

To Recreate or Conserve that is the Question: The Case of Lake St Lucia, South Africa.

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Abstract: Lake St Lucia and surroundings parks, constitute the Greater St Lucia Wetland Park, one of South Africa's World Heritage Sites. This recreation and tourism destination is presently facing increasing ecological attention, as well as the ever-increasing numbers of visitors. These greater numbers of people participating in outdoor recreation activities, result in greater pressure and various impacts on the natural environment. The challenge to the authorities is whether to encourage more recreation participation or conservation of the environment. This paper explores the perceptions of local communities and recreationists visiting the park, about what form recreation activities should be promoted between recreation and conservation. The sub-focus of the paper is also on the awareness of local communities and recreationists of the impacts of recreation usage and engagement in outdoor recreation activities. The main findings of the study are that there are significant levels of unawareness of the impact of recreation activities on the natural environment in the study area.

Keywords: Recreationist, Outdoor Recreation, Conservation, Tourism, Perception, Awareness.

Introduction

The idea of maintaining a sustainable balance between the utilisation of recreation facilities or their commercial exploitation and the conservation of natural resources and environments, has been a site of struggle and unending debate. This kind of debate, in the study area, is pursued and involves levels of awareness that vary from individual to individual, in local communities, tourists and recreationists, and recreation authorities. Pertaining to the inestimable value of the Lake St Lucia and Parks, it has been argued that natural and wetland environments in South Africa as a whole, can be conserved more effectively by preserving the way they are perceived culturally and socially by local communities (Mangqalaza, 2005).

Fundamentally, this paper seeks to shed more light on the preservation-commercialization debate of natural resources, in the context of perceived recreation impacts on the natural environment at the Lake St Lucia. It aims at revealing how stakeholders: the community, tourists and authorities, in the study area perceive the effects of various types of recreation activities on the natural environment.

The Study Setting

The Lake St Lucia and Park environment is one of the most popular tourists holiday destinations in South Africa on the North Coast of KwaZulu-Natal. The Greater St Lucia Wetland Park is receiving in excess of approximately 12 000 visitors per month on average. Characteristically, it is receiving more domestic tourists than internationals, both of which are increasing by an average of 8% annually (TKZN 2004). The popularity of Lake St Lucia and Parks began to climb when its four sites: wetland system, coastal-lake system, estuary and river system, were inscribed on the Ramsar list of protected areas of international importance (www.environment.gov.za 2006). With the Ramsar inscriptions achieved, the Greater St Lucia Wetland was then declared in July, 1999 as the first World Heritage Site in South Africa.

The Lake St Lucia environment has two fundamental natural features which attract tourist and recreationists to the area. These are: (a) the Lake St Lucia which is an 38 682 hectares of natural water with a surface area of 387 sq. km, and (b) the ocean which has an open beach and the highly vegetated dunes. Lake St Lucia is the central feature and is regarded as the largest estuary in Africa that is linked by 20 kilometres of tidal channel to the India Ocean. In the context of the Lake St Lucia environment and its increased tourist attraction capacities, this study seeks to pay attention to the impacts that are perceived to have emerged with participation of tourists and recreationists in recreation activities.

Conceptual Framework

For better understanding of the discussion in this paper, some of the concepts are clarified or defined so as to remove notions of ambiguity and doubt. Some concepts which form the hub of this study are explained in the next section as follows:

Recreator / Recreationist

These concepts are synonymously and interchangeably used, and refer to individuals that participate in leisure and recreation activities during their unobligated time (Torlkildsen 2004). The term favoured in this study is 'recreationist' which refers to a person pursuing, seeking or engaged in recreation activities, as well as visiting recreation areas (Magi 1992).

Leisure and Recreation

In the context of this discussion these terms are closely interrelated, and are used interchangeably though not synonymously. The terms at times mean

different things to different people, and do generate some confusion if used indiscriminately. The simplest distinction is to identify leisure with time, (specifically with unobligated time) and recreation with activities undertaken voluntarily for pleasure and satisfaction during that time (Pigram 1983). This explanation is not always true, at times recreation is associated with free time in the Western societies and obligated time in African societies. It is important to note that a relationship between leisure, recreation and tourism, fundamentally hinges on leisure, which significantly covers both recreation and tourism. On the other hand, both recreation and tourism are related to one another, with a section of their focus operating outside the realm of leisure. Outdoor recreation relates to activities pursued within and around a body of water (www.kznwildlife.com, 2006). It should be recognised that there has been a variety of perception and awareness studies (Magi 1986; Gumede 1998) that have attempted to reveal how local communities, recreationists, tourists, conservationists and wildlife offers respond to the recreation impacts on the natural environment (Magi 1992; Duffus and Dearden 1990; Berjak 1998; Mkhabela 2000).

Impact on conservation

Objectively the concept "impact" can either represent a positive or negative change. Impacts can also be acceptable or unacceptable. In this study the concept is used to mean the negative impacts of recreation activities. Impacts do not occur in isolation and there is no single, predictable environmental response to recreation use. Single activities may cause multiple impacts and each impact tends to exacerbate or compensate for other impacts. An interrelated set of impacts that may follow can potentially affect soil, flora, fauna, and the air. The impacts caused by recreation use can be direct, indirect, or cumulative. Some of the impacts are obvious while others are different to identify (Hammitt and Cole 1887; Kuse et al. 1990a). Direct impacts are observable and obvious changes in the environmental components and processes that result from certain recreation activities (Erickson 1994). It is anticipated that these impacts are environmental changes playing a role in the study area and should be linked to certain recreation activities pursued at the Lake St Lucia.

