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ASSESSMENT OF PROTECTED AREA MANAGEMENT PRACTICES IN THE NIGERIAN NATIONAL PARK SERVICE: THE CASE OF CROSS RIVER NATIONAL PARK

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Abstract: The study examined the level of Protected Area Management Practices in the Nigerian National Park Service. Primary data were collected through interviews and Focus Group Discussion. Secondary data involved a reconnaissance survey of the park for two months to assess the situation on ground in the study area. Data obtained were analyzed using descriptive statistics as well as chi-square. Results of the study revealed that management strategies adopted in the operations of the park were inadequate for effective park management. Adequate funding and provision of modern patrol equipment were considered necessary for effective management of the park.

Key words: Protected area, management practices, Focus group discussion, management strategies, funding, effective park management

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INTRODUCTION

Protected areas (PAs) are key sites where conscious efforts are made for the preservation of wildlife and the sustainability of ecosystems (Craigie et al., 2010 and Stolton et al., 2015). However, the state of biodiversity is deteriorating globally, compromised by anthropogenic threats that have increased in recent decades (Pereira et al., 2012). The effectiveness of wildlife protection varies greatly across PAs, ranging from effective to almost entirely ineffective with poor or a complete lack of any protective measures (Craigie et al., 2010; Leverington et al., 2010). Currently, many West African countries are affected by the same kinds of land-use development, i.e., urbanization and agricultural production that in the past destroyed the original forest cover of many parts of Europe, the United States of America, and large areas of East Asia (International Cooperation and Development, 2016). However, societal dynamics in the twenty-first century are connected with the numerous conservation issues facing PAs. Protected area managers are confronted with relentless increasing pressure to cope with these changes. Assessments of PA management effectiveness offer valuable information about the threats and other management issues that PAs face (Schulze et al., 2017).

These assessments create opportunities for all stakeholders, especially policymakers, to improve their conservation strategies, reallocate budget expenditures, and develop strategic responses to the most prevalent threats and management weaknesses (Leverington et al., 2010; Watson et al., 2014). There is, therefore, a call for the periodic assessment of PAs in terms of their management effectiveness, as reported by many authors (e.g., Goodman 2003; Kolahi et al., 2013). In Ghana, the International Union for Conservation of Nature and Natural Resources/Program on African Protected Areas and Conservation (IUCN/PACO, 2010) assessed the management effectiveness of many PAs from the perspective of government authorities, with little or no inclusion of the views and knowledge of local communities, non-governmental organizations, district assemblies, the Environmental Protection Agency (EPA), and other relevant local stakeholders.

However, the local communities are directly dependent upon the natural resources and land-use decisions of these areas for their basic needs and livelihoods. Planning and implementing systems for managing PAs that exclude local communities and other stakeholders have resulted in various conflicts and frustrations, including dislocation, violence, poaching, and poverty among indigenous communities (Amaja et al., 2016; Frank, 2016). Involving local communities and other Stakeholders in the process can contribute to the effectiveness of PA management since people's perceptions and attitudes towards PAs are influenced by their involvement in the PA management activities and decision-making (Ramakrishnan, 2007). In a similar study, community participation in tourism development ensures the inclusion of local communities in the planning, decision making and implementation of tourism development programmes and projects (Nchor, 2021). It is therefore vital that local communities and other stakeholders be included in PA management

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effectiveness assessments to bring together a range of vantage points and knowledge for both, aligning interests and innovative problem-solving. There is a global increase in the trend of conserving natural resources through the designation of areas where various types of resources are put under protection. More than 100,000 designated protected areas have been listed in the world database on Protected Areas. These cover over 11.4% of the Earth's land surface along with marine protected areas (Dudley et al, 2005). During the fourth world congress in 1992, the prior paradigm focusing on the conservation of species and habitat shifted from adhoc management of resources based on past approaches to deliberate protection with Laws, Acts, Policies, Regulations and Management Plans. These strategies and innovations are meant to guide management needs and provide for effective management of protected areas across the continents.

The congress identified effective management as one of the four major protected area issues of global concern. There was therefore a call for International Union for the Conservation of Nature (IUCN) to further develop a system of monitoring management effectiveness of protected areas in order to get a more logical and transparent basis for planning and for allocation of resources. This was further emphasized in the 5th IUCN World Parks congress held in Durban in 2003. The congresses also laid emphasize on such issues as "How well is the global protected areas estate managed? Are this areas meeting their conservation objectives? An evaluation of management effectiveness is therefore a first step to diagnose the ills of these areas and prescribe correct treatment". The congresses also addressed the issue of building a global database containing inform ation on the management effectiveness of the protected area estate. This has also been considered by the Convention on Biological Diversity (CBD) as an important part of the protected area management and has been addressed in its programme of work. Accordingly, one of the CBD's programme elements is "to evaluate and improve the effectiveness of protected area management". It has emphasized the need to evaluate the effective management in at least 30% of each party's protected areas by 2010 and in the nationally protected area systems and, as appropriate, ecological works (Dudley et al, 2005). It has also commenced developing and adopting appropriate methods, standards, criteria and indicators for evaluating the effectiveness of protected area management and governance. It has also setup a related database, taking into account the IUCN-WCPA framework for evaluating management effectiveness and other relevant methodologies which should be adapted to local conditions. In Nigeria, creation of Kainji Lake National Park (KLNP) in 1976 marked the first major attempt to manage protected areas for recreational purposes. The National Park Service (NPS) was later established in 1991 creating six National Parks. Further to this development two additional Parks were established in 1999 bringing the total number of Parks to eight. In spite of the enormous resources in terms of flora and fauna unique cultural attributes as well as spectacular landscape, the use of the Parks for tourism purposes in particular and for human needs generally has not been maximally exploited. Furthermore, the conservation and management of these Parks is influenced by the local communities living very close to Park boundaries.

