 0.4 times less likely to report an annual occurrence of crop loss than those who used other deterrents or who do not use any deterrent $(Oddsratio = 0.39 \pm 95\%\ CI: 0.16 - 0.95, P = 0.039)$.

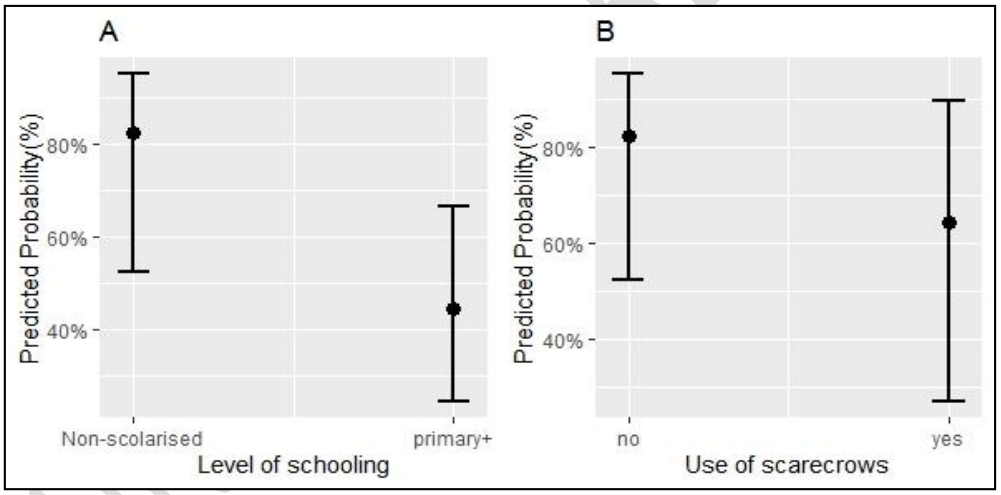

Figure 6: Predicted probability of the reported annual occurrence of crop loss due to olive baboons in association with the level of schooling (A) and whether or not the respondent uses scarecrows to deter olive baboons from crop raiding (B). The error bars represent the 95% confidence intervals.

According to Figures 3 and 7, olive baboons visit their farms mainly three times a day, eating mostly cassava and maize. Furthermore, those who declared not using scarecrows as a deterrent were the most likely to acknowledge that olive baboons usually visit their farms (Figure 4).

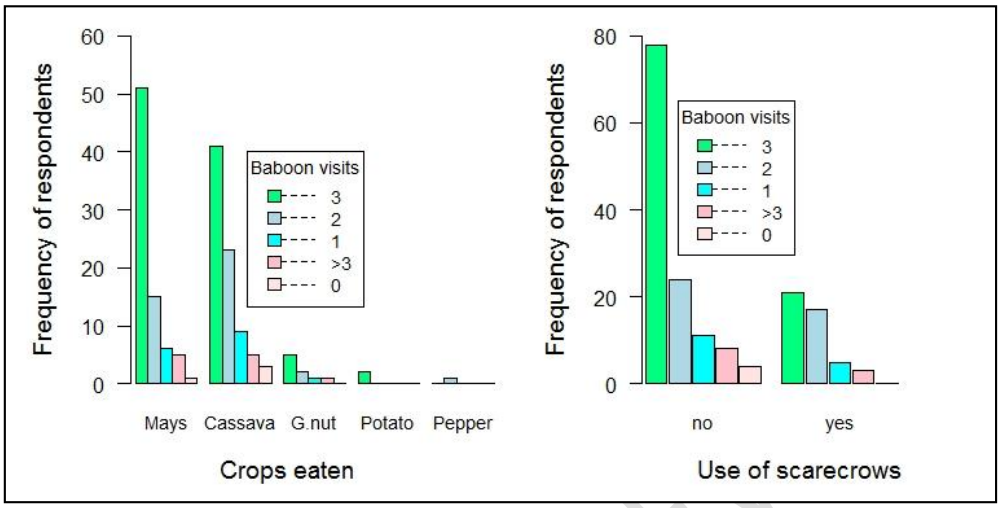

Figure 7: Frequency of respondents regarding the number of times olive baboons visit their farms per day, on average, in association with the alleged crop types eaten, as well as the use or non-use of scarecrows in their farms as a deterrent.

3.4. Damaged surface area, quantity, and value of crop loss

According to respondents who declared crop loss, one to 46 ($\overline{x} = 3 \pm 0.5$) bags of farm products were lost yearly as a result of the olive olive baboon raided crop. The crop loss of <25% (90.5% of the respondents, n=142) was the most declared ($X^2 = 102.73$, df $= 1, P < 0.001$) compared to >25% loss (9.5% of the respondents, n=15). The annual economic loss was estimated to be on average 150 647±21 695 (IQR=91,500) CFA, with a maximum loss of 1 058, 000 CFA (approximately 1 765USD) and a minimum loss of 16 000 CFA (approximately 27 USD).