With regard to the incremental impacts of recreation activities on the environment, these can be translated to cumulative impacts. These kinds of impacts result from the incremental impacts of recreation activities. These impacts can result from individually minor but significant actions taking place over a period of time (Prestine and Bedford 1988). They may also initially seem to be essentially insignificant but may accumulate and become additive

in a habitat over a period of time (Erickson 1994). These environmental influences are of concern because they can easily lead to a piecemeal degradation or loss of key environmental components and attributes. This study seeks to establish whether overuse of the environment in the Lake St Lucia area may lead to the need to enhance conservation in the study area. If left unattended, the negative impacts on the environment may lead to the degradation of the resource, harassment or disturbance of aquatic wildlife, reduction of the aesthetic quality of the resources, deterioration of water quality due to pollution, sedimentation, turbidity, and contamination (Kuss et al. 1989; McGwynne et al. 1996). In addition, the impacts may stem from an ever-increasing participation of recreationists in outdoor recreation activities.

Objectives of The Study

Greater frequencies in recreation participation combine with significantly large numbers of people engaging in recreation activities, result in greater pressure and more impacts on the natural environment (Nzama 2000). Environmental impacts such as degradation of the resource, disturbance of wildlife, destruction of plants, pollution, reduced water quality and deterioration of the natural conditions of water bodies, are largely associated with increased participation in recreation activities. This situation has been recorded in some localities, and this paper seeks to report what obtains at Lake St Lucia. Understandably, the degradation of such resources would reduce both present and future benefits that the local community can derive from the Lake St Lucia and Parks environment and resource.

Accordingly, this study reports on the impacts of outdoor recreation activities on the natural environment and related resources. The focus of this study is therefore four-fold, that is to:

- (a) Explore existing relationships between visitation and participation patterns at St Lucia Lake.
- (b) Reveal levels of awareness of how outdoor recreation participation at Lake St Lucia, impacts on the natural environment.
- (c) Establish whether recreationists are mindful of the effects of ever-increasing numbers of visitors to the study area.
- (d) Indicate the perceived role of conservation, during participation in outdoor recreation activities in the study area.

In the context of the utilisation of recreation facilities for commercial

purposes versus the conservation of natural resources and environments, this paper will highlight the importance of perceptions of different users of recreation activities, such as domestic tourists, international visitors, boaters, swimmers and picnickers, and eco-recreationists, towards generating impacts on the environment. These impacts could either enhance the degradation or conservation of the natural environment.

Methodology

This paper reports on the findings of ongoing research that is conducted at the Lake St Lucia in KwaZulu-Natal. In establishing the empirical basis of this study, data were collected at Lake St Lucia covering the estuary, the lake, the beach, wetlands and the town (See Figure 1). The categories of individuals interviewed include the local community, business people, domestic and international tourists, recreationists such as boaters, swimmers, picnickers, and eco-tourists and eco-recreationists, as well as administrators and workers of the KZN Ezemvelo Wildlife. A stratified random sample size of 600 respondents was targeted, surveyed using a person-to-person interview schedule. Finally 520 respondents covering the categories given above, responded to the questionnaires.

The sample-size of respondents was as follows: 109 local community of potential recreationists; 254 domestic tourists or recreationists, 141 international tourists or recreationists, 18 of which were eco-tourists; and 16 Lake St Lucia administrators (4) and maintenance workers (12). The data was collected mainly during the summer and winter seasons of the year, and the questionnaire was composed mainly of structured or close-ended questions. The collected data was analysed using the Statistical Package for the Social Sciences [SPSS] computer programme. The analysed data was presented through usage of frequency tables and columnar graphs. These data representation measures facilitated the analysis and interpretation of data, which sought to justify the extent to which recreation impacts affect the natural environment at Lake St Lucia.

Findings of the Study

The findings of this study are based, not only on the objectives that were put forward earlier, but also on important recreation processes that would assist elucidate the views and actions of recreationists, regarding the impact of their recreation activities on the natural environment. In addition, the findings are based on the perceptions of recreationists towards the impacts resulting from participating in outdoor recreation activities. The findings of the

study are therefore discussed under the following headings: participation in recreation activities; awareness of recreation activities and related impacts on the environment; the effects of ever-increasing visitors, and the role of conservation in outdoor recreation participation.

