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Research Article

Assessing The Threats Of Gashaka Gumti National Park In Conservation Biodiversity

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Abstract

Threat hinders successful biodiversity conservation in national parks. Assessing the current status of the threats to Gashaka Gumti National Parks (GGNP) is important. Based on the univariate analysis, communities perceived poaching, logging, encroachment, farming, invasive species and Grazing as threats to the Park. However, poaching, logging and grazing pose severe threat to biodiversity conservation. Therefore, the study concludes that GGNP faces a level of threat. The findings show that Gashaka Gumti National Park faces the following threat: logging, poaching, grazing, invasive species; farming and encroachments in conserving biodiversity in about 29.3%.

Keywords: *Poaching, logging, Grazing, Biodiversity, Gashaka Gumti National Park*

Introduction

Biodiversity conservation is essential to mitigate loss of wildlife and habitat for the benefit of current and future generations. One way to conserve biodiversity is to establish a national park because parks, in general, serve as a storehouse of wildlife and habitats [1, 2]. So, the increase in national parks has necessitated the assessment of the current state of threat faced by parks [3, 4] for better policy formulation and to improve natural resources management [5, 6].

Although the threats to park are many, it is a common believe that human interference poses much danger to wildlife and habitat. The popular threat to parks in most developing countries are associated with anthropogenic activities [6, 7], which includes farming, poaching, land encroachment, overconsumption and other human activities [8]. The implications of these

threats on biodiversity include land degradation, fragmentation, pollution of wildlife, resources ownership conflict.

Although few empirical studies investigate the effect of threat on biodiversity, the general finding of these articles is inconclusive. This is because what is considered as a threat to one park is not considered as a threat to another park. Thus, we make empirical contribution to literature by assessing the human threats to national park in conserving biodiversity.

In Nigeria, the threat to biodiversity is of a great concern. For this reason, Gashaka Gumti National Park (GGNP) was purposely established to conserve biodiversity and support rural development and livelihood of the locals [10]. For many reasons, the purpose has not been met. This is because of the adverse effect of activities of the local community who perceive the wildlife and their habitats as sources of their livelihood.

Given that fact that little is known about the current status of Gashaka Gumti national park [11], this study fills the gap by assessing the threats to Gashaka Gumti National Park. The rest of the article has been organized as follows: Section 2 presents literature review. The section 3 discusses the methodology. The section 4 presents results and discussion while section 5 discusses conclusion.

Literature Review

National parks are protected areas for wildlife and habitats. Each park has its unique threats to biodiversity [12, 13, 14, 15, 16]. A threat can also be defined as “any human activity or processes that cause destruction, degradation, and/or impairment of biodiversity targets [17, 18]. Moreover, The Convention on Biological Diversity (CBD) defined a threat as “any human activity or related process that has a negative impact on key biodiversity features, ecological processes or cultural assets within a protected area’ [19].

Poaching

Poaching remains the single most common threat to conservation and wildlife [20, 21, 22, 23]. it is illegal activities of man that involves trapping or slaying of wildlife that has been declared endangered or protected [23]. Poachers hunt all kinds of wildlife including reptiles, mammals and birds [24, 25]. In the North America, animals such as grily bears, bighorn sheep moose and walruses are poached. The poachers merchandising vital parts of wildlife, such as bladders, paws, meat of bears the paws, bladders and meat of bears; walrus tusks as ivory; and animal antlers and pelts [26, 27].

In Asia, poaching of tigers and Asiatic black bear and pangolins are severe. These animals are on the threshold of being extinct [27, 28, 29, 30]. In the Minkebe National Park in Gabon,

more than half of the elephant population was reduced from 21,000 to 11,100. Moreover, in the first quarter of 2012, over 100 elephants in Bouba Ndjida National Parks were slaughtered; the Janjaweed militias of Western Sudan aided by neighboring Chadians were the alleged perpetrators [31]. The intensity of poaching threat varies across the scale from a moderate threat to a high or even severe threat as overharvested species become vulnerable to local extirpation and even extinction.

