

This work is licensed under a
Creative Commons Attribution-NonCommercial-
NoDerivs 3.0 Licence.

To view a copy of the licence please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

(a) UNIVERSITY OF NAIROBI
(b) Institute for Development Studies
Working papers

MANAGEMENT PLANNING FOR TOURISM IN AMBOSELI:
INCORPORATING BEHAVIORAL INFORMATION ON PARK USERS

By
Wesley R. Henry
Working Paper No. 365

LIBRARY
10 FEB 2011
INSTITUTE OF
DEVELOPMENT STUDIES

INSTITUTE FOR DEVELOPMENT STUDIES
UNIVERSITY OF NAIROBI
P.O. BOX 30197
Nairobi, Kenya

March, 1980

Views expressed in this paper are those of the author and should not be interpreted as reflecting views of the Institute for Development Studies or the University of Nairobi.

This paper has protection under the Copyright Act, Cap.130 of the Laws of Kenya.

RN 322586

IDS



095386

MANAGEMENT PLANNING FOR TOURISM IN AMBOSELI:
INCORPORATING BEHAVIORAL INFORMATION ON PARK USERS

By
Wesley R. Henry

ABSTRACT

A basic tenet for planners of Amboseli National Park is that many benefits result from environmental preservation. Maximizing these benefits is the major function of management. The carrying capacity of the park for tourism is a useful approach to management in this situation since it is concerned with finding a balance between preservation and use.

An examination of existing research and planning efforts from a capacity perspective reveals a deficiency of behavioral information on park users. Research reported in this paper is a first attempt at overcoming this deficiency.

Highly specific expectations and preferences would greatly reduce potential capacity, but response indicated park visitors may have considerable flexibility in their expectations and preferences. Capacity can be increased beyond its present level because there are many elements in the experience contributing to visitor satisfaction which can be enhanced by better management.

This conclusion was supported by the fact that a lack of information, especially resulting from uninformed and uncommunicative rangers and drivers, was one of the problems bothering visitors most. Visitors supported using guides and were willing to pay for them. Furthermore, information may be useful in correcting many existing misconceptions and aid in reducing depreciative types of behavior.

At present, crowding and congestion are problems existing primarily in the vicinity of lions and cheetahs. Enhancing visitor satisfaction will require vehicle use around these animals to be limited to 4-8 vehicles at any one time. Vehicles must first be prohibited from approaching the predators too closely, and then an optimal number can be determined as a function of the behavior of visitors and drivers.

Site management and indirect regulations were the most favored management techniques. Indirect regulation through use of interpretive guides and better trained drivers, not unexpectedly, were strongly approved. More importantly, people who were most bothered by problems in the park were also more likely to support the proposed management techniques. Monitoring implementation is suggested.

Some additional visitor facilities were also approved since they would add diversity to the park's attractions. Also, tour operators felt that under the right circumstances, lodges and game viewing tracks outside the park would be feasible.

MANAGEMENT PLANNING FOR TOURISM IN AMBOSELI: *
INCORPORATING BEHAVIORAL INFORMATION ON PARK USERS

INTRODUCTION A Need for Improved Park Management Planning

Parks and equivalent types of reserves are preserved and managed for benefits and values they provide for people. The 1976 Wildlife Management Act, enabling legislation for Kenya's National Parks, was designed to protect and preserve the natural environment, including wildlife. It was not enacted just to preserve wildlife, but expressed as well, the assumption that natural environments provide important human benefits and values. Tourism and wildlife preservation are prime examples. The former provides direct economic benefits to the nation while the latter is a reflection of support for a wide-spread belief that animals are in some way valuable to man's well-being, enjoyment, or survival.

Furthermore, these values and benefits are highly interdependent. Kenya's tourism benefits from environmental preservation, and tourism provides an economic incentive for the country to aid and support preservation. It is now recognized that environmental quality is the major attraction and primary product sold by the tourist industry (Western 1975). Thus, it is not surprising that using parks to support tourism and preserving them for aesthetic, scientific, and cultural purposes have become legislated goals for Kenya's National Parks.

But, environmental preservation is threatened by tourism as well as by the demands of local agriculturalists and ranchers. Amboseli National Park, located in southern Kenya, has been a focal point of concern with respect to both threats. These problems were recognized early by Mitchell (1969) and Western (1973). A strong argument to meet these threats through better planning and management was made by Western and Thresher (1973). This need was again emphasized when research on visitor use (Henry 1975) suggested increasing visitation might be having negative effects on wildlife behavior and habitat as well as effecting a reduction in the park's amenity value for tourism.

* The author would like to acknowledge the financial support given to this project by the New York Zoological Society, African Wildlife Leadership Foundation, East African Wildlife Society, and Elsa Fund.

David Western's assistance is also gratefully acknowledged.

The Carrying Capacity Concept

Although there are several concepts available that could be used to guide planning and management in Amboseli, carrying capacity is a logical choice since it has already been used by park planners because it is the implicit concern of most parties involved in the situation. The tourist industry wants the park to accommodate an ever-increasing number of visitors yet retain its attractiveness to tourists. Conservationists' prime concern is to preserve wildlife and not restrict tourism, unless it is absolutely necessary. Ministry of Tourism and Wildlife officials charged with Amboseli's management are legally obligated to preserve the park and insure it as a functioning resource for the tourist industry. As these examples illustrate capacity is the underlying concern.

A formal definition of carrying capacity would be the amount and type of tourist use that is consistent with production of satisfying visitor experiences and with protection and maintenance of the resource base (Brown et al., 1976). It should not imply magic formulas or absolute numbers, but rather a framework for management decision-making. It is concerned with constraints imposed upon tourist demand by the nature of the resource, management considerations, visitor expectations and preferences, and the way the resource is used.

A simplified, capacity-based management decision system (Figure 1) illustrates this approach. The Key element for managing within this concept is the development of explicit management objectives that specify the kinds of recreational experiences to be provided and the nature and degree of protection to be given the resource. Without these objectives, the notion of capacity is illusive.

Formulation of specific objectives is dependent upon adequate information about resource capabilities, institutional factors, users' preferences, and the existing situation. By combining objectives with information on the natural and developed structure of the resource, calculation of a visitor capacity is possible. But, this number is not static since at any time it can be altered by changes in management objectives, clientele, or in the biological/physical structure of the area.