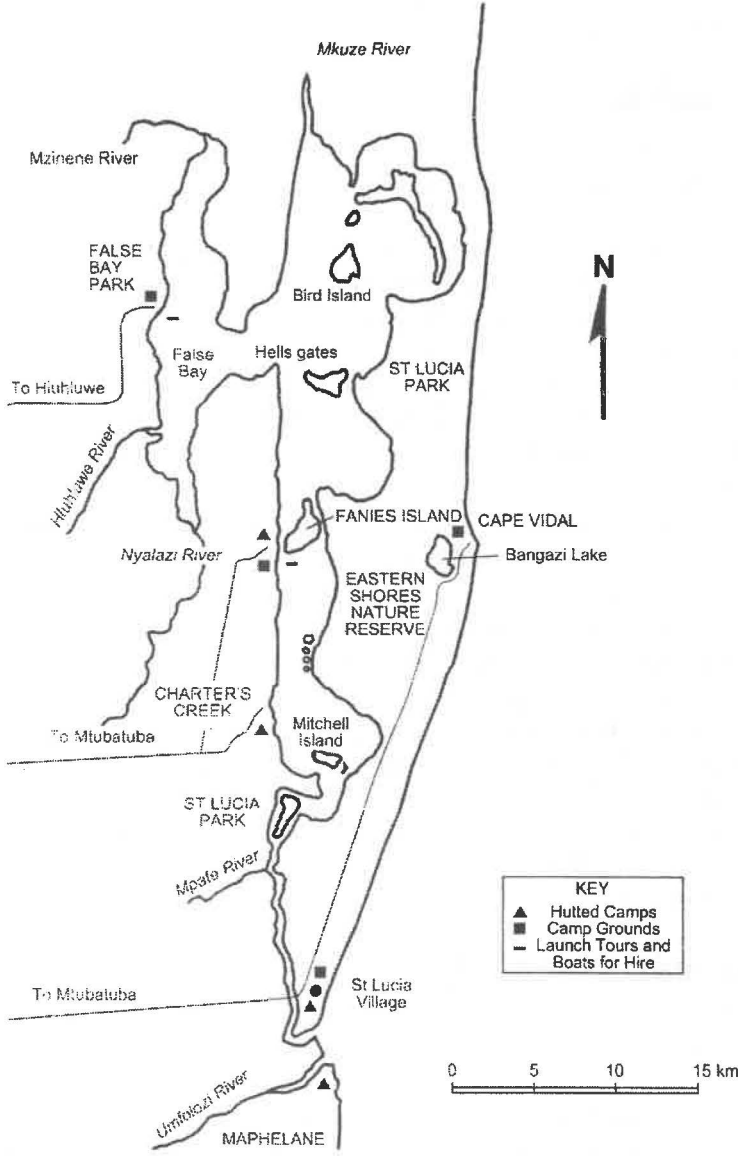


Figure 1 : Location Map of Lake St. Lucia

Participation in Recreation Activities

One of the main objectives of the paper was to determine the recreation visitation and participation patterns of recreationists in the study area. To that end, respondents were asked to indicate the extent to which they visited and participated in recreation activities at Lake St Lucia. As shown in Figure 1 the respondents, on the whole, indicated that they participated, visited and are somehow aware of outdoor recreation activities at Lake St Lucia.

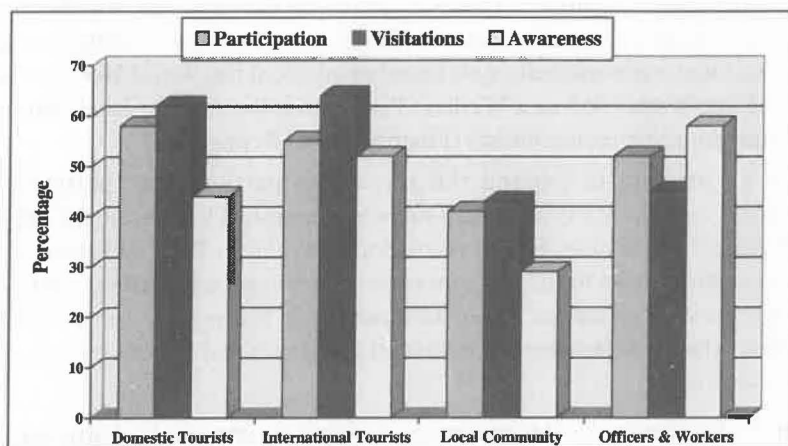


Figure2 : Outdoor Recreation Participation Pattern At Lake St Lucia

More specifically, the domestic [58%] and international [55%] tourists or recreationists indicated that they participated in outdoor recreation. Whereas, only 41 percent of the local community and 48 percent of the Lake St Lucia officers and workers indicated that they participated in outdoor recreation activities in their own rights during their leisure or free time. The justification for these outcomes is that tourists or recreationists actually responded to this question when they were participating in outdoor recreation activities. The local community members and workers that were at the recreation facility responded moderately because their participation arrangements were neither leisure-time based, or self-induced. It seems employment requirements were the motivating factor.

Pertaining to visitation to outdoor recreation facilities, the responses of subjects were somewhat similar to the participation responses. Relatively 62 percent of domestic tourists, 64 percent of international tourists, as well as 43 percent of the local community and 45 percent of the officers and workers of KwaZulu-Natal Wildlife, revealed that they visited the outdoor recreation facilities. On the one hand, it is evident that both domestic and international

recreationists perceive visitations to be relatively more intense than participation. On the other hand, the local community members and employees of KZN Wildlife perceived very little variation in responses between participation and visitation to water-related recreation facilities.

With regard to awareness of outdoor recreation facilities and activities, it became apparent that, surprisingly so, the international visiting recreationists [52%] and the employees of KwaZulu-Natal Wildlife [58%], were more relatively more aware of outdoor outdoor recreation facilities than the domestic tourists [44%] and local communities [29%]. This outcome may be justified by the fact that more internationals know more about the World Heritage Site status of the Greater St Lucia Wetland Park than is the case for local communities and domestic recreationists (Financial Mail Report 2005).

In an attempt to expand the recreation participation patterns of recreationists in the study area, respondents were asked to indicate the notion of enjoyment of participation in recreation activities at Lake St Lucia. The latter was an addition to the recreation views relating participation, visitation and awareness expressed in this section earlier. In this regard, Table 1 shows the cross-tabulation between recreationist categories and the enjoyment general statement.

Table 1: Perception Of Recreationists Towards Enjoyment Of Participation In Recreation Activities Of Their Choice

Recreationist Categories	Responses					Total
	SA	A	N	D	SD	
Domestic	2%	17%	9%	4%	1%	33%
International	2%	20%	4%	8%	2%	36%
Potential	1%	1%	16%	4%	3%	25%
Employee	1%	1%	3%	1%	0%	6%
Total	6%	39%	32%	17%	6%	100%

[N = 520] SA =Strongly Agreed, A =Agreed, N =Neutral, D =Disagree, SD =Strongly Disagree

The statement with a caption: "I thoroughly enjoyed participating in any recreation activity of my choice", revealed that most international recreationists [22%] out of 36 percent revealed that they enjoyed their recreation activities at Lake St Lucia. Similarly, most domestic recreationists [19%] also agreed with the statement. It seems obvious the recreationists that were interviewed enjoyed participation in outdoor recreation activities at Lake St Lucia because of its natural endowment with resources and its World Heritage Site status. Interestingly the potential recreationists or local community members [16%]

and the Lake St Lucia employees [3%] were neutral or not sure about the notion of enjoyment of participation in recreation activities at Lake St Lucia.

Following on the revelation of participation related to visitation, awareness and enjoyment of respondents, it becomes imperative to investigate further the awareness of participation impacts of recreation activities on the environment as well as how the introduction of foreign bodies into water systems affects the environment.

Awareness of Recreation Participation Impacts on the Environment.

