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MANAGEMENT EFFECTIVENESS OF PROTECTED AREAS: A CASE STUDY OF FOUR NATIONAL PARKS IN NIGERIA

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Abstract
The management of protected areas was assessed in four national parks in Nigeria. This was done to identify the weaknesses, strength and threat to the four protected areas. Data were collected with well-structured questionnaires administered on ten (10) Managers of each of the selected protected areas. The data obtained were analyzed using descriptive statistics, mean and graphs. Prevalent Threat Index (PTI), Protection Area Susceptibility Index (PASI), the Mean Score of Threat Factor (MSTF) and the Relative Threat Factor Severity Index (RTFSI) were also calculated. The results found weaknesses in funding, staffing, research inventorying of biodiversity and threats and community relations. The numbers of staff found in the Parks were not adequate and as such the available staff cannot effectively cover the land area of the park for protection against illegal activities. The study concluded that the parks need to be properly funded by the Government.

Keywords: *Assessment, Protected Area Management, Effectiveness, National Parks*

Introduction
Protected areas span the globe. Almost all countries have set aside at least a part of their territory for the purpose of nature conservation. More than 130,000 sites have been reported to the World Data Base of Protected Areas (WDPA) by 2010 and this number is still increasing (Nolte et al., 2010). Protected Areas constitute a major component of national and regional strategies to control biodiversity loss. They are considered as *in situ* repositories' of genetic wealth as well as relics of pristine landscapes that deeply touch the spiritual, cultural, aesthetic and relational dimensions of human existence (Chape, et al., 2003; Putney, 2003).

Society is continuing to invest resources into acquiring and managing protected areas, believing that they are the backbone of biodiversity conservation and that they deliver a range of other social, economic and environmental benefits. Over 12% of the earth's terrestrial surface is now in nationally designated protected areas (UNEP-WCMC, 2008) but global biodiversity continues to decline at an alarming rate (Butchart and others 2010). Management effectiveness evaluation has become a more prominent feature of Protected Area Management over the past decade (Hockings, 2003; Hockings et al., 2006; Leverington et al., 2008). A wide survey of Protected Area assessments has found that broad participation improves accuracy, completeness, acceptance and usefulness of evaluation results (Paleczny and Russell, 2005). Society is continuing to invest resources into acquiring and managing protected areas, believing that they are the backbone of biodiversity conservation and that they deliver a range of other social, economic and environmental benefits (Flona *et al.,* 2010).

We need to evaluate the extent to which these reserves really do protect their values and deliver benefits to the community (Hockings and Phillips, 1999; Ervin, 2003a; Southworth *et al*., 2006; Timko and Innes, 2009), and demonstrate proper accountability, good management practices and transparency in reporting (Hockings *et al*., 2006, 2009). Evaluations have been undertaken using a wide variety of methodologies; most of them based around the IUCN-WCPA Protected Area Management Effectiveness Framework (Hockings *et al.*2006), which provides an overall structure and guidance on the purpose of management effectiveness evaluation, the selection and measurement of indicators and the analysis and use of data (Nolte *et al.,* 2010).

The need for protected area effectiveness evaluation echoes calls to measure, evaluate and communicate the effectiveness of conservation strategies more generally (Saterson *et al*., 2004; Sutherland *et al*., 2004; Brooks *et al*., 2006). Good management needs to be rooted in a thorough understanding of the individual conditions related to a protected area, be carefully planned and implemented and include regular monitoring, leading to changes in management as required (Nolte et al., 2010). The study was carried out on the management effectiveness of Protected Areas using four (4) of the national parks in Nigeria as case study.

Materials and Method

Study Area

The study was carried out in Cross River National Park (CRNP), Gashaka Gumti National Park (GGNP), Kainji Lake National Park (KLNP) and Old Oyo National Park (OONP).

Cross River National Park (CRNP): Cross River National Park is located in the rainforest ecological zone in the extreme south eastern corner of Nigeria on the border with the Republic of Cameroun. The park occupies a total land area of about 4000km^2 of tropical rainforest ecosystem which thins out progressively to montane savannah vegetation at the edge of Obudu Plateau in Okwangwo. The southern Oban sector has an area of 3000km^2 while the northern Okwangwo division near Obudu covers an area of 1000km^2. The park lies within longitudes 5°05' and 6°29'N and latitiudes 8°15' and 9°30'E (NNPS, 2010; Osunsina, 2010).

