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Impact of Insecurity on the Conservation of Wildlife in the National Parc of Bouba Ndjidda and Eco-Touristic Frequentation

¹ Dieudonné GNAPOU, ² Daniel Toumba, ³ Alain Loabé Pahimi, ⁴ David Amedep, ⁵ Bertrand Wang-Bara

^{1,4} Institute of Agricultural Research for Development (IRAD), Regional Center of Maroua, Cameroon

^{2,3,5} Institute of Agricultural Research for Development (IRAD, Polyvalente Station of Agricultural Research of Garoua, Cameroon

Corresponding Author: **Dieudonné GNAPOU**

Abstract

It's not easy to divide with exactly the impact (environmental, economic, social etc.) of armed conflict on sub-region of CEMAC (Chad, Cameroon and RCA) on conservation of natural resources and eco-touristic sponsorship (International and national) on the protection zone of natural diversity. Despite of, we have many crises deriving to the violence with environmental effects (annihilation of habitat, hunting, poaching and fishing) and with consequence providing to the decline of ecotourism. One of principal objectives of conservation of biodiversity is the preservation of natural resources and his eco-systemic components. Ecological system and the natural resources that exist as well constitute an attraction of eco-tourist. National Parc of Bouba Ndjidda is one of the biggest, but also more isolated was chosen because it's received many international tourists. Adding, the location of this parc is situated on the three frontier zones where several insecurities of Boko haram, road cutter (Cameroon), Balaka (RCA) and movement providing to ethnic group of the North of country (Chad). Least than 300 elephants were killed in January 2012, considered most than third of the population of this parc (Kitio, 2019). Three list of structured questions were established for this work. The First (type A) was destined to personal of parc, second (type B) to villager inhabitant of Operational Technical Unit and the third (type C) to tourists. In total 317 list of questions were randomly

administrated to personal answers (personal of parc and resident of village). These results were recovered and analyzed. Results of research on impact of insecurity on natural resources in the National parc of Bouba Ndjidda concern encroachment, the changes of status of some species. However, the effects of insecurity on international tourism are the disorganization of touristic activities, manifestation of fright of insecurity by the tourist. One of principle of neo conservation of parc is the use of non-consumer for the economic advantages (income sources of money via ecotourism). Armed conflict in the septentrional part and the two neighbour countries degraded natural resources. This conflict reduced ecotourist flux, whose general objective is a virgin natural environment in hazard zones due to insecurity. Fright due to kidnapping against ransom, attack and flight reduced touristic enthusiasm for the zone of North Cameroon. However, we have an important decrease of volume of income in term of money providing of ecotourism activities in country and consequently the benefit of ecotourism is destroyed in these zones. The vision of Cameroon to horizon 2030 as ecotourist zone must be not considered. At least that the government take solution for these situations that critical affect ecosystem of the nation. Good contribution attended of this sector (tourist) to PIB could be possible that on free atmosphere and sure.

Keywords: Insecurity, Biodiversity, Conservation, Ecotourism

1. Introduction

Since some decade, many political crisis due to the violence affected the civil populations of Central Africa. This populations were victim at different degree of armed conflict in sub-region (CEMAC). These conflicts have an evident cultural, religious, politic, economic, social, environmental causes and bad management of natural resources cause the disorganization in different states. The hostility in the country of these sub-region has negative effects on personals and their profits, but also on the biodiversity resources of nations in fact. Armed Conflicts have relatively consequences on environment. Their effects could be destructors of environment and are also affect in short and long term on development human life in their environment. Indicators of these conflicts providing in large cases on the zone in direct conflict and sometimes in neighbour countries. Conflict could ruin social capital, environmental, human and physic and restrict also the opportunities for sustainable