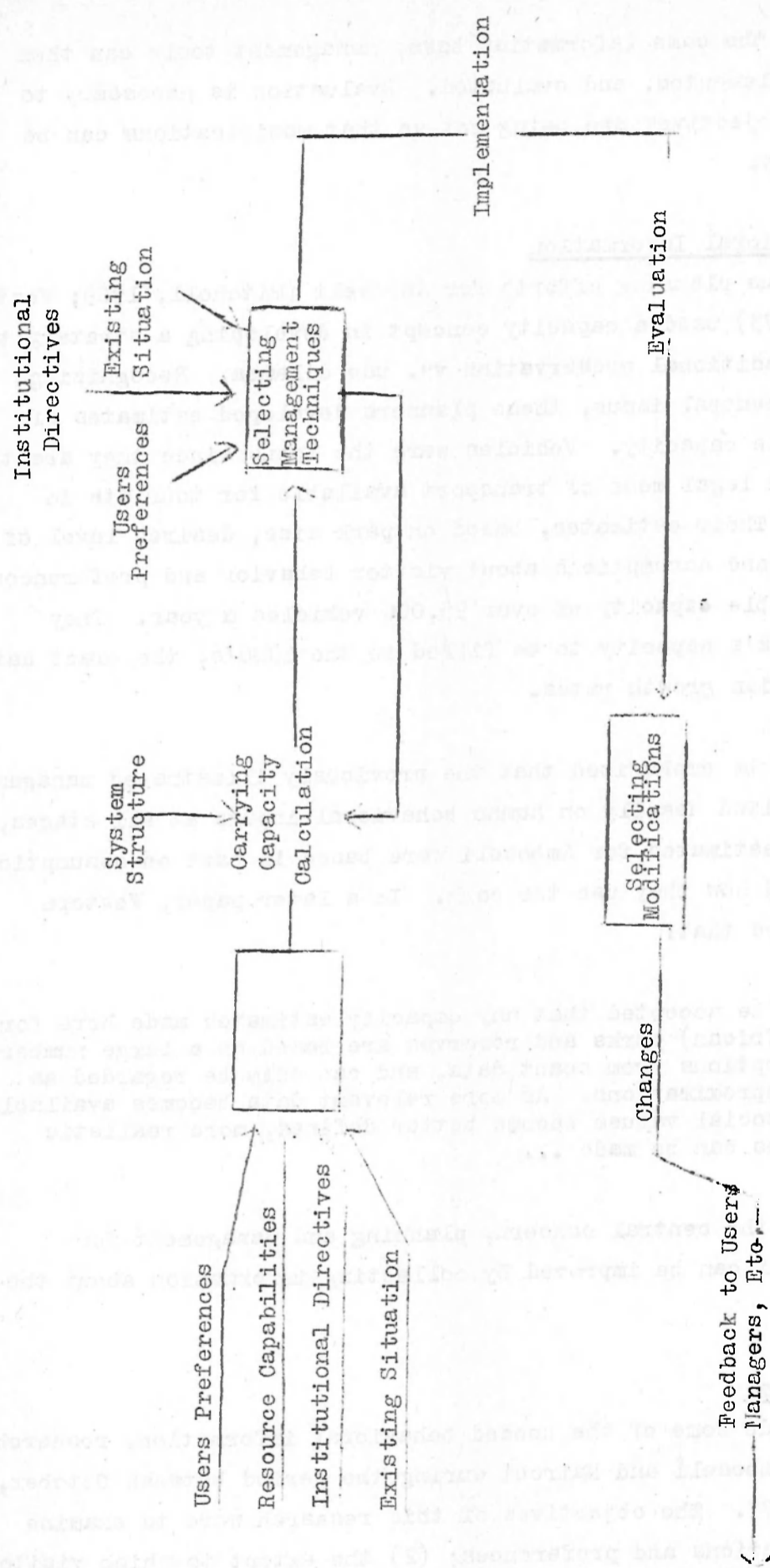


Figure 1. A park management decision model based on the carrying capacity concept. (After Brown et al., 1976).

Using the same information base, management tools can then be selected, implemented, and evaluated. Evaluation is necessary to judge how well objectives are being met so that modifications can be made if necessary.

A Need for Behavioral Information

Previous planning efforts for Amboseli (Mitchell, 1969; Western and Thresher, 1973) used a capacity concept in developing a strategy to cope with the traditional preservation vs. use dilemma. Recognizing capacity as the central issue, these planners developed estimates of the area's vehicle capacity. Vehicles were the focus since they are the only feasible and legal mode of transport available for tourists in wildlife parks. Their estimates, based on park size, desired level of vehicle density, and assumptions about visitor behavior and preferences suggested a possible capacity of over 95,000 vehicles a year. They expected the park's capacity to be filled in the 1980's, the exact date dependent on tourism growth rates.

It must be emphasized that the previously illustrated management decision model relied heavily on human behavioral inputs at all stages, but the capacity estimates for Amboseli were based in part on assumptions about visitors and how they use the park. In a later paper, Western (1975) acknowledged that:

It must be accepted that any capacity estimates made here for (East African) parks and reserves are based on a large number of assumptions from scant data, and can only be regarded as first approximations. As more relevant data becomes available, and as social values become better defined, more realistic estimates can be made ...

Since capacity is the central concern, planning and management for tourism in Amboseli can be improved by collecting information about the area's users.

Research Objectives

To provide some of the needed behavioral information, research was conducted in Amboseli and Nairobi during the period between October, 1976 and April, 1977. The objectives of this research were to examine (1) visitor expectations and preferences; (2) the extent to which visitors

were bothered by park problems; and (3) users' acceptance of proposed management tools and techniques. All of these have potentially major effects on Amboseli's tourist carrying capacity.

Secondary objectives included examination of predictability in response, and differences in response by different user groups (visitors, tour operators, and couriers).

Analytic techniques used to accomplish these objectives are described in Appendix A.

RESEARCH METHODS

Surveys comprised the research methodology for this study. Three basically similar survey instruments were distributed to random samples of visitors, tour operators, and travel couriers (see Appendix B). The questionnaires were concerned with visitor expectations, perceptions, and preferences relating to the experience of visiting Amboseli National Park. The three different samples were for examining differences in those groups.

Visitor Expectations

A preliminary section asked about visitors' expectations and preferences relating to their visit in the park. These questions were open-ended and primarily of an exploratory nature.

Perception of Park Problems

After the preliminary section, respondents were asked to indicate how bothered they (the visitors) were by twelve "situations" which had already been identified by other visitors, park employees, and researchers as problems.

Response was measured on five-point scales which ranged from "Not Bothered" to "Extremely Bothered." The problems were categorized as ecological in nature, management related, or tourist-use related.

Acceptance of Management Tools and Techniques

In a second major section of the questionnaire, users were asked to indicate their degree of approval for 14 management tools or techniques which were explicitly or implicitly suggested in planning studies (Mitchell, 1969; Western and Thresher, 1973; Western, 1974).