The study also attempted to find out if recreationists were aware of the impacts of their participation on the natural environment. Essentially, it was their participation in outdoor recreation activities, which had an effect on the natural environment. To achieve this, respondents were provided with pre-selected statements describing impacts resulting from participating in recreation activities. The findings of the responses are shown in Table 1. In fact the respondents were given a list of impacts which could result from participation in outdoor recreation activities. The findings indicated that generally, recreationists were aware of impacts which result from participating in recreation activities. It is worth noting that more than half (54 percent) of the recreationists agreed that recreation activities change the characteristics of the water body. It is however also important to point out that while respondents were aware that impacts change the character of the water, most of them did not agree that impacts also result from the recreation activities which originate from the shore and from the watershed. Respondents were equally divided on the issue of the use of the shoreline causing it to be unstable. At Lake St Lucia, there are many recreation activities which take place on the shore, for example, shoreline fishing, picnicking, and so on.

The majority of these recreation activities could result in both direct and indirect impacts. These impacts are discussed in some detail later in this paper. As shown in Table 2, it is evident that on the whole the respondents were not sure about the awareness of impacts associated with recreation participation. It is therefore of concern that more recreationists [41%] do not agree and strongly disagree that impacts also originate from some recreation activities occurring on the shore. Only 37 percent agree and strongly agree about the origins of impacts. Also of concern is the number of recreationists [46%] who agree and strongly agree that impacts also originate from recreation activities occurring in the watershed.

Notwithstanding the fact that 34 percent of the respondents disagreed

and 32 percent were not sure that the use of the shoreline recreation can make the shore to be unstable, some studies (Cole and Landres 1995) have, indicated that shoreline recreation activities such as shore-based fishing and other forms of recreation activities can alter the flow regimes and eliminate the protective cover afforded by overhanging banks. Trampling affects both above-ground and below-ground plant structures. These impacts directly injure or destroy plants in various stages of their life circle and can seriously impair growth, development and reproduction processes. Shore-based recreation activities can also contribute nutrient influxes (Dickman and Dorais 1977).

Table 2 : Awareness of Impacts Resulting from Participating in Recreation Activities (%)

STATEMENTS OF IMPACT	SA	A	N	D	SD
1. Recreation activities change the characteristics of the water-body	22%	32%	14%	20%	12%
2. Impacts also originate from some recreation activities occurring on the shore	13%	24%	22%	24%	17%
3. Impacts in the water body also originate from recreation activities occurring in the watershed	16%	14%	24%	28%	18%
4. Recreation activities can alter the reproductive patterns of certain animal species	23%	32%	22%	13%	10%
5. Recreation activities can harm or lead to death of wildlife	22%	17%	28%	18%	15%
6. Recreation activities can lead to the extinction of certain plant and animals life	18%	14%	20%	22%	26%
7. Recreation activities, involving boat rides can increase nitrogen and phosphorus	16%	10%	38%	23%	13%
8. The use of the shoreline can make the shore to be unstable.	9%	25%	32%	19%	15%
9. Recreationists produce pollutants in the water bodies such as oil, solid waste and sediments.	22%	26%	23%	13%	16%
10. Layers of boat oil reduce light penetration and this restrict activity of plants and animals	14%	18%	38%	17%	13%

[N=520] SA-[Strongly Agree] A-[Agree] N-[Neutral] D-[Disagree] SD-[Strongly Disagree]

Despite that the majority of respondents [66%] were uncertain and disagreed that the use of the shoreline can make the shore to be unstable, it has been reported that heavy shoreline use of the lake not only accelerates soil erosion leading to an influx of nitrates into the water, but they also influence water clarity, an important indicator of water quality for recreation purposes. Furthermore, it was gratifying to note that a significant number of respondents [48%] were fully aware of the fact that recreationists produce pollutants in the water bodies such as oil, solid waste and sediments. Only 29 percents of the respondents were not aware of this process. Literature also indicated that direct ecological impacts on water resources are sometimes caused by

the intentional or careless discarding of toxic and solid wastes into the water by boaters, fishermen or who use water resources as a dumping ground (Kuss et al. 1990a, 1990b).

Studies on recreation that relate to impacts have also focused on nutrient enrichment of the water. The findings of this study indicate that only 26 percent of the recreationists are aware that boats can increase the amount of nutrients in the water, whereas 36 percent disagreed and 38 percent were not sure that boats could increase nutrients in the water. The lack of awareness about these outcomes may be associated with the lack of technical knowledge of many of the respondents about these matters.

Also worth reiterating is that 48 percent of recreationists agreed that major sources of pollutants in water bodies such as oil products, solid wastes and sediments are produced by recreationists, and only 29 percent disagreed with the statements. These figures indicate that about 29 percent of the respondents do not agree that they, through their participation can increase pollutants in the environment. Studies have indicated that pollutants may enter the water as a direct result of recreation use, as when surface films of oil and gasoline pollute the lake with heavy motorboat use (Liddle and Scorgie 1980; Hammitt and Cole 1987). Water pollution depletes oxygen and alters aquatic plant and animal growth and survival. When recreationists are using the water for recreation purposes they sometimes pollute water by throwing food waste, beverage cans, and so on, all of which have a negative impact on the aquatic ecosystem. Interestingly, as reflected in Table 2, this study does not show outright awareness of impacts resulting from these pollutants.

Awareness of the Effects of Everincreasing Visitors at Lake St. Lucia

One of the objectives of this paper sought to establish the extent to which recreationists are mindful of the effects of ever-increasing visitors that can adversely affect the outdoor recreation environment. In other words, it sought to find out if outdoor recreation activities are perceived to have the capacity to attract more visitors that in turn adversely affect the natural environment. To establish these matters, the respondents had to express their opinions whether they felt the introduction and presence of more visitors in the study area, negatively affect the environment. In this regard the subjects had to say whether they strongly agreed or strongly disagreed, on the basis of seven pre-selected statement or environmental descriptors relating to visitors to the study area, as shown in Table 3. Most of these statements reflect some varying impacts on the environment.