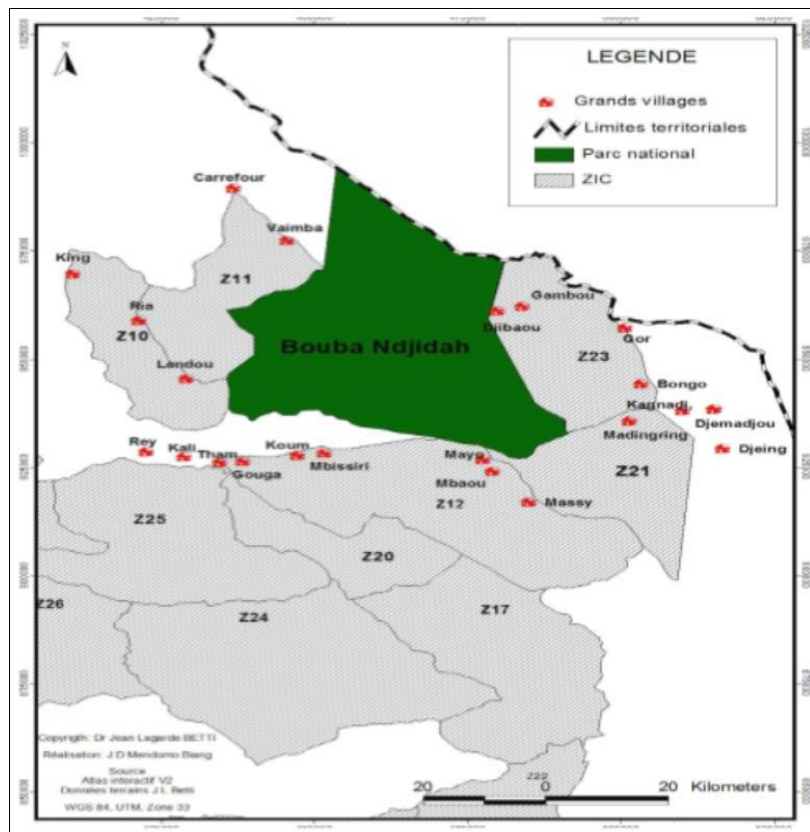
development (Dorsouma, 2006) [5]. They are considered as sovereignty questions, that why majority of environmental damages arrives suddenly without be controlled by organisms in charge (Guruswamy, 2003) [6]. Serious armed crisis or an insecurity involve the use of arm such as fire arm, bullet, bombe lance-rocket containing toxic chemical substances. This can cause damages in the environment without knowledge scale. This situation calls humans to important resolution which form a dangerous niche on ecosystem. It's difficult to evaluate with exactitude the environmental damages of armed conflicts on conservation of biodiversity. Nevertheless, it's exist of important environmental damages (arm proliferation, habitat destruction, fishing, hunting, camping of refugee, non-authorized gold washing, ecotourism extinction and so one). The fundamental base of attractive of ecotourists is the biodiversity and his ecosystemic components. Armed conflict and some movement population (Boko haram, road cutter, Balaka) are destructive practices of environment and related activities. All these practices present incomparable consequences on resources. None state could hope at an international touristic visit level on a region in crisis.

The development of Ecotourism Company responsible is one of principal objective for the research of funds for management of protected area. Touristic industry is one company permitting to conciliate the protection of environment, economic development and human being of local populations (McCool, 1995) [10]. But this company is very unstable in term of insecurity that could disturbed by external populations of reception countries. Ecotourism must be defined as a central tourism on discovery of nature in the respect of environment and local culture. In origin,

tourism was one social obligation for responsible of reception countries to set external persons comfort when they arrived (Virgil, 2010) [15]. Bowtell in « *Journal of tourism futures* » declared that the international tourism started in cultural sites in west (occident) and propagated in the rest where explosion exist. It started by Deventer in 1925 in Netherlands where it become a company which give economic hope and environmental (Ayodele, 1993) [3]. In the country with active international tourism like Suisse, France, Great Britain, Spain, he was the sources of quick development of banking system. An international tourism refers to a group of tourists moving in external frontier for make activities of spare time or affair. Cameroon makes enormous efforts for increase the ecotourist frequentation, but this last decade, the insecurity disturbs this activities sector. The contribution of income provide of touristic activities in the National parc of Bouba Ndjidda is become very negligible. Between 2012 to 2017, she encounters a decrease most than 99 % and tourists have the level of income available and free time.