The problems of Protected Area Management (PAM) are generally Institutional and Infrastructural:

Institutional: This has to do with re-orienting and repositioning the management and administrative system of the Parks to be self-sustaining in their sourcing for funds as against dependence on government subventions as evidenced in Annual reports of the Parks.

Infrastructural: This involves the quality and availability of facilities that make the Park attractive and inviting to the public. These include good access or approach roads to the Park, hotels or lodges, telecommunication facilities, electric power and recreational opportunities, etc.

Consequently, management problems including encroachments and grazing are prevalence inside the Park. Furthermore, poaching as well as illegal settlements have become major threats to the integrity of the Park (Nchor, 2021). Above all, the Parks are funded through annual budget allocations from the Federal government. This has become grossly inadequate to support Park operations, a development corroborated by Nchor (2021) regarding inadequate funding as a serious witness in Cross River National Park. Management of Parks is capital intensive as funds are required for the provision of basic infrastructures, employment of the right caliber of professionals and the development of support zone communities living very close to the boundaries. These challenges have not been addressed by the National Park Service in the past years. Successful Park management requires a much wider perspectives than that provided by conservation biology if it is targeted at understanding and managing the enormous challenges it faces. It does not only involve making management more efficient but goes beyond that by defining what it aims to accomplish so that strategies and goals are adopted to make management more efficient. Accountability for performance is being increasingly demanded across all sectors of society and conservation management is no exception. Traditionally, concerns for accountability focused on issues of financial and managerial probity but this has now expanded to include concerns for management effectiveness. Viewed in this light, accountability is not so much about "checking up" on managers to see where they are failing, but on developing a professional approach to management. Governments and other funding or regulatory bodies are requiring information on management effectiveness that will allow them to assess whether results being achieved are commensurate with the effort and resources being expended and in line with policy and management objectives. This study therefore examined the level of Protected Area Management Practices in Cross River National Park.

MATERIALS AND METHODS

Study Area

Cross River National Park (CRNP) is situated in Cross River State, which is in the South - East end of Nigeria bordering the Republic of Cameroon. The Park covers a total area of 4000sq km, mainly made up of moist tropical primary rainforest ecosystem. The Park has two distinct, contiguous Sectors: Oban and Okwangwo Sectors. Oban Sector lies within longitude 8 º02'E and 8 º55'E and Latitude 5 º00'N, and 6º00'N. It covers a total area of 3000sq km, and is the

larger of the two sectors, rich in biodiversity. Oban Sector is ecologically contiguous with Korup National Park in the Republic of Cameroon. It is reputed to be the richest ecosystem in Nigeria in terms of biodiversity (Cliffs, 2004).

It has 1568 plant species of which 77 are endemic to Nigeria, 75 species of mammals, 282 species of birds, and 42 species of snakes (Cliffs, 2004). Oban Sector moist primary forests are also rich in epiphytic ferns and orchids. Okwangwo Sector covers a total area of 1000sqkm and lies between latitudes 6 º02'N and 6 º028'N and longitudes 902' E and 9 º27' E. It shares international boundaries with Takamenda Game Reserve in the Republic of Cameroon. It is made up of primary rainforest, Montane Forest and derived savannah, with about 1545 identified species of plants in 98 families. The rediscovery of Gorillas in the Boshi and Okwangwo areas in late 1987 is of particular importance, because as they are the most viable population of low land gorillas in Africa (Happold, 1987).