The findings in Table 3 indicate that on average, most recreationists agreed

[48%] and strongly agreed [22%] that over increased visitors affect the natural resources negatively. This is a clear suggestion that most recreationists are aware that the increased numbers at resources will affect the environment negatively. In addition, 46 percent of the respondents agreed and 21 percent strongly agreed that a congested Lake St Lucia will negatives impact on the natural environment. Interestingly, the majority of respondents [60%] disagreed that pollution of the natural environment is encouraged by too many visitors to the resource. A significant number of respondents were uncertain about the following statements: 'good resource management will always save the natural resource from degradation' [32%]; 'conservation of the Lake is far better than open recreation for all visitors' [37%]; 'it is better to have more visitors to the Lake because they bring more money' [29%]; 'the Lake St Lucia authorities must make laws that discourage overcrowding at the resource' [28%]. In all four preceding statements, none of the subjects responded either positive or negatively to the statement. This suggests that there was uncertainty about how to react. The respondents have tended to balance out between those who advocate for more recreation as a source of money and those favour conservation for purposes sustainably utilising the natural environment.

Table 3 : Responses on whether increased visitor-numbers affect the Natural Environment.

STATEMENTS ON THE NATURAL ENVIRONMENT	SA	A	N	D	SD	%
1. Over increased visitors affect the natural resources negatively	22%	48%	5%	16%	9%	100
2. A congested Lake St Lucia will negatives impact on the natural environment	21%	46%	12%	11%	10%	100
3. Pollution of the natural environment is encouraged by too many visitors	4%	16%	20%	22%	38%	100
4. Good resource management will always save the natural resource from degradation	6%	28%	32%	27%	7%	100
5. It is better to have more visitors to the Lake because they bring more money	7%	22%	29%	15%	27%	100
6. Conservation of the Lake is far better than open recreation for all visitors.	11%	22%	37%	26%	4%	100
7. The Lake St Lucia authorities must make laws that discourage overcrowding at the resource	8%	26%	28%	22%	16%	100

[N=520] SA =Strongly Agree, A =Agree; N =Neutral; D =Disagree; SD =Strongly Disagree.

It is further important to note that respondents were in agreement that increased visitor-numbers in the study area would negatively affect the natural environment. To many of the statements the respondents were influenced by extra-conservation considerations. The respondents who benefited from

selling the natural environment in the name of 'eco-tourism' tended to agree with the statements. On the other hand, those driven by extra-recreation consideration tended to disagree with the statements, and appeared to be champions of environmental protection. This state of affairs poses a challenge to the KZN Wildlife authorities responsible for the maintenance of the Greater St Lucia Wetland Park. The authority had to try and achieve a balance between recreation usage and conservation.

Finally, it must be inferred that recreationists who did not feel that the change in the natural environment brought about by overcrowding was important are a cause for concern because previous studies (Greer 1992; Erickson 1994; Manfredo and Driver 1995) on recreationists' perception of impacts show that many recreationists who do not regard change of the recreation habitat as 'damage' or as undesirable change do not recognize impacts and also do not immediately notice ecological changes underway.

In rounding off this section on the role of overcrowding as it affects the natural recreation environment, it is necessary to reaffirm that perception influences behaviour, therefore, recreationists who do not perceive change as 'damage on the environment' are not likely to change their behaviour towards the resource. They may also not have less satisfactory experiences even when confronted by impacts that could be considered undesirable (Hendee, et al. 1990; Fishbein, and Manfredo 1992). In support, Ewert (1996) mentions that attitudes have a significant effect on how recreationists experience the recreation environment. Not only do attitudes affect the relationship between recreationists and the environment but also their reactions towards the resource.

Perceived Role of Conservation In Outdoor Recreation Participation

The last objective of this paper was to highlight some of the perceived attributes of conservation in outdoor recreation at the study area. This section places emphasis on whether the recreationists are aware of the impacts of outdoor recreation activities on the natural environment in terms of some demographic variables such as recreationist categories and groups. To find out if respondents were aware of impacts of conservation based recreation activities on the natural environmental, respondents were asked to respond to statements that could be associated with related impacts (refer to Table 4). What is interesting to note is that the responses on these impacts are not clearly evident as they occur. This is so because impacts are observable and obvious changes in the environmental components and processes that result from certain recreation activities (Erickson 1994).

On the whole, the findings in Table 4 can be categorised into two for-

mats: the administration-based conservation statements and the science-and-technology based statements. On average, the respondents strongly supported the administrative manipulation of the natural environment by introducing legislation and regulations to foster conservation. Respondents [39% and 19%] agreed and strongly agreed that 'it is the responsibility of each recreationist to protect the natural environment'. Administratively, the majority of the respondents [32% and 18%] agreed and strongly agreed that 'it is necessary to introduce conservation by-laws so as to make the area sustainable' and furthermore that administratively, 'most impacts originate from recreation actions occurring on the shore' [Agreed 47% and Disagreed 11%]. It may be concluded that respondents were not averse to introducing administrative measures to 'protect' the integrity of the natural environment. The World Heritage Site status of the Lake St Lucia environment could have contributed to the perception that the area needs a more conservation-focused approach, than would have been otherwise necessary.