The Park is home to many species of plants and animals, some of which are; Gorilla, Drill, Chimpanzee, Forest elephant, Leopard and Butterflies. Flora species include *Anceistocladus korupensis, Prumus africana, Irvingia gabonensis* etc. The park has two entry points, Erokut entry point at Akamkpa and Butatong Base Camp in Okwangwo division (NNPS, 2010)

Gashaka-Gumti National Park (GGNP)

Gashaka-Gumti National Park is the largest and most scenic of all the seven National Parks in Nigeria. It covers a total area of 6,731 km^2, located in the North-eastern part of the country. The park has enclave villages covering a land area of 329.5 km^2 covering geographically. The Park lies between latitudes $6^0\ 55^1$ and $8^0\ 00^1$N, and within longitudes $11^0\ 11^1$ and $12^0\ 13^1$E at a location between Adamawa and Taraba States, with adjoining spectacular, temperate-like Manbilla Plateau. Gashaka-Gumti has five distinct ecological zones ranging from Shrub Savanna to Sudan Guinea Savanna; fringing lowland rainforest, to montane forest and grassland habitats. The gradation of these ecosystems depends on the altitude and the north-south spread. It should also be noted that these different vegetation-types harbour exceptionally high level of biodiversity. The Park's montane forests appear to be of relatively rare-dry type, characterized by the presence of species more typical of semi-deciduous forest, with little distinction elsewhere in Africa (Osunsina, 2010)

Kainji Lake National Park: Kainji Lake National Park (KLNP) was established in 1979 by the merger of the two former Game Reserves–Borgu Game Reserve (located between Niger and Kwara States) and the Zugurma Game Reserve (located in Niger State), the two reserves have been gazetted in 1962 and 1971 respectively as Game Reserves by the then Northern Regional Government. It was therefore known to be the first National Park and the second largest of all the seven National Parks in Nigeria with land area of 5,340.83 km^2. The Park lies between latitude $9^0\ 40^1$–$10^0\ 30^1$ N and longitude $3^0\ 30^1$–$5^0\ 50^1$E (UNEP-WCMC, 2003) and it has a savanna vegetation. Night temperature can be as low as 7^{0}C near Oli River. The drainage system in the two sectors of Kainji Lake National Park is maintained by the Oli, Menai and Doro Rivers (Borgu sector) while the Manyara and NuwaZurugi Rivers maintains the Zurguma sector. The major vegetation type of Kainji Lake National Park as classified by Keay (1959) is Northern Guinea Savanna ecotype. Afolayan (1977) and Milligan (1978) identified seven vegetation sub-types; *Burkea africana/ Detarium microcarpum* woodland, *Afzelia africana* woodland, *Isoberlinia tomentosa* woodland, *Terminalia macroptera* woodland, *Diospyros mespiliformis* dry forest, *Acacia* "complex" dry forest and Riparian forest and woodlands in Kainji Lake National Park.

Old Oyo National Park: Old Oyo National Park is located in the northern part of Oyo state, south-western Nigeria. It has a total land area of 2,512sq.km and derives its name from the ruins of Oyo Ile, the ancient political capital of the Yoruba Empire. The Park lies between latitudes 8°101 and 9°051N and longitudes 3°00' and 4°02'E. The Head Office is located in Oyo town, Oyo State. (NNPS, 2010).

Most of the park is low and plain, rising from 300m to 500m above the sea level at its highest. Notable hills in the Park, namely Yemoso, Gbogun and Kosomonu. The southern part is drained by Owu, Owe and Ogun Rivers, while the northern sector is drained by Tessi River. The park experiences two seasons in a year, the wet and dry seasons. The rainy season begins in April through September while the dry season begins from October to March. The park is rich in fauna and flora resources, significant among which are Buffon Kob, Buffalo, Bushbuck and a wide variety of Birdlife. Ethno-historical site includes the ruins of the city wall, the great 'Agbaku' cave, Python cave, Detune wall, the Oyo-Ile Reservoir (NNPS, 2010).