Response was on a five-point scale of "Strongly Approve," "Approve," "Neutral," "Disapprove," and "Strongly Disapprove." These tools and techniques were also grouped into three categories relating to site management, direct regulation, and indirect regulation (Lime and Stankey, 1971; Gilbert et al., 1972; Lime, 1976).

The first category was comprised of design and engineering techniques for hardening recreation sites or channeling use (physically or by facility placement). Techniques in the second category emphasized regulation of visitor behavior through increased policy enforcement, zoning, and restrictions on users. Influencing or modifying behavior by altering physical facilities, informing users, or by setting eligibility requirements (price) were techniques included in the third category.

The Vehicle Congestion Problem

Interspersed with the items relating to park problems were six additional items which focused on visitors' perception of vehicle congestion. Respondents were also asked how many vehicles could feasibly be around a group of lions or cheetahs before their own viewing was adversely affected, and how the behavior of tour bus drivers affected the situation.

Perception of Other Management Issues/Miscellaneous

A final section in the visitors' version of the survey solicited information on the individual, the party he was traveling with, and the type of safari he was on. These were the most obvious ways of subdividing and classifying the visitor population.

Tour operators and couriers were asked several additional questions on another five-point scale which ranged from "Very Interested" to "Not Interested." They were asked how interested visitors would be in using other types of facilities that could be provided. Finally, several questions queried the operators on the importance of lodge location, their support for training programs, and willingness to use viewing tracks in wet-season wildlife dispersal areas outside the park.

RESEARCH RESULTS

Tourist Expectations --- Park User Expectations.

Visitors indicated that a variety of elements were essential in contributing to a satisfying and enjoyable park visit (Table 1, Park A).

Seeing wildlife in its natural habitat was the most frequent response (47 percent) and good food and accommodations ranked second (24 percent). Information on natural history and ecology ranked a more distant third, accounting for 11 percent of visitor responses.

The natural setting of the park was important for the quiet, relaxing atmosphere it provided as well as for scenic quality. Kilimanjaro was an important element in the landscape. Together, these elements accounted for another 19 percent of visitor responses.

The last distinct element identified was "seeing few cars and/or people in the park" (5 percent of responses). In the "other" category were a variety of responses such as good roads, friendly staff, better weather, and so forth.

When visitors were asked if they had any specific expectations about what they would see or do in Amboseli, there was a general but familiar response (Table 1, Part B). Thirty percent of respondents indicated their wish to see natural scenery and wildlife while only 10 percent said seeing Kilimanjaro was a specific expectation.

Seeing many predators and photography-related expectations were next in importance with responses of nine and seven percent respectively. However, 23 percent of the respondents had no specific expectations. Together with the generalized nature of other responses, this suggests visitors do not have strong or clearly defined expectations. In a subsequent question, a majority of visitors indicated numbers and variety of wildlife were more important than seeing a large number of predators.

But, visitors did expect to see specific animals (Table 2). Lion, cheetah, elephant, and rhino were the species visitors most expected to see. Overall, visitors expressed interest in seeing a much wider variety of wildlife than either tour operators or couriers who thought them to be primarily interested in lions and cheetahs.

Table 1. Expectations and essential elements of satisfaction.

A. Essential elements contributing to satisfying and enjoyable visitor experiences in Amboseli

User Response	Visitors		Tour Operators		Travel Couriers	
	N	%	N	%	N	%
Wildlife in its natural habitat	197	47	20	83	11	57
Good accommodation and food	102	24	14	58	13	62
Good natural history interpretive information (Rangers, guides, guidebooks, etc.)	45	11	--	--	2	10
A quiet, relaxing, and natural setting	43	10	--	--	1	5
Scenic landscapes, including Kilimanjaro	38	9	13	54	4	19
Seeing few cars and/or people	20	5	--	--	1	5
Others (good roads, friendly staff, etc.)	55	13	3	13	2	10

B. Visitor expectations for their Amboseli visit.

User Response	Visitors		Tour Operators		Travel Couriers	
	N	%	N	%	N	%
Natural scenery and wildlife	127	34	6	15	12	57
Seeing Kilimanjaro	43	10	12	50	9	43
Seeing many predators	36	9	--	--	2	10
Photographic related expectations	30	7	7	29	1	5
Other expectations	37	9	1	4	2	10
No specific expectation	97	23	7	29	4	19

Table 2. Visitor expectations for seeing specific species of wildlife

Rank	User Response	Visitors		Tour Operators		Travel Couriers	
		N	%	N	%	N	%
1	Lion	118	28	20	83	11	53
2	Cheetah	84	20	20	83	11	53
3	Elephant	72	17	7	29	6	29
4	Rhino	59	14	7	29	6	29
5	Giraffe	21	5	---	---	---	---
	All other species	115	28	4	17	---	---
	Anything and everything	63	15	2	8	3	14

Tour Operators' and Couriers' Perception of Visitor Expectations

Perception of tour operators and couriers differed only slightly. They did indicate wildlife, together with food and accommodation, were the most essential elements in visitor satisfaction, but tour operators stressed wildlife while couriers stressed food and accommodation. Seeing Kilimanjaro was virtually the only other element cited by tour operators as being important. Couriers' response more closely reflected the response pattern by visitors.

PERCEPTIONS OF PARK PROBLEMS

Visiting' Perception

There was not strong tendency for visitors to be bothered by any one category of problems more than another, but there were problems in each category bothering substantial number of park visitors (Table 3). Average response ranged from 1.8 to 4.0 on the five-point scale with relatively larger standard deviations indicating a wide range of response.

Problems which should concern managers are those with average scores greater than or equal to 2.7. That score was selected as cut-off since approximately 40 percent of the respondents would then be in the "Bothered," "Bothered a lot," and "Bothered Very Much" categories. A score of 3.0 or more meant 50 percent or more of responses were in these categories.

Habitat destruction and drought was the ecological problem bothering visitors most, and it was closely followed by the dusty conditions and too few animals in the park. However, the presence of Maasai and their livestock did not bother visitors as much as other ecologically-related problems.

Response to management-related problems showed that poor access roads and poor quality of viewing roads and tracks did not bother substantially numbers of visitors. But, they were bothered by a lack of information on the park and wildlife as well as by drivers and guides who seemed uniformed or uncommunicative.

Rising use and vehicle congestion increase the number of incidences in which drivers appear to be discourteous or rude to visitors other than those they are escorting. However, response indicated it is not a problem of significant proportions at this time.

Visitors did not feel there were too many facilities or developments, but they were more bothered by vehicles which they associated with crowding, over-use, and damage to the park.

Tour Operators' and Couriers' Perception

The response of tour operators and couriers reflected a similar pattern except they believed visitors would be more bothered by the problems than they actually were. To some extent, however, this reflects the personal bias of tour operators and couriers on these problems plus their experience in dealing with visitors who were bothered by these problems.

