

ENHANCEMENT OF THE AWARENESS
OF
CONSERVATION ISSUES
IN VISITORS TO
THREE SOUTH AFRICAN NATURE RESERVES

BY

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ABSTRACT

A statistically significant increase in awareness of conservation issues has been found for South African residents who stayed overnight in Hluhluwe Game Reserve, in Giant's Castle Game Reserve, or in Londolozi Private Game Reserve. Despite these increases, the levels of awareness of conservation issues in respondents leaving the reserves are considered to be low.

These findings, using a longitudinal survey design, were verified using a cross-sectional survey design. Approximately 150 respondents were interviewed in each reserve, and for both approaches.

Respondents were found to represent a most privileged sector of the South African public, both in terms of educational and socio-economic status. Interest in nature, and use of interpretative services, are shown to be limited by a generally narrow perspective of nature conservation. Interpretative facilities and programmes in the reserves were not found to be structured in a manner whereby the various mediums complemented one another to provoke an holistic consideration of nature and the conservation thereof.

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S.A. NATURE FOUNDATION

CHAPTER 1

INTRODUCTION

"Informal education programmes, directed at the adult public, are haphazard; and formal programmes, directed at school-children, are still too few and inadequate. Relatively little can be achieved, and few achievements will last, while the contribution of conservation objectives to development and the requirements of achieving those objectives remain poorly communicated."

(World Conservation Strategy, IUCN, 1978)

Several authorities administering nature reserves in South Africa have in recent years intensified efforts to provide informal educative services for visitors. These services vary from passive provision of libraries and small museums (interpretative centres) at rest camps to active interaction with visitors by naturalists employed to assist the public. Between these two extremes are many other forms of aid designed to help visitors appreciate what they are seeing in the reserve. These types of instruction about natural history, ecology and nature conservation are collectively termed interpretation.

Tilden (1977, p8) defines interpretation as, "An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, rather than simply to communicate factual information." Furthermore, he maintains that the chief aim of interpretation is not instruction, but provocation; and that interpretation should aim to present a whole rather than a part.

Another view of relevance is that of Sharpe (1976), who sees interpretation as setting out to achieve three chief objectives: to assist the visitor in developing a keener awareness, appreciation, and understanding of the area he or she is visiting; to help accomplish management goals, and to promote public understanding of an agency and its programmes. Wallin (quoted in Sharpe, 1976) stresses the importance of helping the visitor to develop perception. Aldridge (1974, p304) defines interpretation as "... the art

of explaining the place of man in his environment, to increase visitor or public awareness of the importance of this relationship, and to awaken a desire to contribute to environmental conservation".

Of significance in establishing the parameters of interpretation is the goal of environmental education stated in the Belgrade Charter (UNESCO-UNEP, 1976): "To develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones."

For the purposes of this thesis, interpretation in nature reserves is taken to have the following broad aims:

To engender in visitors...

- a) an understanding of ecological systems and environmental inter-relationships;
- b) an empathy with and commitment to nature and its conservation;
- c) an awareness of their own environmental influence and responsibilities;
- d) confidence in and support for conservation authorities and their work.

Interpretative services in South African nature reserves are in their infancy, and problems still abound. The most significant appear to be:

- limited resources available for interpretative services, and difficulties in deciding the priority of interpretation against other demands in nature reserves;
- the scope of interpretative services remain ill-defined. There is some controversy as to whether it is a reserve's function to embrace broad environmental issues or simply to explain local phenomena. Little interpretation is offered in South African nature reserves, and that that exists tends to be limited to information on the parks themselves;
- little research into visitor knowledge and attitudes toward nature conservation has been undertaken in South Africa. It is consequently difficult to focus interpretative efforts;
- the effectiveness of the various existing interpretative facilities and programmes remain largely untested. Negligible research on this topic has been undertaken in South Africa.

1.1. AIMS

The chief aim of this project is to assess:

- a) the extent to which visitors' awareness of issues in conservation is enhanced by a visit to a nature reserve.

Secondary aims are to gain insight into:

- b) the motives people have for visiting nature reserves;
- c) the extent to which visitors make use of the interpretative facilities and programmes offered in nature reserves.

It is necessary to demarcate the scope of this research project, as interpretative efforts and priorities in reserves cover a wider spectrum than was researched. Several riders must be added to the stated aims:

- only visitors above 14 years of age were interviewed;
- only South African residents were interviewed. While the study was not intended to be racially limited, the small number of 'non-whites' visiting the reserves (4 out of over 800 eligible respondents) resulted in the study being

limited to white South Africans;

- only overnight visitors were interviewed;

- the study is directed at the cognitive domain, rather than at the affective domain or at behavioral tendencies. 'Domain' carries connotations of a sphere of influence. One cannot split the cognitive and affective into discrete parts; rather they are points on a continuum. As Leff (1978) states, "affect - the emotional or feeling tone of experience - is partially based on active cognitive processes". [The Belgrade Charter (UNESCO/UNEP, 1976) identifies six environmental education objectives: awareness, knowledge, attitudes, skills, evaluative ability, and participation. The present study looks primarily at awareness ("to help individuals and social groups acquire an awareness of and sensitivity to the total environment and its allied problems" (ibid, p 161)) and knowledge ("to help individuals and social groups acquire basic understanding of the total environment, its associated problems, and humanity's critically responsible presence and role in it", (ibid, p 161)) in such a breakdown];

- the study does not assess the effectiveness of individual interpretative facilities and programmes in the reserves surveyed;

- the retention of enhancement of awareness of conservation issues is not studied;

- no attempt is made to equate scoring on the questionnaires to a "conservation awareness rating".

used to ascertain any change in awareness of conservation issues. A cross-sectional design [Approach (b)], testing two sample groups of 150 respondents each, with one questionnaire, was used to verify the results of the longitudinal design. (See section 2.1)

Data was collected using self-administered questionnaires, completed by respondents in the presence of the researcher. The questionnaires were designed following established techniques. (See sections 2.3 and 2.4)

The statistical test used for the longitudinal design was the McNemar test of symmetry. The test used for the cross-sectional design was Pearson's chi-squared. A 10% level of significance was taken. (See section 2.5)

In designing and matching the questionnaires, pre-tests and pilot studies were conducted in Cape Town. Respondents were chosen at random on criteria likely to mimic those applicable to the nature reserves' populations. (See section 2.6)

All interviewing was done by the researcher. Those responsible for interpretation in the reserves visited were not informed of the content of the questionnaires until after the survey had been completed. (See section 2.7)

1.3. RESEARCH ON INTERPRETATION

While research into environmental education in South Africa is increasing (Nightingale, 1977; Hurry, 1977; Diepeveen, 1979; Liebenberg and Spies, 1977; Opie, 1979; Millar, 1980; Natal Parks Board, 1982; Clayton, 1982; Irwin, 1982; Hurry, 1982), no study on interpretation in South African nature reserves has been published.

Related research includes that of Lambrechts (1976), who studied (inter alia) the conservation knowledge of owners of private nature reserves in the Eastern Transvaal, concluding that this was generally low. Pickles (1982) studied landscape preferences in the Natal Drakensberg, while Boddington (1980) surveyed the views of hikers on Table Mountain. Von Broembsen (1977) undertook a survey of public attitudes towards nature conservation, with specific emphasis on the conservation of Table Mountain. The study focussed chiefly on the affective domain.

Senior ranger/naturalist R Goetz, stationed at Hlulhuwe, has an on-going project to monitor the visitor profile for Hlulhuwe, and ascertain the interpretative preferences of these visitors. Questions asked in Goetz's survey were of assistance to the researcher in compiling the questionnaires for this study.

An interpretative research bibliography (Winzeler and Cherem, 1978) lists abstracts of research papers, theses and texts on various aspects of interpretation in the U.S.A. and Canada. None of these attempts an overview of the enhancement of awareness of conservation issues in visitors to nature areas.

Kellert (1980) studied Americans' knowledge and attitudes towards animals, concluding that "... the wildlife views of most Americans appear to be based on limited factual understanding and awareness. Moreover, interest and concern for animals were largely confined to attractive and emotionally pleasing species. While substantial growth in wildlife appreciation is certainly a welcome development, inadequate knowledge and an inordinately narrow perspective must also be recognized and used to form the basis for more innovative public awareness efforts".

1.4. FORMAT

Chapter 2 deals with the methodology applicable to this study. Chapter 3 discusses the scoring of the questions used to assess the level of awareness. It was decided to present the data obtained in the three reserves separately. (Although involving some repetition, this facilitates the reader who may be particularly interested in one of the

reserves. However, the results are discussed jointly.) The results of the longitudinal designs [Approach (a)] are presented for Hluhluwe (in Chapter 4), Giant's Castle (Chapter 5) and Londolozi (Chapter 7). The results of the cross-sectional design [Approach (b)], undertaken in Hluhluwe and Giant's Castle, are presented and compared in Chapter 6. Discussion of the results, and conclusions drawn, are to be found in Chapter 8.

The English and Afrikaans questionnaires used, and summaries of the data from each of the reserves, are presented in the appendices. The scientific names of plants and animals mentioned in the text are given only in Appendix J. Maps showing the positions of each reserve are to be found on the frontispiece to their respective chapters.

Suggestions and recommendations to the Natal Parks Board and to the owners of Londolozi take the form of a supplement, and are not included in the thesis.

CHAPTER 2

METHODOLOGY

In this chapter the reasoning behind the survey design, choice of venues, method of data collection, questionnaire design, and the statistical analysis is given. In addition, the pre-testing and pilot studies, and the implementation of the approach in the reserves, are discussed.

2.1. SURVEY DESIGN

In most social surveys the researcher "attempts to explain values on the dependent variable on the basis of values on the independent variable" (Babbie, 1973, p244). The independent (or experimental) variable in this study is interpretation in nature reserves. The dependent variable is awareness of conservation issues.

In order to be able to isolate the independent variable it is necessary to control other variables that could influence the dependent variable. This was done by randomizing such variables as sex, age, language, occupation and education, and excluding others (e.g. by only interviewing South African residents; by using an age cut-off). Length of stay in the reserve remained an uncontrolled variable.

The approach adopted was a longitudinal design in which visitors to the reserves were questioned on their arrival, and again on their departure, using two matched questionnaires. In order that any change could be ascribed

to the experimental variable, a control group was necessary to indicate "what would have happened to the experimental group if it had not been subjected to the experimental variable" (Oppenheim, 1966, p18). This control was undertaken in the final pilot study. The pilot study is discussed in detail in section 2.7.