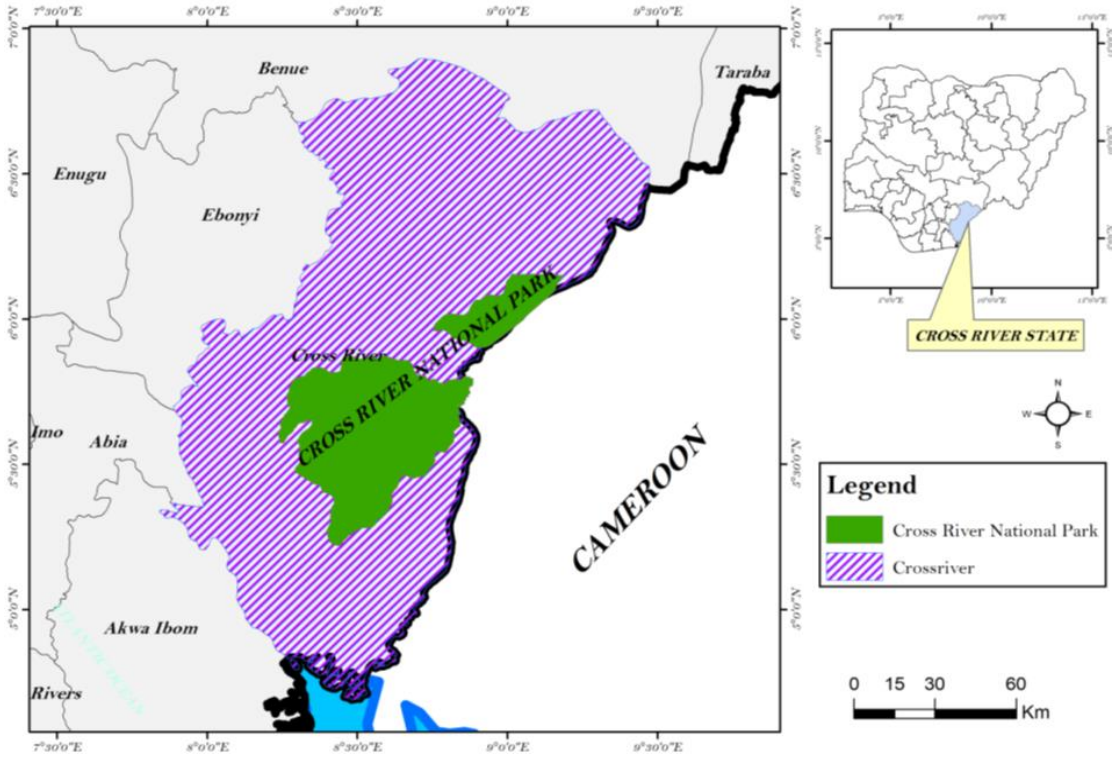

Figure 1. Cross River National Park

Method of Data Collection

The survey was conducted in November, 2021 to March, 2022. Both primary and secondary data were collected. The primary data collection tool for the study was a standard questionnaire based on a modified Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) methodology. The questionnaires comprise of two sections. The first section consisted of information about personal characteristics of respondents such as Age, Gender, Level of Education, etc. while the second section focus on protected area management practices in the area of Staffing, Local Community Participation, Status of Park Infrastructures/Maintenance as well as Park Protection and Conservation. Other areas included Park Finances and Budget as well as Research and Monitoring Programmes. The questionnaire covers some aspects of international evaluation framework developed by the World Commission on Protected Areas (WCPA) (Hockings, 2003). The questionnaire was structured around a Likert scale (Ko and Steward, 2002), which allow respondents to make personal decisions based on individual degree of rating and intensity of items contained in the questions, which varied from, Agree (A), not sure (NS), to Disagree (D). The questionnaire was developed by the research team and used for the collection of data for the study. Secondary data involved a reconnaissance survey of the park for two months to assess the situation on ground in the study area. During the period the Park was contacted to gather all relevant documents pertaining to their operations. This included existing documents containing appropriate biological and management information, draft management plans, tourism development plans, zonation plans (where available) and annual reports covering the study period (2011 - 2015). Field trips were also embarked upon to assess the situation on ground.

Focus Group Discussion (FGD) were held with principal stakeholders in this study namely officials of national Park Service to obtain secondary data. The meetings provided a forum for the acquisition of first hand briefing on the scope of the assignment. It also provided a medium to gain insight into the views and sensitivities of senior Park administrators on their expectations as well as concerns about the current state of the Parks and their views of the Parks' future. Documentary materials consisting substantially Annual Reports of the Park were obtained from the Park's Head Office. These were reviewed critically with a view to making inferences that will enable the study make meaningful recommendations. Extensive use of the internet provided valuable resources material, especially with regard to obtaining information about other countries' experiences with National Parks. Site visits to the field were undertaken with a view to having first hand practical and empirical experience about the realities and physical conditions at the Park.

The administration of questionnaires was in a workshop setting with strict supervision from the researcher using previously collated data and Park records. This allowed for respondents to be accountable to one another. Nine departments were used for the study including Human Resource Management **(HRM)**, Ecology and Resource Management **(ERM)**, Planning Research and ICT **(PR/ICT)**, Works/Maintenance **(W/M)**, Ecotourism, Finance and Account **(F&A)** as well as Litigation **(LIT)**, Public Relation **(PR)** and Internal Audit **(IA)** (Table 1).

Sample Size

The formula developed by Yamane (1973) for determination of sample size used in this study is given as:

$$n = \frac{N}{1} + N\,(e)^2$$

Where: n = The sample; N = The population of the study; e = The allowable or margin error which in this study was pegged at 0.05 $n = \frac{415}{1} + 415\,(0.05)^2 = \frac{415}{2.04} = 203$

A formula adopted by Kathuri and Pals (1993) was used to determine the sample size for each Unit/Department as follows: $n_n = (\frac{Nn}{N})$ x n

Where, n_n = The sample size of each unit; N_n = Population of the unit; N = Total population size; n = Total sample size.

Hypothesis:

H_0: Protected Area Management Practices are adequate for effective management of Cross River National Park.

H_1: Protected Area Management Practices are not adequate for effective management of Cross River National Park.