Overutilization of land

Overutilization of land is another threat to wildlife [32]. Over the last 300 years more than half of the land surface has been transformed by human activities [33, 34], resulting in habitat losses [35, 36, 37]. The increase in human growth has placed enormous socio-economic pressure on humanity to compete strongly for limited available lands to meet their social and economic needs. In an attempt to meet these needs has undoubtedly resulted in overutilization of land in and around protected areas for expansion of farming and agricultural activities, illegal encroachment; logging, overgrazing and other uses [38, 39, 40] leading to ecological disturbances, severe land degradation, loss of biotic and a biotic resource [41, 42].

Land use for farming and agriculture activities is another sources of human threat Conversion of land for farming and agriculture activities is a global issue. In the tropical forest zones, the Amazon forest, the Southeast Asia and African rain forest, agriculture and farming activities are expanding at alarming rate [43, 44, 45]. Moreover, increased farming and deserted farmlands have escalated in the US, Europe and Latin America and have mounted intense pressure on habitat [46, 47, 48].

In the Sub-Saharan Africa and other developing countries, land is commonly used for both subsistent farming and commercial purposes. The indiscriminate farming and agricultural activities and the use of insecticides and herbicides are killing untargeted wildlife [49]. Besides, the excessive farming and agriculture result in fragmentation of habitats which creates room for alien species to find refuge [50, 24]. Moreover, overutilization of land for faming activities is exacerbated leading to deforestation and desertification of some protected areas.

In spite of numerous land regulations, environmental protections and management approaches, land conversion for human activities is rapidly expanding within and outside national parks. In Ethiopia, for example, the huge tourism potential of Bale Mountain National Park is threatened by agricultural activities and overgrazing [50], which impact on the unique landscape of the parks, and impede the movement of the species [51, 52, 53], leading to loss a Mountain nyala and Ethiopian wolf [53]. At the same time the increased

livestock grazing and farming activities has degenerated into human wildlife conflict such as crop raiding by Mountain Nyalas, Bush Pigs (*Potamochoerus larvatus*) and Olive baboons (*Papio anubis*) [54]. A similar human wildlife conflict has ensued in Simien Mountains National Park, Ethiopia in which Gelada Baboon destroyed substantial crop of household [55]. In fact, the human wildlife conflict is not common only in Africa but a world -wide.

Land Encroachment

Land encroachment threat is characterized by rapid expansion of human settlement [56, 57]. The expansion of existing settlements and emerging of new communities can be caused by the increase in the number of native and immigration from neighboring communities. A case in point is a community expansion in the catchment areas of Bale national Park [57, 58, 59, 60].

The rapid encroachment has intensified farming activities and overexploitation of Bale National park's natural resources [60]. Moreover, due to inadequate of land to cater for rapid community expansion landowners are "enticed' to allow encroachment on the fringe of the parks. The greed attitude of landowners has paved way for rapid development of infrastructure around the catchment areas of Penang national Parks in Malaysia [61]. The intense pressure of rapid community development in and around the parks cause perennial floods and other natural havoc [62], resulting in soil erosion, loss of vegetation and pollution in the park to the detriment of species due to environmental threats faced by the Park [63].

Logging

Logging is another important threat. It is closely linked to the threat of overutilization of land is illegal logging or harvesting. These activities are prevalent in tropical forest due to the richness of forest potential [62, 63]. It is shown that about 70% of illegal logging adversely affected over 200 selected parks from the tropics [64], due to harvesting of timber, collection of fuel wood and extraction of trees barks [62]. In the Philippine, every year about 200,000 to 350,000 volume of wood is harvested from the Seirra Madred National Park [66]. The harvesting of woods dis-integrates animal community composition and ecological relationship [67, 68, 69]. The heavy of presence of logging companies has increased illegal logging in Africa, and the use of chainsaw, heavy machinery because enormous disturbance to wildlife [69, 70], but how it affects forest ecosystem with direct disturbance and modifications of the structure, species composition and ecosystem services is still unclear.