A possible weakness in longitudinal design is that "if the respondents are aware that they are participating in a survey or experiment, this in itself will produce certain changes" (Oppenheim, 1966, p 17). It was decided to test for such an effect by taking, in addition, a cross-sectional survey in (initially) one of the reserves studied. This involved interviewing a second sample in the reserve, giving them the Questionnaire One at the end of their visit. If the results of the longitudinal design (Approach (a)) are verified by those of the cross-sectional design (Approach (b)), this indicates that the administration of the first questionnaire has not in itself produced changes in the second questionnaire. The two approaches may be summarized as follows:

(a) In all reserves

Arrive: Questionnaire One / Respondent group A

Depart: Questionnaire Two / Respondent group A

(b) In one reserve

Arrive: Questionnaire One / Respondent group A

Depart: Questionnaire One / Respondent group B

Those questioned on leaving in Approach (b) were given the Before questionnaire (Questionnaire One of the two matched questionnaires). Questionnaire Two could not have been used, as any comparison would not take the post-test influence of the pre-test into account.

The decision to use two matched questionnaires (in Approach (a)) necessitated making the questions 'difficult'. If most responses were scored positively in Questionnaire One, any increase in awareness would have been difficult to gauge.

The recommended sample size for a population of 20 000 (and more), taking a 95% confidence interval with a precision of +/- 10%, is 100 respondents (Yahame, 1967). At the request of the South African Nature Foundation a sample size of 150 respondents was taken.

2.2. CHOICE OF VENUES

Important logistical constraints in the choice of reserves were that the use of National Parks for this project was denied, and that the reserves selected should have sufficient overnight visitors for adequate sampling. Thus a number of reserves with interesting emphases in interpretation were not available, or not suitable, for this project. Of the reserves considered, all offered some form of interpretation. The presence of a ranger/naturalist

charged with the specific function of interpretation was taken to be a basic requirement in the choice of reserves.

The interpretative facilities and programmes offered in each of the three reserves visited - Hluhluwe, Giant's Castle and Londolozi - are set out in detail in the respective chapters. The reasons for approaching those administering these reserves for permission are briefly discussed below.

Hluhluwe is one of the better-known nature reserves in South Africa (particularly because of the recent campaign to save the white rhinoceros), and thus has a reputation that would probably draw those beginning to explore nature reserves. Hluhluwe has a high turnover of visitors, with 7 991 accommodated visitors in the year ending 31 March 1981 (Natal Parks Board, 1981).

Dr J Vincent, Assistant Director (Interpretation) of the Natal Parks, Game and Fish Preservation Board (NPB), suggested Giant's Castle as a second venue. Opportunity to study two Natal reserves offered the chance to compare visitor profiles between bushveld reserves and mountain reserves. In addition and more importantly, Giant's Castle has the most intense interpretation of the NPB's Drakensberg reserves (Dr J Vincent, pers. comm.), and also has a high visitor turnover (6 316 accommodated visitors in 1980/1).

Private nature reserves formed the second group to be surveyed. Such reserves are usually very much more expensive to visit than are public reserves, and usually

offer more interpretation facilities. Londolozi tends to draw a higher proportion of South African visitors than many other private reserves (J Varty, pers. comm.), and has a reputation for placing an emphasis on education. Furthermore, Londolozi newsletters show that they stress broad environmental education in their interpretation programmes.

The interpretative facilities and programmes offered in the reserves surveyed are summarized below:

	HLUHLUWE	GIANT'S CASTLE	LONDOLOZI CASTLE
Literature on the reserve	x	x	x
General literature	x	(x)	(x)
Displays	(x)	x	
Interpretative centre		(x)	
Site museum	x	x	
Hide	x	x	x
Self-guided drives	x		
Self-guided walks	x	x	
Resident ranger/naturalist	x	x	x
Formal talks	(x)	(x)	
Slide shows			x
Film shows	x	x	(x)
Guided day drives	(x)		x
Guided night drives			x
Guided walking trails	(x)	x	x

(x) indicates that this is infrequently offered, or that the facility or programme is not fully developed. For example, there are seldom film shows at Londolozi, while film shows constitute one of the more important forms of interpretation in the other two reserves; guided day drives are occasionally offered at Hluhluwe, though none occurred during the research period.

Giant's Castle was logistically preferable as the reserve in which to adopt Approach (b) (ref. 1.3.1). During the field trip, with the permission of the Natal Parks Board, it was decided to adopt Approach (b) in Hluhluwe as well (see section 2.7).

2.3. DATA COLLECTION

Respondents were surveyed using self-administered questionnaires. These were completed in the presence of the researcher. "This method of data-collection ensures a high response rate, accurate sampling, and a minimum of interviewer bias, while permitting interviewer assessments, providing necessary explanations (but not the interpretation of questions), and giving the benefit of a degree of personal contact" (Oppenheim, 1966, p 36).

Furthermore, questionnaires can be checked to ensure that all questions have been completed, and obvious mistakes can be rectified. The researcher is able to corroborate and thus check respondents' answers. Other advantages mentioned by Bailey (1978) are control over the environment (e.g., noise) and observation of nonverbal behaviour. These allow for factors such as distraction by infants, disinterest, liquor and language difficulties to be tempered or noted. An atmosphere conducive to serious consideration of the questions can be engendered.

One of the chief advantages of using self-administered questionnaires is that the respondent alone can answer (Bailey, 1978).. This enables the range and types of factual questions to be reliably increased, as the respondent cannot obtain the answer from someone else, or consult literature.

Disadvantages of such an approach are the costs and time such an approach demands. Furthermore, the possibility of inconvenience to the respondent affecting the responses must be guarded against (Bailey, 1978).

Practical difficulties in the implementation of the approach are discussed in section 2.7.

2.4. QUESTIONNAIRE DESIGN

The pitfalls in the design of questionnaires are well documented (Babbie, 1973; Bailey, 1978; Barber, 1976; Doby, 1967; Goode and Hatt, 1952; Oppenheim, 1966), and the application of established techniques in the design of the questionnaires is discussed below.

2.4.1. Relevance

Of central concern is the relevance and sufficiency of the questionnaire items to the dependent variable (Doby, 1967) - i.e. knowledge of conservation issues. "The inclusion of every item should be defensible on the ground that the researcher can logically expect the answer to be significant for his central problem" (Goode and Hatt, 1952, p 135).

It is generally accepted that an holistic approach to nature conservation is necessary (UNESCO/UNEP, 1976; IUCN, 1978; Wildlife Society, 1980). No interpretative service in South Africa known to the researcher attempts an holistic approach. Nonetheless, it was decided that issues raised should cover a broad spectrum, and not simply be limited to local phenomena in the reserves.

The issues raised have been grouped into three broad categories: Wildlife, Conservation and Environmental. While such groupings are inevitably somewhat arbitrary, they are strengthened by not having been regarded as mutually exclusive. Thus, some issues have been included in more than one category. The questions asked are covered in detail in chapter 3.

In all, 28 questions on conservation issues were asked in each questionnaire. (Through pre-testing, this was found to be the optimum number of questions relating to the chief aim of the thesis. Of these, 25 are scored. Two questions in each questionnaire were asked to give respondents something

to answer with certainty. One question was asked chiefly as a reliability check (Bailey, 1978) in the pre-testing.) By limiting the number of questions to be asked, the number of issues that could be raised was also limited. Furthermore, the decision to cover broad issues had the opportunity cost of reduced probing into individual issues.

As mentioned in section 2.1, the nature of the survey required that the questions be discriminating enough to allow for an increase in awareness to be noted. For some topics it proved too difficult to devise two reliably demanding matching questions despite many attempts (e.g. on the concept of sustainable yield). Consequently, such issues were not included in the final drafts.

Questions could also not be made too demanding. It was felt that were the majority of respondents to find too many of the questions beyond them, some would be unwilling to answer a second questionnaire later. The level at which the questionnaires were pitched was such that approximately 40% of responses would be likely to be scored positively. This allowed for increases to be fairly easily noted, without the questionnaires being demoralizingly difficult.

2.4.2. Open and Closed Response Categories

Open and closed response categories of questioning each have advantages and disadvantages (Bailey, 1978). The chief

advantages of closed response categories that led to this approach being adopted are the saving of time (allowing for more issues to be raised in the time available), greater ease in answering, greater uniformity of responses, and the advantage of easy coding of responses. Such an approach demands careful pre-testing. The chief disadvantage is the reduced control over guessing.

In pre-testing questions related to the motives of visitors in visiting reserves, open-ended questions (in which the respondent is able to provide his own answer) were initially used. These answers provided a range of options from which to draw in constructing closed-ended questions. Where thought appropriate, space was left at the end of closed-ended questions for respondents to also fill in their own answers. In addition, respondents were able to write in comments about the closed-ended questions if they so wished.

2.4.3. Wording of Questions

A common mistake in the wording of questions is using a double-barrelled statement. One question fell into this trap (see the discussion of question 24 in Chapter 3), and responses to this question thus had to be verbally corroborated by the researcher. Babbie (1973) warns against negative items. Again one question (which was deliberately phrased in the negative - see question 23 in Chapter 3) needed to be verbally corroborated by the researcher.

Ambiguous questions (Bailey, 1978) proved to be a problem in the pre-testing. Two questions (see questions 8 and 21 in Chapter 3) occasionally needed to be briefly explained by the researcher in the survey.

The level of wording had to be such that respondents were capable of answering. The questionnaires were pre-tested on adolescents of various ages in order to forestall this problem. The final questionnaires were written so as to be comprehensible to the average 14 year old.

Abstract questions were avoided (Bailey, 1978), and questions were kept as short as possible. The possible influence of biased items (e.g. "Hitler said...")(Babbie, 1973) was borne in mind in wording statements.

2.4.4. Format

The format was varied in the pre-tests until the questionnaires were easy to answer, uncluttered, and matched respondents' time expectations. In answering the awareness questions, respondents were asked to circle abbreviations (e.g. SA for Strongly Agree), rather than numbers. This aided the respondent by making responses easier to remember, and reduced the "halo effect" (Meyers and Grossen, 1974) - numbers may bias the responses of subjects if construed to have positive or negative values.

The presence of the researcher whilst respondents completed the questionnaires allowed for explanation and corroboration of instructions, when necessary.

2.4.5. Question Order

The ordering of questions is of great potential influence. Babbie (1973, p21) advises against 'randomizing' the order of questions, advocating rather that the researcher be sensitive to the possible effects of the order.

Biographical questions that could be influenced by the respondent's handling of the awareness questions (questions asked to assess the respondents' awareness of conservation issues) were asked first. For example, a person who finds the awareness questions difficult might rate his interest in conservation or his desire to be taught about nature with more diffidence if such questions were to be asked after the awareness questions (see Oppenheim, 1966, p39-40). Following standard practice, questions asking for sex, age, etc were asked at the very end (Babbie,1973).

The order of the awareness questions was shuffled during the pre-tests and pilot studies. At suitable intervals, 'easy' questions (that were not necessarily scored) were asked. This was done to give respondents something to answer with greater surety, so as to maintain their interest and co-operation. Care was taken to ensure that the respondent

was "brought as smoothly as possible from one frame of reference to another, rather than made to jump back and forth" (Goode and Hatt, 1952, p 137).

2.4.6. Scoring of the Awareness Questions

Interviewees were asked to respond to statements on a slightly modified Likert scale :- Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree, Don't Know.