Table 1. Nominal roll of Cross River National Park (Source: Field survey, 2022)

S/N	DEPARTMENTS / UNITS	JUNIOR		SENIOR		TOTAL	
		Total No. of Staff	Sample Size	Total No. of Staff	Sample Size	Total No. of Staff	Total No. Sampled
1	Human Resource Management	6	3	26	13	32	**16**
2	Ecology and Resource Management	194	95	91	45	285	**140**
3	Planning, Research and ICT	18	9	18	9	36	**18**
4	Works/Maintenance	3	1	9	4	12	**5**
5	Ecotourism	11	5	16	8	27	**13**
6	Finance and Account	4	2	11	5	15	**7**
7	Others (Litigation, Public Relation and Internal Audit)	2	1	6	3	8	**4**
	Total	**238**	**116**	**177**	**87**	**415**	**203**

The study developed and adopted a quantitative research design. Data was collected from staff in the six Departments operating in the Cross River National Park namely: Planning Research and ICT **(PR/ICT)**, Works/Maintenance **(W/M)**, Ecotourism, Finance and Account **(F&A)** as well as Litigation **(LIT)**, Public Relation **(PR)** and Internal Audit **(IA)**. The study population was selected from the six Departments. The sample Size for the study was generated from the formula developed by Yamane (1973) for the determination of sample size with: $n = \frac{N}{1} + N\,(e)^2$

Where: n = The sample; N = The population of the study; e = The allowable or margin error which in this study was pegged at 0.05 $n = \frac{415}{1}\,415\,(0.05)^2 = \frac{415}{2.04} = 203$

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Where, n_n = The sample size of each unit; N_n = Population of the unit; N = Total population size; n = Total sample size.

Thus, a total of 203 respondents constituted the sample size with 18 for **(PR/ICT)**,5 for **(W/M)**, 7 for **(F&A),** and 4 for **Others** (**LIT**,**PR** and **IA**). Table 1 The questionnaires comprised of two sections. The first section consisted of information about personal characteristics of respondents such as Age, Gender, Level of Education, etc. while the second section focused on Protected Area management practices in the area of Staffing, Local Community Participation, Status of Park Infrastructures/Maintenance as well as Park Protection and Conservation. Other areas included Park Finances and Budget as well as Research and Monitoring Programmes The questionnaire was structured around a Likert scale (Ko and Steward, 2002), which allow respondents to make personal decisions based on individual degree of rating and intensity of items contained in the questions, which varied from, Agree (A), not sure (NS), to Disagree (D). The questionnaire was developed by the research team and used for the collection of data for the study. It was also subjected to a pilot test on 12 staffs in the park in order to check on the convenience of administrating the questionnaire.

Both primary and secondary data were collected. The primary data collection tool for the study was a standard questionnaire based on a modified Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) methodology. Secondary data involved a reconnaissance survey of the park for two months to assess the situation on ground in the study area. During the period the Park was contacted to gather all relevant documents pertaining to their operations. This included existing documents containing appropriate biological and management information, draft management plans, tourism development plans, zonation plans (where available) and annual reports covering the study period (2011 - 2015). Field trips were also embarked upon to assess the situation on ground. Focus Group Discussion (FGD) were held with principal stakeholders in this study namely officials of national Park Service to obtain secondary data. The meetings provided a forum for the acquisition of first hand briefing on the scope of the assignment. It also

provided a medium to gain insight into the views and sensitivities of senior Park administrators on their expectations as well as concerns about the current state of the Parks and their views of the Parks' future. Documentary materials consisting substantially Annual Reports of the Park were obtained from the Park's Head Office. These were reviewed critically with a view to making inferences that will enable the study make meaningful recommendations. Extensive use of the internet provided valuable resources material, especially with regard to obtaining information about other countries' experiences with National Parks. Site visits to the field were undertaken with a view to having first hand practical and empirical experience about the realities and physical conditions at the Park. Descriptive and inferential statistics were applied on the collected data. Data was analyzed using statistical package for social sciences (SPSS) software version 27 Descriptive analysis was used to summarize the variable while chi-square analysis was adopted to test the hypothesis of the study.

Hypothesis:

H_0: Protected Area Management Practices are adequate for effective management of Cross River National Park.

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5	Ecotourism	11	5	16	8	27	**13**
6	Finance and Account	4	2	11	5	15	**7**
7	Others (Litigation, Public Relation and Internal Audit)	2	1	6	3	8	**4**
	Total	**238**	**116**	**177**	**87**	**415**	**203**

RESULTS AND DISCUSSIONS

Characteristics of Respondents

Majority of the respondents (85.0%) were males, indicating that the profession is male-dominated. This may be due to the fact that in this region of Nigeria, female education is relatively low and the work requires some enforcement skills, which may be elusive to women. Furthermore, most of the respondents fall between the ages ranging 51 - 60. In addition, 37.5% of the respondents have work experience of 20 years and above (Table 2). Majority of the respondents (50.7%) had secondary school education. This could be due to the fact that most of them were park rangers, whose jobs did not require any technical education.

