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Analyses of Threats on Managements, Rangers and Ranges in Old Oyo National Park as a Tourism Destination, Oyo State, Nigeria

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Abstract Protected areas are one of the most effective strategies for minimising human impacts on biodiversity globally. However, studies have shown that protected areas face numerous threats, yet there is little emphasis on arranging these threats by severity. This study analysed the threats to management, rangers, and ranges in Old Oyo National Park (OONP), Nigeria, and assessed their impact on conservation efforts. OONP, covering an area of approximately 2,512 km², is Nigeria's fourth-largest national park with five ranges and 185 rangers. A multi-stage sampling technique was employed, selecting all five ranges and randomly selecting 40% of rangers (74) for the study. Data were gathered through semi-structured questionnaires, interviews, and observations then analysed using descriptive statistics and Garrett Ranking. The findings revealed that grazing posed the most severe threat (89.2%), while logging was the least (44.5%). Threat severity varied by range, with grazing and bush burning predominant in Yemoso and human settlement and mining prevalent in Tede. Challenges such as limited vehicles and inadequate management hindered efforts to mitigate these threats. This study highlights the importance of local community support to mitigate the impact of threats on the park's biodiversity and management.

Keywords Perception · National Park · Threats · Park Rangers · Management

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Analyses of Threats on Managements, Rangers and Ranges in Old Oyo National Park as a Tourism Destination, Oyo State, Nigeria

Protected areas are one of the most effective strategies for minimising how humans affect biodiversity worldwide. It is simply referred to as 'geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values' (IUCN, 2021).Yazdandoost, 2022) noted thatmajority of the protected areas are significant not because of their biodiversity, but because local communities in developing nations solely rely on flora and fauna resources for their livings. However, a number of studies have shown that protected areas are faced with threats like poaching, logging, illegal grazing, and bush burning (Jacob *et al*., 2015a; Ogogo *et al.,* 2014; Jacob *et al.,* 2013; Malik *et al*., 2016). As a result of over dependent for energy, food, medication and survival.Most of these regions lack sufficient manpower and poor management strategies to deal with a variety of threats that exist within their borders, and this has generated the rising levels of threats in protected areas across the globe.

Some of the protected areas according to Jacob *et al.,* (2018) include forest reserves, strict nature reserves, biosphere reserves, natural regeneration plots, permanent sample plots, game reserves/sanctuaries, fish parks, national parks and Ramsar sites. Ijeomah *et al*., (2015) also pointed out that protected areas such as strict nature reserves, national parks, game reserves, wildlife sanctuaries and forest reserves were created for the preservation of ecosystems, conducting scientific research for the conservation of species, the recreational aspect of wildlife termed ecotourism and the prevention of over exploitation of biodiversity and loss of habitat and species. A national park is a big natural range that protects large-scale environmental processes with characteristic types and ecologies, biological and culturally compatible, spiritual, scientific, educational, leisure and tourist's prospects. It is listed as category II in the IUCN categories of protected areas (IUCN, 2021).It is a natural area managed for the preservation of flora and fauna species and tourism (Chernobay, 2014). According to the IUCN (2021), there are about one thousand and fifty-five (1055) national parks worldwide and seven in Nigeria.

According to Afolayan and Ajayi (1983), game reserves in Nigeria were originally forest reserves. Early in the 1930s, colonial officers in Nigeria suggested the idea of conserving wildlife in game reserves and urged the government to pursue the idea. Haywood's 1932 survey of West Africa's wildlife resources led to the recommendation that game reserves be established in Nigeria's savanna regions (Afolayan and Ajayi, 1983). By establishing forest reserves, game reserves, national parks, and other protected areas, it is hoped that Nigeria's natural resources will be protected and used sustainably for the benefit of people forever. The policy for natural resource preservation in game reserves, national parks, and other protected areas resulted from a desire to stop the extinction of most flora and fauna in the wild. Globalisation, industrialisation, population growth, and urbanisation have altered food production and consumption patterns in ways that have a significant negative impact on ecosystems (Ervin, 2010). Recent studies have shown that innovative technologies and sustainable financing models are becoming critical tools in addressing these pressures. Such as, Baydeniz (2024) explained the process by which the blockchain could support transparency and stakeholder collaboration in tourism, aiding sustainability efforts.