The responses have been collapsed for the purposes of analysis. For example, a response of either "Strongly Agree" or "Agree" is scored positively for the question,

'The enforcement of laws protecting the environment in South Africa is seriously inadequate.'

Any other response is scored negatively. (The response of "Neutral" or "Don't Know" is always scored as negative.) Responses were collapsed to simplify index scoring, but it was felt necessary to offer respondents a wider range of options so as to increase the likelihood of their committing themselves to an opinion. (While such indexing is ordinal in nature (Miller, 1970), the data has been treated as being on an interval scale - a common practice in social research (Bailey, 1978).)

2.5. STATISTICAL TESTS

The level of significance to be used was set at 10%. This level was chosen so as to minimize the possibility of a "Type II Error" - i.e. of accepting a false hypothesis (Meyers and Grossen, 1974). Furthermore, this is in accord with the level of significance usually employed in exploratory surveys of this nature (Prof M. von Broembsen, pers. comm.).

The data takes the form of frequencies arranged in categories. Normality cannot be assumed, and it is consequently necessary to use non-parametric tests (Siegel, 1956). The test used in Approach (a) is the McNemar Test of Symmetry (a non-parametric chi-squared test for matched pairs). Whilst valid for testing symmetry, a weakness of this test can be shown in the following example:

		BEFORE		
		Negative	Positive	Total
AFTER	Negative	107	12	119
	Positive	31	5	36
	Total	138	17	153

A statistically significant increase is computed for the above figures (chi-squared value of 8,395; probability of 0,38%) when using the McNemar test. The weakness is that the figure of 112 (representing those who scored the same both Before and After = 107+5) could be of any size without affecting the statistical result. The test is only concerned with the compartments where there has been a

change - either positive to negative, or negative to positive. Thus sample size MAY become unimportant. The following figures will give the same result:

		BEFORE		
		Negative	Positive	Total
AFTER	Negative	100000	12	100012
	Positive	31	500	531
	Total	100031	512	100543

The McNemar Test, then, is concerned with what changes there have been, but not with what changes there have NOT been. It is because of this it is felt that the actual scores are also of significance when presenting and analysing the results.

The statistical test used in Approach (b) is Pearson's Chi-squared Test (non-parametric for independent samples). This well-known test examines the ratios between compartments. An important feature of this test (and of the McNemar test) is that if the ratio of the frequencies in the compartments is kept constant, and the frequencies are changed, the chi-squared values will change. (For each sample size there is a different chi-squared distribution. Effectively, the greater the sample size, the more surety with which a ratio will be accepted as significant.)

This presents a problem when dealing with condition variables. For example, say we wished to know whether the teachers in a sample showed a significant increase in awareness of conservation issues, and found the following:

TEACHERS:	Negative	Positive	Total
Before	50	40	90
After	40	50	90
Total	90	90	180

NON-TEACHERS:	Negative	Positive	Total
Before	100	80	180
After	80	100	180
Total	180	180	360

The Pearson's chi-squared value for the teachers in this example would be 2,222. This would not be significant at a significance level of 10% (the value must be greater than 2,706). Thus, the teachers would not be shown to increase their level of awareness. The chi-squared value for the non-teachers would be 4,444 (i.e. significant). Yet there is obviously no difference between the proportionate increases shown by both sub-groups (a comparison of teachers and non-teachers yields a chi-squared value of 0,0).

It is frequently difficult to compare subgroups of condition variables, however, as average Before levels usually differ. (It would presumably be easier to increase from a lower Before level of awareness).

Statistics were computed using the Biomedical Statistical Package (BMDP) (Dixon, 1981). Only actual frequencies have been used in calculating statistical values in this survey. Statistical tests have not been performed on raw data converted to percentages. (Data has often been presented in percentage format so as to facilitate comprehension.)

2.6. PRE-TESTS AND PILOT STUDIES

Babbie (1973, p205) differentiates between pre-tests and pilot studies thus: "Pre-tests ... refer to initial testing of one or more aspects of the study design. ... Pilot studies ... refer to miniturized walkthroughs of the entire study design".

In all, 10 pre-tests and 3 pilot studies were undertaken. The need for so many preparatory runs was chiefly because of difficulties in balancing the Before and After awareness questions, and the need to re-test questions after rewording (Oppenheim, 1966). Pre-tests and pilot studies were conducted in Cape Town. While it would have been preferable to have undertaken pre-tests in one of the reserves to be studied (or at least a similar reserve), this was not logistically feasible.

Respondents for the pre-tests and pilot studies were selected so as to as closely approximate the reserve populations as possible (Oppenheim, 1966). Respondents thus had to be South African residents; be interested in nature conservation (and have visited or be intent on visiting the reserves, or similar types of reserves); from the higher socio-economic groups; 14 years old or older, and chosen at random.

The final pilot studies was conducted in the Kirstenbosch Botanical Gardens over a weekend. All respondents were selected on the basis of the above criteria. As with visitors to nature reserves, these respondents had made a physical effort to visit a nature area, which seemed a preferable pilot population to any other that could have been sampled in Cape Town. The sample size was 42.

A comparison with the positive responses to the Before questionnaire in the reserves is an indication of how closely the pilot sample represented the populations in these reserves. The figures are:

Pilot Study	435/1050	(41,42%)
Hluhluwe	1450/3850	(37,66%)
Giant's Castle	1517/3700	(41,00%)
Londolozi	1520/3800	(40,00%)

A chi-squared test on the above frequencies indicates a statistically significant difference (taking a 5% significance level). If the value for Hluhluwe is omitted for the test, there is no statistically significant difference. (Any combination including Hluhluwe shows a statistically significant difference.) This highlights a justification for doing the pilot test in Cape Town, for had it been possible to do the final pilot study in one of the reserves, that reserve may not have been representative of all three reserves: The above figures indicate, rather, that the Before level of awareness of respondents in Hluhluwe was significantly lower than that in the two other reserves sampled.

In the pilot studies the Before and After questionnaires were consecutively administered, without any intervening experiences to change attitudes or knowledge. Pilot testing in Cape Town had the drawback that in the field work in the reserves the respondents had the length of their stay to mull over the Before questions before answering the After questions. [This represents an uncontrolled variable in the longitudinal design (Approach (a)), but a controlled variable in the cross-sectional design (Approach (b)).]

A further limitation stemming from pilot testing in Cape Town was the possibility of inappropriate questions. For example, visitors to Giant's Castle were asked

"The eland tends to graze (eat grass)
during Summer in this reserve."

(Eland are predominantly browsers, but do graze in Summer in Giant's Castle.) It may have been easier to answer such a question when in the animal's habitat. Respondents in Cape Town unfamiliar with the reserve might have been at a disadvantage.

In addition to the pre-tests and pilot studies, a group of academics from various biological sciences, together with officials from the Cape Department of Nature and Environmental Conservation, were tested (using the penultimate pilot study questionnaires). This was to establish the accuracy of the questions when answered by knowledgeable persons.

2.6.1. The Final Pilot Study: Results

The final pilot study was undertaken at Kirstenbosch Botanical Gardens on the 22 June 1982. The result of the overall scoring - i.e. all the answers of all the respondents - was as follows:

H 0: There is no difference between the the overall responses to the two questionnaires.

H 1: There is a difference.

Significance Level: 0,10 (10%)

Critical Region: $\chi^2 > \chi^2_{(1; 0,10)}$
 $> 2,706$

		After		
		NEGATIVE	POSITIVE	TOTAL
Before	NEGATIVE	483	132 I	615
	POSITIVE	143	292 I	435
	TOTAL	626	424 I	1050

McNemar Test of Symmetry: $\chi^2 = 0,440$

As $2,706 > 0,440$, the null hypothesis is accepted. No difference between the responses to the questionnaires is shown.

[NOTE: Unless specified otherwise, the Critical Region

beyond a value of 2,706 (10%, 1 degree of freedom) is used in all chi-squared tests in this thesis. All chi-squared tests are conducted on actual frequencies.]

As mentioned in section 2.3.1, the questions are grouped into three categories: Wildlife, Conservation and Environmental. The results may be summarized thus:

	%	%	
	Positive Before	Positive After	
Wildlife	32,38	28,81	(10 questions)
Conservation	34,25	37,00	(13 questions)
Environmental	45,24	44,52	(10 questions).

The values for the McNemar test on the scores obtained when grouping the issues are listed below. (These have been calculated from the frequencies, and not the percentages.) The correction for continuity is an attempt to remove the error when expected values may be small (Siegel, 1966). These values are given in brackets.

Wildlife	:	1,8908	(1,6471)
Conservation	:	1,5734	(1,3706)
Environmental	:	0,1084	(0,0482)

Degrees of Freedom = 1.

n = 42

The scores for the entire group of 25 questions, as well as for each of the sub-groups, are below 2,706. Therefore, no statistical significance is attached to the slight variation in scores between the two questionnaires.

Thus, the two questionnaires could be considered balanced

and equivalent measures of awareness of issues in nature conservation.

2.7. IMPLEMENTATION OF THE APPROACH

Field work was completed between 27 June - 10 October, 1982. The order in which reserves were visited (Londolozi, Giant's Castle, Hluhluwe) was of logistical convenience.

The decision to adopt Approach (b) in Giant's Castle - the second reserve surveyed - allowed for the possibility of adopting Approach (b) in the third reserve surveyed (Hluhluwe). As early indications suggested a possibility of the two approaches yielding different results in Giant's Castle, it was decided (during the field work) to use both approaches in Hluhluwe as well.

Respondents were interviewed as soon as possible after their arrival in the reserves, and as late as possible before their departure. Respondents had at least one full day in the reserve between answering the questionnaires. No visitors were surveyed twice. This applied to two respondents (one visitor to Londolozi who had been part of a pre-test sample, and one visitor on her second visit to Giant's Castle during the survey there). All questionnaires were checked and coded immediately after having been completed. All interviewing was done by the researcher. It

was for this reason occasionally difficult to survey all eligible respondents. This applied particularly to the After questionnaire at Giant's Castle over weekends, when many of the guests left fairly early on Sunday mornings. People using Hluhluwe as an overnight stop, arriving late and leaving early, also proved to be a problem.

Co-operation from visitors was good. Requests that they partake in the survey seldom met with a refusal. All Afrikaans-speaking respondents were addressed in Afrikaans. Occasionally, when the researcher's vocabulary did not suffice (in explaining a question or instruction), English was used. Rangers responsible for interpretation in the reserves were only shown the questionnaires on completion of the survey. The guests were requested not to discuss the questions with the rangers ("as they're doing it at the end"). This request appeared to be heeded. Only two rangers said they knew (by inference) of a question in the questionnaires, when asked afterwards.

The care taken by respondents in completing the questionnaires, as well as any extraneous influences, were subjectively scored. If it seemed that the questionnaires were given serious consideration, respondents were given a 'reliability' score of 3. If the respondents were obviously disinterested or frivolous, they were given a score of 1. The grey area between scored 2. (This usually related to parents being disturbed by infants; people who seemed to have had 'a few drinks', and those in a rush to complete one or both of the questionnaires.) Because of the subjective

nature of the assesment, only those scoring a 1 for this condition were omitted from the analysis (Prof M von Broembsen, pers. comm.).