Methods of Data Collection

The data for this study were collected using multi-stage random sampling technique. The Parks were divided into ranges which serve as units for protection and conservation activities and are located in various geographical zones for ease of protection and administrative activities. Primary data and Information were gathered from Park staff. A total of 40 protected area managers were interviewed, 10 were chosen from each Park comprising of Conservators of Park, Heads of Department of Park Protection and Conservation, Sector heads, Range heads and Bit heads in the Park. The primary data collection tool of the RAPPAM methodology is the rapid assessment questionnaire. The questionnaire covers all aspects of the international evaluation framework developed by the World Commission on Protected Areas
(WCPA) and used by Ervin (2003b).

Data Analyses

Data obtained were presented and analyzed with descriptive and inferential statistics.

Biodiversity Threat Analysis: A synthesis of the threat activities and underlying causes as perceived by the Rangers; (Protected Area Officers); was done to identify the types of threat factors impacting on biodiversity and conservation within and around the protected areas. To establish the prevalence of threat factors across protected areas, two indices were calculated. The indices are

(i) The proportion of protected areas where a threat factor was identified irrespective of how many times it was mentioned by interviewees for each protected area.

(ii) Prevalent threat index, PTI was determined as the proportion of the frequency of occurrence of a threat factor based on the number of interviewees who mentioned it across protected area. The Prevalent Threat Index (PTI) is calculated as:

$$PTI = \frac{\text{No of Protected area Officers mentioning that particular threat factor}}{\text{Officers of all Protected area Interviewed}} \times 100$$

Protected Areas Susceptibility Index (PASI): To determine the susceptibility of protected areas to threat factors, a Protection Area Susceptibility Index (PASI) was also calculated as a proportion of the threat factors (out of the total indentified) that were impacting on biodiversity and conservation, irrespective of their frequency of mention by interviewees:

$$PASI = \frac{\text{No of Threat types occurring} \times 100}{\text{Total no of threat types identified in the study}}$$

The Mean Score of Threat Factor (MSTF): The mean score of threat factors is calculated as

$$\textbf{MSTF} = \frac{\text{Sum of all the scores for that particular threat factor}}{\text{The total number of respondents}}$$

The Relative Threat Factor Severity Index (RTFSI): The relative threat factor severity index (RTFSI) is calculated as

$$\textbf{RTFSI} = \frac{\text{The means score for a particular threat Factor}}{\text{The maximum possible score}}$$

A ranking system revealed the most prevalent threat factors and susceptible protected areas based on PTI and PASI respectively (Okello and Kiringe, 2004 and Kiringe and Okello, 2004).

Results

Human Activities Constituting Threat to Biodiversity

There are several human activities constituting threats to the parks ecosystem and these varied with the parks and they are greatly affected by the socio-economic activities of people around the park and are also influenced by the vegetation of the parks. Figure 1 shows the threat to biodiversity in CRNP. The major threats to biodiversity are hunting (35.4 %) and logging activities (28.7 %) which are very pronounced because of the rainforest vegetation of the park and the presence of merchantable and exploitable economic trees. Other threats to biodiversity in this park include collection of NTFP's (majorly vegetables, fruits and seeds which were highly in abundance in the area'10.4 %), Illegal fishing (7.9 %) and poisoning of water bodies for the purpose of fishing (6.7 %).

In GGNP, threat to biodiversity were mainly hunting (25.8 %) and grazing (22.1 %) necessitated by the abundance of grassland available in the savannah vegetation. Other threats to biodiversity include fishing (13.2 %), logging (9.9 %), poisoning of water bodies for fishing purposes (8.0 %) collection of NTFPs/Vegetables (4.7 %) and illegal settlements (4.7 %) (Figure 2). Illegal settlement was also a threat due to the village enclaves located in GGNP. The major threats to biodiversity in KLNP are hunting (32.7 %) and grazing (28.2 %). Grazing is as a result of the luxuriant northern guinea savannah grassland which provides fodder for the cattle and other domestic livestock most importantly during the dry season. Fishing activities (14.1 %) also constitute threat to biodiversity, most especially the unregulated fishing activities going on in the Kainji Lake Basin (Figure 3). Other threats include logging (9.7 %) and farming (7.9 %) (Figure 3). In OONP, the major threat to biodiversity is hunting (33.6 %) and closely followed by grazing (26.9 %) necessitated by the southern guinea savanna, which provides flourishing grassland for the cattle herds during the dry season (Figure 4). Fishing activities (10.7 %), logging (9.4 %) and bush burning (6.7 %) also constituted threat to biodiversity in the area.