The number of game reserves and national parks in the nation increased from 12 in 1969 to 36 in 1980. The adjacent Borgu and Zugurma reserves were formally designated as the Kainji Lake National Park in 1975,

and the park was established as the top national park in Nigeria with Decree No. 46 of 1979. Five additional national parks and the National Park Governing Board were established by Decree No.36 Of 1991, bringing the total number of national parks in Nigeria to six in that year. The two new national parks, Kamuku and Okomu, were established by Decree No. 46 of 1999, bringing the total number of national parks in the nation to eight. However, Yankari National Park was returned to the State Government in June 2006 to serve as a game reserve in Bauchi State, leaving Nigeria with only seven national parks at the time. The number of game reserves in the country was decreased by the merger of some game reserves, like Borgu and Zuguluma, and the use of some individual game reserves, like Okomu and Kamuku, to establish national parks.

Despite this development, there has been a serious decline in global biodiversity over the past few decades due to species extinction, habitat loss, and significant ecosystem changes. The biggest threats negatively impacting the conservation of wildlife and ecotourism in National Parks and Game Reserves are illegal hunting, farming, logging and grazing (Alarape, 2002). Nigerian National Parks, which are intended to protect natural resources by prohibiting their unauthorised exploitation, have recently witnessed a steady increase threats to these natural resources recently (Malik *et al*., 2016). The increasing rate of habitat loss or modification brought on by human activity is a significant threat to wildlife conservation in Nigeria (Tang, 2024). Due to these, many areas of these parks have been severely degraded and turned into forest mosaics as a result of the unsustainable exploitation of timber, grazing, and agricultural practices. These activities' combined effects have made our parks into an island surrounded by farmland. The diversity of wildlife in the park now shifts in favour of species that can survive in damaged habitats and in agricultural settings as a result of these landscapes impeding seasonal migration of animals. Despite the fact that the country has wildlife laws in place to protect endangered species from threats, most of them were not imposed because there is no sufficient manpower, finances, and other material resources to keep an eye out for illegal activity and uphold the law as it stands (Ogogo *et al*., 2014). Although the nation and other conservation bodies have previously expressed serious concern about the preservation of its indigenous resources, the objectives of managing its wildlife resources sustainably from threats have not been realised. Loss of wildlife habitats, poaching, including overhunting, collection of NTFPs, logging, farming, and grazing remain challenges and threats affecting the management of protected areas in Nigeria. This therefore necessitated the need to identify and rank the threats, the current management application and weaknesses then ranger perceived solutions affecting the Old Oyo National Park. This research therefore analysed the threats faced by management, rangers, and the ranges in Old Oyo National Park, Nigeria. Specifically, the study identified and categorised the various threats to the park, assessed the severity and impact of these threats on park management and conservation efforts, evaluated the effectiveness of current management practices in mitigating these threats, and provided recommendations for improving the management and protection of Old Oyo National Park.

Old Oyo National Park, like many protected areas, is confronted with a range of threats that jeopardise its biodiversity, cultural heritage, and conservation efforts. These threats include illegal grazing, poaching, logging, encroachment on farming, and human settlement. While previous studies have recognised these challenges, they often fail to comprehensively assess the severity of each threat and its specific impact on different regions of the park. As a result, the park's management continues to struggle with prioritising conservation efforts and effectively mitigating these threats. Furthermore, there has been limited research on the effectiveness of existing management strategies aimed at addressing these issues. Current efforts such as anti-poaching patrols, surveillance, and community outreach programs face obstacles such as inadequate resources, insufficient manpower, and a lack of essential equipment. Despite these interventions, the Old

Oyo National Park continues to suffer from degradation and loss of biodiversity, largely due to ineffective threat management and enforcement of regulations. In addition, there is a notable gap in research regarding the role of local communities in conservation efforts. Protected areas in many developing nations, including Nigeria, are often surrounded by communities reliant on park resources for their livelihoods. However, there is little emphasis on integrating these communities into conservation strategies in a manner that addresses their needs while protecting the park's resources. The failure to actively engage local communities has led to increased conflicts between park rangers and residents, as well as a rise in illegal activities such as grazing and logging within the park.

This study aims to fill these gaps by analysing and ranking the various threats faced by Old Oyo National Park, examining the impact of these threats on park management, and evaluating the effectiveness of the current management strategies. Additionally, the research seeks to explore the potential for community-based conservation by involving local communities in efforts to protect the park. By addressing these critical areas, the study will provide valuable insights for improving the management of Old Oyo National Park and contribute to broader conservation efforts within Nigeria and other developing nations facing similar challenges.