Some differences, however, are of interest. Couriers and tour operators did not believe visitors were bothered by lack of information on the park and wildlife, yet it was the problem bothering visitors most. In contrast, tour operators and couriers reacted strongly on personnel issues that did not particularly bother visitors. This may be the result of past problems and sensitivity resulting from recognition of drivers' key role in providing satisfying visitor experiences. Also, tour operators felt visitors were bothered by too much development but not by vehicle impact when, in fact, the opposite was true.

Explanation of Perceptions

Exploratory research using step-wise regression analysis to

Table 3. Park problems and the degree to which they bother users.¹

Category of Problem	Park Problem		Visitors		Tour Operators		Couriers	
	\bar{X}	S.D	\bar{X}	S.D	\bar{X}	S.D	\bar{X}	S.D
E C O L O G I C A L	The presence of Maasai and their livestock	2.1	1.5	2.2	1.2	2.9	1.5	
	Dusty condition of the park	2.7	1.6	3.8	1.2	3.9	1.3	
	Habitat destruction and drought	3.2	1.5	3.9	1.3	3.7	1.3	
	Too few animals in the park	2.7	1.5	3.1	1.7	2.6	1.4	
M A N A G E M E N T	Bad access roads from Tsavo and Namanga	2.3	1.4	2.6	1.3	2.6	1.3	
	Poor quality of game viewing roads and tracks in park	2.0	1.3	2.5	1.4	2.0	1.1	
	Lack of information on the park and the wildlife	3.1	1.5	3.1	1.6	2.8	1.4	
	Drivers and guides who seem to be unformed and uncommunicative	2.8	1.6	3.8	1.6	3.7	1.3	
T O U R I S T	Discourteous drivers	2.1	1.5	4.0	1.5	3.9	1.3	
	Overuse and damage resulting from unregulated tourist vehicles	2.7	1.6	2.3	1.2	3.2	1.6	
U S E	Crowding--too many vehicles in park	2.9	1.5	3.6	1.2	3.4	1.4	
	Too many facilities and developments in the park	1.8	1.5	3.6	1.2	2.2	1.4	

1. Average scores (\bar{X}) relate to the five-point scale on which 5= Bothered Very Much and 1= Not Bothered.

search for causality in visitor response was unproductive (Table 4). Several variables could explain some of the variance in response, but total explained variance for most problems was small.

Seasonal differences explained some variance in response to ecological and management problems as it should have since habitat destruction, drought, and dust are more noticeable in the dry seasons while the condition of roads and tracks is a more severe problem in the wet seasons. And, not unexpectedly, conservationists were more likely to perceive the park as being over-used, crowded, and containing too many facilities and developments.

Previous experience or greater exposure to problems also affected response. For example, visitors who had previously visited Amboseli were much more likely to be bothered by the presence of Maasai and their livestock, a factor accounting for 21 percent of response variance. Taking two or more game viewing drives or visiting the park at the end of one's safari also helped to explain why some visitors were more bothered about several problems.

Acceptance of Management Tools and Techniques

Visitor Acceptance

Visitor response to proposed management tools and techniques was varied (Table 5), but techniques for site management and indirect regulation were the most favorably approved. Only two direct regulatory measures were approved by a majority of visitors.

Small, natural-looking tracks and improved road surfaces were site management techniques approved by a very substantial majority of visitors. Bare majorities approved of the road system and disapproved of paving access roads.

Restricting visitor accommodation to its present level and stricter enforcement of park regulations were the only direct regulations approved by most park users. Despite approval of the latter technique, only a minority of visitors approved a prohibition of off-road driving. Over 60 per cent of respondents disapproved or were neutral about using one-way roads, imposing higher entrance fees, and consolidating the present road system.

Table 4. Park problems and the results of step-wise regression analysis.

Park Problems	Overall F (Significance)	Statistically significant (P < .05) predictor variables in order of entry to the step-wise regression model. () Parentheses indicate R ² values.	Total Variance Explained
The presence of Maasai and their livestock	14.33 (.000)	Previous visits to Amboseli (.21) Nationality (Other) (.03)	.28
Dusty condition of the park	7.29 (.0001)	Season (.07) Nationality (U.S.A.) (.02)	.09
Habitat destruction and drought	8.55 (.000)	Nationality (Other Europeans) (.04) Nationality (Kenya-Tanzania) Tour Circuit (.02)	.18
Too few animals in the park	8.18 (.000)	Beginning, middle, end of safari (Kenya-Tanzania) (End of safari) (.06) Tour Circuit (.02)	.14
Bad access roads from Tsavo and Mamanga	6.06 (.000)	Nationality (Other) (.03) Vehicle type (.15)	.14
Poor quality of game viewing roads and tracks in the park	4.66 (.032)	Season (.03)	.02
Lack of information on the park and the	6.41 (.012)	Visitor accommodation (Camping) (.03) Number of game viewing drives taken in Amboseli (.01)	.04
Drivers and guides who seem to be uninformed and uncommunicative	6.11 (.000)	Season (.06) Nationality (Other Europeans) (.04)	.16
Discourteous drivers	7.08 (.000)	Length of stay in Amboseli (.05) (Long) Season (.06) Nationality (Other Europeans) (.04)	.19
Overuse and damage resulting from unregulated tourist vehicles	9.13 (.000)	Previous visits to E. Africa (.09) Vehicle type (Tour) (.04) Conservation organization membership (.06)	.24
Crowding--too many vehicles in the park	3.73 (.026)	Conservation organization membership (.02) Nationality (Other Europeans) (.03)	.05
Too many facilities and developments in the park	5.68 (.001)	Number of game viewing drives taken in Amboseli (.06) Conservation organization membership (.24) Previous visits to E. Africa (.02)	.11