Evaluation of Management Activities

The rapid assessment questionnaire included questions for each of the Park frame work elements. Table 1 summarizes the findings on the four Parks indicating system objectives provided for the protection and conservation of biodiversity, management plan includes specific biodiversity-related objectives, management policies are consistent with Park objective and employees understand the Park objectives. Furthermore, the protected areas were legally secured and their locations were consistent with the Park objectives. Weaknesses were not consistent. A weakness in one Park was often strength in another, while in some Parks, the weaknesses were similar. Table 1 includes all weakness found in the four parks showing which weaknesses were directly related to financial resources, which one were related to broad macro-level policies involving other sectors.

The staff indicated that the parks were not well funded and as such they were unable to carry out their management activities effectively. Some of the management weaknesses appeared concurrently in the four parks. This study found weaknesses in funding, staffing, research inventorying of biodiversity and threats and community relations. The numbers of staff found in the Parks were not adequate and as such the available staff cannot effectively cover the land area of the park for protection against illegal activities. The Parks also

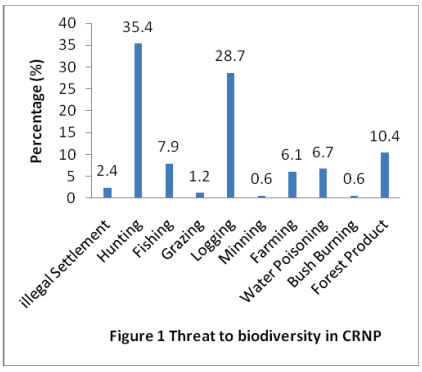

Figure 1 Threat to biodiversity in CRNP

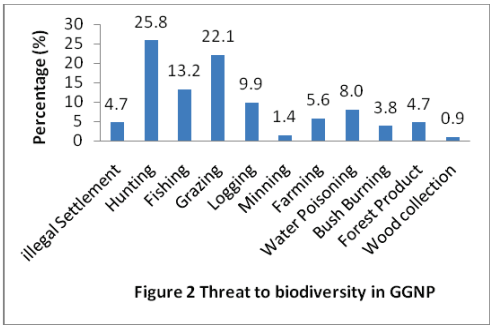

Figure 2 Threat to biodiversity in GGNP

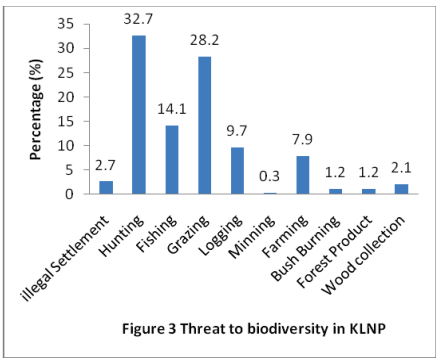

Figure 3 Threat to biodiversity in KLNP

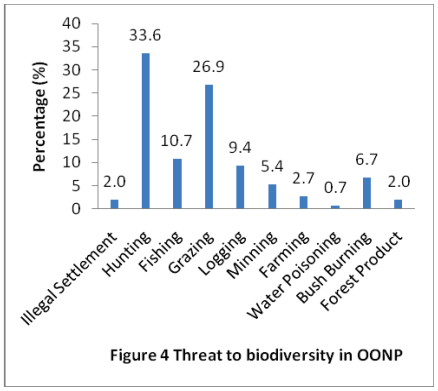

Figure 4 Threat to biodiversity in OONP

Table 1. Summary of evaluation of management activities in the selected Nigerian National Parks