Table 4 : Responses of Recreationists to Conservation Related Impact Statements (%)

CONSERVATION IMPACT STATEMENTS	SA	A	N	D	SD
1. It is the responsibility of each recreationist to protect the natural environment	19%	39%	19%	13%	10%
2. Aquatic ecosystems are less susceptible to impacts than terrestrial ecosystems	13%	39%	18%	19%	11%
3. Most impacts originate from recreation actions occurring on the shore	11%	47%	12%	16%	14%
4. Heavy shoreline use may lead to the introduction of many pollutants in the area.	17%	33%	22%	16%	12%
5. It is necessary to introduce conservation by-laws so as to make the area sustainable	18%	32%	29%	14%	7%
6. Excessive vegetation leads to the depletion of dissolved oxygen supply	9%	24%	30%	16%	21%
7. Heavy used of resource by recreationists can lead to the displacement of wildlife	12%	13%	22%	35%	18%
8. Activities such as boating can result in harassment or death of aquatic animals	9%	25%	29%	23%	14%
9. Forces from the propulsion of motored water craft uproot submerged vegetation	4%	31%	21%	25%	19%
10. Propulsion of motored water craft disturb bottom-sediment fauna and spawning fish	6%	19%	32%	12%	31%

[N=520] SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

With regard to the scientific-technological attributes of the conservation statements, the respondents indicated that, save for the second and forth statements on aquatic ecosystems [Agreed 39% and Strongly Agreed 13%]

and shore recreation, [Agreed 33% and Strongly Agreed 17%] most respondents showed an inclination to disagree with the statements. In addition, 'most impacts' do not necessarily 'originate from recreation actions occurring on the shore,' some may be occurring in the water body or lake itself. More than half of the respondents [52%] agreed that aquatic ecosystems are less susceptible to impacts than terrestrial ecosystem. Another possible reason could be that the aquatic impacts caused by recreation activities in aquatic ecosystems are not striking or immediately obvious as those in terrestrial ecosystems. The respondents were either uncertain or did not support the scientific-technological attributes such as the depletion of dissolved oxygen supply [Neutral 30% and Disagreed 37%], boating resulting in death of aquatic animals [Neutral 29% and Disagreed 37%], motored water craft uprooting vegetation [Neutral 21% and Disagreed 44%], and water craft disturbing bottom-sediment fauna and spawning fish [Neutral 32% and Disagreed 43%]. The justification for this outcome is that perhaps the statements were too scientific and complex, and could not be comprehended by the respondents. Alternatively, that the ecosystem processes reflected in the statements were too complex for most of the respondents to grasp.

Furthermore respondents were neutral and disagreed on conservation impact statements such as 'heavy used of resource by recreationists' [22% and 53%]; and 'propulsion of motored water craft' [32% and 43%] which negatively affects the flora and fauna in the lake. This indirect conservation impact should specifically be of concern to the Lake St Lucia management, because it is actually occurring and studies (Kuss et al. 1989; Gutzwiller and Knight 1995) have indicated that boats can lead to disturbance, harassment and displacement of aquatic wildlife which may lead to direct and or cumulative impacts such as change in habitat, reproductive failure, emigration, and redistribution of species. In essence, all these outcomes reflect that respondents do not appreciate the effects of conservation-based impacts on the natural environment. It would be interesting to further analyse the role played by some demographic variables of respondents in the perception and awareness of the impacts of outdoor recreation activities. Demographic variables such as recreationist categories and race groups are explored.

Outdoor Recreation Impacts by Recreationist Categories

The understanding and awareness of the indirect impacts of outdoor recrea-

tion on the environment are influenced by a variety of variables. Given a basic level of exposure and understanding of recreationists, the outcome of recreation participation and impact avoidance may depend on the type of recreationist. As shown in Table 5 recreationist categories revealed varying responses to the conservation impacts on the environment.

From the outcomes in Table 5, it can be concluded that awareness of outdoor recreation impacts resulting from participation of respondents is dependent on whether the recreationists were international, domestic, potential or employees. A global response to the various impact statements showed that international recreationists [31%] of the 46 percent who agreed to the statements. The majority of international recreationists were aware of the impacts associated with outdoor recreation. Only 7 percent remained neutral and 9 percent of them disagreed. Regarding the domestic recreationists, 12 percent were agreed, 10 percent neutral and 11 percent disagreed. The majority of potential recreationists or local community [11%] disagreed with the statements, thus reflecting a sense of being unaware of the impacts. It may, therefore, be deduced that more international tourists are more aware of the impacts of outdoor recreation activities than domestic and potential recreationists and employees.

Table 5 : Perceived Outdoor Recreation Impacts By Recreationist Categories

Recreationist Categories	Responses			Total
	A	N	D	
Whites	20%	1%	4%	25%
Blacks	7%	8%	16%	31%
Coloureds	8%	4%	9%	21%
Indians	11%	7%	5%	23%
Total	46%	20%	34%	100%

Outdoor Recreation Impacts by Race

Race in South Africa plays an important role in the understanding and awareness of the impacts of outdoor recreation on the environment. This is so because of the legacy of apartheid, which influenced some population groups to perceive recreation resources differently from others (Magi 1986). The objective in Table 6 was to find out if race is a factor on the responses of recreationists towards the impacts of outdoor resources, the impact statements as they appear in Table 4 were crossed with the race of recreationists.

As shown in Table 6, race categories revealed varying responses to the impacts on the environment. The general pattern of the results for combined statements indicated that most Whites [20% of 46%] agreed with the statements leading to the conclusion that Whites are more aware of the recreation impacts of

participating in outdoor recreation activities that the three other race groups [7%, 8% and 11%]. This is to be expected because in the South African context Whites have been participating in outdoor recreation activities for a long time compared to other racial groups who were by law barred from using the recreation facilities. On the basis of these analyses, it can therefore be concluded that the general pattern of the results indicated that most Whites agreed with the statements.

Table 6 : Perceived Outdoor Recreation Impacts By Race [%]

Recreationist Categories	Responses			Total
	A	N	D	
Domestic	12%	10%	11%	33%
International	31%	7%	9%	47%
Potential	1%	2%	11%	14%
Employee	2%	1%	3%	6%
[N = 520] Total	A = Agreed, 46%	N = Neutral, 20%	D = Disagree 34%	100%

Conclusion

Although there is a growing concern about recreation impacts on the natural environment, it has also become apparent that there is no agreement about what constitutes acceptable and unacceptable impacts (Clark 1979; Kuss et al. 1989). Furthermore, it stands out as a tough challenge whether people must be allowed to participate in outdoor recreation without restrictions or to embrace conservation principles on a continuous basis. Determining the acceptable level of outdoor recreation impacts is difficult since there are no absolute standards of acceptability. Furthermore, the conceptual framework associated with the study of outdoor recreation effects on the natural environment can be regarded as terra incognita. It is therefore, anticipated that the literary contribution made in this study would go a long way towards drawing attention to the need for further research in understanding and awareness of factors playing a role in outdoor recreation impact studies. Also compounding the problem of acceptability of levels of impacts is the fact that outdoor recreation influences are not static, they change over time (Hammitt and Cole 1987). The rates of change differ with the types of recreation activities, the environment of occurrence and the principles put in place to curb over-indulgence, such as may be experienced at Lake St Lucia, the study area.

