ASSESSMENT OF MANAGEMENT EFFECTIVENESS OF LEKKI CONSERVATION CENTRE IN LAGOS, NIGERIA

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Abstract

This study was carried out in the Lekki Conservation Centre (LCC), a private nature reserve, between April and September, 2010, with the objective of assessing the management effectiveness of the Nature Reserve. The study was carried out through visual assessment as well as interviews with people living around LCC, some key staff of Nigeria Conservation Foundation (NCF) and LCC, to establish baseline data. It also involved the use of structured closed and open ended questionnaires for three categories of respondents – tourists, NCF and LCC staff based on the World Bank/WWF Management Effectiveness Tracking Tool (METT). The research outcome showed that unsustainable adjacent land use, isolation and inadequate funding were the major threats to the effective management of the centre's conservation objectives. Legal status, resource inventory, boundary demarcation, protected area design and objectives, security of budgeted fund, regular work plan, awareness education and resource management are some of the strengths of LCC. The overall management effectiveness score for LCC was 75.3%. Recruitment of more staff, drafting and implementation of a management plan and seeking additional sources of funding are ways LCC can improve their management effectiveness.

Keywords: Protected Area Management Effectiveness (PAME), Lekki Conservation Centre (LCC), Nature Reserve, Management Effectiveness Tracking Tool (METT).

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Introduction

Protected areas are a valid, measurable indicator of progress in conserving the world's remaining biodiversity, or at least slowing the rate of loss of biodiversity (Chape *et al,* 2005) and our only hope of stopping many threatened or endemic species from becoming extinct (Dudley *et al,* 2010). Protected Area Management Effectiveness (PAME) is a tool for monitoring the degree to which the management process protects biological and cultural resources and achieves the goals and objectives for which protected areas are established (Burgess and Rodgers, 2004). It has been identified as a key priority and a vital assessment tool in improving effective management to secure bio-diversity within protected area networks (Hockings *et al,* 2006; Dudley *et al,* 2007).

In the 1990s, Nigeria had a total protected area of about 10 million hectares, about 10% of the total land mass (NEST, 1991; World Bank, 1992) made up of nearly 1,000 forest reserves included in the IUCN World Database on Protected Areas (WDPA), but many of these have been highly degraded due to activities like unsustainable extraction, 'bushmeat' hunting, poaching, human habitat expansion and land use conversion (Oates *et al,* 2008). Few have enforcement controls in place, and others exist merely on paper.

Lekki Conservation Centre (LCC), a privately owned nature reserve was established in 1990 to protect a representative of the bio-diversity of the Lekki Peninsula, educate and create awareness on natural resources and environmental management in Nigeria

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(NCF, 2008). The centre is exceptional for their fauna and flora quality that is kept in their wild state. Assessment of Protected Area Management Effectiveness (PAME) has not been carried out in most protected areas in Nigeria, LCC inclusive, and so there is insufficient base line data. An evaluation of management practices, barriers, driving forces, and areas of improvement for the management of LCC will serve to ensure proper management and a 'healthy' protected area. The study aims to assess the management effectiveness of the centre with a view of identifying indicators for evaluation and proffering ways to improve site management effectiveness.

Materials and methods

Study area

Lekki Conservation Centre is a 78-hectare land area lying between Latitude $6^0 27'$N and $3^0 23'$E. It extends from kilometre 19 along the Lekki-Epe Expressway in Igbo Efon close to the Atlantic Ocean near Okun Ibeju on the Lekki Peninsula in Eti Osa LGA of Lagos State. It is divided into the LCC Complex and the Nature Reserve. The LCC complex comprises of a multi-purpose rotunda and office blocks. Facilities in the Nature Reserve include a 2 km trail boardwalk, swamp outlook, bird hide overlooking the natural pond, rest stops and a 25 m high tree house on a stout 'dawadawa' tree (*Pakia biglobossa*). At the end of boardwalk is the nature station, with indoor picnic and outdoor game facilities for children. Concrete wall perimeter fencing protects it and there are security guards who ensure twenty-four hour surveillance.