Table 5. User approval of proposed management tools and techniques.¹

Type of Management	Proposed Management Measure	Visitors		Tour Operators		Couriers	
		\bar{X}	S.D.	\bar{X}	S.D.	\bar{X}	S.D.
Site Management	A well developed system of game viewing roads and tracks	3.3	1.4	4.3	0.7	4.0	1.1
	Paved access roads from Namanga and Tsavo	3.0	1.5	3.2	1.3	2.9	1.5
	Improved road surfaces in park (all weather, less dusty, not paved)	3.7	1.3	4.7	0.6	4.3	0.2
	Many small, natural looking tracks branching off and returning to main circuit roads	4.0	1.1	4.5	0.7	4.3	0.7
Direct Regulation	Expansion of visitor accommodation in Amboseli restricted to present level to limit numbers of vehicles using park at any one time	4.0	1.1	4.0	0.9	4.2	0.8
	One-way circuit roads with a limited number of entry and exit points	2.9	1.4	3.0	1.4	3.1	1.4
	Higher park entrance fees used to regulate numbers of vehicles using park during peak use period	2.5	1.4	1.7	1.2	2.6	1.1
	Consolidate present roads and tracks into 8-10 major circuit (loop) roads	3.1	1.3	3.1	1.0	3.0	0.9
	No off-road driving permitted in the park	2.7	1.4	3.1	1.4	3.0	1.4
	Strict enforcement of park regulations, even if this restricts visitor viewing and photography	4.0	1.4	3.8	1.0	3.8	1.3
Indirect Regulation	Further accommodations and facilities located outside the park boundary	3.0	1.4	3.7	1.2	3.4	1.2
	Controlling visitor and vehicle impacts through increased management intervention rather than restricting numbers in any way	3.4	1.3	4.0	1.0	3.6	1.0
	Professional drivers licensed and given special training as guides and couriers	3.9	1.3	4.5	0.9	4.4	0.7

1. User response was measured on a five-point scale where 1 = Strongly Disapprove, 2 = Disapprove, 3 = Neutral or Undecided, 4 = Approve and 5 = Strongly Approve.

Most visitors, however, approved on controlling impacts through increased management, training and licensing of drivers, and the use of trained, interpretive guides. But, they did not approve of locating new facilities and accommodations outside the park. Unsolicited comments suggested some visitors felt that this would result in a less satisfying experience. It is also true that most visitors cannot distinguish between the old game reserve boundary and the new, small national park boundary.

Tour Operators' and Couriers' Acceptance

The reaction of tour operators and couriers was similar to the general pattern of visitors' responses except the pattern was again more pronounced. Again, some of the differences here were of interest. For example, more tour operators approved than disapproved of paved access roads -- lessened vehicle repair bills were a consideration in their decision.

Tour operators' and couriers' responses to use of one-way circuits and a consolidation of the present road system was a mixed and essentially neutral response. They questioned whether a one-way system was desirable or could even work. A wait-and-see attitude was taken toward consolidation in the present road system.

Use of higher park entrance fees to regulate vehicle use was disapproved of by most operators and couriers who argued fees would have to be exorbitant before they would have any real impact on use, and this would be an unnecessary burden for the industry. Tour operators and couriers did, however, agree with visitors that off-road driving should not be prohibited. Many felt it might also have a negative impact on tourism.

Mandatory use of guides was approved by a majority of tour operators and couriers, but some questioned why it should be mandatory. If guides were trained, they would be in demand.

Acceptance by Most Bothered Visitors

Using the Concerned/Informed Index (see Appendix A) in analysis produced some constructive results (Table 6). Specifically, statistically significant relationships were found between the Index and ten of the proposed management measures. Post-hoc Student-Newman-Kuels tests indicated visitors who were most bothered by park problems tended to be the group

Table 6. Analysis of variance results using the concerned/informed index.

Proposed Management Measures	Overall Mean (S.D.)	Concerned/Informed Means			Groups with Significant Differences
		Visitors Most Bothered (MB)	Visitors somewhat Bothered (SB)	Visitors Not Bothered (NB)	
A well developed system of game viewing roads and tracks	3.3 (1.4)	3.33	3.36	3.07	-----
Paved access roads from Namanga and Tsavo	3.0 (1.5)	2.57	2.83	3.31	MB
Improved road surfaces in park (all weather, less dusty, not paved)	3.7 (1.3)	3.95	3.74	3.53	MB
Many small, natural looking tracks branching off and returning to main circuit roads	4.0 (1.1)	4.07	4.01	4.04	---
Expansion of visitor accommodation in Amboseli restricted to present level to limit numbers of vehicles using park at any one time	4.0 (1.1)	4.34	4.02	3.78	MB
One-way circuit roads with a limited no. of entry and exit points	2.9 (1.4)	3.26	2.90	2.53	MB
Higher park entrance fees used to regulate numbers of vehicles using park during peak use period	2.5 (1.4)	2.42	2.54	2.40	---
Consolidate present roads and tracks into 8-10 major circuit (loop) roads	3.1 (1.3)	3.68	3.05	2.71	MB
No off-road driving permitted in the park	2.7 (1.4)	2.92	2.74	2.56	NB
Strict enforcement of park regulations, even if this restricts visitor viewing and photography	3.5 (1.4)	4.22	3.62	3.51	MB
Further accommodation and facilities located outside the park boundary	3.0 (1.4)	3.36	2.97	2.97	MB
Mandatory use of trained park interpretive guides	3.5 (1.4)	3.24	3.54	3.41	---
Controlling visitor and vehicle impacts through increased management intervention rather than restricting numbers in any way	3.4 (1.3)	3.78	3.31	3.28	MB
Professional drivers licensed and given special training as guides and couriers	3.9 (1.3)	4.32	3.77	3.65	MB

significantly different and above the overall mean -- the group more willing to approve use of management tools and techniques.

The S-N-K tests results indicated that visitors who were most bothered by park problems:

1. Gave a lower than average approval to paving,
2. Had scores consistent with the mean for development of road system, use of small, natural tracks, use of interpretive guides, and the prohibition on off-road driving, and
3. Had higher than average approval scores for all other techniques.

Explanation for Response

Step-wise regression analysis used to search for causality in visitor response again produced few constructive results. As before, a few variables were statistically significant, but they explained little variance in visitor response (Table 7). Seasonal differences, and "exposure" variables such as length of visitors' stay, number of game viewing drives, and visiting the park at the end of the safari again explained a small proportion of total variance in response.

The Vehicle Congestion Problem

Visitors provided some useful insights on the problem of vehicle congestion (Table 8). First, vehicle size and type are important. A majority of visitor indicated they were bothered by large vehicles using the park. This is an important finding since the small but increasing numbers of 20-40 seat buses and converted lorries using the

Table 8. Visitor response to facets of the vehicle congestion problem.

Item Type	Facet of Vehicle Congestion Problem	Mean	Standard Deviation
Vehicle Type	Use of 20-40 seat buses for game viewing in the park	3.7	1.7
Spatial	Seeing many cars and people around the lodge	1.9	1.3
Spatial	Seeing many cars out in the park while game viewing	2.8	1.5
Spatial	Seeing many cars in the park, but only at a distance	1.8	1.1

Table 8 Continues

Visitor response to facets of the vehicle congestion problem.

<u>Item Type</u>	<u>Facet of Vehicle Congestion Problem</u>	<u>Mean</u>	<u>Standard Deviation</u>
Spatial	Seeing few (5-10) vehicles in the park, but having those in close proximity	2.4	1.4
Spatial	Seeing many cars while stopped to view lion and cheetah	3.1	1.5

area may be doing environmental damage and reducing amenity value.