There was a relationship between the number of olive baboons encountered per day on the farm and the reported crop losses in economic value and in bags. The annual economic value in CFA (Kendall: tau $= 0.22, P = 0.012$, also see Figure 7A)and the average number of bags of crop lost per annum (Kendall: tau $= 0.24$, $P = 0.009$, also see Figure 7B) as reported by respondents were both significantly and positively correlated with the reported number of olive baboons encountered dayly on the farm.

The estimated surface area of the agricultural crop damaged annually by olive baboons was on average 0.3±0.05 ha with a maximum of 2.3 ha and a minimum of 0.2 ha. There was a significant association between the location of the respondent's park (N, S, or W) and the surface area reported damaged by olive baboons (Kruskal – Wallis test : $X^2 = 8.0346$, df $= 2, P < 0.018$). The Dunn test of multiple comparisons suggested that the damaged surface area was significantly greater ($Z = 2.60$ $P_{adj} = 0.028$)if the respondent was from the North antenna (median $= 0.21$)than if he/she was from the west antenna(median $= 0.10$). This was similar for other factor-level combinations.

We found a positive correlation between the annual surface area of the respondent's crop damaged by Olive baboons and his/her total farmland surface area(Kendall: tau $= 0.26,\ P < 0.001, also\ see\ Figure\ 7C$). Similarly, the reported annual loss (in bags) was strongly correlated with the annual surface area of the respondent's crop damaged by Olive baboons(Kendall: tau $= 0.67,\ P < 0.001, also\ see\ Figure\ 7D$).

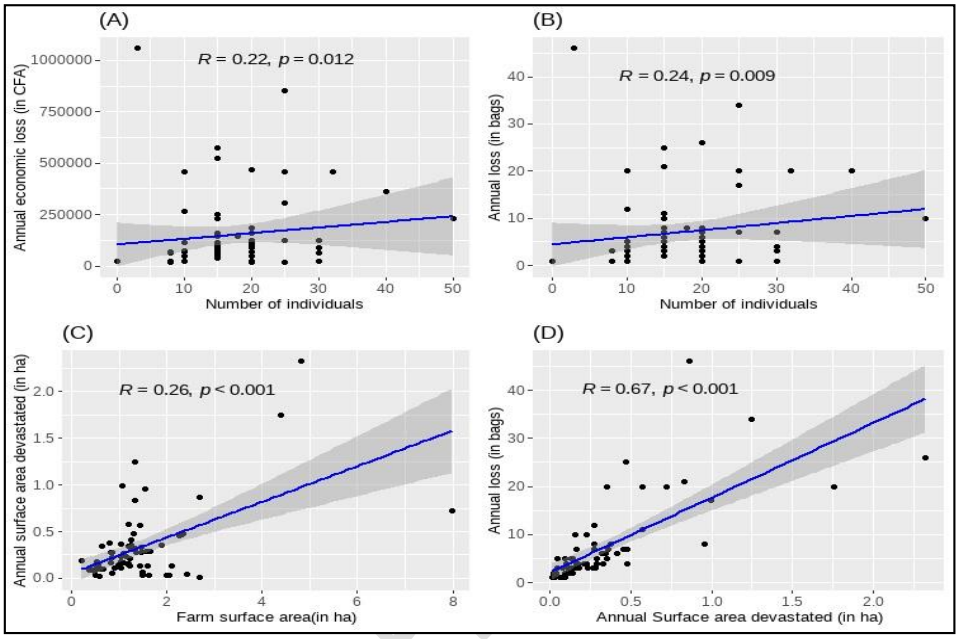

Figure 8: Respondents' report of annual crop loss (in economic value and number of bags of crop) in association with the number of olive baboons encountered on the farm per day (A and B); annual devastation of the surface area in relation to the area of the farmland (in ha) and annual loss in bags (B and C).

4.Discussion

Understanding the interactions between human and olive baboons is crucial for the development of sustainable conservation strategies in protected areas. The access to natural resources often gives rise to various interactions between human and wildlife.

Surveys carried out in the northern, western and southern peripheral villages of the MDNP have shown that there are five types of conflicts between Human and olive baboons: crop raiding, bullying of farmers, hunting of olive baboons, disturbance and predation. Although ecotourism and leisure were cited as other interactions. Among these different forms of interaction, crop raiding is the most encountered. This result is similar to that obtained by ***[30]***in Ivory Coast that characterized the damage caused by wildlife on the periphery of the Marais Tanoe-Ehy forest.

Respondents reported that olive baboons raided a variety of cereal crops in the region. Maize (46%, n=79), cassava (46%, n = 79) and groundnut were the most frequently raided cereal crops by olive baboons in the study area. This result is lower than that obtained by **[37]**, whose study was carried out in the Omo valley in southern Ethiopia on the density of wild animal population and their conflict in the Konasa_Pulasa community that showed that the olive baboon was involved in 34.9% of crop raids. This difference would be due to the fact that agriculture in the peripheral villages of the National Parks of Mbam and Djerem is centered on two main crops including cassava and corn unlike that of Ethiopia where farmers cultivate in the same field of corn, beans, potatoes, cotton, millet, sorghum, etc. However, olive baboons prefer the cereal crop over the other crop. This result is consistent with that of a study carried out in **[36]**in the Bale Mountains National Park located in the south-west of Ethiopia and **[2]** which evaluated farmer strategies to fight against monkey attacks on crops in Kandi in the periphery of the W national parkthat showed that olive baboons consume more maize. The results show that maize, cassava, and peanuts are the main crops most damaged by olive baboons and *Miopithecus talapoin*. Maize and cassava are widely damaged crops and of the same rank because they are the most produced crop in Centre and Adamawa. This result is consistent with those of other authors who have confirmed that Olive Baboons are known to favour crop maize around national parks **[8, 16, 60].**