The climate is of two seasons, the rainy season from April to October and the dry season from November to March. The vegetation types in LCC are secondary forest, swamp forest and Savanna grassland. Plants found in the reserve include a variety of flowering plants, ferns, lianas, vines, epiphytes, grasses and palms. Grasses in the savannah area include *Panicium spp., Setaria anceps, Rhynchospora corymbosa, Lodentia spp., Hypharrhenia spp.,* and *Impreta cylindrical.*

The Nature Reserve is home to about 118 species of resident and migratory birds as identified by the Bird Watch Club of the NCF. Other animals present in LCC include *Cercopithecus mona*, *Veranus niloticus*, *Crocodylus nilotocus*, *Protoxerus stangen*, *Tragelaphus scriptus*, *Cricetomys gambianus*, *Manis tetradactyla* and *Nandina binotata*.

Survey methods

This study was carried out through visual assessment as well as interviews with people living around LCC, some key staff of NCF and LCC, to establish baseline data. It also involved the use of structured closed and open ended questionnaires for three categories of respondents – tourists, NCF and LCC staff based on the World Bank/WWF Management Effectiveness Tracking Tool (METT) (Leverington *et al,* 2008; Stolton *et al,* 2007). There were slight modifications to the METT to suit the category of protected area and local circumstances being examined. A total of 80 questionnaires were administered – 55 to tourists, 10 to LCC staff and 15 to NCF staff. There was a 90% response rate.

Quantification of data obtained was achieved through tabulation and counting. Data collected were analyzed, cross checked and verified with the information from the interviews. Results were presented in percentages and simple statistical representations.

Results

The findings consist of results from the questionnaires administered to tourists to the centre analyzed separately and compared with data from the interviews and field observations. The second part consists of the assessment of indicator fields and summary of the overall findings of the study based on questionnaires of LCC and NCF staff and interviews of the communities living around the Centre and key staff of LCC and NCF. Field observations were incorporated where necessary.

Tourists' questionnaire

In all, 55 questionnaires were administered to tourists. A summary of the results showed that the resources, facilities and services in the centre such as the rest stations, parking facilities, security (forest guards), bird hide/swamp outlook, trail way/internal movement system and entrance fees paid were found adequate by 100%, 95%, 90%, 80%, 80% and 75% of the respondents respectively (Figure 1). Only 10% of the respondents found the fauna resources adequate. There was a call for an increase in fauna species diversity especially of larger mammals from interviews' results and questionnaires filled by the tourists. Ninety per cent of the tourists who were not satisfied with the number of animals they had seen during their tour of the reserve would want a zoo established within the centre. The tourists would also like to see a refreshment/snack shop, souvenir shop on their next visit and 20% of the respondents would like the trailway to get to the savanna area.

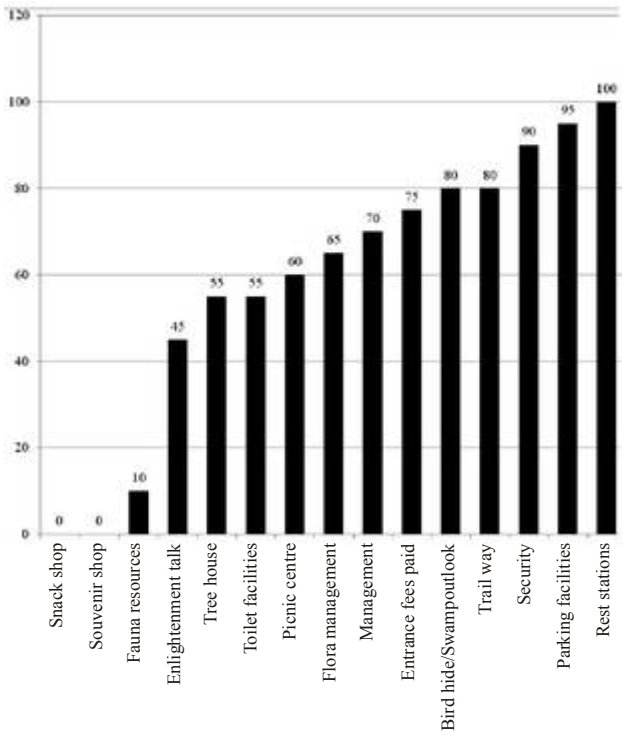

Figure 1. Bar chart showing the percentage adequacy of resources/facilities/services in LCC as rated by tourists.