However, the real problem at present is spatial in nature. Visitors were more bothered by seeing many cars out on the park rather than in the lodge vicinity. Furthermore, they were most bothered by seeing many cars in close proximity around lions and cheetahs. The essential management problem is to limit congestion around these two predators since this is where it causes the greatest problem.

Visitors' enjoyment of viewing lions and cheetahs decreased with increasing vehicle density (Figure 2). However, visitors' tolerance of other vehicles could be increased if other drivers were more careful and courteous. Unsolicited comments indicated there was a real need for tourists in other vehicles to improve their behavior also.

Visitors indicated they would tolerate an average of 3.2 vehicles around lions or cheetahs they were viewing before their enjoyment was adversely affected, although this increased to 4.5 if drivers were careful and courteous. Tour operators felt visitors would tolerate an average of 5.8 vehicles before enjoyment was affected, and this could be increased to 8.2 vehicles with better drivers.

Perception of Other Management Issues

Willingness to Pay for Guides

& A majority of visitors indicated they would be willing to pay 30 shillings (\$3.70, or a 100 percent increase over present guide fees) for an interpretive guide who could give them detailed information on park ecology and wildlife behavior. Most tour operators and couriers agreed with this sentiment.

Proposed Management Measures	Overall F (Significance)	Statistically significant (P=.05) (Numbers in parentheses show R ² values added)	Independent variables in the order they enter the regression	Total Variance Explained
A well-developed system of game viewing roads and tracks	11.23 (.000)	Season (.17)	No statistically significant variables enter the regression equation	(.0)
Paved access roads from Mwanza and Tsavo	4.33 (.015)	Length of stay (short) (.04) No. of game viewing drivers taken in park (many) (.04) Nationality (Other European) drivers taken in park (many) (.02)	Tour Circuit (Amboseli only) (.02) Tour Circuit (Kenya-Tanzania) (.02) Nationality (U.S.A.) (.02)	(.29) (.40)
Improved road surfaces in park (all weather, less dusty; not paved)	5.72 (.004)	Length of stay Amboseli end of safari (.02)		(.07)
Many small, natural looking tracks branching off and returning to main circuit roads	13.34 (.000)	Season (.10) Amboseli end of safari (.07)		(.07)
Expansion of visitor accommodation in Amboseli restricted to present level to limit numbers of vehicles using park at any one time	10.08 (.000)	Season (.07) Vehicle Type (private) (.05)		(.12)
One way circuit roads with a limited no. of entry and exit points	5.46 (.021)	Amboseli end of safari (.04)		(.04)
Higher park entrance fees used to regulate numbers of vehicles using park during peak used period				(.0)
Consolidate present roads and tracks into 8-10 major circuit (loop) roads				(.0)
No off-road driving permitted in the park				(.0)
Strict enforcement of park regulations, even if this restricts visitor viewing and photography				(.04)

Table 7 ---Cont.

Proposed Management Measures	Overall F (Significance)	Statistically significant independent variables in the order they enter the regression model. Numbers in parentheses () show R ² values added.	Total Variance Explained.
Further accommodation and facilities located outside the park boundary	4.70 (.004)	Conservation Org. Membership (.04) Amboseli - end of safari (.01) Accommodation type (Camping) (.02)	(.07)
Mandatory use of trained park interpretive guides.	10.38 (.000)	Amboseli - end of safari (.16) Conservation Org. Membership (.02) Nationality (.05) (Other Europeans) Previous visits to Amboseli (.02) Vehicle type (Tours) (.06) Nationality (Other) (.03) Accommodation type (Lodges) (.02) Vehicle type (Private) (.02)	(.37)
Controlling visitor and vehicle impacts through increased management intervention rather than restricting numbers in any way	4.18 (.042)	Season (.03)	(.03)
Professional drivers licensed and given special training as guides and couriers	6.96 (.000)	Vehicle Type (Tours) (.05) Conservation Org. Membership (.04) No. of game view drives taken in park (.03)	(.03)