Literature Review

The Global Importance of Protected Areas

Protected areas (PAs) are critical for conserving the world's biodiversity and ensuring the survival of endangered species. Globally, PAs are recognised as tools for mitigating biodiversity loss, promoting ecological resilience, and preserving ecosystems (IUCN, 2021). These areas contribute to sustaining ecosystem services, including climate regulation, water purification, and soil fertility. The IUCN categorises protected areas into six categories on the basis of their management objectives, with national parks falling under Category II focused on ecosystem conservation and recreation. In addition to conservation, PAs play vital socio-economic roles in supporting the livelihoods of local communities. For example, in countries like Kenya and Tanzania, ecotourism within protected areas generates significant revenue, providing income and employment for nearby communities (Ogogo et al., 2014). However, PAs in many developing nations, including Nigeria, are under immense pressure due to increasing human needs and limited enforcement capacities (Alarape, 2002). Moreover, emerging approaches such as spiritual and wellness tourism offer alternative sustainable models for destination development. For example, Arora, Dhiman, and Sharma (2023) explored how spiritual experiences in Himalayan tourism promote sustainability and value creation. These insights can be adapted to parks like OONP to broaden the conservation benefits.

Protected Areas in Nigeria: An Overview

Nigeria's protected areas encompass national parks, game reserves, forest reserves, and biosphere reserves. The country has seven national parks, established to protect its rich biodiversity and cultural heritage. These parks are managed for ecosystem protection and the promotion of ecotourism, scientific research, and education (Ijeomah et al., 2015). Examples include Old Oyo National Park (OONP), Gashaka Gumti National Park, and Cross River National Park, which are home to diverse species of flora and fauna, some of which are threatened or endangered. National parks in Nigeria face multiple challenges, primarily stemming from human activities such as illegal grazing, poaching, and logging. These challenges threaten the integrity of the parks, reducing their ability to fulfil their conservation objectives (Jacob et al., 2015). The

Old Oyo National Park, in particular, is notable for both its natural resources and cultural significance, being home to relics from the ancient Oyo Empire (Alarape, 2002).

Similar Studies on Protected Areas and Threats

Studies conducted on protected areas across Africa and other parts of the world provide a broader understanding of the threats faced by these areas. Research in Tanzania's Serengeti National Park and Uganda's Bwindi Impenetrable National Park shows that human-wildlife conflicts, illegal resource extraction, and encroachment are common challenges in protected areas, similar to what is observed in Nigeria (Ogogo *et al.*, 2014).

In Ghana's Mole National Park, Brashares et al. (2004) highlighted the significant impact of poaching and agricultural expansion on wildlife populations. These findings mirror the challenges faced in Nigerian parks like Cross River and Gashaka Gumti, where illegal hunting and land conversion for farming have led to habitat fragmentation and biodiversity loss (Jacob et al., 2015). Studies from Southern Africa, particularly in Namibia's Etosha National Park and Botswana's Chobe National Park, also identify illegal grazing and poaching as primary threats (Thouless, 1994).

In Asia, studies from India's Kaziranga National Park reveal that conflicts between local communities and park authorities often arise due to the lack of alternative livelihoods, which forces communities to rely on park resources (Ogogo et al., 2014). The similarities between these studies and the situation in Old Oyo National Park provide valuable insights into the global nature of these challenges and the need for targeted solutions. Additionally, Uçgun (2022) emphasises the need to consider demographic factors influencing tourists' sustainability awareness and behaviour, which could inform community engagement and education strategies around OONP.

Major Threats to the Nigerian National Parks

Poaching

Poaching is one of the most significant threats to protected areas in Nigeria. The illegal hunting of wildlife for bushmeat or the trade of animal parts has devastated species populations in parks such as Cross River National Park and Gashaka Gumti National Park (Jacob et al., 2015). The impact of poaching extends beyond the immediate loss of wildlife; it disrupts ecosystems, alters predator-prey dynamics, and undermines conservation efforts (Malik et al., 2016). A similar situation exists in Southern Africa, where elephant and rhinoceros poaching has had devastating effects on biodiversity in parks like Zimbabwe's Hwange National Park and South Africa's Kruger National Park (Ogogo et al., 2014). These parks have implemented anti-poaching units and surveillance technologies to combat the threat, providing potential models for Nigeria's parks to follow.

Illegal Logging and Habitat Destruction

Illegal logging is another critical threat to Nigeria's national parks. Logging activities are driven by the demand for timber, fuelwood, and land for agriculture. This has led to deforestation and habitat fragmentation in many protected areas, including Old Oyo National Park (Ogogo et al., 2014). The destruction of habitats affects biodiversity, disrupts wildlife corridors, and reduces the park's ability to function as a refuge for species. Similar challenges are seen in Uganda's Kibale National Park and the Congo Basin, where illegal logging has had severe consequences for forest ecosystems (Naughton-Treves et al., 2005). The persistence

of this threat across African PAs underscores the need for stronger law enforcement and alternative livelihood programs for communities reliant on forest resources.