A souvenir and refreshment/snack shop may be adequate in such a setting but calling for a zoo defeats the purpose of *in situ* conservation which is practiced in this Nature Reserve. In LCC, the trail/walkway was constructed over the swampy area for easy access. The savanna area is a dry land making a walkway unnecessary. Some of the tourists interviewed cited the issue of safety especially from wild animals as their reason for asking for a walkway to the savanna area. There had been no case of such incidence since the centre was set up.

Eighty per cent of the tourists rated their tour round the reserve as being educative, 65% found it entertaining while 50% rated it as relaxing; 45% rated the tour round the reserve as spiritually fulfilling; 30% found it hectic and 20% said the trail was too long (Figure 2). LCC got an above average 65% score on the tourism potential from the tourists.

Sixty per cent of the respondents agreed that facilities in the centre were used optimally while 15% thought otherwise; 20% said facilities present were grossly inadequate and 5% were indifferent; 85% of the tourists would like to visit LCC again.

Evaluation using elements of Protected Area Management Effectiveness (PAME)

The results from interviews, questionnaires and field observations were analysed based on the following elements: context, planning, input, process, outputs and outcomes which were further broken down into management effectiveness indicators. Answers were scored on a scale of 0 (poor) to 3 (excellent).

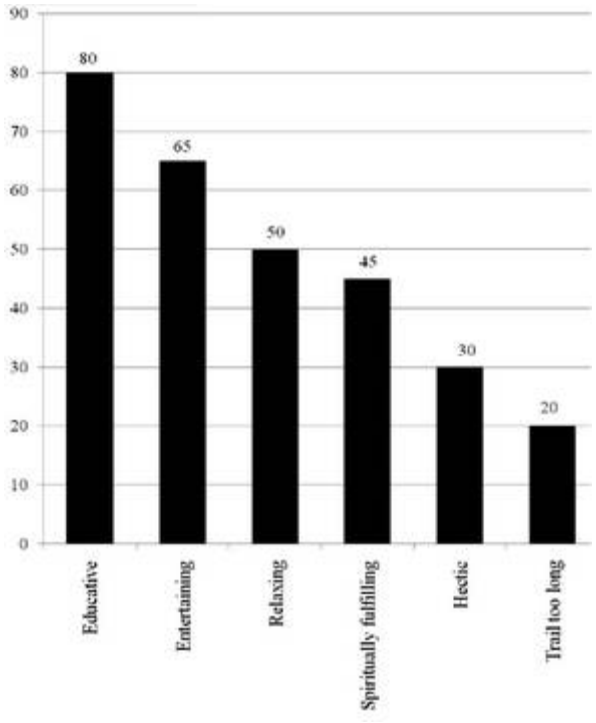

Figure 2. Bar chart representing percentage satisfaction of tourists' tour round LCC.

Context

The context element of the PAME assessed what was on ground using the value of the species present, significance of species, threats and constraints of the protected-area. This was rated based on a combination of answers to questionnaires administered to tourists, NCF and LCC staff.

Poaching/illegal harvesting was very low or not applicable because it was not allowed. The adequate security provided by the concrete perimeter fencing and the security guards on an all-round 24-hour duty discouraged encroachment of any sort. The species present in LCC were highly significant as they were a representation of the flora and fauna present in the Lekki Area.

The five most important threats from the survey were impacts of land use from development around LCC, isolation from other natural habitats, making LCC a virtual island, recreational and tourism activities within LCC, inadequate funding and loss of keystone species.

Table 1: Trend of indicators of context element of PAME in LCC.

Indicator	High impact	Medium impact	Low impact	Not applicable
Isolation from other natural habitats	16%	32%	40%	12%
Impacts of adjacent land use	60%	32%	8%	0%
Inadequate funding	0%	0%	20%	80%
Loss of keystone species	0%	0%	8%	92%
Recreational and tourism activities within LCC	0%	0%	32%	68%
Poaching/illegal harvesting	0%	0%	8%	92%
Status of species	20%	60%	20%	0%

Planning

Under planning element, site design, establishment and management planning were considered using scores from questionnaires filled by LCC staff. Gazettement and legislation both scored three while land tenure scored zero. The land was bought outright so there were no tenure issues. LCC did not have a current management plan but used a work plan to guide its activities. Design was based on size and shape of the centre in relation to protecting species, habitats, ecological processes and water catchments of key conservation concern. The scores for the indicators of planning element of PAME as rated by LCC staff and shown in Figure 3 was on a scale of 0-3.