Elements of assessing management effectiveness	CRNP	GGNP	KLNP	OONP
Objective				
Park objectives provide for biodiversity protection.	S	S	S	S
Management plan includes specific biodiversity-related objectives	S	S	S	S
Management policies are consistent with Park objectives.	S	S	S	S
Employees understand the Park objectives.	S	S	S	S
Local communities support the Park objectives.	W	-	-	-
Legal Security.				
Park has long term, legally binding protection.	S	-	S	S
There are no unsettled disputes regarding tenure or use rights.	-	W	-	S
The boundary demarcation is adequate to meet Park objectives.	-	-	S	-
Resources are adequate to conduct critical law enforcement activities	-	-	S	-
Conflicts with local communities are resolved effectively.	-	-	S	-
Design				
The sitting of the Park is consistent with the objectives.	S	S	S	S
The Park layout and configuration optimize biodiversity conservation.	-	S	S	S
The Park zoning system is adequate to achieve park objectives.	-	S	S	-
The land use in surrounding areas enables effective Park Management.	-	-	W	-
The Park is linked to other conserved or protected land.	S	-	-	W
Staffing				
The level of staffing is sufficient to effectively manage the area.	W	W	W	W
Staff members have adequate skills to conduct critical management activities	-	-	-	-
Staff members have adequate training and development opportunities.	W	-	-	-
Staff performance is adequately monitored.	S	-	S	S
Staff employment conditions are sufficient to retain staff.	-	W	S	-
Communication and Information.				
There are adequate means of communication between field and office.	W	-	-	-
Ecological and social data are adequate for management planning.	-	-	W	-
There are adequate means of collecting new data.	-	W	-	-
There are adequate systems for processing and analyzing data.	W	W	-	-
There is effective communication with local communities.	-	-	W	-
Infrastructure				
Transportation is adequate to perform critical management activities.	W	W	-	-
Field equipment is adequate to perform critical management activities.	W	W	-	W
Staff facilities are adequate to perform critical management activities.	W	W	-	W
Maintenance and care of equipment is adequate for long term use.	-	-	S	-
Visitor facilities are appropriate for the level of visitors use.	-	-	S	-
Finances				
Funding is adequate to conduct critical management activities	W	W	-	W
Funding is regular as at the time needed	W	W	S	W
Management Planning				
There is a comprehensive, recent management plan.	-	W	S	-
There is an inventory of natural and cultural resources.	W	-	S	S
There is a strategy for addressing park threats and pressures.	-	-	S	S
There is a detailed work plan with specific targets and objectives.	-	-	S	-
The results of research are routinely incorporated into planning	-	-	S	-
Research and Monitoring				
The impacts of Park uses are adequately monitored	S	-	S	S
Research on key ecological issues is consistent with Park needs.	-	S	S	-
Research on key social issues is consistent with Park needs.	-	-	S	-

S - Strength, where 60% or more of the respondent answered strongly agreed or agreed; W, - Weakness, where 60% 0r more respondents answered disagreed or strongly disagreed. A dash (-) indicates that the element was neither a strength nor a weakness**.**

Threat Activities

Various threat activities and their underlying causes were mentioned by the park officers (Rangers) from which 11 main factors threatening biodiversity and wildlife conservation were identified (Table 2). Illegal killing of wildlife for bush meat was reported in the selected 4 parks for this study. Other threat factors that occurred in all the 4 parks include human encroachment in terms of their densities and distribution around the park, unsustainable use, demand and over exploitation of forest fruits, vegetables and plants by local communities, agricultural expansion and other incompatible land use changes, illegal mining of solid minerals from the park (Table 2).

Indiscriminate burning of bush that destroys wildlife habitat, logging and deforestation of parks, illegal grazing and infiltration of livestock into the park and illegal fishing in water bodies located in the park were also discovered to be threats affecting the management of the four selected national park . Pollution of water bodies that harm biodiversity directly or indirectly occurred in 3 parks and gathering of fuelwood in the park occurred in 2 of the parks (Table 2).

In terms of prevalent threat index (PTI), illegal grazing and infiltration of livestock into the park had a threat index of 56.43% (Table 2). Illegal killing of wildlife for bush meat (for the local markets) and poaching of large mammals for trophies and other products had a prevalence threat index of 53.07%, followed by logging and deforestation of the parks with an index of 55.08%, and illegal fishing in water bodies located in the park with an index of 35.08%. Other threat factors had prevalence threat index of less than 20% (Table 3). The only park susceptible to 100% of the identified threat factors was GGNP. The other parks recorded 90.9% protected area susceptibility index each. The results of the mean threat factor shows that human encroachment in terms of their densities and distribution around the Park recorded the highest mean score (19.5 ± 0.65), followed by Agricultural expansion and other incompatible land use changes (18.5 ± 4.5), unsustainable use, demand and over exploitation of fruits and plants by local communities (16.0±1.73) and pollution of water bodies that harm biodiversity directly or indirectly (16.0 ± 2.45). The relative threat factor severity index (RTFSI) indicated that human encroachment in terms of density and distribution around the Park (0.98) was the most severe factor affecting the parks. This is closely followed by agricultural expansion and other incompatible land use changes (Table 4).