2. Presentation of Parc

The present study is realized in the National Parc of Bouba Ndjidda (NPBN) create by the decree N°270 of 29th July 1947 like a reservation of wildlife and hunting by colonial administration then transformed in NPBN in 1968. It extends among 08°21' to 09°00' of latitude North and 14°25' to 14°55' of longitude East. The surface is around 220.000 ha and the parc is limited to North by Chad making cross-border protected area with the National parc of Séna-oura in Chad followed by the figure below:



Sources: DR-MINEF/NORTH

Fig 1: National Parc of Bouba Ndjidda

The climate of this zone is Sudano-Guinean type with two seasons and the precipitation is around 1225mm/year with 28°C of temperature (Aubreville, 1950) [2]. It is constituted on hilly peneplain (280 to 400 m) and of range of mountain which the highest measure 610 m (Raimond *et al.*, 2017) [12]. With the surface inclined from East to West, it is drained by important rain system which pass under dry forest and wooded (Bosch, 1972). He records 250 species of bird and 24 biggest and medium species of mammal which four are threatened of extinction (UICN, 2002) [14].

Concerning Socio-economic aspects, Operational Technical Unity (OTU) recorded 76.204 souls allocated in 70 villages with 7.35 % of foreign (Terdel, 2007) [13]. They live essentially of agriculture, breeding, fishing, hunting, picking, trading and handworker (Raimond *et al.*, 2017) [12]. This Parc received an international number of tourists.

3. Materials and Method

We elaborated a methodological frame in order to answers some groups of questions structured for this work. The personals of conservation of this Parc, of ecotourism and inhabitants of township furnishing OTU were the target of this study. Inhabitants of six township were identified and administrated randomly. These questions groups were collected and submitted for statistical treatment (effective and percentage). These treatments were realized with office 2013 and analyzed with software QGIS 2.12. Results were divided in several parts.

4. Results and Discussion

Results were divided in three big parts:

Table 1: Ecological effects of armed conflicts on biodiversity resources

	Different impacts of biodiversity	Yes	%	Not	%	Ind.	%
1	Poaching	247	77.9%	41	12.9%	29	9.1%
2	Destruction of habitat	231	72.8%	19	6%	67	21.1%
3	Encroachment	183	57.7%	45	14.2%	89	28.1%
4	Fishing, illegal gold panning	190	59.9%	70	22.1%	57	18%
5	Status change of some species	200	63.1%	41	12.9%	76	24%

Ind: indifferent

Part A: Ecological effects of armed conflicts on biodiversity resources.

1. Poaching

Table 1 above indicate 77.9 % of responds says that poaching is one of consequences of armed conflicts, while 12.9 % disapproves that. Poaching of big mammals are regular in a period of conflict. All forms of munitions and arms circulates and poachers use it. Conservation laws are violating at this moment, for the reasons of chaos. All that cause of tragic damage on animal population of Parc (Plumtre *et al.*, 2001).

2. Destruction of habitat of parc during conflict

Results of Table 1 on the destruction of habitat shows that 72.8 % of personal interrogated were of opinion that damages caused on habitat are direct and indirect consequences of situation of insecurity in the two

neighboring countries. A rate of 6 % was not agree with that while 21.1 % of responds was indifferent. These impacts are characterized by illegal entrance of persons and beats of breeders. All these entrances not take account of ecological composition of middle. Vegetal cover of the parc is an easy target for road cutter, hostage makers for get refuge. All these hostile environmental behaviors cause an enormous damage on natural resources of this parc. During conflicts of Balaka to RCA, Ufc in Chad, inhabitants of this parc were affected negatively. This level of damages on environment depends of the intensity and duration of conflict. Resent case was the armed conflict of Vietnamese republic with direct and indirect catastrophic consequences on environment (Neyret, 2014) [11].