Table 2. Demographic background of respondents (Source: Field survey, 2022)

S/N	Respondents		Frequency	Percentage
1	Gender	Male	173	85.0
		Female	30	15.0
2	Age	30 and below	12	5.8
		31 – 40	17	8.3
		41 – 50	47	23.3
		51 – 60	103	50.8
		Above 60	24	11.7
3	Qualifications	Primary Education	45	22.2
		Secondary Education	103	50.7
		NCE/ND	35	17.2
		B.Sc.	20	9.9
4	Work Experience	1 - 5 years	24	11.7
		6 - 10 years	39	19.2
		11 - 15 years	27	13.3
		16 - 20 years	37	18.3
		Above 20 years	76	37.5

Effective Internal Communication

Majority of the respondents (71.43%) affirmed that internal communication between all levels of park staff is not effective. (Table 3). The means and effectiveness of communication between staff in the field and administrative staff appeared to be below acceptable standard. Furthermore, the results indicated that the processing of information and data associated with management were inadequate, thus data about the protected areas were not available and up-to-date. Respondents in this study also suggested that staff conditions, inadequate skills and inadequate communication across the park was due to general lack of funds by government and supporting agencies leading to inadequate communications with local communities and inadequate data collection and analysis of park operations.

X^2_{cal} =134.966** df = 2, X^2_{tab} = 5.991, P - value = 0.000; Since t_{cal} (134.966) > t_{tab} (5.991), the null hypothesis was rejected implying that internal communication between all levels of park staff is not effective in the study area.

Table 3. Effective Internal Communication in the Park (Source: Field survey, 2022)

Response	Departments / Units							
	HRM	**ERM**	**PR/ICT**	**W/M**	**ECOTOURISM**	**F/A**	**OTHERS**	**Total (%)**
Agree	8	4	4	4	4	6	8	38 (18.72)
Not sure	4	2	2	2	2	4	4	20 (9.85)
Disagree	27	20	18	18	14	27	21	145 (71.43)
Total	**39**	**26**	**24**	**24**	**20**	**37**	**33**	**203 (100)**

Staff Employment Conditions

Majority of the population sampled (76.35%) were of the opinion that highly qualified staff were retained (Table 4).

From the results on employment conditions, the weight of opinion was that employment conditions for lower level positions were not good as compared to higher level staff. It was therefore relatively easy to retain this category of staff. On the other hand, employment conditions for positions with higher skill requirements and responsibility levels were not good enough to retain staff. This tendency to lose highly skilled and experience staff from the organization should be recognized as a critical weakness and needs to be addressed by improving employment conditions within the organization.

X^2cal = 54.310** df = 1, X^2 tab = 3.841, P - value = 0.000; Since t_{cal} (54.310) > t_{tab} (3.841), the null hypothesis was rejected implying that staff employment conditions are not good in the study area.

Table 4. Staff employment conditions (Source: Field survey, 2022)

Response	Departments / Units							
	HRM	**ERM**	**PR/ICT**	**W/M**	**ECOTOURISM**	**F/A**	**OTHERS**	**Total (%)**
Agree	8	6	6	8	4	8	8	48 (23.65)
Not sure	0	0	0	0	0	0	0	0 (0.00)
Disagree	30	22	18	16	16	27	26	155 (76.35)
Total	38	**28**	**24**	**24**	**20**	**35**	**34**	**203 (100)**

Local Community Participation

A greater number of the respondents (76.35%) disagreed that local communities were involved in the operations of Cross River National Park (Table 5). Conservation areas like CRNP started their programmes with an objective of managing their biodiversity and community development together, particularly to improve on the livelihoods of local communities known as support zone communities. However, none of the parks operated well designated buffer zones or proposed buffer zones to encourage local community participation. Though there are a number of activities across the park involving local communities, there is need to ascertain the level at which stakeholders participate and understand the objectives of the park. Though, the activities of the park in law enforcement were very high, community conflicts with the park authorities were also on the high side. This is a general development across protected areas globally because these areas are mostly surrounded by heavily populated communities and the land within these parks are under agricultural use. The local communities operating close to the parks have traditionally used and depended upon the resources available within and surrounding the protected areas. Furthermore, while the focus of the early stages of the designs of these parks was on biological integrity, the boundaries of the parks included both state and community owned land. Consequently, there are likelihoods of conflicts over resource; use rights in such areas particularly if there were no standard and adequate mechanisms for compensating local communities as in the case of the protected areas in China (Diqiang et al., 2003).

However, there were a few strengths in the planning, in all cases, the primary objective of establishing the park was for the maintenance and conservation of biodiversity. In these areas, the Federal Government has put in place some legislation to give the park legal status. In the same vein, communication with local communities regarding the management of the park including the involvement of local communities in park management projects and policy decisions was considered ineffective. This again should be recognized as an important weakness since improved communication with local communities is likely to lead to a much better understanding of the value of the protected areas, A greater degree of participatory management and acceptance of the protected area is also expected to boost the level of cooperation and the much needed support the park expects from these communities. The three elements that are related to community relations - communication with local communities, local community participation in park programmes and decision making as well as collaboration with stake holders had a non-convincing performance. More than 70% of respondents felt that participation in decision making was not effective. Although none of the assessments tested for a correlation between poor community relations and community-related threats (e.g. poaching and collection of Non Timber Forest Products (NTFP), a positive correlation would not be surprising. Analysis by Jacoby (2001) had a positive relationship between community relations and threats in US national parks.