Table 2: Threat factors' prevalence and severity against biodiversity conservation in the selected Nigeria's Park

Threat factor identified from Park Officers	**Number of Parks where the threat factor exist**	**Prevalence Threat Index (PTI)**
Illegal killing of wildlife for their bush meat for the local market	4 (100%)	53.07%
Human encroachment in terms of their densities and distribution around park	4 (100%)	7.93%
Unsustainable use, demand and over-exploitation of forest fruits, vegetables and plants by local communities	4 (100%)	10.37%
Agricultural expansion and other incompatible land use changes to biodiversity requirement	4 (100%)	15.56%
Pollution of water bodies that harm biodiversity directly or Indirectly	3 (75%)	8.85%
Illegal mining of solid mineral from the park	4 (100%)	3.97%
Indiscriminate burning of bush that destroys wildlife habitat	4 (100%)	7.02%
Logging and deforestation of park	4 (100%)	35.08%
Illegal grazing and infiltration of domestic livestock into the park	4 (100%)	56.43%
Illegal fishing in water bodies located in the Park.	4 (100%)	35.08%
Gathering of fuel wood in the park	2 (100%)	2.75%

Table 3: Susceptibility of parks to threat against biodiversity and conservation within and around the selected parks

National Park	Threat factors within and Outside National Parks	Protected Area Susceptibility Index (PASI)
Cross River	1,2,3,4,5,6,7,8,9,10	10 (90.9%)
Gashaka Gumti	1,2,3,4,5,6,7,8,9,10,11	11 (100%)
Kainji Lake	1,2,3,4,5,6,7,9,10,11	10 (90.9%)
Old Oyo	1,2,3,4,5,6,7,8,9,10	10 (90.9%)

Key to threat: 1- Illegal settlement; 2- Hunting; 3- Fishing; 4 – Grazing; 5 – Logging; 6 – Illegal mining of Minerals; 7 – Agricultural Expansion(Farming); 8 – Pollution, Poisoning of water;9 – Indiscriminate Bush Burning; 10 - over-exploitation of Forest Fruits and Plants;11 – Fuel wood collection

Table 4: The threat factors that operate against biodiversity in some Nigeria's Park, their prevalence and severity as stated by Protected Areas Officers (Rangers)

Threat factor identified from Parks by Park Officers	Mean threat factor score (Mean ± SE)	Relative Threat Factor Severity Index (RTFSI)
Illegal killing of Wildlife for thier bush meat for the local Market	8.25 ± 1.26	0.41
Human encroachment in terms of their densities and distribution around Park	19.5 ± 0.65	0.98
Unsustainable use, demand and over -exploitation of Forest fruits, Vegetables and Pl ants by local communities	16.0 ± 1.73	0.80
Agricultural expansion and other incompatible land use changes to biodiversity requirement	18.5 ± 4.5	0.93
Pollution of water bodies that harm biodiversity directly or Indirectly	16.0 ± 2.45	0.80
Illegal mining of solid mineral from the park	6.0 ± 0.71	0.30
Indiscriminate burning of bush that destroys wildlife habitat	11.25 ± 2.29	0.56
Logging and deforestation of Park	10.0 ± 3.0	0.50
Illegal grazing and infiltration of livestock into the Park	8.0 ± 1.47	0.40
Illegal fishing in water bodies located in the Park.	10.75 ± 3.09	0.54
Gathering of Fuel wood in the Park	5.5 ± 0.5	0.28
Mean Value	**12.27 ± 1.04**	**0.59 ± 0.07**