Illegal Grazing

Illegal grazing by nomadic herders is a persistent issue in Old Oyo National Park, contributing to habitat degradation and escalating conflicts between herders and park rangers (Alarape, 2002). The herders drive their cattle into the park in search of grazing land, leading to overgrazing, soil erosion, and the displacement of wildlife. This issue is not unique to OONP, and similar conflicts have been documented in Kenya's Amboseli National Park and Botswana's protected areas (Ogogo et al., 2014).

Encroachment and Agricultural Expansion

Encroachment into protected areas for agricultural expansion is a widespread problem in Nigerian parks. Local communities often clear forest land within national parks for farming, leading to habitat destruction and the loss of biodiversity. This problem is exacerbated by Nigeria's growing population and the increasing demand for land (Tang et al., 2024). Studies from Ghana's Mole National Park and Tanzania's Selous Game Reserve show similar trends of agricultural encroachment (Brashares et al., 2004).

Management Strategies for Protected Areas

Law Enforcement and Surveillance

Effective law enforcement is critical for the management of protected areas. In Nigeria, however, national parks face challenges such as insufficient funding, limited personnel, and inadequate equipment to perform effective surveillance and patrols (Jacob et al., 2018). Studies from other countries suggest that strengthening law enforcement through the use of technology, such as drones and camera traps, can enhance the effectiveness of surveillance and reduce illegal activities (Ogogo et al., 2014).

Community Engagement and Sustainable Livelihoods

Engaging local communities in conservation efforts is essential for the long-term sustainability of protected areas. Community-Based Natural Resource Management (CBNRM) programs, which give communities a stake in conservation, have proven successful in countries like Namibia (Ogogo et al., 2014). These programs reduce poaching and illegal activities by providing alternative livelihoods and involving locals in park management. In Old Oyo National Park, initiatives to involve local communities through conservation education have been implemented, but their effectiveness is limited due to weak enforcement and the lack of alternative income sources (Alarape, 2002). Similar programs in Uganda and Rwanda have shown that providing ecotourism-related jobs or other sustainable income opportunities can significantly reduce the pressure on park resources (Robbins et al., 2011).

Capacity Building for Park Rangers

Training and equipping park rangers is critical for improving the management of protected areas. Studies from India's Kaziranga National Park show that ranger training programs and the provision of necessary equipment, such as firearms and vehicles, significantly reduce poaching activities (Ogogo et al., 2014). In Nigeria, improving ranger capacity through similar programs could strengthen the management of national parks and reduce the threats they face (Ogogo et al., 2014).

Lessons from Global Conservation Efforts

Global studies highlight several best practices for protected area management, including the integration of advanced surveillance technologies, the promotion of ecotourism, and the establishment of effective community engagement programs. For instance, Rwanda's gorilla conservation efforts in Volcanoes National Park demonstrate how ecotourism can generate significant revenue while simultaneously protecting endangered species (Robbins et al., 2011). Similarly, Namibia's CBNRM programs show how community participation can help conserve biodiversity while improving local livelihoods (Ogogo et al., 2014). Nigeria can draw on these experiences to enhance its park management strategies. By incorporating ecotourism as a viable economical alternative and strengthening community engagement, Nigeria's national parks can improve conservation outcomes while addressing the needs of local communities.