Table 5. Local community participation/involvement in park Management (Source: Field survey, 2022)

Response	Departments / Units							
	HRM	**ERM**	**PR/ICT**	**W/M**	**ECOTOURISM**	**F/A**	**OTHERS**	**Total (%)**
Agree	10	8	6	4	4	10	6	48 (23.65)
Not sure	0	0	0	0	0	0	0	0 (0.00)
Disagree	29	20	18	20	16	26	26	155 (76.35)
Total	**39**	**28**	**24**	**24**	**20**	**36**	**32**	**203 (100)**

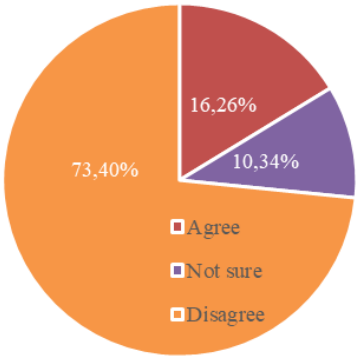
X^2cal = 54.310** df = 1, X^2 tab = 3.841, P - value = 0.000; Since t_{cal} (54.310) > t_{tab} (3.841), the null hypothesis was rejected implying that local communities were not involved in the operations of Cross River National Park in the study area.

Status of Park Infrastructures

The results in Figure 2 shows that 73.40% of the respondents submitted that park infrastructures were inadequate for critical management activities. In considering the level of infrastructures in the park, transport and park protection facilities, the general opinion of respondents was that these facilities were inadequate for management and monitoring purposes. In considering transport and facilities in the park, the means of transport was considered fairly adequate for management and monitoring purposes. This included equipment for field level data collection. This position is important in that without adequate means of collecting field data many management activities cannot be properly monitored and evaluated.

Some staff raise their concerns over the maintenance and care of equipment which was obviously regarded as being inadequate to ensure long term use. This assessment was reinforce by the opinion frequently express that not only equipment but structures such as building, roads and tourist infrastructures were suffering due to lack of funding and maintenance. An analysis of the Parks vehicles and motorcycles during the study period shows that the vehicles include Peugeot, Nissan Buses, Tractors Toyota Buses, Hilux and Land Cruisers, Isuzu Pick-up, Land Rovers, Fiat Truck and Motorcycles. Most of these vehicles are no more serviceable thus have been withdrawn and relocated to the National Parks Headquarters in Abuja for disposal in line with the Federal Government's monetization policy. A greater percentage of others including motorcycles acquired at the end of the Okwangwo programme (EU-WWF sponsored) are now unserviceable. However, information on the state of these motorcycles and vehicles, the number disposed of at the National Park's Headquarters, Abuja and the present location of the patrol vehicles across the various ranges in the Park was not available as at the time of this study.

X^2cal = 131.300** df = 2, X^2 tab = 5.991, P - value = 0.000; Since t_{cal} (131.300) > t_{tab} (5.991), the null hypothesis was rejected submitting that park infrastructures were not inadequate for critical management activities in the study area.



Fgure 2. Status of park infrastructures for critical management activities

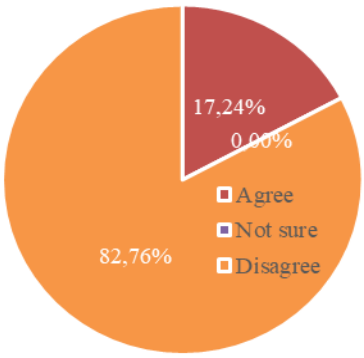


Figure 3. Maintenance and care of equipment (Source: Field survey, 2022)

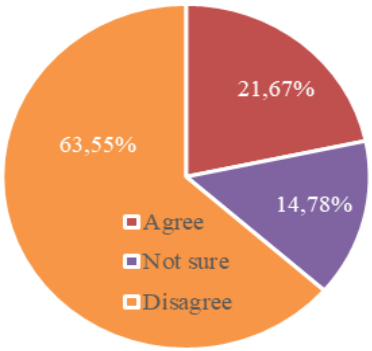


Figure 4. Park Protection and Conservation (Source: Field survey, 2022)

Maintenance and Care of Equipment

Results on the maintenance of equipment in the park shows that majority of respondents (82.76%) positioned that equipment in the park were not properly taken care of (Figure 3).

A critical weakness identified in the study was the maintenance and care of equipment which was obviously regarded as being inadequate to ensure long term use. This position was reinforced by the opinion frequently expressed that not only equipment but structures such as buildings, roads and tourist infrastructure were suffering due to lack of funding for maintenance. Reports from past studies have also attributed constrains in maintaining tourism infrastructure to lack of will by government to manage resources effectively (Gopal et al., 2008). This in the case of Obudu Ranch Resort where the complete shutdown of operations in the resort was due to government's disposition towards other projects and programmes (Ayuk et al., 2021). With respect to the adequacy of visitor facilities, there were generally considered not only being inadequate but in a high level of deterioration and standards that were not internationally acceptable.

X^2cal = 87.138** df = 1, X^2 tab = 3.841, P - value = 0.000; Since t_{cal} (87.138) > t_{tab} (3.841), the null hypothesis was rejected implying that equipment in the park were not properly taken care of in the study area.