Discussion

The results of the management weakness appear concurrently in the four parks. There were weaknesses in five major areas: (1) funding, (2) staffing, (3) research, (4) inventorying of biodiversity and threat and (5) community relations. Inadequate funding was a major weakness for all the four parks: CRNP, GGNP. KLNP and OONP. Funding was considered inadequate to conduct critical management activities and irregular as at the time needed to conduct these activities. This has prevent irreplaceable and unacceptable losses to natural and cultural resources Erwin (2003a). Inadequate funding has directly led to many other management problems, including inadequate communication gadget, transportation for anti poaching patrol, gun and ammunition. Erwin (2003a) reported that under-funding of protected areas appears to be a systemic problem in other parts of the world. James *et al.,* (2001) documented that protected areas across Africa and Latin America are managed on less than US $150 per square kilometer ($km^{2)}$ for less than the generally accepted US $ 250 per km^2 needed to adequately manage tropical parks. There is the need to properly fund the parks so that they can adequately fulfill their purpose of being established. Oye (2002) advocated that greater funding is needed for the management of the Nigerian protected areas. Spergel (2002) identified a variety of potential financing mechanisms for protected areas, including annual government allocations, park visitor's fees, resources extraction and hunting, fines from illegal activities and international donor contribution.

The major staffing weakness across the protected areas was in the number of staff. Erwin (2003a) indicated that lack of funding was the indirect cause of this shortfall in the numbers Protected Area Staff. Rao *et al.,* (2002) noted that some Myanmar's parks had no staff at all while others have few staff that are not enough to adequately perform management duties. Similarly, Singh (1999) reported that some of Indian's national parks and its wildlife sanctuaries did not have staff allocated to them. Brandon *et al.,* (1998) and Terborgh *et al.,* (2002) corroborated the inadequate staffing problem as being a wide spread phenomenon in many protected area systems. All the four Parks assessed are battling with the problems of inadequate staffing, due to Government restriction on employment and inadequate funding. There is also an inadequacy of research, including sociological, ecological, and threat – related research. This was a weakness noted in all the four parks assessed. Equally worrisome is the logical conclusion that data are not systematically used to inform management planning and decision making. The system lack of adequate data and research means that protected area staff are unlikely to be able to test their assumptions, adapt other strategies, learn from their mistakes, or share their lessons -one hall marks of effective, adaptive management (Erwin 2003b; Salafsky *et. al.,* 2001). Erwin (2003a) also affirmed that inadequate research and monitoring efforts are not unique to certain parks alone but also to many protected area systems, including those in the United States, even though their resources are comparatively ample.

On natural resources inventory, the quality of natural resources inventories ranked as a weakness only in CRNP, it was strength in KLNP and OONP. In CRNP the respondents observed that natural resources inventories were inadequate because of the incomplete data on threatened species. Moreover, many of the qualifying comments for a "Mostly yes" response to the statement about natural resources inventory indicated that, while biodiversity inventories do exist, the vast majority of them are based on theoretical data rather than on ground – truth data (data based on field observations). Some of the wild animal species believed to be abundant are in reality seriously threatened, while some have not been located / observed for over a period of six years but are still believed to be found in the park. Examples include the water buck (*Kobus defassa*) in KLNP and Gorilla (*Gorilla gorilla*) (rarely seen) in CRNP. The fact about their status seems cloudy.

Erwin (2003b) reported that natural resource inventories that account for the full range of species within a park are rare; rarer still are those that account for the distribution, habitat and processes of those species. There is, therefore, an urgent need for a detailed and accurate natural resources inventory, without which a management plan, would be a mere facade and the management activities that flow from it are fanciful exercises. Oye (2002) also advocated for an urgent need for a complete management plan for both protected areas, rather than operating an annual work plans as practiced presently.

The three elements that related to community relations – community support of the park objectives, conflict resolution and effective communication with local communities – have a poor performance in all the four parks. KLNP only showed the strengths in this area. This may primarily be because of the GEF/LEEMP programme going on in KLNP, which is part of an integrated conservation and development program. This observation is in line with findings of Erwin (2003b) that there are serious conflicts between the park officials and the local communities in many of the protected areas. The problems of conflict

around these parks can be partly attributed to population increase. There are indicators of new settlements springing up around the parks. This observation is in line with the previous study conducted by Okeyoyin (2009).

Conclusion and Recommendations

The parks need to be properly funded by the Government. Majority of the management problems are closely tied to inadequate funding. There should, therefore, be provision of patrol vehicles, gun and ammunition, communication gadgets and kits for the rangers to be able to perform their duties effectively and boldly without fear of armed poachers. The Park should also seek for external funding from international donor agencies. There is also need for the Parks to adequately train their staff, since it is only a well trained staff that can effectively implement management plan and objectives.

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