It may further be pointed out that this study could possibly form a basis for the KZN Wildlife authorities to debate its findings, particularly as it relates to the international, domestic and potential recreationists visiting Lake St Lucia, and take steps towards implementing some of its outcomes. The Wildlife authorities have to decide between the conflict of increasing access to resources, which tends to increase levels of impact, and the protection of natural resources,

which is basically a problem of resource allocation (Vogt 1979). The solution to problem does not require an all-or-nothing approach, but one which either allows or prohibits free access or strives to strike a balance between use and the maintenance of biophysical integrity of the resource. In short, the question is not about to recreate or conserve, but to strike a balance between the two procedures.

Finally, considering that the main focus of this paper was to assist elucidate the views and actions of recreationists, regarding the impact of their recreation activities on the natural environment, it is important to transmit some of the findings to the local wildlife, recreation and tourism authorities. Some of these findings relate to the perceptions recreationists have towards the over-utilisation, which result from participating in outdoor recreation activities, the levels of recreation awareness pertaining to influences on the environment; the effects of ever-increasing numbers of visitors to the study area, and the role of conservation when participating in outdoor recreation activities in the study area. Critical decisions as to where to place the emphasis in dealing with these areas of investigation, is the prerogative of the local wildlife and recreation authorities. However, this study advocates for a middle-of-the-ground approach to natural resources utilisation, would achieve sustainability and high-levels of recreation experience.

References

- Aronsson, L. (2000): *The Development of Sustainable Tourism*. London: British Library Cataloguing-in-Publishing Data.
- Berjak, L.K. (1998): *Implications for Tourist Development Along the Maputaland Coast*. London: University of Natal.
- Clark, R.G. (1979): *The Recreation Opportunity Spectrum: A Framework for Planning, Management and Research*. United States Department of Agriculture Forest Services, General Technical Report. PNW-98, Seattle.
- Cole, D.N and Landres, N. (1995): *Indirect Effect of Receptionists on Wildlife*. Washington D.C.: Island Press.
- Dickman, M. and Dorais, M. (1977): *The Impact of Human Trampling on Phosphorus Loading to a Small Lake in Gastineau Park, Quebec, Canada*. *Journal of Environmental Management*. Vol. 39: 335-344.
- Duffus, D.A. and Dearden, P. (1990): *Non Consumptive Wildlife Oriented recreation: A Conceptual Framework*. *Biological Conservation*, Vol 53: 213-220.
- Edington, J.M. and Edington, M.A. (1985): *Ecology and Environmental Planning*. London: Chapman Hall.
- Erickman J.W. (1986): *Commentary II, on Some Scientific Issues in Cumulative Environmental Impact Assessment*. In Beanlands, G.E.; Ericman, W.J., Orians G.H., O' Riordan, J., Policansky D., Sadar, M.H and Salder, B. (1986): *Cumulative Environmental Effects: A Binational Perspective*. Ontario: Canadian Environmental Assessment Research Council and Washington. D.C.: U.S. National Research Council.
- Erickson, P.A. (1994): *A Practical Guide to Environmental Impact Assessment*. London: Academic Press.
- Ewert, A.W. (1996): *Natural Resource Management: The Human Dimension*. Boulder: Westview Press, Inc.
- Financial Mail (2005): *Tourism in KwaZulu-Natal: Streamimg In*. Financial Mail Special Report. (5 August 2005), Johannesburg.
- Fishbein, M. and Manifredo, M.J. (1992): *A Theory of Behaviour Change*. In Manifredo, M.J. (Ed).

To Recreate or Conserve that is the Question: The Case of Lake St Lucia, South Africa.

Influencing Human Behaviour. Champaign, Illinois: Sagmore Press.

Flather, C. H. and H. K. Cordell (1995): Outdoor Recreation: Historical and Anticipated Trends. Washington D.C.: Island Press.

Greer, J. D. (1992): Recreation Habitats: A Concept for Study and Management. Bedford: Conference Proceedings.

Grossman, D. and Koch, E. (1995): Ecotourism Report: Nature Tourism in South Africa - Links with the Reconstruction and Development Programme. Pretoria: South African Tourism Board.

Gumede, T.A. (1998): Eco-tourism and Its Associated Cultural Impact with Special Reference to Indigenous Communities Adjacent to the Great St Lucia Wetland Park. Unpublished MRT Dissertation, University of Zululand, Durban-Umlazi.

Gutzwiller, K.J. and Knight, R.L. (1995): Wildlife and Recreation: Ecology and Management. New York: John Wiley & Sons.

Hammit, W. E. and D. N. Cole. (1987): Wildlands Recreation. Ecology and Management. New John: Wiley & Sons.

Hendee, J.C., Stankey, G.H and Lucas, R.C. (1990): Wilderness Management. Colorado: Fulcrum Publishing.

<http://www.environment.gov.za> [Online] Department of Environmental Affairs and Tourism, Website. [Accessed on 13-04-2006]

<http://www.kznwildlife.com> [Online] KwaZulu-Natal Nature Conservation Services, Website. [Accessed on 15-04-2006]

Jackvicz, T.P. and L.N Kuzminski. (1973): A Review of Outboard Motor Effects on the Aquatic Environment. Journal of Water Pollution. Vol. 45:1759-1770

Jubenville, A. and Twilight, B.W. (1993): Outdoor Recreation Management: Theory and Application. Chicago: Venture Publishing Company.