3. Encroachment

Analysis of Table 1 on encroachment of National Parc of Bouba Ndjidda show that 57.7 % of persons interrogated think that armed conflict has resulted of massive migration of persons who get refuge in Operational Technical Unity (OTU). A rate of 14.2 % of responds are not agree and 28.1 % are indifferent. Disastrous impacts providing of movement and installation of persons. By these actions, anthropic factors, use surface for agriculture and breeding takes place. Soil erosion, water and soil contamination by human residues are direct consequences. Civil war of Sudan is one of illustration with the degradation of environment (Huginin, 2011) [7].

4. Fishing and illegal gold panning

Table 1 show that movement of mass of water and their halieutic resources, mining resources are not saved of this armed conflict. 59.9 % of responds were agree with that, against 22.1 % that are not agree and 18 % which present no pattern of preference. Different species of fish are overexploited for consumption. PNUE in his report in 2004 has recorded a general break of fish stock during of armed conflict of Liberia. Exhaustion of natural resources in water during the war of Liberia was the effects of results of this crisis.

5. Status change of some species

Results of Table 1 on status change of some species of biodiversity during the conflict indicated that 63.1 % are agree for this aspect, while 12.9 % of responds were not agree with this point of view. In natural middle, biodiversity species have a different status. Some species could be as endangers, in extinction, rare, vulnerable or extinct among others in function of status of species before the crisis. Armed conflict of big fullness could bring populations to use natural resources beyond of his capacity of regeneration. At this critical time, all biodiversity resources that are important for consumption are used regardless of classification status. For example, during armed conflict in Rwanda, one part of National parc of Akagera was open followed by the extinction of animal like antelope and eland. Research of food by human for survival conduct to the fight for resources and the consequences of that is the overexploitation of natural resources (Percival *et al.*, 1995).

Part B: Causes and effects of armed conflicts on international ecotourism in the NPBN

A. Causes of conflict on ecotourism

Table 2: Different causes du conflict on ecotourism in the PNBN

	Different causes on ecotourism	Yes	%	Not	%	Ind.	%
1	Ethno-religious causes	276	87.1%	34	10.7%	7	2.2%
2	Causes beyond the border	181	57.1%	54	17%	82	25.9%
3	Sociological causes	234	73.8	38	12%	45	14.2

Ind: indifferent

1. Ethno-religious causes

Table 2 above show that 87.1 % of members of responders were of opinion that ethno-religious crisis of Boko Haram was one of causes of armed conflict that conducted to stop touristic activities and the destruction of natural resources in this parc. A rate of 10.7 % were not supported this affirmation and 2.2 % are indifferent. Questions concerning Boko haram is one of revolt that ravaged the North and eventually limited international tourists. This ugly situation reduced significantly the numbers of international tourists in this part of country and causes the migration of many populations of Far North region to North, where soils present good characteristic for agriculture and nature. Many touristic sites and zone of conservation are located in this part of country. This crisis does not create suitable environment for ecotourism development.

2. Causes linked to the war of neighbors countries

Results of table 2 on political crisis beyond the border has negative effect on touristic activities of this parc, but 57.1 % of responds were supported these aspects. However, 17 % of responds are not agree with this opinion against 25.9 % that are indifferent. Among end of December 2013 and at the beginning of January 2014, assistant general secretary in charge of humanitarian affairs recorded 17.000 persons that lived to Cameroon. Due to the permeability of borders of these two countries, poachers who came majority to others countries penetrates and causes poaching. They create insecurity reducing the numbers of tourists that need to discover this parc (massacre of elephant 2012). Adding, this part continuous to suffer with the negative effects of proliferation and illegal of circulation war arm.