Site design, management and legislation indicators were split into sub-indicators for better understanding and rated on a scale of 1-10 based on how these variables suit the need of the planning indicators as shown in Figure 4.

Input

This was computed from data gotten from the LCC questionnaire assessment form and information from NCF and LCC staff interviews. Results from the interviews showed that staff employed were highly professional and the professionalism was further enhanced through training and retraining. The low score for staffing (1.1) was as a result of inadequacy of staff strength. Infrastructure and equipment were inadequate but maintained regularly. A lot of up-to-date equipment were required by staff to carry out their task. Reliability of funding had the highest score (3) because the funds came in promptly from Chevron Nigeria Limited, the major financier, but were inadequate as reflected by the low score of 1.1. Information was found to be adequate with a score of 2.9. Scores from the questionnaire administered to LCC staff and rated on a scale of 0-3 are shown in Figure 5.

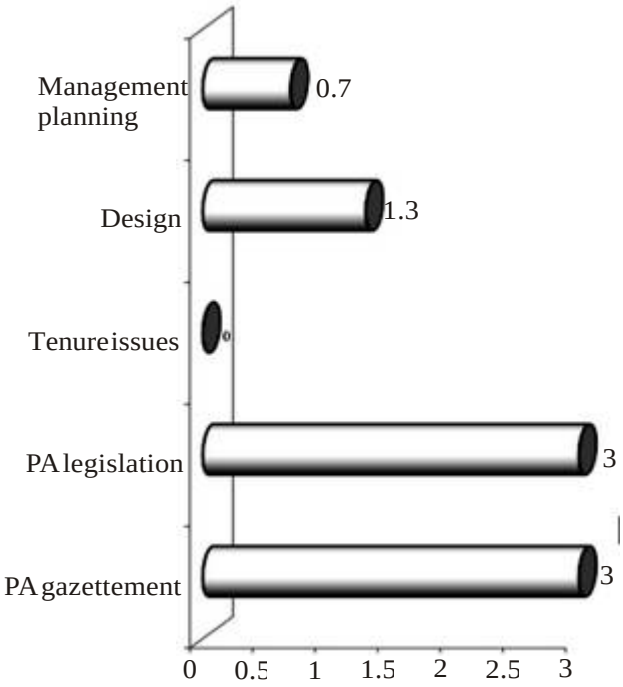

Figure 3. Indicators of planning element of PAME rated by LCC staff.

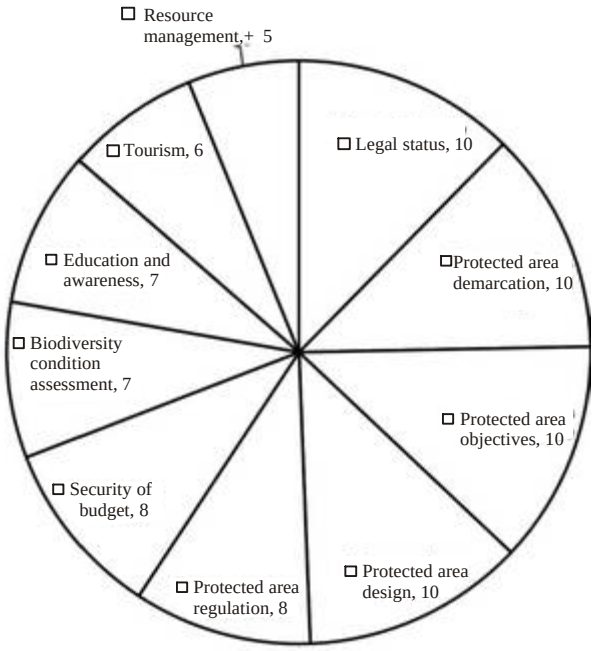

Figure 4. Sub-variables of planning indicators of PAME in LCC.