The researcher took part in as many interpreted activities in the reserves as was feasible, so as to record content and presentation. While this participation observation (Babbie, 1973) was done as unobtrusively as possible, it may have had some influence on the interpretation in the reserves.

CHAPTER 3

CRITERIA FOR ASSESSMENT

In this chapter the scoring of the questions whereby the visitors' awareness of conservation issues is quantified is discussed. As mentioned in 2.4.6, responses have been collapsed in such a manner that only AGREE or DISAGREE (depending on the question) is scored positively.

The first question in the pairs of matched questions (which are indented below) is that from Questionnaire One; the second that from Questionnaire Two. Then follows the collapsed response to each that is scored as positive (e.g. AGREE/DISAGREE indicates that a response of "Strongly Agree" or "Agree" to the Questionnaire One's statement is scored as positive, while a response of "Strongly Disagree" or "Disagree" to the Questionnaire Two's statement is scored as positive). Thereafter brief reasons are given for the scoring of responses. Finally, the category/categories (WILDLIFE, CONSERVATION, ENVIRONMENTAL) into which the issue has been grouped for more detailed analysis is given.

1. It is my responsibility to help ensure that natural areas are conserved for future generations.

I should be prepared to make sacrifices in order that we pass on to future generations as many of the environmental options we have inherited as possible.

AGREE/AGREE

This question deals with what could be termed a 'conservation ethic'. The intent of these questions is partially to ease the respondents into the awareness

questions (Bailey, 1978). Although there was the possibility that some people without genuine commitment would be scored positively on this issue, the questions were utilized. Disagreement with (or neutrality on) the above statements would show a seemingly tenuous commitment to nature conservation.

ENVIRONMENTAL

2. The indiscriminate killing of sharks is wrong.

It is absurd to kill spiders indiscriminately.

AGREE/AGREE

This was a deliberate attempt to juxtapose emotions against reason. Sharks and spiders are generally disliked, but both are of ecological importance.

CONSERVATION

3. Some of the game reserves in South Africa should be left to reach a natural balance.

Suitable supplementary methods of feeding should be provided for game animals in Winter.

DISAGREE/DISAGREE

These statements deal with the need for appropriate management in nature reserves.

Most of South Africa's reserves are too small to function as

self-regulating ecological units without a reduction in diversity, and possibly in stability (Pienaar, 1982). This does not negate the need for "unmanaged" areas as controls against which to measure the effects of our management. (It is important, too, to realise that a decision not to manage is a management decision - not just a play on words, for it implies that controls can be at any point along a managed to not-managed continuum.)

A further significant implication is that reserves are of importance as potential resource centres. The question of whether it is in conservation's interests that reserves continue to be as sacrosanct as they tend to be is one of the most important being deliberated by nature conservationists. By making resources available to people living in poverty on the borders of reserves (on an acceptable and sustainable basis), two benefits accrue. Firstly, the ecological pressures on the land adjacent to the reserves can be reduced (which in turn could reduce extraneous ecological pressures on the reserve). Secondly, the attitudes of many of those who regard nature reserves as "playgrounds of the whites" (Buthelezi, 1979) could be tempered, a social consideration of central concern to nature conservation in Africa.

The question in the second questionnaire tackles the issue from the other extreme - overmanagement. The statement implies that game animals be fed during Winter as a matter of course. While reserves are seldom ecological units, their aim is to maintain as great a diversity of the

indigenous fauna and flora under as natural ecological conditions as possible. Except in critical circumstances the expense of maintaining unnaturally high populations of animals during Winter (food shortage during Winter being a natural limiting factor) would be difficult to justify. Management endeavours to ascertain and maintain natural balances (Pianka, 1978).

A final point is that the above discussion is in accord with what is conveyed to visitors in the reserves visited.

WILDLIFE, CONSERVATION.

4. Elephant numbers are dropping at an alarming rate, worldwide. We should thus not cull them (reduce their numbers by killing some) in game reserves, even if moving the 'excess' to other areas is impossible.

There is no need to cull (reduce the number of) lions in game reserves - their numbers are adequately controlled by their available food (prey).

DISAGREE/DISAGREE

The need for culling as a management tool again plays emotions against reason. There is a need to control the numbers of animals whose potential population explosion may harm other (important) species, and be to the detriment of ecological inter-relationships and functions. Where they proliferate to the detriment of their habitat and environment, elephants must be controlled (Eltringham, 1979). While translocation is preferable to culling, in the case of an animal whose numbers are declining the way that

elephant numbers are, this presupposes suitable areas for them to go to. This is difficult, given the costs involved, and veterinary restrictions. The added benefit of financial returns (and possible social benefits) from the culling of elephants must also receive just consideration.

The matter of culling lions is less obvious. (As a rule, the questions in the Questionnaire Two tended to be slightly more demanding to balance the pre-test effect on the post-test.) Lions do need to be culled where their increase threatens prey species. As an example, Berry (1980) reports the need to control lions in the Etosha Game Reserve in S.W.A./Namibia, as the increase in the lion population in the reserve was resulting in the devastation of wildebeest (whose migration route, their escape from over-predation, had been blocked by newly-erected fences).

WILDLIFE, CONSERVATION

5. Endangered species not found in this reserve (and not thought to have occurred here) should still be afforded the protection of this reserve.

The roan antelope, a somewhat threatened species adapted to bushveld but not known to have occurred in Hluhluwe Game Reserve, should be introduced into Hluhluwe if it becomes endangered.

DISAGREE/DISAGREE

These questions deal with the issue of exotics. There are very seldom valid ecological reasons for introducing exotics into an area. If an endangered species is to be protected in the wild it must be protected in its natural habitat.

Should it be introduced as an exotic it will either be outcompeted and may not survive, or it may out-compete indigenous rivals. (Endangered species can be protected in zoos or even on farms as neither attempt to conserve ecological inter-relationships and systems in the way that nature reserves aspire to.)

WILDLIFE, CONSERVATION

6. The veld in this reserve should be deliberately burned periodically.

The advantages of controlled burning of the veld in this reserve outweigh the deaths of tortoises and other animals unable to escape the fire.

AGREE/AGREE

All three reserves in which this study was undertaken are fire-adapted. Deliberate burning programmes are thus ecologically necessary. To rely on natural fires is no longer an option as, inter-alia, the fencing of reserves does not allow those animals adapted to fleeing from fires an escape route. The contention is not whether to burn, but rather how and when to burn.

As Odum (1971, p 131) states, "...biotic communities adapt and compensate for this factor..". While controlled burning programmes are sensitive to ramifications that are ecologically detrimental, the loss of "tortoises and other animals unable to escape the fire" should approach the necessary ecological check (by fire) on such species.

WILDLIFE, CONSERVATION

7. Accommodation in game reserves should be geared towards a sense of privacy for the visitor.

Private radios should not be allowed to be played aloud in this camp.

These questions are NOT SCORED in trying to assess visitors' awareness of conservation issues. Although the responses are of interest, the chief purpose of the questions is to give the interviewee something to answer with surety.

8. South Africa's conservation laws are adequate for the purposes of nature conservation.

The enforcement of laws protecting the environment in South Africa is seriously inadequate.

DISAGREE/AGREE

The conservation laws in South Africa are not adequate for the purposes of nature conservation; they tend to be piece-meal, often convenient to government agencies, and penalties are frequently inappropriate.

Fuggle (1980, p 78) states, "In short, there is no South African law which specifically protects the environment and not simply some small portion of it; South Africa has no formal statement of environmental policy, no individual has been charged with ultimate authority in matters pertaining to the environment and there is no legal requirement that environmental matters be considered in the formulation of development plans and projects". Legislation concerning

estuaries and the sea-shore in South Africa provides sufficient confirmation (Grindley, 1976; Millar, 1981; Day and Grindley, 1981).

Few would disagree that the enforcement of laws protecting the environment in South Africa is inadequate. It was stated in Parliament in May, 1982 (i.e. just prior to the period of research) that only TWO people had been prosecuted under the (strict) laws dealing with soil conservation in the two years 1980-82 (Du Plessis, 1982)!

CONSERVATION, ENVIRONMENTAL

9. The social conditions in South Africa are a most important conservation issue.

Nature conservation cannot be divorced from political decision making.

AGREE/AGREE

These questions are central to the idea that broad issues should be tackled in nature reserve interpretation programmes.

Nature conservation has no option but to embrace socio-economic conditions in its strategies; similarly, such strategies are at the virtual whim of political decision-makers. For better or worse, nature conservation can never be 'above politics'.

ENVIRONMENTAL

10. The tsetse-fly (responsible for sleeping sickness in man and nagana in cattle) should be exterminated, if economically possible.

The malaria-carrying mosquito should be eradicated, if economically possible.

DISAGREE/DISAGREE

These questions, perhaps more so than any other questions asked, are thought to give a strong insight into a respondent's appreciation of nature conservation.

If the tsetse-fly was to be exterminated, as the Food and Agricultural Organization recommends (Tinley, 1979), the costs could well exceed the benefits:

- the eradication programme would significantly influence other species. No matter what control measures presently available to authorities in tsetse-infested areas were used, other species would be affected. (DDT, banned in many 'first world' countries, is by virtue of its relatively low cost often used in such programmes in 'third world' countries [Odum, 1971; Lappe and Collins, 1977], with dire ecological consequences.) It is certain that other species affected would include many species beneficial to man (especially those controlling 'pests' and 'weeds'), and that these would invariably be the slower to recover (being more K-selected [Pianka, 1978]).

- there are long-term effects. If, for example, the tsetse-fly were to be exterminated in Botswana, areas such as the Okavango Delta, close to optimum in terms of

long-term sustainable food production, would almost certainly not survive the farming activities that would engulf the area. There would also be concomitant changes in life-styles, wants and expectations. Human population trends could be affected as a result of such action.

- there is the moral question of whether humans have the right to wilfully (let alone negligently) exterminate other species.

Many of these issues apply when substituting the malaria-carrying mosquito for the tsetse-fly. There are medical and short-term social benefits associated with the extermination of these species, but their extermination is not in the long-term interests of nature conservation.

CONSERVATION, ENVIRONMENTAL

11. The preservation of habitats should be regarded as a more important priority in conservation than is the preservation of endangered species.

We cannot afford to rank the preservation of the Knysna elephants as a conservation priority in South Africa - there are many more important conservation issues.

AGREE/AGREE

The World Conservation Strategy (IUCN, 1978) offers as a general principle the following priority ratings in conservation:

	Rare	Vulnerable	Endangered
Family	4	2	1
Genus	7	5	3
Species	9	8	6

While such a formulation is obviously intended only as a broad guide, the policy of giving priority rating to the general before the specific is sound. Equally important, the best way to protect a species is by the protection of its critical habitats (feeding, breeding, nursery and resting areas).