These two cultures were visited much more during the maturity period than during the fructification period. Similarly, a study carried out in the Budongo Forest Reserve in Uganda reported that olive baboons prefer maize and cassava to other crops **[23]**and that olive baboons consume almost all parts of maize plants for grain extraction. Newly sown hunting of olive baboons from young leaves to flowers **[23,43].**

Mammals involved in crop damage in the northern, southern, and western peripheries of MDNP are, respectively, *olive, baboons, Miopithecus, talapoin, cercopithecus nictitans, Chlorocebus aethiops tantalus, hedgehog, porcupine, chimpanzee, cercopithecus neglectus, cercopithecus erythrotis, cercopithecus pogonias Lophocebus albigena (mangabey) and Colobus guereza* (See Figure2).

This observation is similar to that obtained by **[21]**whose study was carried out in South West Ethiopia on human-wildlife conflicts around the Belo-Biro forest showing that *Papio anubis, Cercopithecus aethiops , Potamochoerus larvatus, Canis aureus* and *Crocuta crocuta* were involved in crop raiding and livestock predation.Therefore, olive baboons and *Miopithecus talapoin* are the most devastating monkey species around MDNP. However, the olive baboon is the most devastating species, as cited by **[63]**in a study carried out in Ethiopia. The olive baboon has become accustomed to human presence and develops no fear, especially when the field is guarded by a woman or child, in case of repression; the colony flees but can return after 2 hours. This species has no fear of nonlethal strategies such as dog, shouting, scarecrow, slingshots, guarding, guarding under a hut with the fire lit, unlike local strategies such as the trap and gun. The same observation was made in a study carried out in Benin around the W National Park by **[2]**. Fields unlike *Miopithecus talapoin* which spends almost a month returning to the same field with regard to the same colony. The use of guns was the strategy farmers found to be most effective in repelling monkeys in their fields. This result is opposed to that obtained by by **[2]**in Benin who found that guarding was a good strategy to protect his field Unlike **[51]**and**[35].** who believe that guarding, use of scarecrows, and fencing were techniques used to reduce Human-Wildlife conflicts. Several inhabitants on the periphery of the park are farmers

and crop raiding is the cause of economic losses that constitute a serious problem for housewives given the fact that they practice subsistence agriculture. Annual economic losses were higher than the annual income of some respondents. Economic losses due to HWCs have been demonstrated around protected areas **[29,58,10,3]** and compensation measures should be included in protected area management strategies. The choice of cassava and maize as the main crop in agriculture around MDNP is explained by the attachment of the local population to the consumption of foufou made from crushed cassava, its simple and diversified local processing, and the short vegetative cycle of maize.

The economic losses were higher in the northern antenna of the park populated by Gbaya, Bororo, and Foufoulbe who are mainly Muslims and their religion prohibits the consumption of monkeys, unlike the southern and western antennas occupied by the Mvuté, Mambila, and Moundang who are predominantly Christian and hunt olive baboons in response to crop raiding by this species for consumption to reduce population size and preserve their culture.

Comment [U5]: Based on the research results obtained, it may be possible to add the possibility of further research if there are researchers who are interested in conducting further research. And maybe you can add about the application of the results from this research.

Conclusions

The extension of the conversion of natural habitats into agricultural land around protected areas has significant impacts on both the local population and primates, as is the case with human-olive baboon conflicts. Monkey crop raids are a serious threat to the food security of local populations, however, this is perceived as a significant problem in several African countries **[41,63]**. The present study carried out the interactions between the local population and olive baboons around Mbam and Djerem National Park revealed that human-olive baboons exist, we have: crop raiding, hunting of olive baboons, bullying, disturbances caused by olive baboons and domestic animals predation by baboons. Although ecotourism and leisure were cited as other interactions. The result of this study showed that olive baboons were a problematic primate species because they were responsible for crop raiding around the park. The result also showed that olive baboons consumed more cassava and maize, leading to large economic losses despite the various control strategies used such as guarding, guarding with dogs, guarding with straw hut, dog, gun, slingshots, traps, and screams. However, many farmers develop negative attitudes to the conservation of olive baboons (guns, traps, and dogs). Several species were involved in crop looting first, olive baboons followed by *Miopithecus talapoin* and *Cercopithecus nicititans*, etc. This study should contribute to creating an awareness program for young primary and secondary school students on the ecosystem services of monkeys, educate farmers about the sowing of crops not preferred by the olive baboons in the periphery of the fields, sensitizing the local population on the use of the gun in the inspection of crop fields and reinforcement of day and night field inspection during the crop maturity period.

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