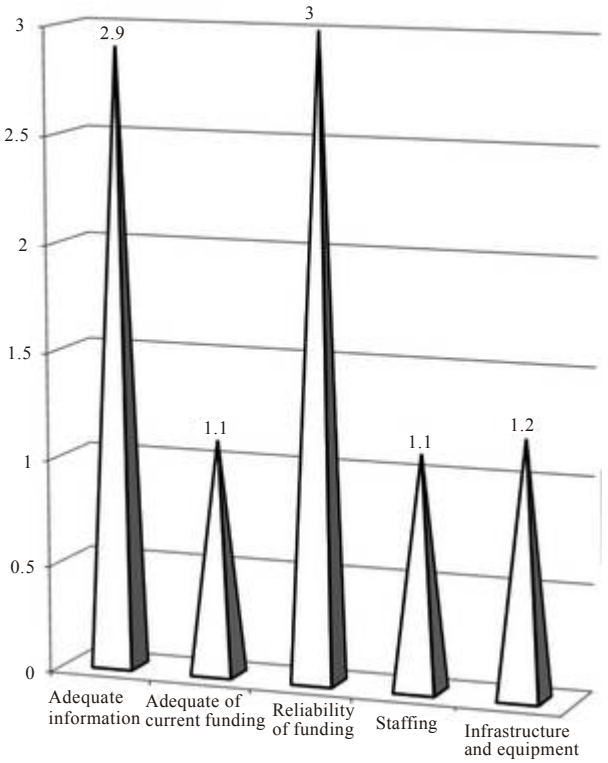

Figure 5. Indicators of input element of the PAME as rated by LCC staff.

Process

This element assessed the way in which management was conducted. The following main indicators – internal management systems and processes, enforcement of law within the reserve, relationship with other stakeholders, management of visitors/tourists and resource management systems – were used in this assessment. Sub-indicators such as effectiveness of administration including financial management, evaluation of management effectiveness and governance issues were assessed under internal management systems and processes because staff and infrastructure issues are presented under the input element above. All the sub-indicators used here scored above average.

Results in this section were collated from interviews and questionnaires administered to NCF and LCC staff. Law enforcement was carried out by security guards provided by Chevron Nigeria Limited. Tourists, primary and secondary schools' children on educational visits, were given guided tours after an informative introductory talk and so did not impact negatively on the environment. Students from higher institutions used LCC mainly for research purposes. Scores from process element indicators/sub-indicators rated on a scale of 0-3 in order of effectiveness are shown in Figure 6. Communication of research and monitoring scored 2.7, threat monitoring and existence of management effectiveness evaluation scored 2.3 and 2 respectively.

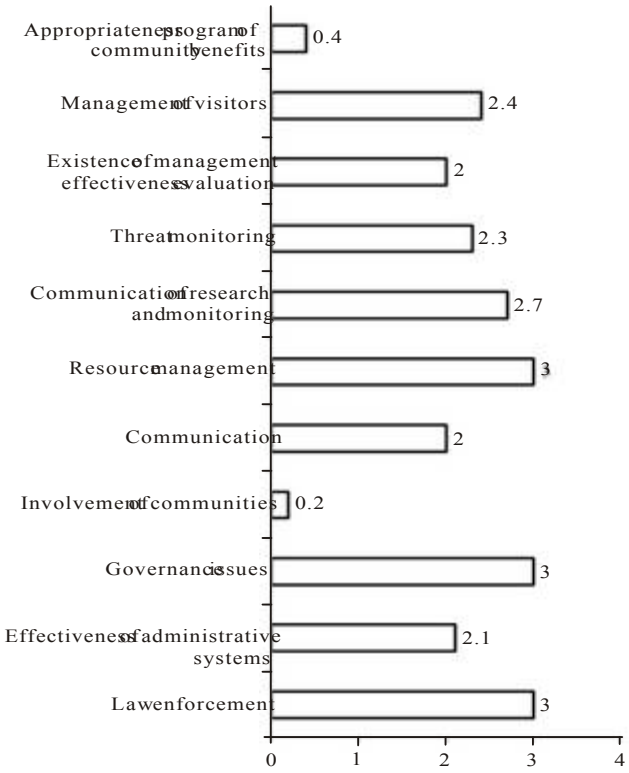

Figure 6. Assessment of process element.