The second statement is a topical issue. The Knysna elephants are not a sub-species (Greig, 1982), and while their preservation is of importance, there is no doubt that there are numerous issues of far greater priority to nature conservation in South Africa.

[Ledger (1981) and Walker (1981) make the point that the plight of the Knysna elephants has an important value in luring the public to nature conservation. However, this may be at a greater cost (Nicol, 1980) viz., the superficiality of the commitment to nature conservation such sentimentality often engenders.]

The use of 'preservation' (rather than 'conservation'), a current semantic debate, was deliberate.

CONSERVATION

12. The majority of South Africa's terrestrial (land) and marine (sea)

ecosystems are represented in nature reserves.

The majority of vegetation-types found in South Africa are inadequately protected.

DISAGREE/AGREE

The Wildlife Society publication, 'A Policy and Strategy for Environmental Conservation in South Africa' (1981), stresses the serious lack of protection of ecosystems in South Africa, as do publications by Grindley (1976) and Noble and Hemens (1978). Hanks (1981, p 8) writes, "... 90 out of the 189 southern African terrestrial vegetation types are unprotected or inadequately protected, as is 99% of the southern African coast".

CONSERVATION

13. The eradication of a little-known species of insect is an important conservation question.

We cannot justly accuse farmers who use pesticides of causing the deaths of birds of prey.

AGREE/DISAGREE

These questions probe the respondents' understanding of food-webs and inter-relationships in ecosystem functioning. A little-known species of insect may be of importance as a link in a number of food-chains. (Furthermore, it may also be of medicinal value to mankind. There could be concern for how the species was eradicated. The moral question is again relevant [Collins and Wells, 1983].) While extinction is a natural evolutionary process, man does not have

sufficient knowledge to allow for 'natural extinction'.

Pesticides can and do pass through (and build up in) food-chains, killing birds of prey (Carson, 1962; Odum, 1971; Smith, 1980).

CONSERVATION

14. Desert encroachment in South Africa is being accelerated by our changing climate.

The appalling rate of desert encroachment in South Africa has nothing to do with a change in climate.

DISAGREE/AGREE

Lancaster (1977, p73) states, "... there seems to be no good evidence for a progressive dessication of the arid zone, and there is no reason to suspect that arid zone rainfall amounts are decreasing, either in the medium or long term". Desert encroachment in South Africa is man-induced, primarily through poor farming methods that accelerate erosion, overgrazing and denuding of vegetation.

CONSERVATION, ENVIRONMENTAL

15. Deforestation in South Africa has definitely reached crisis point.

This question is NOT SCORED. It was used more for the pilot tests (repeating the question to note any unwarranted changes in opinion). The answer to the statement is dependent upon one's understanding of the term 'deforestation'.

16. Farmers should be encouraged to concentrate on monoculture (i.e. single crop) farming methods.

It is man's actions that are responsible for plants and animals that become "weeds" and "pests".

DISAGREE/AGREE

Monoculture and pests/weeds are virtually synonymous. By simplifying ecological systems man must inevitably favour certain species, invariably those best able to compete with or take advantage of man's manipulations. Plants and animals that are 'weeds' and 'pests' become so through man's tampering with natural balances. For this reason, and because "... monocultural systems ... are inherently unstable" (Odum, 1971, p224), farmers should be encouraged to diversify.

CONSERVATION

17. It has become essential in virtually all of South Africa that people be prepared to have their sewage purified and the water recycled.

In most of South Africa there is an urgent need to adopt a policy of purifying sewage and recycling the water.

AGREE/AGREE

This question is deliberately phrased to offend the senses. The water shortage in virtually all of South Africa is critical. Of particular concern is that the effects of over-consumption on water-tables are slow in their manifestation, and consequently are largely ignored (Davies

and Day, 1982). Hanks (1982, p 28) states, "An obvious priority for this country is the introduction of a water policy which has, as its main objective, the increase in efficiency of water use, the reduction of waste where possible through recycling, and a policy of collaboration regarding water resources with all southern African states."

ENVIRONMENTAL

18. Many game reserves in South Africa are bordered by people unable to adequately feed themselves. It is in nature conservation's interests that 'surplus' resources (e.g. meat) from these reserves be used to upgrade the lives of these people.

Nature conservation cannot afford to ignore the poverty that exists on the borders of many of the reserves in South Africa.

AGREE/AGREE

Sustainable utilization of species and ecosystems is the third objective of the World Conservation Strategy (IUCN, 1978). The poverty that exists on the borders of many of the reserves in South Africa is of immense concern to nature conservation, and it is in conservation's long-term interests to ensure that these reserves be seen to be to the benefit of those who have such potential influence. (A simple example would be the effects on the water flow and quality of the rivers flowing through reserves which would result from the removal of vegetation on the (upstream) borders of these reserves.)

The 'sustainable utilization' of resources in reserves must

be compatible with the functions of the reserves, and graded levels of utilization should be practised.

ENVIRONMENTAL

19. No circus should be allowed to use wild animals in its show.

Cosmetic firms should not be allowed to test their products on animals.

These questions are NOT SCORED in trying to assess visitors' awareness of conservation issues. Although the responses are of interest, the chief purpose of the questions is again to give the interviewee something to answer with surety.

20. This question relates to soil erosion. Please would you indicate which figure below you feel is closest to the annual loss of top soil in South Africa.

Five options, as well as a Don't Know option, were offered (see Appendix B). The correct answer is over 100 million tonnes. Adler (1981) gives a figure of approximately 300 million tonnes, while the Wildlife Society conservation working group set the figure at between 100 - 150 m tonnes (Wildlife Society, 1980). The point is made that, while there has been a decline in soil erosion, a very significant factor has been that most of the easily eroded soil has already been lost.

CONSERVATION, ENVIRONMENTAL

21. "Fashion" is an environmental threat.

The wants and expectations of the affluent (rich) are (also) a serious environmental threat in South Africa.

AGREE/AGREE

Fashion is, by its nature and design, indulgent. Occasionally respondents asked what was meant by 'fashion' (ref. 2.2.2). (The stock answer was fashion as manifested in clothing - but not just fur coats.)

The disproportionate consumption of resources by the affluent (IUCN, 1978; Southwick, 1976; Odum, 1971) is cause for serious concern. A simplification of life-styles is necessary as pressure on non-renewable resources, and over-utilization of renewable resources, increases. The Western socialization of cultures exacerbates the problem.

ENVIRONMENTAL

22. The South African population is expected to double its present total in roughly how many years:

The world population is expected to double its present total in roughly how many years:

Five options, as well as a Don't Know option, were given (see Appendix B). The South African population has an annual growth rate of 2,8% (Nicol, 1981), which means a doubling period of about 25 years. (The recently published South African yearbook (Van Wyk, 1983) gives a growth rate of 2,6 - excluding the independent homeland areas.)

The annual growth rate for the world is given as 1,8% (Southwick, 1980), with a doubling period of 38 years.

ENVIRONMENTAL

23. The hippopotamus does not eat fish.

The black rhinoceros does not usually graze (eat grass).

[For Giant's Castle: The eland usually grazes (eats grass) during Summer in this reserve.]

AGREE/AGREE/AGREE

Hippotamuses are herbivorous; black rhinoceroses are browsers, and in the Drakensberg areas the eland do graze in Summer. (This last question was asked as this fact is stressed in the interpretation activities in the reserve.) The researcher reminded all respondents of the questions being phrased in the negative (ref. 2.2.2).

WILDLIFE

24. While colour vision in mammals is still somewhat controversial in ecology, it would seem that all birds have well-developed colour vision.

Carnivorous (meat-eating) mammals have forward-facing eyes.

DISAGREE/AGREE

The first statement has an elementary mistake: respondents who disagree with the statement could do so either because

they feel that no birds have well-developed colour vision (which is incorrect - many species rely on colour vision in breeding and in foraging) or that some birds are unlikely to have well-developed colour vision (correct - nocturnal birds and raptors, for example, have maximized their clarity of vision, involving rods, at the expense of colour vision, involving cones). Those disagreeing with this statement were thus asked why they did so.

It is necessary for predators to have binocular vision, so as to be better able to judge distances when hunting.

WILDLIFE

25. Some species of birds rear (bring up) the young of other species.

AGREE

This question was asked in both questionnaires. Various species of cuckoos and whydahs are the best known examples. The question was deliberately easy.

WILDLIFE

26. Which one of the following does not belong in this reserve:

Six ungulates species (four for Giant's Castle), as well as a None and a Don't Know category, were the options. (The options may be found in Appendix A.) For Hluhluwe and Londolozi, the answers were the SPRINGBUCK /BLESBOK; for

Giant's Castle the answers were WATERBUCK /NONE.

WILDLIFE

27. Which one of the following does not belong in this reserve:

In this question birds were covered (Appendix A). The compiler erred in thinking that the GREY HORNBILL occurs in Hluhluwe. It does not (McDonald and Birkenstock, 1980). The correct answer in Questionnaire One is the HOUSE SPARROW (which occurs in all three reserves, but is an exotic). The EUROPEAN STARLING (which does not occur, and is exotic to South Africa) is the correct answer in Questionnaire Two.

WILDLIFE

28. Which one of the following does not occur in this reserve:

These questions deal with common trees in the three reserves (Appendix A). The correct answer for Questionnaire One is the BLACK WATTLE in each of the reserves. In Questionnaire Two the correct answer is the PRICKLY PEAR for Hluhluwe and Londolozzi, and the WEEPING WILLOW in Giant's Castle. All are exotic to South Africa.

WILDLIFE

3.1. APPLICATION

Certain questions are inevitably stronger than others. Similarly, certain issues are of greater concern to the ideals of nature conservation than are others. It is felt that Question 10 (the eradication of the tsetse-fly/malaria-carrying mosquito), in particular, tests respondents' awareness of conservation. Accordingly, this issue has been tested separately. [The Before and After responses in the pilot study were balanced, each having returned 14,3% positive responses.]

Certain matchings of questions, too, are inevitably stronger than others. The weakest grouping was in Question 24 (adaptation - eyes), where the After question,

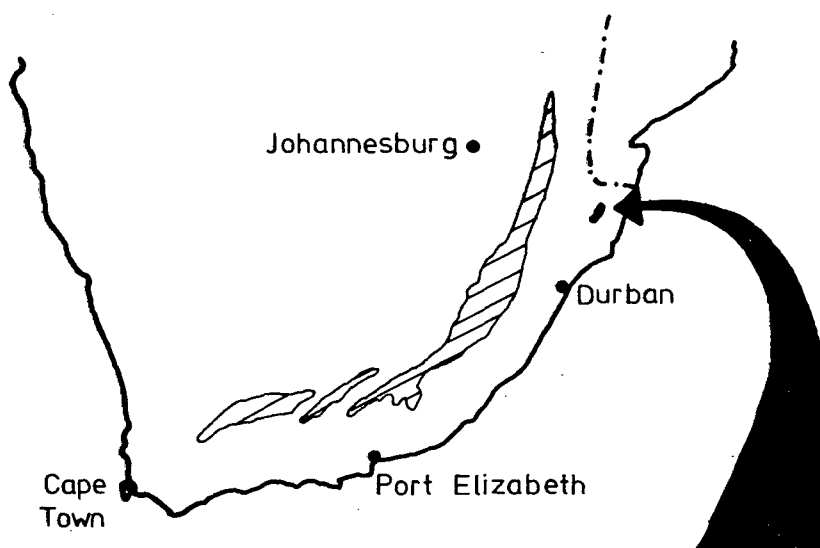
'Carnivorous (meat-eating) mammals have forward-facing eyes.'

was markedly easier. (When asked afterwards, many respondents scoring positively for this question admitted that they had not thought of the fact before, but that "it seems right".) As the questionnaires were balanced on overall scores, it is not possible to make comparisons between individual questions using Approach (a). Comparisons are made on data obtained using Approach (b), as exactly the same questions were asked Before and After.