3. Sociological causes

A rate 73.8 % of responds were agreed that sociological conflict disturbs on ecotourist activities (Table 2). However, 12 % were not agreed and 14.2 % were indifferent. Effect of armed robbery in the department of Mayo-Rey, discourages international tourists. Removal of persons for ransoms is one of sociological problem in this part of country. It a negative impact on reception of international tourists. Removal of populations in Department around the National parc of Bouba Ndjidda discourages the tourists. Removal of strangers for ransoms, phenomenon of cutter « Zaraguinas » are others sociological problems in septentrional region of Cameroon. That is negative impact on reception of tourists in this part of country. Removal of seven French tourists whose four children in the Far North region in 2013 give bad image of country with international community. Any nation has courage to go around an ecotourist destination where a rate of criminality is increased. The North of Cameroon must expect a low level of invasion of

international tourist face to an environment in crisis. In a survey realized in 2007 by ISSA SOUAIBOU and his collaborators, 175 persons kidnapped were identified, whether 852.285.000F of ransoms.

B. Effects of armed conflict on international ecotourism

1. Disorganization of touristic activities

Illegal activities of groups of terrorists like Boko haram acting in septentrional region of North Cameroon where is located the National parc of Bouba Ndjidda deemed for the conservation of eleven different species not promote must development of tourism. This armed group's leads of activities that are hostiles to sponsorship of international tourism. A rate of 87.9 % of responds was of opinion that insecurity disorganized the ecotourist activities. The contribution of PIB is strongly reduces. Table 3 below, illustrate the evolution of tourist activities in this parc.

Table 3: Numbers of tourists and incomes

Years	Number of tourists	Incomes (F. CFA)
2004-2005	50	70.287.000
2005-2006	72	76.567.000
2006-2007	130	86.755.000
2007-2008	156	89.330.000
2008-2009	187	93.267.000
2009-2010	200	95.650.000
2010-2011	223	106.649.750
2011-2012	300	143.474.000
2012-2013	219	104.736.000
2013-2014	180	86.084.000
2014-2015	34	16.260.000
2015-2016	15	7.173.000
2016-2017	3	1.434.000

Sources: MINTOUL-NORTH 2017

2. Leaving of international tourists

Bad management of crisis could conduct to a crisis internal and leaving of tourists of country. Leaving of strangers is translates by a reduction of numbers of international tourists in the country and therefore limit the North Cameroon of a touristic destination that peoples dreamed of going to visit (Table 3). In mostly of advanced country, the government emits alert for warming to her citizens for inform them of dangerous of a touristic site (red zone).

3. Fear of insecurity by tourists

Many of responds think that tourists fear their insecurity following to uncontrolled incidence that are frequently in this part of country. The fear of incertitude enough to deter the touristic frequentation. Preoccupations of all is the security before the pleasure. Touristic industry is relatively unstable, the insecurity in the North Cameroon discouraged the local and international tourists as well as interest of potential investors like the attacks by real ball in the parc in 2012.

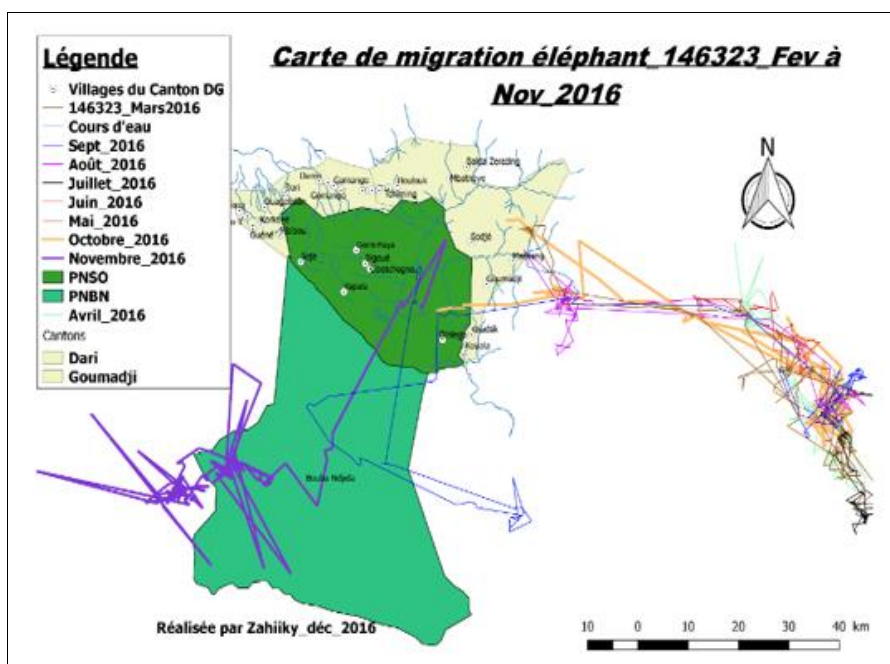
Part C: Consequences on conservation in the NPBN