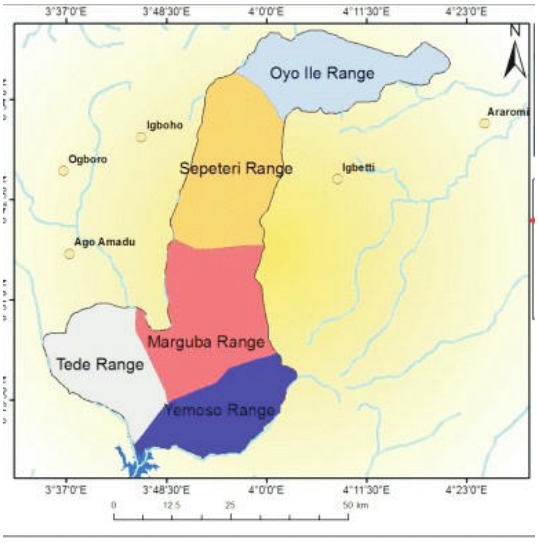
Methodology

Study Area

The Old Oyo National Park (OONP) is geographically located in the southwestern part of Nigeria at latitude 8° 15' and 9° 00'N and longitude 3°35' and 4° 42'E. Old Oyo National Park is surrounded by nine local government areas, namely, Atiba, Irepo, Iseyin, Itesiwaju, Oyo West, Oriire, Iyamopo, Saki West, and Oyo East. The Park covers a land area of approximately 2,512km² (World gazetteers, 2015), making it the fourth largest national park in Nigeria. The Old Oyo National Park was created from the former upper Ogun and Old Oyo game reserves and was established under Decree No. 36 of 1991. The major settlements that surround the park at a distance are Oyo, Ogbomoso, Igbeti, Kishi, Igboho, Sepeteri, Aha, Tede, Ago-Are, Okaka, and Iseyin. It consists of various fauna and flora resources and has a blend of cultural history and nature. Animals like Lion, Leopard, Greater bustard, spotted hyena, Serval cat, Aardvark, Elephant, Buffalo, Kob, Waterbuck, Reedbuck, Oribi, Roan antelope, Hartebeest Bushbuck, spotted hyena, Common warthog, Red river hog, Red flanked duiker, Bush buck, Mongoose, Maxwell's duiker, Patas monkey, Tantallus monkey, Olive baboon, Hunting dog and Mangabey have been sighted in the OONP (Alarape, 2002).The Park is divided to 5 ranges, they are Marguba, Sepeteri, Oyo- Ile, Tede and Yemoso range (Figure 1).

Figure 1

Map of old Oyo National Parks Indicating the Ranges



Source: Author

Sampling Technique and Procedures

A three-stage multi-stage sampling technique was applied to this research, structured as follows:

Stage One: Purposive selection of Old Oyo National Park (OONP) as the study area. OONP was selected because of its functionality, accessibility, and variety of challenges in conservation management. The park was specifically chosen to ensure that the study represents a well-protected but highly threatened national park in Nigeria.

Stage Two: Selection of ranges within the OONP. The park is divided into five ranges: Marguba, Sepeteri, Oyo Ile, Tede, and Yemoso. All five ranges were purposively selected for the study to capture the diverse threats and conservation practices within the park. This stage ensures a wide coverage of the park's ecosystem and management challenges.

Stage Three: Random sampling of rangers in each range. A total of 40% of the rangers in each of the five ranges were randomly selected for the study. Out of the total 185 rangers working in the park, 74 respondents were selected. This random sampling of rangers ensures the representation of the park's human resources across different ranges, providing varied insights into the threats faced in each range.

Data Collection and Analysis

Data Collection Methods

The research used both primary and secondary data sources:

Primary Data Collection:

Semi-structured questionnaires were administered to the rangers to gather quantitative data on the types and severity of threats faced in each range. The questions were raised to address the objectives of the study. The questionnaire was designed to obtain genuine and facts for the research by dividing the questionnaire into four (4) sub-sections namely: Demographic characteristics, Identification and categorizations of the various threats to old Oyo National park, assessment of the severity and impact of threats on park management and conservation efforts, and effectiveness management practices in mitigating threats on Old Oyo National Park. The questionnaires were designed to allow flexibility for detailed responses. Semi-structured questionnaires were developed based on existing literature and consultations with conservation experts. Key themes included: Identification and categorisation of threats, Assessment of threat severity, Evaluation of management strategies and Recommendations for mitigating challenges

Field observations were carried out by the research team. Five days were spent in each range, allowing for the direct observation of park operations, ranger activities, and ongoing threats such as poaching, grazing, and habitat encroachment.

Secondary Data Collection:

Secondary data were sourced from relevant journals, official park reports, and publications available from the Research Department of Old Oyo National Park. These sources provided historical and contextual data on the threats and management efforts in the park.

Data Analysis

The study used quantitative data analysis methods:

Descriptive statistics (frequencies and percentages) were used to summarise the data collected from the questionnaires.

The Garrett Ranking was applied to rank the severity of various threats across the five ranges, helping to prioritise the most pressing threats to the park's conservation.

Ethical Considerations

Ethical approval was obtained from the relevant authorities, and participation in the study was voluntary. Confidentiality was maintained throughout the research process, and the data collected were used solely for the study.

Result

Threats Encountered by Rangers in the Old Oyo National Park range

As shown in Table 1, grazing, hunting, poaching, and snaring were the most reported threats. Of the respondents, 89.2% stated grazing, and 83.8% stated hunting, poaching, or snaring. Farm encroachment and mining were also major threats, as reported by 68.9% and 64.9% of the respondents, respectively. Of the respondents, 44.5% stated logging, 60.8% stated Bush fires set by people, and 56.8% stated human settlements.