CHAPTER 4

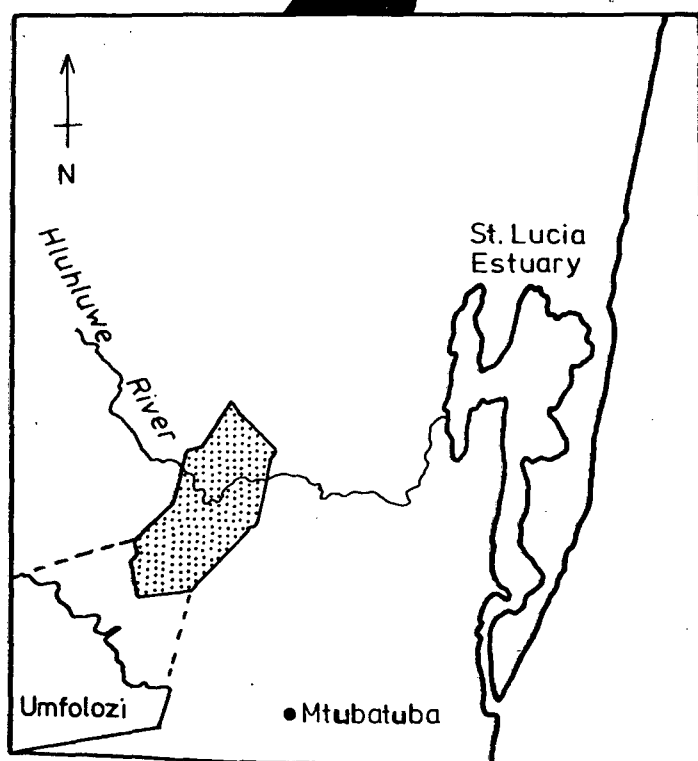
HLUHLUWE

GAME RESERVE



Proclaimed : 1897
 Area : 23 067 ha
 Adcocks' (1975)
 veld type : (10) lowveld

0 20 40 km



4.1. OVERVIEW

The Natal Parks, Game and Fish Preservation Board (NPB) is regarded by many as the conservation body doing the most in the field of interpretation in South Africa at present. While the Interpretation Division of the NPB is small (approximately 3% of the budget; 1,8% of the technical and professional staff), all of the members of the executive board of the NPB stressed the need for it to grow (pers. comm.). [It should be stated that members of other divisions in the NPB assume interpretative functions in reserves where no ranger/naturalist is present. Moreover, considerable extension work is done outside of reserves.]

The resources available to the Interpretation Division need to be spread over approximately 26 nature reserves and resorts administered by the NPB. The emphasis has been on facilities and programmes in the larger reserves. The rationale would seem to be that it is better to intensify their efforts on those more likely to take heed of the message, rather than a more dissipated approach.

[Whether the NPB should have positions for people with the sole function of interpretation, rather than entrusting interpretative duties to rangers, is the subject of some debate within the NPB. Provision of housing is the most restrictive factor in extending the number of ranger / naturalists (Dr J Vincent, pers. comm.).]

While this study has been limited to two reserves administered by the NPB, specific interpretative facilities and programmes are emphasized in different reserves. For example, the interpretative centre at the St. Lucia Crocodile Centre received greater financial and technical attention than did the displays at either Hluhluwe or Giant's Castle. [The technical section of the Interpretation Division, responsible for displays in the reserves, has a backlog of some 10 years of planned work (R Gush, pers. comm.).]

Student assistance during weekends and holiday periods has not been regularly exploited by the NPB, and none was used during the period of research in Hluhluwe and Giant's Castle.

Interpretation in Hluhluwe and Giant's Castle seldom covered a broad spectrum. The emphasis was on wildlife, and broader issues (such as pollution, energy, poverty) were infrequently inter-related. Supportive interpretative facilities (e.g. displays, available films, literature) did not assist the ranger/naturalists in this regard. Self-guided interpretative facilities had not been graded.

The ranger/naturalists were given scope within which to plan their activities. They were required to inform the Information Officer, Headquarters of these activities on a weekly basis. Comprehensive interpretative programmes had been compiled for several reserves and areas, including Hluhluwe.

Hluhluwe Game Reserve accommodates a potential maximum of 64 overnight visitors. One ranger / naturalist from the Interpretation Division is responsible for interpretation in the reserve.

The ranger/naturalist stationed at Hluhluwe has interpretative duties outside of the reserve. It seems that during the period of research he was involved in work that took him out of the reserve more often than is usual - 17 of the 31 days researched (R Goetz, pers. comm.). Consequently, it may be that ranger/naturalist activity was lower than is the norm. Formal interpretation duties were not delegated during the ranger / naturalist's absence.

The large number of visitors (44 124 in the year ending 31 March 1981 [Natal Parks Board, 1981]), and the problems involved in extending ranger / naturalist activities in the reserve, have resulted in an interpretative emphasis on self-guided activities. This has the advantage of better catering for the large number of day visitors (81,9% of the above figure). The facilities and programmes available are discussed in detail in section 4.2.3.

Both Approach (a) and Approach (b) were used. In this chapter the results obtained using Approach (a) are discussed in detail. The results using Approach (b) dealing with respondents' awareness of conservation issues are discussed and compared in Chapter 6. (The results of

Approach (b) with regard to the motives, preferences and participation of the respondents are not analysed. The reader is referred to Appendix D for these results. It suffices to say that in this regard there was very little difference in the results obtained using the different approaches.)

4.2. SURVEY RESULTS

Between 24 August and 26 September 1982, overnight visitors to Hluhluwe who were of an acceptable age, were South African residents, and who spent at least one full day in the reserve were interviewed.

155 out of 198 eligible respondents (78%) were interviewed. (12 refused; 3 respondents left after the researcher had missed the appointment; 7 respondents left without completing Questionnaire Two, and 21 overnight visitors were not interviewed sufficiently early or late to be genuine Before and After responses.)

Of the 155 respondents, 136 were given a reliability rating of 3 (acceptable); 18 were given 2 (suspect), and one was given 1 (unreliable). Thus, for the purpose of analysis, the number of respondents was 154.

4.2.1. VISITOR PROFILE

The biographical details of the samples are listed in Appendix C. Briefly, those interviewed were predominantly English-speaking (81,8%); fairly evenly spread across the age brackets (calculated mean age of 42,9), and generally from the income brackets above R18 000 p.a. (68,8%). Exactly half of the sample were males. 49,4% of respondents had some form of tertiary education. 40,3% had professional or administrative occupations, with a further 40,3% being classified as not economically active (scholars, students, housewives and retired persons).

The range for the length of stay in the reserve was 1-5 nights, with a modal value of two nights (41,6%). The average length of stay was 2,23 nights.

51,3% of respondents had stayed overnight in a South African reserve within the past 12 months. 46,1% usually stayed in South African reserves once or more a year. 44,8% had stayed overnight in Hluhluwe before.

66,2% of respondents indicated that they would rather visit a nature reserve than some other holiday resort. Most respondents rated their interest in nature conservation as very strong (53,3%) or strong (34,4%). Yet only 24,0% were members of a conservation society.

22,1% of respondents said that the decision to visit the reserve was not their own. 39,0% would "definitely" try to

visit Hluhluwe again. 83,1% would "definitely" try to visit some other nature reserve in the future. (33,1% had visited or were to visit some other reserve on the same trip as when surveyed.)

4.2.2. MOTIVATIONS

The importance of various reasons to respondents in their decision to visit a nature reserve are listed in order of preference below. (This order is approximate as respondents rated, rather than ranked and weighted, their preferences.)

The reader is referred to Appendix A (question E in Questionnaire One) for the exact wording of the reasons respondents were asked to rate. For example, "Being taught" was asked as "Chance to be taught about nature".

TABLE 4.1

	EXTREMELY IMPORTANT	5	4	3	2	1	NOT AT ALL IMPORTANT
Game viewing	113	33	7	1	0		
Atmosphere	112	28	10	3	1		
"Getting away"	111	24	11	5	3		
Relaxation	101	34	16	2	1		
Being taught	69	35	36	10	4		
Comfort	52	50	35	14	3		
Bird watching	52	33	43	18	8		
Low costs	36	34	61	19	4		
Walking on trails	40	38	34	13	29		
Convenience	45	22	38	22	27		
The night sky	26	20	49	32	27		
Proximity	13	27	65	30	19		
Studying plants	19	24	49	37	25		
Recreation	7	14	36	36	61		

The accommodation offered at Hluhluwe is not up to the standard usually offered in Natal Parks Board reserves (Dr J Vincent, pers. comm.). Nonetheless, most of the visitors surveyed would prefer an improvement in information facilities, rather than in accommodation or in recreational facilities:

	Before Ranking		
	FIRST	SECOND	THIRD
Better accommodation	42	74	38
Better information	86	47	21
Better recreation	25	33	96

When asked After, the responses were as follows.

	After Ranking		
	FIRST	SECOND	THIRD
Better accommodation	49	70	35
Better information	85	52	17
Better recreation	20	33	100

Respondents were asked whether they thought accommodation should be geared towards a sense of privacy for the visitor. Only 23,3% strongly agreed, while 38,3% agreed. (The vast majority of respondents (80%) felt that radios should not be permitted to be played aloud in the reserve.)

4.2.3. PARTICIPATION

The various interpretative facilities and programmes available during the period of research, and visitor participation therein, were as follows:

4.2.3.1. Information

The ranger/naturalist and reception staff were available to advise visitors of activities. When a conducted activity was to take place, a board was taken around to all accommodation units advising visitors of the event. There was no notice board advising visitors of interpretative amenities available. A box outside the reception area that housed booklets for the self-guided walking trail was inconspicuous, and many respondents claimed that they had not been aware of this facility.

4.2.3.2. Literature

A pamphlet giving basic (holiday) information on the reserve was available, as were pamphlets on various conservation issues - e.g. "Wildlife and the Human Population Explosion", "Reserve Management Options", "Board Operations Outside Reserves". These were provided free of charge, kept well-stocked, and prominently displayed. [The pamphlet, "Reserve Management Operations", dealt (inter alia) with two issues raised as tests of visitors' awareness of conservation issues - burning and culling programmes.]