Meanwhile the intensity of the illegal logging varies in terms of the number of fallen trees, damage of other trees caused by logging operations and the construction of access roads and exploitation trails. For example, field data from 511 plots in the tropical forest of Sierra Leone, Ghana, Cameroon and Gabon. These plots were subject to different forest management practices: no recent logging (primary forests), selective logging (up to 30 years old) and re-grown secondary forests post clear-cutting (at least 20 years ago). Our findings suggest that the vertical structure and plant richness of the selectively logged and secondary [71].

Material And Methods

The study area is Gashaka-Gumti National Park. It is situated at the foot of the Mambilla Plateau and covers a land area of about 6,411 km2. It lies between latitude 6º55'N and 8º05'N and longitude 11º13' to12º11'E. The park was originally gazetted as Gumti, Gashaka and Serti Game sanctuaries by the defunct Northeast Government in the 1970's. The three game sanctuaries were merged and upgraded to a National park by the Nigeria National Park Decree of 26th August, 1991 which was repealed by Decree 46 of 1999.Gashaka-Gumti National Park is a vast land of spectacular wilderness (6,000 km2) in the southeast corner of Taraba State, adjoining the Mambilla Plateau (Figs. 1 and 2).

The Park is an outstanding tourist landmark in Taraba State and the largest of all the eight national parks in the country [72]. It is a home the most diverse in terms of species such as the colobus monkey and warthogs, including buffalo, roam antelope, chimpanzee, hippopotamus, hyena, giant forest hog, lion and leopard. The park is surrendered by 25 communities; 5 outside, 11 on the periphery and 9 inside, including 6 enclaves [73], belong to different ethnic groups such as Jibu, Dakka,Ndoro, Tigun, Gbaya, Tiv, Mambilla, Kaka and Fulani in the southern part of the park, while in the northern part or Toungo sector are the Chamba, Kutim Potopore, Fulani, Dakka, Nyamnyam and Kona. The main sources occupations are farming, livestock husbandry, vocational jobs, civil service with few hunters and fishermen. The best time to visit the park is during dry season that is between Decembers to March yearly.

Data

The population of this study is the number of households in these communities namely Gashaka Gumti, Selbe, Filinga and Chappal Hendu communities within the Gashaka Gumti National Park. As at 2006 national population Census the total residents of four (4)

communities is 15,038 [74] (NPC, 2006) number of households 825.The population distribution are as follows: Gashaka Gumti 6762 (45%), Selbe 5284 (35%), Filinga 2472 (16.4%) and Chappal Hendu 520(3.6). In terms number of households, Gashaka Gumti has 352 (42.7%) Selbe 301(36.5%), Filinga 120 (14.5%) and Chappal Hendu 52 (6.3%).

In determining the sample size, the study adhered to the advice of Kerlinger [75] who indicate that "a sample size of 10% of the target population is large enough so long as it allows for reliable data analysis. Having applied Nassiuma [76] model, a sample of 87.9 was obtained. However, study used sample size of 200 households for better representation. The stratified random sampling technique in the selection of the sample due to heterogonous nature of the households Bryman [77, 78, 79], to ensure proportionally allocation of sample. Data were collected through standard questionnaire administered by a team of expert (researcher and wardens of the parks)

The questionnaire sought information threat Gashaka Gumti National Parks. A five-point Likert scale is used. For example (1=not too much), (2=not much); (3=much); (4=Very much) and (5=T00 Much). Data on perceived severity of threat utilized binary scale. Where (1=severe) and (0=not severe). Data on the overall level of threat to GGNP used dichotomous measurement. For example, (0=Low) and (1=high). Out of two hundred questionnaires distributed to the households, 118 were questionnaires fully completed but 8 of them were rejected due to extreme missing data. The study employs descriptive statistics.