Table 1

Threat Encountered Since the Respondents Have Been Assigned to the Range

S/N	Threats	Frequency	Percentage
1	Hunting/ poaching/Snaring	62	83.8%
2	Farm encroachment	51	68.9%
3	Human settlements	42	56.8
4	Grazing	66	89.2%
5	Bush fires set by people	45	60.8%
6	Logging	33	44.5%
7	Mining	48	64.9%

Source: *Author*

Ranking of the Threats in Order of Severity Facing Each Range

Table 2 presents the ranking of the threats in order of severity facing each range. In the Sepeteri and Marguba ranges, poaching, grazing, and logging were the top three threats facing the range. In Oyo Ile, mining, grazing, and logging were the top three threats facing the range. In Yemoso, grazing, logging, and farm encroachment were the major threats facing the range. In Tede, the major threats facing the range include mining, logging, and grazing.

Table 2

Ranks of Threats in Order of Severity Facing Each Range

Threats	Yemoso	Tede	Oyo Ile	Marguba	Sepeteri
Hunting/ poaching/Snaring	4th	5th	4th	1st	1st
Farm encroachment	3rd	4th	6th		6th
Human settlements	6th	7th	7th		7th
Grazing	1st	3rd	2nd	3rd	2nd
Bush fires set by people	7th	7th	5th		5th
Logging	2nd	2nd	3rd	2nd	3rd
Mining	5th	1st	1st	4th	4th

Source: *Author*

Management practices in place to control threats

Table 3 shows the results of the management practices the respondents put in place to control the threat. The result revealed that the surveillance patrol was reported by most respondents. Specifically, 55.4% of the respondents stated surveillance patrol; 47.3% stated regular anti-poaching patrol; 41.9% stated conservation education to the local community by teaching students in schools and enlightening them on radio stations; and 45.9% reported meeting with the support zone community for conflict resolution, planning, and decision-making. Other management practices reported include securing strategic information, employing more rangers, constant training of rangers and providing them with adequate equipment, and prosecuting poachers.

Table 3

Management Practices Put in Place to Control the Threat

S/N	Management practices	Frequency	Percentage
1	Regular anti-poaching patrol	35	47.3%
2	Surveillance patrol	41	55.4%
3	Conservation education to the local community by teaching students in schools and educating them on radio stations	31	41.9%
4	Meeting the support zones community for conflict resolution, planning, and decision making.	34	45.9%
5	Securing strategic Information	7	9.4%
6	Employing more rangers	10	13.5%%
7	Constant training of rangers and providing them with adequate equipment	6	17.6%%

S/N	Management practices	Frequency	Percentage
8	Prosecuting the poachers	8	10.8%
9	Incentives for rangers	5	6.7%

Source: *Author*

Challenges in Forestalling the Threats.

Table 4 reveals the challenges the respondents faced in forestalling the threats. The most reported challenge was the lack of enough vehicles to carry out patrol efficiently, as 93.2% of the respondents asserted. 71.6% of the respondents stated low pay; 79.1% of the respondents stated inadequate equipment, such as training facilities; 68.9% of the respondents stated insufficient weapons; 35.1% stated poor management; 59.5 stated low morale; and 45.9% stated uniform.

Table 4

Challenges respondents faced in forestalling the threats.

S/N	Challenges	Frequency	Percentage
1	Low pay	53	71.6%
2	Low morale	44	59.5%
3	Vehicles	69	93.2%
4	Equipment	59	79.7%
5	Uniform	34	45.9%
6	Management	26	35.1%
7	Weapon	51	68.9%

Source: *Author*

Forestalling the threat in the park

Table 5 presents the result of the respondent's responses on what would help them do their best to forestall the threat in the park. 78.3% of the respondents stated that procuring better equipment for rangers, for example, vehicles and weapons, would help them do their best to forestall the threat in the park. 36.4% stated educating the community members about conservation, 29.7% stated an increment in salary, and 25.7% stated that training the rangers will help them forestall the threat in the park. Some other responses stated by the ranger include conflict resolution meetings with rural dwellers and support zones, recruiting more rangers, adequate funding from NGOs and the government, and infrastructural development such as good road tracks.

Table 5

Respondents' responses on what would help them do their best in forestalling the threat in the park.

S/N	Statements	Frequency	Percentage
1	Procurement of better equipment for rangers. For example, vehicles and weapons	58	78.3%
2	Educating community members about conservation	27	36.4%
3	Increment in salary	22	29.7%

S/N	Statements	Frequency	Percentage
4	Training of the rangers	19	25.7%
5	Conflict resolution meeting with rural dwellers and support zones	7	9.4%
6	Recruiting more rangers	9	12.1%
7	Adequate funding from NGOs and government	10	13.5%
8	Infrastructural development such as good road track	11	14.9%