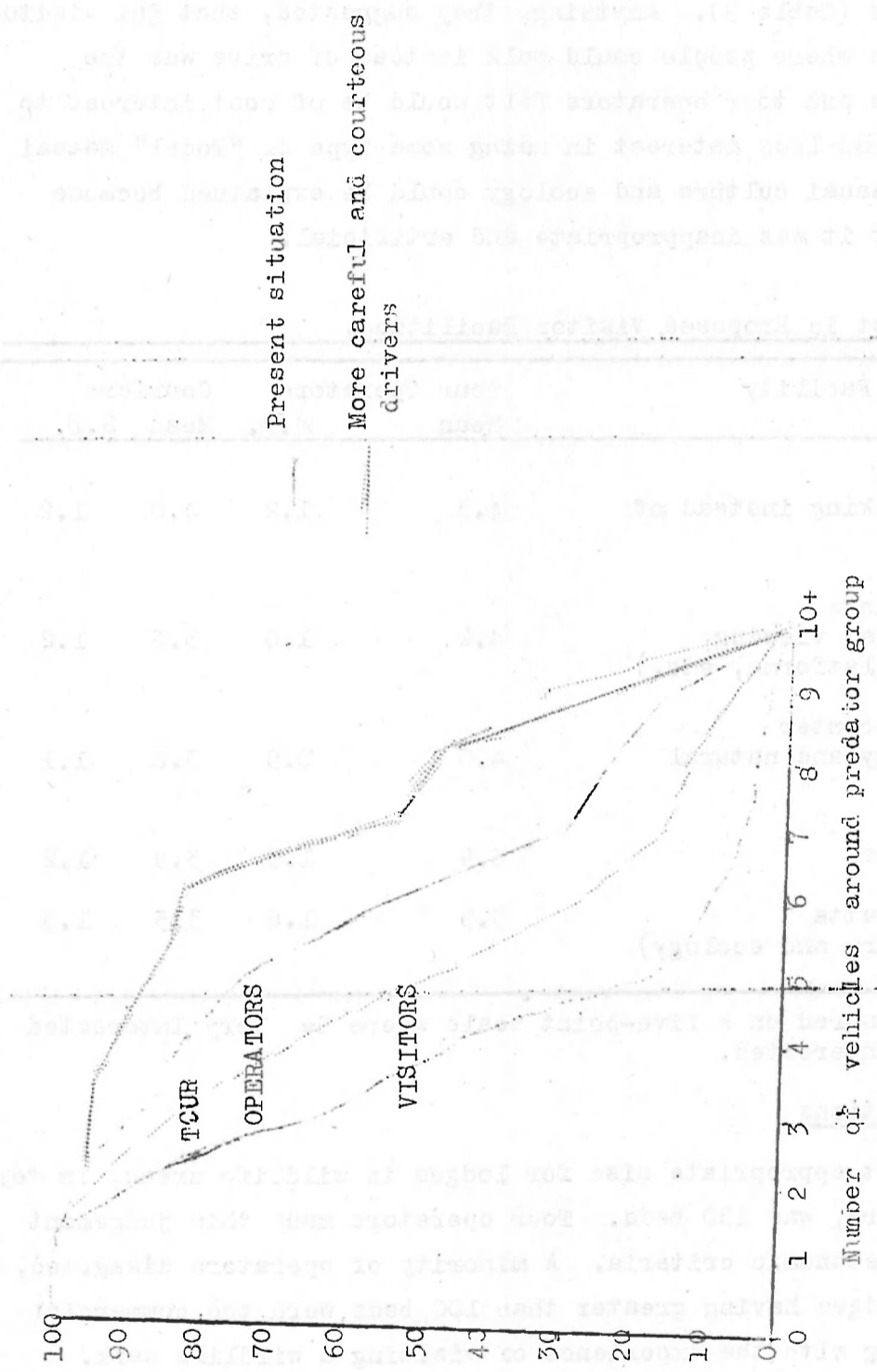


Figure 2. Visitor Enjoyment and Vehicle Congestion

Additional Visitor Facilities

Tour operators and couriers also believed visitors to be interested in using several kinds of visitors facilities proposed in development plans (Table 9). Anything, they suggested, that got visitors out of their area where people could walk instead of drive was the facility couriers and tour operators felt would be of most interest to visitors. They had less interest in using some type of "Model" Maasai Manyatta where Maasai culture and ecology could be explained because some of them felt it was inappropriate and artificial.

Table 9. Interest in Proposed Visitor Facilities.

Proposed Visitor Facility	Tour Operators		Couriers	
	Mean	S.D.	Mean	S.D.
Game viewing area (Area for walking instead of driving)	4.3	1.2	4.0	1.2
More stopping points (Nature trails, viewing, platforms, etc.)	4.2	1.0	3.6	1.2
Museum/education center (Local ecology and natural history)	4.0	0.9	3.8	1.1
Photographic hides	3.9	1.3	3.9	1.2
Model Maasai Manyatta (Maasai culture and ecology)	3.5	1.6	3.5	1.5

1. Interest measured on a five-point scale where 5= Very Interested and 1= Not Interested.

Visitor Accommodations

The most appropriate size for lodges in wildlife areas, in terms of unit bed numbers, was 150 beds. Tour operators made this judgement based largely on economic criteria. A minority of operators disagreed, stressing that lodges having greater than 100 beds were too commercial and not in keeping with the experience of visiting a wildlife park.

Most tour operators felt a lodge could be located within a 20 mile radius of the existing park boundary still be competitive with existing lodges. One operator indicated this could be as much as a 50 mile radius since Namanga River Inn already served as a base for Amboseli

tourists. However, special consideration would need to be given to setting, facilities and services offered by these lodges. Tour operators emphasized the need for natural and scenic settings, first-class service, attracting wildlife into the vicinity, and perhaps providing additional forms of entertainment.

Driver Training

It was a better investment for their companies and the tourist industry, operators suggested, to give priority to training programs and licensing systems for their drivers and couriers rather than in-park rangers. They reasoned that since drivers had a more critical role in ensuring satisfactory visitor experiences, they would be willing to support a training program, especially one that would take into account drivers' present level of knowledge and skill.

Viewing Outside Park

More than 90 percent of the tour operators said they would be willing to have their vehicle incur extra mileage to wildlife viewing roads in wet-season dispersal areas, if such roads were provided. This percentage dropped to 66 percent when it was suggested a small additional fee might be required. Those still favorably inclined emphasized a preference for concession arrangements to be handled by the Ministry of Tourism and Wildlife.

CONCLUSIONS AND RECOMMENDATIONS
Visitor Expectations

Insight on visitor expectations and preferences provides important information needed to better understand Amboseli's carrying capacity for tourism. However, more detailed information will be essential. It is clear that wildlife is the single most essential element contributing to satisfying visitor experiences, but the enhancement and promotion of tourism will require a better understanding of all the elements that make up a safari.

Because visitor expectations are not strongly or clearly defined, it should be possible to increase the capacity of the park by using information to aid dispersion of use and increase visitors' viewing diversity. But, this also necessitates a better understanding of the depth and strength of expectations and the quality of information visitors now receive.

Confirming findings on visitor expectations about wildlife will be especially important. Visitors indicated a desire to see major species, notably lion and cheetah, but this may be no more than a reflection of what was listed on their itineraries. However, visitors were interested in a greater variety of animals than either tour operators or couriers supposed they would be, and visitors also indicated that numbers and variety of wildlife were more important than seeing a large number of predators. Confirmation of this trend would mean it will be possible to take the pressure off these predators and interest visitors in a greater variety of park attractions. Congestion around predators need not be as serious a limiting factor as previously suggested,.

Using Management Tools and Techniques
To Solve Park Problems

Problems that users perceive to exist in Amboseli are an indicator that either the resource or its management are in less than optimal condition. Accuracy of user perceptions is often questionable, but the fact that users were bothered by various situations indicates some kinds of problems exist. Furthermore, existence of problems provides some

insight on priorities and implementation problems management must deal with.

Training Drivers and Guides

Lack of information on the park and wildlife, particularly as it relates to drivers and guides who have insufficient education or training, is a problem that should have high priority in the management scheme. Drivers, and to a lesser extent guides, have a key role in ensuring visitors a satisfying experience. Through their behavior and guidance they are also a major determinant of visitor and vehicle impact yet, they are the least regulated aspect of the entire tourist industry.

If congestion around predators is a major constraint on capacity, better trained drivers and guides can ease that constraint by aiding in a dispersion of use and showing visitors Amboseli's diversity of attractions. The current pattern of use may well be more a reflection of training and education deficiencies than of visitor preferences.

Significantly, there was support for use of trained interpretive guides as well as for training and licensing of drivers. Visitors wanted information and were willing to pay for it. Moreover, tour operators themselves were amenable to supporting a training and licensing scheme, especially one that would take into account drivers' present education and skills. Correcting these deficiencies would benefit tourism, the tourist industry, and the individual drivers and guides.

Educating Park Visitors

Other problems appear to be associated with lack of information. Ecologically-related problems are, in part, attributable to misconceptions or misinformation. The Amboseli ecosystem is extremely complex and dynamic, something which is understood by few resident visitors and fewer overseas tourists. Misconceptions are inevitable, especially if accurate information is not available to correct them. For example, if the nature of the monsoon influenced seasons is not understood, dust, habitat destruction, and apparent drought can be viewed as more serious than they actually are. Nor will the scarcity of animals in the park at certain times be understood unless visitors realize Amboseli is primarily a dry-season refuge for wildlife.