Output

Output assessed the implementation of management programmes and actions. The achievement of work programme could be scrutinized by rating the delivery of products and services in LCC. Results for the output element was from interviews with leaders of the communities around LCC, NCF and LCC staff and questionnaires for the NCF and LCC staff category. Indicators used to assess the output element of PAME were rated on a scale of 0-3.

Protected area values compared to status before protection (2.5) upholds the objective of setting up LCC. Socio-economic importance in terms of benefits to the local community was very low with a score of 0.4. From interviews with key NCF and LCC staff, we were able to deduce that because LCC is privately owned, finances were in short supply and so NCF/ LCC contributed in the little way they could to the communities around them. The leaders of the communities around attested to the fact that a water borehole was provided for them in the past.

Conservation of bio-diversity ranked high while extraction of natural resources scored zero. Facilities used for tourists for educative and enlightenment purposes scored 2.1 which indicated that LCC had good facilities (Figure 7).

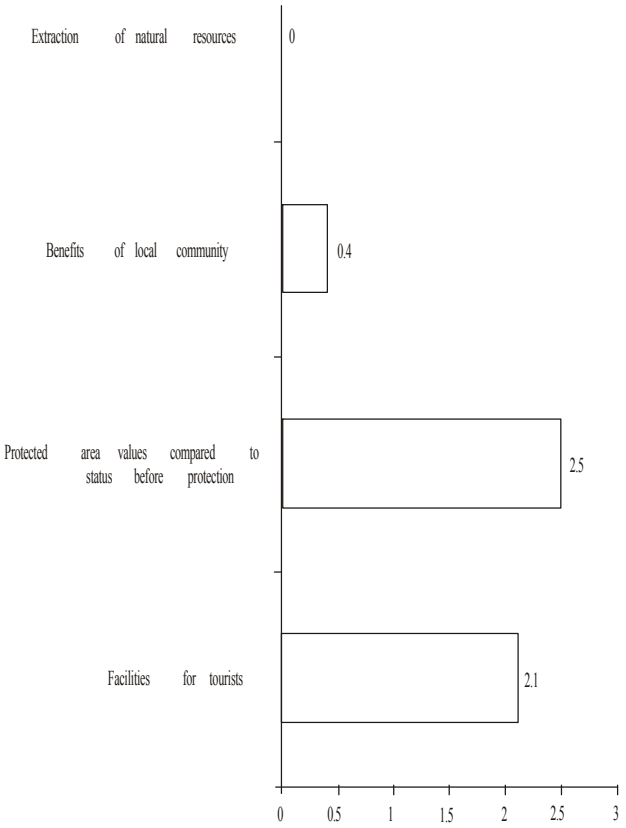

Figure 7. Indicators used to assess output element of PAME of LCC.

Outcome

Visual observation, interviews and questionnaires were employed to achieve the assessment of outcomes and the extent to which objectives were achieved was rated using the trend and condition of conservation values. These were assessed with the level and effectiveness of bio-diversity conservation of flora and fauna present in the nature reserve. Achievement of stated objectives setting up the nature reserve was high with a score of 2.3 out of the available 3 (Figure 8). Impact of park management on local community was included here with a score of 1.2. Though it had been established that the communities did not benefit from the protected-area in terms of harvesting of natural resources, employment and involvement in decision-making, they benefited from other ecosystem services like the quality of air, carbon sequestration and serenity of the environment.

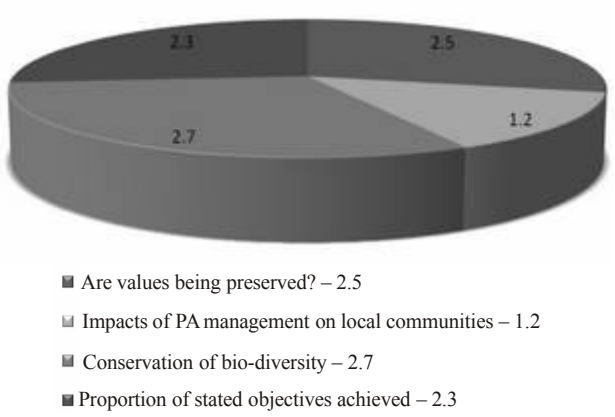

Figure 8. Evaluation of PAME management outcome of LCC.