Source: *Author*

Discussion

The majority of the rangers encountered various threats in their assigned range in Old Oyo National Park. Grazing and hunting were the most reported threats, followed by farming and human encroachment. (Eriksson, 2022) also noted that livestock grazing, logging and poaching are threats to biodiversity loss. A similar study by Ijeomah *et al.* (2015) also revealed that hunting as a form of encroachment is a big threat as observed by the park rangers in Cross River National Park.The study carried out by Alarape (2002) also supported that threats that are negatively impacting the conservation of wildlife and ecotourism in National Parks and Game Reserves are illegal hunting, farming, logging and grazing. The majority of the park rangers interviewed expressed that some of the threats encountered are a detriment to the survival of biodiversity as well as other natural and cultural resources in the park. In an Interview with the head ranger at Marguba Range, he stated that there is a high degree of illegal grazing within the park. According to him, herdsmen move their cattle to graze inside the park. Some of the park rangers at the Yemoso and Oyo Ile Range reported that sometimes when these herdsmen are confronted to leave the Range or attempted were made for their arrest, it normally leads to conflict. These rangers added that some of their members were killed during the confrontation with the herdsmen. Also, some of the park rangers in Tede, Yemoso and Oyo-Ile also revealed that some of their colleagues were killed while others sustained injuries from the poachers and illegal hunters. This finding corroborates with Jacob *et al.* (2018) and Dunbar (2013) findings that park rangers are exposed to risk and insecurity. Adetoro *et al.* (2011) also noted that a ranger was killed by a suspected hunter while another ranger's left hand and fingers were cut in Old Oyo National Park.

The management practices carried out by Old Oyo National Park Rangers to forestall the threats are anti-poaching patrol, surveillance patrol, conservation education to the local community by teaching students in schools and enlightening them on radio station, meeting with the support zones community for conflict resolution, planning, and decision making where the most used method of forestalling these threats. However, these traditional practices can be enhanced through digital innovation. For instance, Baydeniz (2024) proposed blockchain-enabled tools to track and manage conservation actions transparently, which could be piloted in Nigerian parks to improve stakeholder confidence and sustainability accountability. Most of the Park Rangers interviewed confirmed these findings. Halidu *et al.* (2023) (Ogunjimi, *et al.*, 2019) also observed that there is a need for regular and effective anti-poaching patrols, community participation and conservation education of the local communities to mitigate a number of threats in the park.

Shortage of funds**,** lack of enough manpower (i.e., rangers), lack of patrol vehicles, lack of equipment/ weapons, and uniforms are the challenges facing Old Oyo National Park in forestalling the threats. Ogunjimi

et al. (2019) also found that low quality weapons and lack of ammunition, poor logistic, inadequate and unserviceable vehicles, and lack of patrol incentives and allowance are the challenges facing the national parks in Nigeria.

Procurement of better equipment for ranger like vehicles, weapon, uniform etc, educating/enlightening the community members about conservation, increment in salary, training of rangers, conflict resolution meeting with rural dwellers and support zones, recruiting more rangers, adequate funding from NGO and government and Infrastructural development are what is forestall that would help the Old Oyo National Park management face the threat in the park. Tang *et al.,* (2024) also stressed the necessity for the provision of modern equipment and facilities, sufficient funding, employment of trained park rangers, motivation, reorganisation of national parks operations and personnel and cooperation between the parks and other law enforcement agencies, judiciary and communities should be enhanced and sustained.

Conclusion and Recommendation

This study has helped us to understand the perception of Old Oyo National Park rangers regarding threats to the park and to contribute to improved park management strategies. The threats identified by the rangers include poaching, illegal activities, habitat degradation, and encroachment (Lindsey et al., 2013; De Merode et al., 2007). There was also evidence that the lack of manpower, patrol vehicles, funds, equipment, and support from the government were significant challenges impeding effective threat management (Tranquilli et al., 2012; Craigie et al., 2010). It is also recommended that adequate funding from NGOs and government, provision of better and sufficient equipment, training of park rangers, educating/enlightening community members about conservation, increment in salary, conflict resolution meetings with rural dwellers and support zones, recruiting more rangers, and infrastructural development are necessary to control the threats facing the park (Western et al., 2009; Berkes, 2007; Oladeji et al., 2012).

This study provides empirical data on the specific threats facing Old Oyo National Park. It identifies, ranks, and categorises the most significant threats (e.g., grazing, hunting, poaching, and farm encroachment), offering a detailed understanding of the intensity and distribution of these threats across different ranges in the park. This empirical evidence contributes to the body of knowledge about conservation challenges in Nigeria, addressing gaps in the local literature on the severity of threats faced by protected areas.

By evaluating current management practices (such as anti-poaching patrols, community education, and conflict resolution efforts), the research assesses the effectiveness of these strategies in mitigating threats. This evaluation identifies critical areas where improvements are needed, such as the provision of more equipment, better ranger training, and enhanced community engagement. The study thus provides valuable recommendations for optimising resource allocation and improving management efforts in protected areas.