The curio and book shop in the reserve had a wide selection of wildlife reference and 'coffee-table' books. There were few books on ecology, and none on broader environmental concerns. The curios received most of the floor space in

the shop. During 1981/2, the books accounted for roughly 8% of the sales (and roughly 5% of the profit) of the curio and book shop. [Figures calculated by the author.]

(A planned booklet on the Hluhluwe/Umfolozzi complex, dealing with aspects such as the geology, flora, fauna, archeology and history of the area, had not been completed.)

4.2.3.3. Displays

The visitor lounge had a map of the reserve indicating where guests could expect to see various species of game. While the need for an interpretative centre has been recognized, the uncertainty over the future of the reserve, the possibility of moving the camp to a better site, and financial limitations have been delaying factors.

There were no displays on the display board at the Maphumulo picnic site during the period of research. Trees in the camp area were not labelled.

4.2.3.4. Site Museum

An iron-age site museum of a kraal from the period has been constructed. Visitors could listen to a tape recording (in English or in Afrikaans) interpreting the museum. Only 36 respondents (23,4%) took advantage of this amenity. It is

off of the main routes, and was not well publicized.

4.2.3.5. The Hide

Guests were able to alight from their vehicles, and be escorted by a game guard to the hide. Trees in the parking area were labelled. There was no interpretation in the hide. A total of 126 respondents (81,8%) visited the hide.

Game guards were stationed at the crocodile pools and Maphumulo picnic site as well. They did not speak much English or Afrikaans, but were able to point out some of the objects of interest.

4.2.3.6. Self-guided Walking Trail

The Mbhombe Forest Trail, a short self-guided trail around the forest below the camp, was one of the first established in NPB reserves. Visitors paid 30 cents for a booklet (in English and Afrikaans) interpreting the trail. The emphasis of the booklet is on some of the more common trees found in the forested area, but deals with fire and touches on the ecology of the forest floor. Trees identified were not reinforced (i.e. they were only labelled once).

A significant number of visitors interviewed did not know of the trail, perhaps indicating that it needed more prominent

publicity. The number of respondents who walked the self-guided trail cannot be separated from those who made use of the self-guided drive. 75 respondents (48,7%) did one or the other, with a further 8 (4,6%) doing both the walk and the drive.

4.2.3.7. Self-guided Drives

A self-guided auto trail (the 'Northern 40') was offered. Visitors received the notes interpreting the drive on entering the reserve. They were available in English, Afrikaans and Spanish, and were free of charge. The 'Northern 40' trail deals with aspects of Zulu tribal custom, riverine vegetation, pan formation, fencing of reserves, the white rhino, bush encroachment and folklore and medicinal remedies associated with certain trees. The notes emphasize adaptations and behaviour, and in this way promote an ecological consideration of the various aspects interpreted.

As mentioned above, 75 respondents (48,7%) did one (and 4,6% both) of the two self-guided trails.

4.2.3.8. Shows

Two film shows were held for the visitors during the period of research using Approach (a). (Four film shows were held

in all.) The films shown were on wildlife, and concentrated more on aesthetics than on ecology. No films dealing with broad environmental issues were shown. A total of 23 (57,5%) out of a possible 40 respondents who had the opportunity to attend a film show did so (i.e. 14,9% of the respondents using Approach (a)).

Before three of the film shows, the ranger/naturalist talked with the visitors. They were encouraged to raise issues they wished to discuss, and the range of issues covered was wide. Such issues as culling, burning, poverty on the borders of the reserve, and especially, "Where are all the animals?" (i.e. carrying capacity) were discussed.

No formal talks or slide shows were held during the period of research.

4.2.3.9. Conducted Drives

Conducted drives by the ranger/naturalist were held on two or three occasions. These were for special guests of the NPB. (Schools can arrange to be accompanied by the ranger/naturalist on their drives around the reserve. The conducted drives for school groups during the period of research reserve were with day groups - who did not thus form part of the sample.)

4.2.3.10. Conducted Walks

The thickness of the bush in the reserve had led to the NPB being reluctant to offer this amenity (Dr J Vincent, pers. comm.). The ranger/naturalist took two groups of guests of the board ('V.I.P.s') on conducted walks. Two groups of visitors went on walks with game guards. (This facility was available only when there were game guards free to take trails, and was not advertised.) A total of 4 respondents (1,3%) using Approach (a) went on conducted walks.

4.2.3.11. Miscellaneous

The ranger/naturalist encouraged visitors to contact him in his office (when he was available). Fifty-two out of the 109 respondents (47,7%) who had the opportunity did so (i.e. 33,8% of those interviewed using Approach (a)). In line with the policy directive (R Goetz, pers. comm.), much of the ranger/naturalist's informal contact was with the V.I.P.s.

No interpretative facilities specifically aimed at the children of the casual visitors were available.

Visitors tended to spend most of their time in the reserve viewing from their vehicles. Most had access to binoculars and many had access to reference books. Many of the roads are steep, making it difficult to travel at a suitable pace. There were few layby areas in which to stop and relax.

4.2.3.12. Visitor Reactions

Respondents tended to use other interpretative aids (reference books). 24,7% claimed to have done so extensively; 31,8% occasionally; 7,8% seldom, and 35,7% not at all.

83,8% had access to binoculars; 89,6% to a camera. Roughly 40% brought radios, and roughly 10% brought tape recorders.

Respondents were asked to rank various amenities that "may have made your visit more meaningful". This question was not well phrased. The researcher corroborated responses verbally afterwards, explaining that it was what they wished to have, rather than what they had done (as well as to rank their first choice with a 1, fifth with a 5). The rankings were as follows:

	1st	2nd	3rd	4th	5th
Conducted walks	77	24	24	19	10
Literature	38	26	35	28	27
Self-guided walks	9	52	35	30	28
Displays	13	28	29	50	34
Lectures & films	17	24	31	27	55

Most respondents felt that their appreciation of nature had increased as a result of their visit. 50,6% felt it had done so strongly; 44,2% moderately, while 5,2% felt that it had not really increased.

4.2.4. AWARENESS

The over-all results - i.e. all the responses of all the respondents - were as follows:

H 0: There is NO change in respondents' awareness of conservation issues as a result of their visit to the reserve (Hluhluwe).

H 1: There IS an increase in awareness of conservation issues.

Significance Level: 0,10 (10%)

Critical Region: $X^2 > X^2_{(1; 0,10)}$
 $> 2,706$

		After		
		NEGATIVE	POSITIVE	TOTAL
Before	NEGATIVE	1723	677 I	2400
	POSITIVE	504	946 I	1450
	TOTAL	2227	1623 I	3850

STATISTIC	VALUE	D.F.	PROB.
MCNEMAR TEST OF SYMMETRY	25,342	1	.0000

As $25,342 > 2,706$, it will fall within the tail. The null hypothesis is rejected.

Thus, there is an increase in respondents' awareness of conservation issues as a result of their visit to Hluhluwe. In terms of percentages, the increase was from an average of 37,66% positive responses Before to 42,16% positive After.

This represents an 11,9% increase on the Before level. The range of positive responses per individual interviewed was from 2 - 21 Before, and 3 - 22 After. (The possible range is 0 - 25.)

[Note that the BMDP programme computes a probability percentage of up to two decimal points. Thus, .0000 is 0,00% - i.e. less than 0,005%.]

4.2.4.1. Grouping of Questions

The results when grouping the frequencies into the Wildlife, Conservation and Environmental categories may be summarized thus:

	% Positive Before	% Positive After	McNemar Value	Prob.
Wildlife	31,16	33,77	15,493	.0001
Conservation	29,17	34,62	18,829	.0000
Environmental	40,78	44,74	9,468	.0021

The results indicate that there had been an increase in awareness in all three categories. Further tests showed that there was no significantly greater increase in any one category.

4.2.4.2. Individual Questions

The questionnaires were balanced on group issues, rather than on individual issues, and Approach (a) is thus not appropriate for the testing of individual issues.

As mentioned in section 3.1, Question 10 has been tested separately. In Hluhluwe there was no increase in awareness on this issue. 21 respondents (13,6%) scored positively Before, and 19 (12,3%) After. However, the 21 respondents who felt it wrong to exterminate the tsetse-fly scored significantly higher than the rest on the remaining 24 issues, both Before (46,2% : 37,5%) and After (51,2% : 42,2%). Similarly, the 19 respondents who felt that it would be wrong to eradicate the malaria-carrying mosquito scored higher than the rest on the remaining 24 issues, both Before (43,4% : 38,0%) and After (49,3% : 42,6%).

4.2.4.3. Condition Variables

The thrust of this study is on increase of awareness of conservation issues. As explained in section 2.5, condition variables present a problem. Firstly, any differences between the sizes of the subgroups for a condition will bias results. Secondly, any difference between the average

Before levels of the subgroups could bias results (it being presumably easier to increase from a lower average Before level). Comparisons between the increases for subgroups of the condition variables are consequently seldom valid. Exceptions could be when a subgroup has a higher Before level, and shows a greater increase, or when a subgroup has a lower Before level and a higher After level.

However, the average Before levels of awareness of conservation issues associated with the different condition variables do give the reader a deeper insight (e.g. the average percentage for those who have never visited Hluhluwe before). The full figures for the selected condition variables are given in Appendix D.

Analysis of the results shows no obvious relationship between previous visits to reserves and levels of awareness. While those who had visited a reserve most recently had the highest average Before level, those that usually visited a reserve more than twice a year averaged lower levels than most of the other respondents. However, a positive correlation is shown between previous visits to Hluhluwe and levels of awareness, those having visited Hluhluwe before having slightly higher levels. (The average Before levels may not be reliable as indicators of retention of previous interpretation to which they were exposed whilst visiting Hluhluwe, as there is no data on other reserves they may have visited.)

The stronger respondents rated their interest in nature conservation, and the stronger preference they showed for holidaying in nature reserves, the higher the average level of awareness. The 37 respondents who were members of a conservation society had a significantly higher level of awareness than those who were not. Those who would "definitely" visit nature reserves again had higher average Before levels, but those who would "definitely" return to Hluhluwe did not fare any better than those who "probably" would return. Predictably, the respondents who said that the decision to visit Hluhluwe was not their own had the lowest average level. Those who felt their appreciation of nature had strongly increased had the lowest Before levels, but the highest After levels.

As stated in the introduction, this survey is not able to attribute increases to specific forms of interpretation (as they are not isolated variables). Nonetheless, it is noteworthy to record that those respondents who attended the film shows had higher Before but lower After averages than those who did not attend. The same applies to those respondents doing the self-guided trails, and those visiting the hide. Coupled with these is the finding that the 13 respondents who did not participate in any interpretation showed a greater increase than those who did. (A valid conclusion would be that the interpreted programmes mentioned attract respondents with a higher level of awareness.) Those using other aids "extensively" had the highest average level of awareness for this condition, although those who did not refer to any other aids showed a

significant increase in awareness (McNemar value of 35,295).