Protected Area Management Effectiveness (PAME) percentage score

The PAME percentage score was calculated as a percentage of scores from relevant questions – 27 questions which covered a wide range of issues relating to management. Each question with four alternative responses – that could be answered by assigning a simple score ranging between 0 (poor) to 3 (excellent).

The PAME % score for LCC derived from the assessment form filled by LCC staff is shown below:

No of questions used = 27.
Total available score = 27 x 3 = 81.
Total score for LCC = 61.
% score = (Total score/Total available score) x 100;
= 61/81 x 100;
= 75.3%.
From the assessment, PAME of LCC was 75.3%.

Discussion

The major identified threats facing LCC from this study were unsustainable adjacent land use and isolation. The construction of housing units by Chevron Nigeria Limited and private individuals around LCC had affected its water table and salinity. The fast-growing urbanization around LCC, like most protected areas, makes it a virtual island (DeFries *et al*, 2005) and conforms with Goodman's 2003 assessment of the management effectiveness of 110 protected areas across KwaZulu Natal, South Africa, which indicated that protected area isolation was one of the major threats to bio-diversity conservation within protected areas. Majority of parks in his survey had high-voltage electric fencing around them. Lekki Conservation Centre had a concrete perimeter fencing (as shown on Plate 1).

The fact that there was no buffer zone further restricts the animals and the carrying-capacity of the reserve might be stretched in the future due to the growing population especially of the *Cercopithecus mona* that occasionally moved out of the reserve to neighbouring compounds and even across the highway to Chevron Estate in search of food.

Other threats were inadequate funding and staff number which were common to other protected areas (IUCN, 1994; Hockings *et al,* 2006; Stolton *et al,* 2007; Dudley *et al*, 2007). Funding, though prompt and regular, was not adequate for the management of the reserve. It was observed that funds were generated through entrance fees to cushion the effect of inadequacies and more staff would be required for the effective management of the centre.

This study agrees with studies of protected area management effectiveness by Dudley *et al* (2005; 2007), Ervin, (2003), Goodman, (2003) and Stolton *et al* (2007) in which protected area designation, objectives and overall planning is strong, but financial sustainability, community relations and management planning are weak. Legal status, resource inventory and management, boundary demarcation, security of budget, work plan, protected area design and objectives, education and awareness, were some of the strengths of LCC.

A number of inferences could be drawn from the results of this survey. One of such was the high overall score which buttressed the findings of Dudley *et al* (2007) and Lacerda (2004) that there is a highly significant association between overall score and IUCN category with the most highly protected categories exhibiting more effective management. Data from a 2002 survey in some African countries including South Africa, Congo Basin, Ghana and Nigeria (Dudley *et al,* 2005) show that some protected areas in Nigeria, Cross River (Oban Hills and Okwangwo) and Okomu National Parks, when compared to LCC follow this trend. The general assessment scores for Oban Hills and Okwangwo Divisions of Cross River National Park, Okomu National Park and LCC are 64%, 56%, 47% and 75.3% respectively. The level of degradation in the other protected areas were much higher than in LCC, a privately owned Nature Reserve, free from all government bureaucratic bottle-necks, making management easier, more effective and efficient. This is further enhanced by the fact that it is smaller in size than Cross River National Park and Okomu National Park. However, LCC conforms to parameters used in measuring conservation value of a protected area such as bio-diversity value, conservation intent, amount of modification and permanence.

Conclusion

Protected areas could successfully conserve the world's remaining bio-diversity, or at least slow down the rate of loss of bio-diversity only if they are managed effectively to protect the values they contain. Unfortunately, the needs to set up these protected areas are not matched with resources for management in most parts of Nigeria. Since monitoring, evaluation and planning are very closely linked processes, with information from monitoring and evaluation providing the basis for assessing whether goals, objectives and strategies specified in the plans are being achieved. Regular assessments would help to determine if protected areas are serving the purpose for which they were set up.

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