Other kinds of educational information are also lacking. Many guides, drivers, and visitors know too little about how to treat or view wildlife. Visitors seem to regard wildlife as zoo animals, and they miss many interesting things because of not knowing what to watch for. For example, seeing lions or cheetahs hunting may be the ultimate sight to show visitors, but often tourists and their vehicles are inevitably too close and too disruptive to allow this to even happen. Thus, more of this type of information can enhance visitors' experience.

Educational information could also be used to reduce impact by influencing such depreciative behaviors as off-road driving, feeding animals, littering, poor campcraft, and tossing out cigarette butts that are still lit.

Identifying Management Tools and Techniques

Another major conclusion is that development must be carefully attuned to preserving the natural environment and to providing the kind of experience which visitors want. It can be a delicate balance. In this respect, it must be noted that some management techniques were very favorably received while others were greeted with disapproval and suspicion. The latter are indicative of the fact that care and subtlety will be needed in implementation. For example, long, rough, and dusty roads are apparently desirable because visitors like to think that they are "roughing it" in a remote, natural environment. Thus, they approved of small, natural tracks and better road surfacing, but were suspicious of a well-developed road system, and disapproved of paving access roads.

Although a majority of tourists come on well organized and regimented package tours, there are still elements of freedom and spontaneity associated with being in the park which may be desirable to preserve. Implementation of one-way roads or prohibition of off-road driving should be approached with great sensitivity. Since visitors indicated a willingness to support stronger management action even at the expense of viewing and photography, they need educational information on the problem. A phased implementation with monitoring would also be desirable since off-road driving might not even be a problem when the new road system is complete.

Visitors Facilities

Few tourists perceived too many facilities to be a problem, a fact that may help to explain why there was not much support for locating additional lodges and facilities outside the park boundary. This idea, a key element in an integrated approach to planning the Amboseli ecosystem (Western and Thresher 1973) is, however, viewed as feasible by tour operators. If good service and facilities can be provided at competitive prices, distance from the park becomes a less relevant issue. Tour operators also indicated a willingness to use game viewing roads in wet-season dispersal areas outside the park, especially if the Ministry of Tourism and Wildlife made the arrangements.

Some additional visitor facilities would be desirable and would contribute to greater diversity in the park. The only controversy was over a "model" Maasai-Manyatta resulting from a fear of over-commercialization. But since there is a real need to explain Maasai culture and ecology to visitors due to many existing misconceptions, the "model" still seems the best approach.

The Vehicle Congestion Problem

Congestion is primarily a problem in the vicinity of lions and cheetahs, and its seriousness is a function of vehicle size, number, and closeness. A policy decision will be needed soon since use of large vehicles may contribute to environmental and social impacts. Wildlife is not habituated to these large vehicles, and they appear to reduce the amenity value of the park for many visitors. Furthermore, the road system will need to be planned and built differently if this use is to be accommodated.

The optimal number of vehicles allowed around a group of lions or cheetahs at any one time is a function of the health and well-being of the animals as well as the enjoyment of the visitors who want to see them. The number can be a standard for measuring the park's visitor carrying capacity and a criteria for measuring effectiveness of various management techniques.

From the perspective of visitors' enjoyment, this number is between four and eight. The exact number will be dependent upon the behavior of visitors and drivers, how closely they approach these animals,

and the recommendations of an ecologist. It would seem advisable, therefore, to set a limit on how close vehicles should be allowed to approach lions and cheetahs, monitor the situation, and eventually decide on a numeric limit. A distance limit and better trained drivers and guides are likely to make the larger number feasible.

Group Differences

Differences in user groups were not all that different in practical sense. The tendency of tour operators and couriers to believe visitors were more bothered than they actually were reflects the fact that they deal most frequently with the tourists who are complaining. It may also reflect the commitment that many of them feel to the parks and the wildlife.

LITERATURE CITED

- Brown, Perry J., Beverly L. Driver, and George H. Stankey, 1976. Human behavioral science and recreation management. IN XVI Int. Union For. Res. Organ. World Congress, Proc. Div. VI, Vienna, Austria, pp.53-68.
- Economic Survey. 1977. Prepared by Central Bureau of Statistics, Ministry of Finance and Planning. Republic of Kenya, Nairobi, Kenya.
- Gilbert, C.G., G.L. Peterson, and David W. Lime. 1972. Toward a model of travel behavior in the Boundary Waters Vanoes Area.
- Hay, William L. 1973. Statistics for the social sciences. Holt, Rinehart, and Winston, New York.
- Henry, Wesley. 1975. A preliminary report on visitor use in Amboseli National Park. Working Paper No. 263, Institute for Development Studies, University of Nairobi, Nairobi, Kenya.
- Mitchell, Frank. 1969. Forecasts of return to Kajiado County Council from Maasai Amboseli Game Reserve, 1970-2000. Discussion Paper N. 87, Institute for Development Studies, University of Nairobi, Nairobi, Kenya.
- Lime, David W. 1976. Principles of recreational carrying capacity. In Southern States Recreation Research Applications Workshop Proc., USDA For. Serv. Gen. Tech. Rep. SE-9, Southeast For. Exp. Stn., Asheville, N. Carolina, pp. 122-134.
- Lucas, R.C. 1964. The recreational capacity of the Quetico-Superior area. Lake States Forest Experimental Station, St. Paul, Minnesota. USDA Forest Service Paper LS-15.
- Nie, N.H., C.H. Hull, J.S. Jenkins, K. Steinbrenner, D.H. Bent. 1975. Statistical package for the social sciences. McGraw-Hill, New York.
- Western, David J. 1973. The structure, dynamics, and changes of the Amboseli ecosystem. Ph.D. Dissertation, University of Nairobi, Nairobi, Kenya.
- Western, David J. 1974. Road development Plans for Amboseli National Park based on criteria and a rationale for reconciling conservation and recreational use. Mimeo, IBRD, Nairobi, Kenya.
- Western, David J. 1975. An assessment of visitor capacities and related planning needs for Mara, Saruburn and shaba Game Reserves. Mimeo, IBRD, Nairobi, Kenya.
- Western, David J. 1976. Amboseli, integration of people, land and wildlife seeks to end the conflicts which threaten this national park. Parks Magazine, Volume 1:2.
- Western, David J., and Philip Thresher. 1973. Development plans for Amboseli, mainly wildlife viewing in the ecosystem. Mimeo, IBRD, Nairobi, Kenya.