1. Wildlife criminality

In this parc in 2012 most of 300 elephants were victims of poacher jajawids come of Sudan through the Central (WWF, 2012). In 2006, it had discovered 3.9 ton of ivory in the false compartment from a container deposit at a home of Yaoundé. Others report of *The Great Ape Organization Cameroun* had discovered in 2021 of individual in possession of 626 kg of defenses of elephants. All that

demonstrate a sufficiency of wildlife criminality and poaching effects. This poaching in big scales is one activity that escape to personals from services of conservation in the parc, because he benefits of complicity of riverine. This massacre of elephants resulted to the decrease of half of populations of elephant of parc, assure the conservator. This

consequence is remarkable on murder of many esco-guards that are impotent face to terrorists which are heavily armed. The consequences most atrocious is noticed on the migration map of this elephants like indicate the Fig 2 below.



Sources: MINFOF NORTH 2016

Fig 2: Migration map of elephants in 2016

We note on this Fig 2 above that elephant being in situation of insecurity leaves near to housing areas and culture causing the damage of cultures.

2. Disappearance of some species

Inventory of animal of National parc of Bouba Ndjidda realized by Bosch and her collaborators counted 34 species of mammals. In the second inventory realized in 2001, we counted those 24 species. Outside this inventory, the parc has no more benefits of inventory. For the personal of conservation of parc, since several years they not encounter more species like previously as common jackal. Table 4 below enumerate some species of the parc considered like endangered.

Table 4: Lists of some endanger species

Species	2001	2016
Elephant,	Abundant	Threatened
Colobe guereza	Medium	Decreases
Lion	Normal	On the increase
Lycaon	Threatened	Extinct
Common jackal	Medium	Destitute

Source: MINFOF North

Refers to rate of encounter of all animal species take together, three zones of biodiversity were defined during the inventory in 2001:

- Zone of low biodiversity with a rate of encounter of less of 1 animal per kilometers of transect traveled;
- Zone of medium biodiversity where the rate of encounter per kilometers is including among 1 and 2 animals;

- Zone of high biodiversity with a rate of encounter of more than 2 animals per kilometers of transect traveled. On the basic of some five transect (5 km) that we randomly realized in the forest gallery of Mayo Lidi and Mayo Demsa, results were showed a lower value from those of Bosch cited above.

Near to these animal species, vegetation of parc is constituted in 2001 of eleven vegetal successions against eight successions encountered in 1976. That demonstrate anthropic factors of these zone of conservation. These anthropic factors are characterized by pruning of some species like *Azelia africana*, *Pterocarpus erinaceus*, *Isobertina doka*, *Khaya senegalensis*, *Stereospermum kunthianum* and *Vitex simplicifolia*. These different species are threatened of extinction because his cycle of fructification is always disrupted from feeding process by animals.

5. Conclusion

It is not easy to estimate with exactitude impact of insecurity on the resources of biodiversity in this zone of study, but it exist environmental effects that not to be neglect. The loss of biodiversity, overexploitation of natural resources renewable beyond to the capacity of charge and damages of habitat are the indicators. Others results of research are indicated that the extension of insecurity in the sub-region of CEMAC could cause pollution of water, desertification and soils erosion. These conflicts impact on ecotourist sponsorship by deceleration tourist activities, limitation of place where tourists must visit or restriction of movement of personal of tourist and finally loss of economic profit. In 2008, global organization of tourism assured that

international tourist has a level of income more highly, more free time and sophisticated taste. This makes imperatively the demand of touristic product of quality to the North of Cameroon.

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