Park Protection and Conservation

Figure 4 gives an assessment of the level of operations of the park in the areas of park protection and conservation of its resources. Majority of the population sampled (63.55%) were of the position that the activities of the park were not adequate to effectively perform critical management operations in the park. There was also an indication that majority of those holding this position were from the Ecology and Resource Management where most of their operations were seriously affected by paucity of funds. Park protection and conservation is one of the core operational activities of the Cross River National Park. A team of 189 staff were engaged by the Park for effective surveillance across the entire area covering 4000sqkm. The Park is divided into two Divisions - Oban and Okwangwo Divisions and 12 ranges for effective patrols. In Oban Division, the ranges are located in Nsofang, Okokoril/Ekuri, Ifumkpa, Nkunaya, Aking, Ekong Anaku, Erokut Park entry gate and Etara. The four ranges in Okwangwo Division are in Mbuli, Abu, Obisu, Anape and Butatong. Each Range is provided with a four wheel drive vehicles supported by patrol equipment (Figure 4).

A special Ranger squad has also been put in place by the Management of the Park for effective surveillance and quick intervention in areas that cannot be easily covered by regular patrols. The squad which is based at the Park's Head Office in Akamkpa, can be mobilized at short notice for rapid interception of poachers in any part of the Park. Surveillance operations were occasionally disrupted by some hostile and restive youths in support Zone Communities. These situations

arise when suspects from the communities are arrested and prosecuted. In Oban Divisions two Park staff members were molested by youths of Aking community when suspects arrested in the Park were being conveyed to the Park's Head Office in Akamkpa for prosecution. During the attack, the Park staffs were injured while the official vehicle engaged in the exercise was vandalized. A similar incident in Butatong where the Divisional Head Office is located escalated to the barricading of the main entrance by restive youths. Management has commenced dialogue with the affected communities with the state security Adviser of the Governor in attendance. The activities of the park in law enforcement were very low and community conflicts with the park authorities were high. Furthermore, the park I mostly surrounded by heavily populated communities and the surrounding land under intense agricultural use. This communities operate close to the park and have traditionally used and depended upon the resources available within and its surrounding. Consequently, there are likelihood of conflicts over resource use right in such areas, particularly if there were no standard and adequate mechanisms for compensating local communities. Such conflicts has been reported in china protected areas (Diqiang et al., 2003).

X^2cal = 84.837** df = 1, X^2 tab = 3.841, P-value = 0.000;

Since t_{cal} (84.837) > t_{tab} (3.841), the null hypothesis was rejected implying that the activities of the park were not adequate to effectively perform critical management operations in the park in the study area.

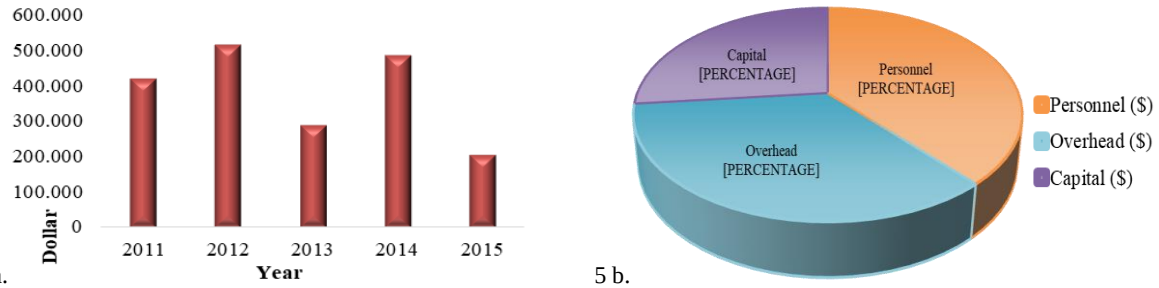
Table 9. Cross River National Park: Park patrol equipment's (Source: Field survey, 2022)

S/N	Description of equipment	Qty.	Remarks
1	Four wheel drive vehicles	6	Four are serviceable
2	Motor cycles	12	Distributed to all the Ranges
3	Shot guns (double barrel)	35	Serviceable
4	Shot guns (pump action)	9	-do-
5	Rifles	2	-do-
6	Camping tents	51	-do-
7	Camp beds	2	-do-
8	Global positioning system	6	-do-

FUNDING

Park Allocation

The overall funding in the park is reflected in the budget allocations of the park between 2011 and 2015. The allocation revealed that the sum of $1,910,046.772 was provided as both capital and recurrent allocation during the period. When considered on year to year basis, the overall allocation reflected an increase from $417,698.3023 in 2011 to $513,501.8243 in 2012, then dropped to $287,524.8826 in 2013. There was a further increase to $484,530.8314 in 2014 which later dropped to $206,790.9316 in 2015 (Figure 5a). In consideration of the expenditure of the park during the same period the highest provision when to personnel cost (38%), followed by Overhead (35%) while the lowest (27%) was in Capital expenditure (Figure 5b).



5a. 5 b.