Kuss, F.R., Graeffe, A.R. and Vaske, J.J. (1989): Recreation Impacts and Carrying Capacity: A Review and Synthesis of Ecological and social Research. Draft Review Report, University of Maryland, College Park, MD, pp.181.

Kuss, F.R.; Vaske, J.J. and Graeffe, A.R. (1990a): Visitor Impact Management: The Planning Framework. Washington D.C.: National Parks and Conservation Association.

Kuss, F.R.; A.R.Graeffe, A.R. and J.J.Vaske (1990b): Visitor Impact Management: A Review of Research. Washington D.C.: National Parks and Conservation Association.

Liddle, H.J. and R.J. Scorgie. (1980): The Effects of Recreation on Fresh Water Plants and Animals: A Review. Biological Conservation. Vol. 17:183-206.

Lucas, R. C. (1978): Perception of Non-motorised Recreational Impacts: A Review of Research Findings. In R. Ittner; D. R. Potter; J. Agee, and S. Anschell, (Eds). (1979): Recreational Impacts in Wildlands. USDA. Forest Service Conference Proceedings, No. R-6-001.

Lucas, R.C. (1979): Use Patterns and Visitor Characteristics, Attitudes, and Preferences in Nine Wildernesses and Other Roadless Area. Natural Resources Journal. Vol. 29: 41-56.

Magi, L. M. (1986): Black People's Cognition of Natural Recreation Resources in the Natal North-Coastal Region. Unpublished PhD Dissertation. Department of Geography. University of Zululand, KwaDlangezwa.

Magi, L. M. (1989a) Recreation as seen by the Zulu of South Africa. Journal of Physical Education, Recreation & Dance Vol. 60(4): 35-36.

Magi, L. M. 1989b. Cognition of Natural Recreation Resources Through Photographic Images. South African Geographical Journal. Vol. 71(2): 67-73.

Magi, L. M. 1989c. Cognized Use of Natural Recreation Resources: A Black Perspective. Development Southern African. Vol. 6(3): 326-339.

Magi, L.M. (1992): Outdoor Recreation Perception Changes Since the Repeal of the Separate Amenities Act in South Africa. A paper presented at the 27th International Geographical Conference of the IGU Conference. Washington DC 9-14 August.

Magi, L.M. (1999): Township Recreation Patterns and the New Order in South Africa. Tourism Geographies. Vol.1 (3): 142-163.

Magi, L.M. and Nzama, A.T. (2002): Perspectives on Recreation and Tourism Geographies in South

- Africa. In Fairhurst, J.; Maharaj, B. and Magi, LM [Ed]: In Transition: Geography and South Africa at the Dawn of the Millennium. South African Geographical Journal. Vol.: 84 (1) 112-128.
- Manfredo, M.J. and B. L. Driver. (1995): A Meta Analysis of the Recreation Experience Preference Scales. Journal of Leisure Research. Vol. 22:254-261.
- Mangqalaza, M. (2005): Save Traditions, Save Wetlands. [Online] www.wrc.org.za. [Accessed on 15-04-2006]
- Mc Gwynne, L. E., A. M. C. De Ruyck, G. I. H. Kerley, and A. McLachlan. (1996): KwaZulu-Natal Coastal Dunes: Ecological Dynamics, Human Impacts, and Guidelines for Planners: A Pilot Study for Sites at Mtunzini and Richards Bay. Pietermaritzburg: Town and Regional Planning Supplementary Report. Vol. 13.
- Mkhabela, A.B. (2000): Nature Conservation Areas as Facilities for the Stimulation of Tourism In Maputaland, Kwazulu-Natal. Unpublished MRT Dissertation, University of Zululand, Durban-Umlazi.
- Morowitz, H. J. (1992): Balancing Species Preservation and Economic Considerations. Science. Vol. 253:752-754.
- Mwandla, ND. (2002): The Planning and Management of Outdoor Recreation Systems in KwaZulu-Natal: Policy and Practice. PhD Thesis. Centre for Recreation and Tourism, University of Zululand.
- Nzama, A.T. (2000): Equilibrium Between Usage and protection of Ecotourism Natural Resources. Paper presented at the International Geographical Union's Commission Conference, held in Cheju, Korea, August 9-13, 2000.
- Nzama, A.T. (2004): Socio-Cultural Impact of Tourism on the Rural Areas - The Case of KwaZulu-Natal, South Africa. Paper presented at the Glasgow International Geographical Congress, held in Glasgow, United Kingdom. August 15-20, 2004.
- O'Shea, T.J. (1995): Waterborne Recreation and the Florida Manatee. In Knight, R. L. and Gutzwiller, K. J. (Eds). Wildlife and Recreationists: Coexistence Through Management and Research. Washington D.C.: Island Press.
- Pigram, J. (1983): Outdoor Recreation and Resource Management. New York: St. Martin's Press.
- Prestine, E.M. and F. (1988): Evaluating Cumulative Effects on Wetland Function: A Conceptual Overview and Generic Framework. Environmental Management. Vol. 12: 565-583
- Sargeant, F.O. and Zayer, F. 1976. Landuse Patterns: Eutrophication, and Pollution in Selected Lakes. Technical Report, USDI Office of Water Research and Technology. p47.
- Taylor, R. (1991): The Greater St. Lucia Wetland Park. Cape Town: Struik Publishers (Pty) Ltd.
- TKZN [Tourism KwaZulu-Natal], (2004): Statistics of Our Tourism Industry -2005. (A Brochure). Durban: Tourism KwaZulu-Natal - Tourism Information Service.
- Torkildsen, G (2004): Leisure and Recreation Management. London: E and F. N. Spon Publishers.
- Uttorman, M. (1979): Allocating Use on Back Country Rivers: Some Legal Issues. Western Wildlands. Vol. 4(2):53-58.
- Vogt, G. (1979): Adverse Effects of Recreation on Sand Dunes: A Problem for Coastal Zone Management. Coastal Zone Management Journal. Vol. 6(1):37-67.

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