Results And Discussion

This section presents findings on the assessment of threats to Gashaka-Gumti National park. Gashaka Gumti. The findings have presented in terms of percentage and frequency for clarity of general distribution of responses related to threats

Threats Gashaka Gumti National Park

The findings show that Gashaka Gumti National Park faces the following threat: logging, poaching, grazing, invasive species; farming and encroachments in conserving biodiversity in about 29.3% of the communities perceived that logging poses much threat to Gashaka Gumti Moreover, 26.10% of the locals said grazing was very much. In addition, nearly 25.5% of the communities perceived poaching was very much. Meanwhile 15.4% of the locals indicated that invasive species was not too much. To assess the threat of farming. 13. 3% of the

communities said farming was very much. In terms of encroachment (11. 7%) perceive it to be the least of the threats to GGNP. On average, the study found that logging activities posed much problem to biodiversity. Perhaps logging might be the main source of energy for the communities or thriving economic venture. The synopsis of the findings has been presented in Table1

Table1: Threat to Gashaka Gumti National Park

Threat	**Not too much** (%)	**Not Much** (%)	**Much** (%)	**Very much** (%)	**Too much** (%)
Poaching	28.7	23.4	11.7	25.5	9.0
Logging	13.3	10.6	30.9	29.3	10.6
Encroachment	36.2	23.4	18.6	11.7	7.4
Farming	29.8	26.1	20.7	13.3	2.7
Invasive species	25.0	30.9	21.3	15.4	2.7
Grazing	12.8	25.5	17.6	26.1	16.0

Perceived Severity of Threats to Gashaka Gumti National Park

Although the communities perceived poaching, logging, encroachment, farming, invasive species and Grazing as threats to the Park, the severity of the threats to the overall threat to biodiversity conservation in Gashaka Gumti National Park greatly differs. With respect poaching, hundred and one of the households (101: 31.4%) perceived threat of poaching to be severe. Moreover, one hundred and thirty-three of the communities (133:70.7%) indicated logging was also severe. For Encroachment, 117(62.2%) of the locals said it was not severe. In addition, while 119(63.3%) of the communities said farming was not severe, 114 (60.6%) of the locals said invasive species was also not severe in conserving biodiversity in Gashaka Gumti National Park. Nonetheless, grazing is severe as confirmed by 112(59.6%) of the communities. Thus, logging and poaching pose severe threat to wildlife and habitat. The summary distribution of findings shown in table below.

Table 2: Perceive the severity of threat to Gashaka Gumti National Park

Threat	**Not Severe**	**Severe**
Poaching	87 (46.3%)	101 (53.7%)
Logging	55 (29.3%)	133 (70.7%)
Encroachment	117 (62.2%)	71(37.8%)
Farming	119 (63.3%)	69 (36.7%)
Invasive specie	114 (60.6%)	74 (39.4%)
Grazing	76 (40.4%)	112 (59.6%)

Overall Levels of Threat to Gashaka Gumti National Park (GGNP)

Based on the severity of the types of threats reported in Table 2, the summary findings of overall levels of threats have been presented in Table 3.

Table 3: Overall Level of Threats

Outcomes of Threat	Frequency	(%)
High	105	55.9
Low	83	44.1

Out of 188 households, 105 locals said Gashaka Gumti National Park faces high level of threat However, 83 of the communities said the park faces low threat in conserving biodiversity.

Discussion

Gashaka Gumti National Park (GGNP) faces a wide range of threats in conserving biodiversity. The evidence of poaching, logging, encroachment, farming, invasive species and grazing are similar to the findings of previous studies. However, some of the threats to GGNP are severe and others not severe. But, the overall level of threat is high.

Conclusion, Implication and Recommendation.

The aim of this paper is to assess the threats to Gashaka Gumt National Park in conservation of biodiversity. Based on the findings, poaching, logging and grazing pose severe threat to biodiversity conservation. Hence, GGNP faces a level of threat.

Considering that park managers are concern with threats to park while managing biodiversity, these results give managers a clearer picture of the various types of threats and their current statuses. With this understanding, park managers, especially those in GGNP, can direct more attention to logging, poaching and grazing and implement appropriate conversation strategies to reduce the level of severity to minimize the high level of threat.

Based on these findings, the study suggests that managers should educate communities on the current and future implication of poaching, logging and grazing. Also, participatory resources management should be considered to enhance biodiversity. Future studies should investigate the effect of threats on biodiversity conservation in GGNP.

Conflict of Interest

The authors declare no conflicts of interest in the study.

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