Figure 5. Cross River National Park allocation (2011 - 2015)

Park Expenditure Profile

A total of $1,911,688.41 was expended by the park over the period under study. A breakdown shows that the highest ($4,908,404.04) was spent on Administrative Cost, followed by $755,780.28 on Staff Cost and $507,274.28 on Capital Expenditure. Other expenses were in the area of Park Conservation Operations ($274,556.98), Park Activities ($162,589) and Support Zone Dev. ($28,888.43) which was lowest during the same period (Figure 6). From the results Administrative Cost and Staff Cost constituted a significant level of the budget with park conservation accommodating one of the areas that had less emphasis in the budget. This development is supported by the results in Figure 4 above were majority of the respondents (63.55%) were of the position that the operations of park protection were not adequately supported financially to effectively perform critical management operations in the park. Biodiversity conservation is the core mandate of a Nigerian National Park Service. However, this was not evident from the results on the park's allocation as well as expenditure profiles. The study rather revealed that the highest allocation of funds to the park was appropriated to personnel and administrative cost while insufficient provision was devoted to protection and conservation of park resources.

The overall proportion of public funding going into investment in the park as well as protected areas globally, is declining (Eagles et al., 2002). In order to ensure that these challenges are overcome, protected area managers are encouraged to put in place stable platforms to generate revenue internally. There is also the need to seek external funding to successfully meet with the objectives of establishing them (Hockings et. al., 2000). Potential financing mechanisms for protected areas have also been identified by Spergel (2002), these include annual government allocations, park visitor fee,

fines from illegal activities, conservation trust funds, donor contributions as well as debt for nature's swaps. Such strategies are likely to become more important in view of the general position that the park's funding is not likely to improve in the future. Inadequate funding was identified as a serious weakness in the park during the study. Funding was not adequate to conduct critical management activities. Lack of funds in the park also generated other management problems including inadequate field equipment, transportation, and facilities. Underfunding of protected areas appears to be a problem globally including those in Africa and Latin America which are managed on less than US $110 per square kilometer (km^2). This situation is less than the globally accepted US$210 per km^2 for effective management of Tropical Parks (James et al., 2001).

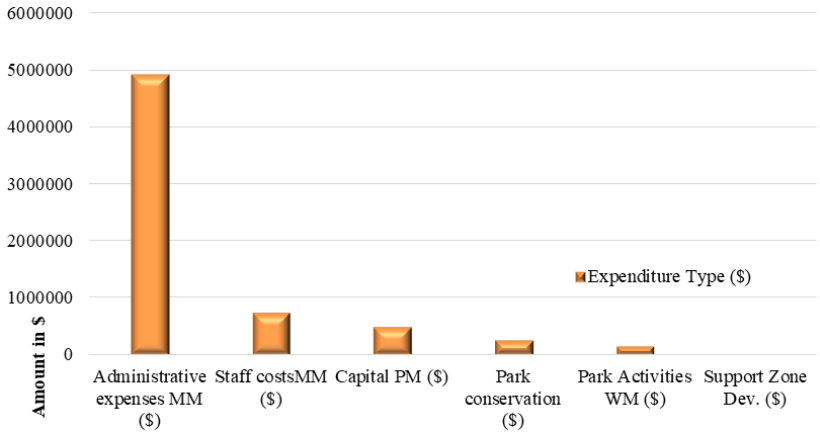


Figure 6. Cross River National Park Expenditure (2011 - 2015) (Source: Field survey, 2022)

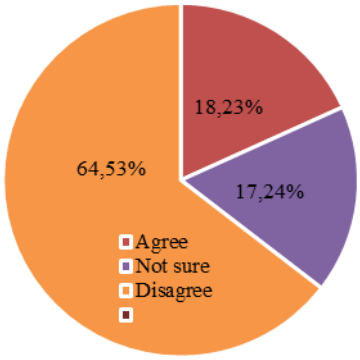


Figure 7. Research and Monitoring

Research and Monitoring Programmes

Majority of the respondents (64.53%) positioned that the park could not incorporate results of research and monitoring into park planning (Figure 7). The inadequacies of research, including ecological and threat-related research was a weakness in the park. This position is likely to have a negative effect in-that without adequate means of collecting field data, many management activities cannot be properly monitored and evaluated. Another challenge is the logical conclusion that data are not systematically used to inform management planning and decision making. For example, in Kwazulu-Natal (KZN) Province, at least 60% of respondent answered yes" or "mostly yes" to the statements "the results of research are routinely incorporated into planning", an equal number responded "no" or "mostly no" to another statement about the adequacies of ecological research, and social research, and means of collecting new data. The systemic lack- of adequate data and research means that protected area staff are unlikely to be able to test their assumptions or share their lessons which is the hallmark of effective adaptive management (Salafsky et al. 2001).

Inadequate research and monitoring in the park is not unique to Cross River National Park. Indeed, many protected areas, including those in the United States, face similar problems even though their resources are comparatively inadequate. The quality of natural resource inventories was considered low by the general opinion of Park Staff, which was a general problem globally. In South Africa, for example, natural resource inventories were also inadequate because of incomplete data on threatened species, inappropriate maps, resolution and inconsistent soil and vegetation map (Goodman, 2003).

CONCLUSION

In summary, statistical analysis shows that the null hypothesis for all the variables (Effective Internal Communication in the Park, Staff Employment Conditions, Local Community, Participation/Involvement in Park Management, Status of Park Infrastructures for Critical, Management Activities, Maintenance and Care of Equipment as well as Park Protection and Conservation were therefore rejected. It was therefore concluded that park protection practices in Cross River National Park were not adequate for effectives operations in the Protected Area.

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