The study offers practical recommendations aimed at policymakers and park authorities. These include suggestions for increasing ranger capacity, enhancing community engagement, and strengthening law enforcement. The recommendations draw on both local findings and lessons from global conservation efforts, making them actionable at both the local and national levels for improving conservation strategies in the Old Oyo National Park and similar protected areas.

One of the unique contributions of this study is the emphasis on involving local communities in conservation efforts. The research outlines a framework for improving community participation through education and awareness programs, conflict resolution meetings, and collaboration with support zone communities. By

highlighting the importance of community involvement, the study provides a pathway for fostering stronger partnerships between local residents and park management.

This study presents an in-depth analysis of the threats to Old Oyo National Park, identifying and ranking them based on severity across different ranges of the park. Using empirical data gathered through surveys and interviews, it highlights how grazing, poaching, and illegal farming are disproportionately affecting conservation efforts. This detailed ranking of threats, especially through the use of the Garrett Ranking method, contributes to the development of prioritisation strategies for park management, enabling targeted resource allocation to the most severe threats. It also fills a significant research gap by providing a systematic approach to threat ranking in Nigerian national parks.

The research goes beyond documenting environmental threats to explore the direct impact of these threats on park rangers and management personnel. It examines the safety challenges faced by rangers, such as limited equipment, insufficient training, and frequent conflicts with illegal grazers and poachers. This focus on ranger welfare and operational constraints provides new insights into the human factors affecting conservation success. The study offers critical recommendations for improving ranger safety and effectiveness, such as the provision of better equipment and vehicles and an increase in ranger capacity through training and recruitment.

This research evaluates the existing management strategies employed by Old Oyo National Park, such as surveillance patrols, anti-poaching measures, and community engagement initiatives. It identifies the strengths and weaknesses of these strategies, offering a clear assessment of areas that need improvement. For example, the study underscores the need for better surveillance technology, enhanced community involvement, and more sustainable livelihood programs for local residents to reduce the pressure on park resources. This evaluation provides actionable insights that can inform future management reforms, making it a valuable tool for park authorities and policymakers.

By offering a set of comprehensive policy recommendations, this research contributes to the broader policy discourse on protected area management. It suggests strategic interventions such as the integration of modern surveillance technologies (e.g., drones, camera traps), increased government and NGO funding, and improved collaboration between park authorities and local law enforcement agencies. These recommendations are applicable not only to the Old Oyo National Park but can also be extended to other protected areas in Nigeria and similar contexts across Africa. The study serves as a foundation for shaping future conservation policies aimed at reducing illegal activities and enhancing park management efficiency.

A significant contribution of this study is the emphasis on local community involvement in conservation efforts. The research highlights the role of local communities as both stakeholders and potential collaborators in park management. It provides a framework for increasing community participation through educational programs, conflict resolution initiatives, and the development of alternative livelihood options. This focus on community engagement presents a more sustainable approach to conservation, advocating for a partnership between park management and local populations to achieve long-term ecological goals.

The research integrates environmental conservation with the social sciences, particularly in its analysis of human-environment interactions and conflict dynamics between park rangers and local communities. By addressing both ecological threats and socio-economic factors, the study broadens the scope of conservation research in Nigeria. This interdisciplinary approach enriches the field by combining ecological data with socio-cultural insights, which is crucial for developing holistic conservation strategies in developing countries.

The study draws comparisons between the Old Oyo National Park and other protected areas globally, such as parks in Tanzania, Uganda, and Southern Africa. It highlights best practices from international conservation efforts, such as anti-poaching technologies and community-based natural resource management (CBNRM) programs, and adapts these lessons to the Nigerian context. By synthesising global conservation strategies and tailoring them to local realities, the research contributes to the global body of knowledge on protected area management and offers a blueprint for enhancing the effectiveness of conservation efforts in other developing countries.

This research adds valuable data and findings to the existing body of literature on protected area management, particularly in the understudied context of Nigerian national parks. It contributes empirical evidence to ongoing debates on the challenges of managing protected areas in developing countries, emphasising the complex interplay of environmental, social, and political factors. Furthermore, the study lays the groundwork for future research on specific aspects of park management, such as the use of technology in conservation, the role of local governance in wildlife protection, and the long-term sustainability of ranger-led management practices.

Future conservation strategies should also consider leveraging emerging trends such as spiritual/ecowellness tourism (Arora et al., 2023) and demographic-informed sustainability education (Uçgun, 2022) to complement traditional patrol and enforcement methods in national parks.

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