The majority of respondents indicated a preference for improved information facilities (rather than accommodation or recreational facilities). These respondents averaged a higher level of awareness of conservation issues than did those who rated better information facilities second or third.

Table 4.1 (see section 4.2.2) gives respondents' ratings of the importance they attach to various reasons for visiting a reserve. Of particular interest is that those who rated the chance to be taught about nature as an extremely important reason did not average the highest Before level (nor did they average the highest After level).

Respondents who ranked conducted walks as first preference out of the five interpretative amenities mentioned (see section 4.2.3.12) had the highest average After levels, and marginally higher Before levels.

Of the 113 respondents rating game viewing as an extremely important reason for visiting a reserve, 47 respondents (41,6%) identified the springbok, and 44 (38,9%) the blesbok, as not belonging in Hluhluwe. 57,5% of these 113 respondents knew that the hippopotamus is herbivorous, and 36,3% that the black rhinoceros is predominantly a browser. It is of interest that the 40 respondents giving game viewing "4" or "3" had higher average scores than did those for whom game viewing was rated as extremely important in

three of the four questions (the exception being the black rhinoceros a browser).

52 respondents rated bird watching as an extremely important reason for visiting reserves. Of these 8 (15,4%) were able to identify the house sparrow (or grey hornbill), and 6 (11,5%) the European starling, as birds not belonging in Hluhluwe. Four of the 33 respondents (9,1%) who rated bird watching as a "4" were able to identify each of the exotic birds.

Those for whom studying plants was an extremely important reason fared a little better than the bird-watchers. Eight (42,1%) of the 19 respondents were able to identify the black wattle, and 12 (63,2%) the prickly pear, as the alien species. The respective percentages for the 24 respondents who gave studying plants a rating of "4" were 33,3% and 29,2%.

Respondents who felt that the wants and expectations of the affluent constitute an environmental threat scored slightly higher on the other 24 issues raised, both Before (38,7% : 36,3%) and After (44,2% : 40,2%).

The biographical data shows that males, Afrikaans-speakers, and those with degrees had marginally higher Before and After levels of awareness. Educationalists did not have substantially higher levels than the average (43,5% : 37,7% Before; 46,5% : 42,2% After). A second important target group, the politicians, showed no increase in awareness of

conservation issues, and had a lower After average than the the mean for Hluhluwe (40,0% : 42,2%). Respondents in the 14-19 and 20-29 years age brackets had averages below the mean for Hluhluwe.

The length of stay in the reserve was an uncontrolled variable (see section 2.1). The table below indicates that when length of stay is taken as the condition criterion, those staying in the reserve for longer periods are not found to have increased their levels of awareness more than those staying for shorter periods:

LENGTH OF STAY	n	POSITIVE		% INCREASE (/Before level)
		Before	After	
1 night	39	40,5	41,9	3,5
2 nights	64	36,3	43,4	19,6
3 nights	35	37,1	40,5	9,2
4+ nights	16	37,5	41,3	10,1

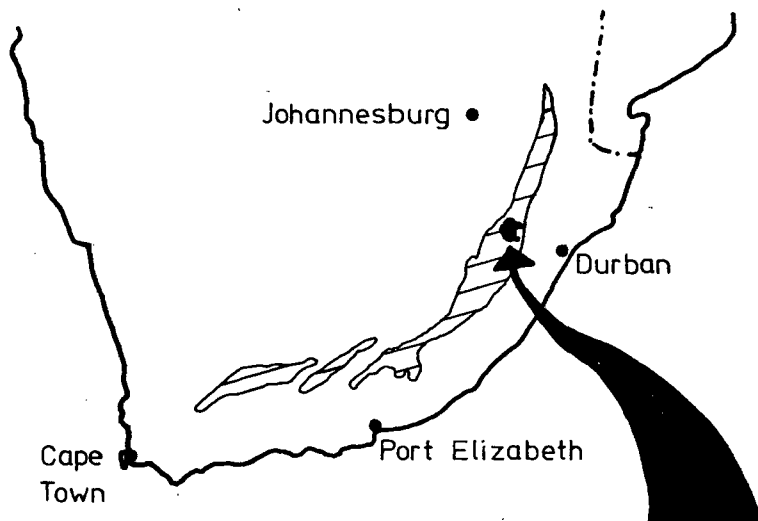
The 64 respondents spending two nights in the reserve had the lowest Before and highest After levels, and consequently recorded the greatest increase for this condition variable. [As with other condition variables, length of stay was not isolated - i.e. all the other variables were not controlled. The comparison above must therefore be treated with caution.]

The discussion and comparison of these results, and conclusions drawn, are to be found in Chapter 8.

CHAPTER 5

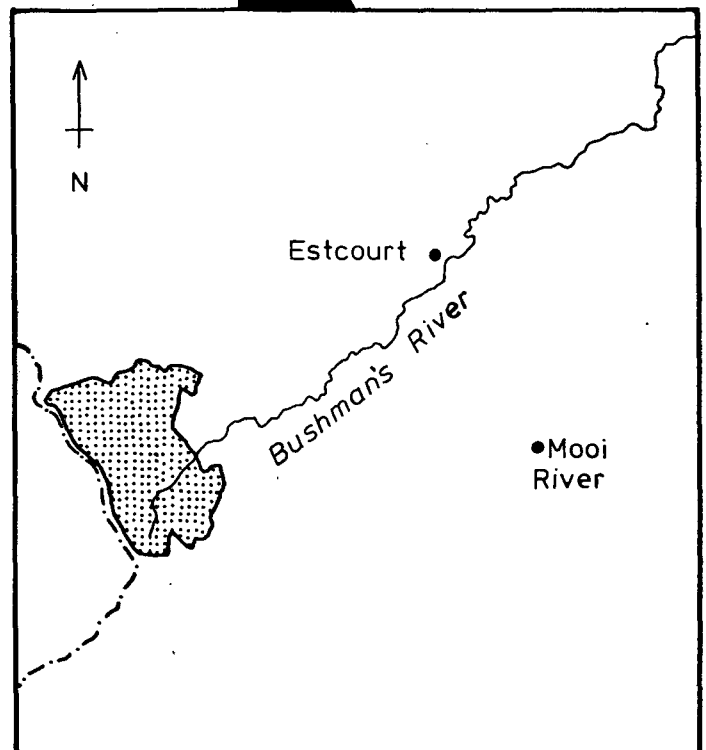
GIANT'S CASTLE

GAME RESERVE



Proclaimed : 1903
 Area : 34 284 ha
 Adcocks' (1975)
 veld types :
 (44a) highland sourveld
 (58) Themeda-Festuca
 alpine veld

0 20 40 km



5.1. OVERVIEW

Giant's Castle Game Reserve accommodates a maximum of 66 visitors per night. During the year ending 31 March 1981 a total of 12 829 people visited Giant's Castle, of which 50,8% were day visitors (Natal Parks Board, 1981). One naturalist from the Interpretation Division was responsible for interpretation in the reserve.

The warden/naturalist's duties outside of the reserve were such that conducted activities were not offered during roughly half the period of research. As with Hluhluwe, this may not be representative of normal conducted activity in the reserve. Interpretative duties were not delegated in the warden/naturalist's absence.

The most prominent interpretative amenities at Giant's Castle were the conducted walks, self-guided trail, site museum display and film shows. These are discussed in detail in section 5.2.3.

Both Approach (a) and Approach (b) were used. In this chapter the results of Approach (a) are presented. The results of Approach (b) are discussed and compared in Chapter 6.

5.2. SURVEY RESULTS

Between 1 - 22 August, and 30 September - 10 October 1982, visitors to Giant's Castle who were eligible in terms of the parameters of the survey were interviewed. Using Approach (a), 152 out of a possible 191 (79,6%) were interviewed. (16 refused, 18 left without completing the second questionnaire, and 5 overnight visitors were not interviewed sufficiently early or late to be genuine 'Before and After' reponses.)

Of the 152 respondents interviewed, 139 were given a reliability rating of 3 (acceptable); 9 were given 2 (suspect), and 4 were given 1 (unreliable). Thus, for the purpose of analysis, the number of respondents was 148.

5.2.1. VISITOR PROFILE

The biographical details of the samples are listed in Appendix C, and details of the survey in Giant's Castle are presented in Appendix E. Briefly, those interviewed using Approach (a) were predominantly English-speaking (89,9%); evenly spread over the age-brackets (calculated mean age of 39,88 years); and mostly from the income brackets above R18 000 p.a. (66,2%). 54,1% of respondents were female. 64,2% had some form of tertiary educational qualification. Most of the economically active respondents were in professional

or administrative positions (47,3%). Only 29,1% were not economically active (scholars, students, housewives and retired persons).

[The visitor profile is very similar to that found by Pickles in his study of landscape preferences and behaviour in visitors to the Natal Drakensberg (Pickles, 1982). While the age and income levels in this survey are slightly higher than those found by Pickles, he states (ibid, p 16-19) that those visitors interviewed at Giant's Castle during his survey were older and had higher income levels than the overall profile. Furthermore, the income levels were those of 1977.]

The range of the length of stay in the reserve was 1 - 6 nights, with a modal period of two nights (50,0%). 31,8% of respondents spent three nights in the reserve, and the mean length of stay was 2,66 nights.

64,9% of respondents had stayed overnight in a South African nature reserve within the past 12 months. 59,5% usually stayed in South African reserves once or more a year. 48% of respondents had stayed overnight in Giant's Castle before.

Most respondents indicated a preference for visiting a nature reserve, rather than some other holiday resort (74,9%). Respondents rated their interest in nature conservation very highly, 82,5% giving it a rating of "strong" or "very strong". However, only 23,6% were members

of a conservation society.

Only 23,6% of respondents said the decision to visit the reserve was not their own. 65,5% would "definitely" try to visit Giant's Castle again, while 80,4% would "definitely" try to visit other reserves in the future. (31,8% had visited or were to visit another reserve on this trip.)

5.2.2. MOTIVATIONS

The importance of various reasons to respondents in their decision to visit a nature reserve are listed in order of preference below. (Readers are reminded that this order is approximate as respondents rated, rather than ranked and weighted, their preferences.)

TABLE 5.1

	EXTREMELY IMPORTANT 5	4	3	2	NOT AT ALL IMPORTANT 1
Atmosphere	113	23	10	2	0
Relaxation	109	30	7	2	0
"Getting away"	106	21	16	3	2
Walking on trails	78	38	21	8	3
Game viewing	69	43	30	5	1
Being taught	45	52	36	11	4
Comfort	54	36	42	8	8
Bird watching	48	27	49	13	11
Low costs	41	37	47	22	1
Convenience	45	26	32	19	26
Proximity	22	23	58	28	17
Studying plants	19	26	54	27	22
The night sky	17	38	51	38	17
Recreation	8	10	36	35	59

It is interesting, considering the debate on the wisdom of stocking rivers in nature reserves with trout (which are exotic), that only four respondents (i.e. 1,3%) in Giant's Castle added trout fishing in as an important reason. (The survey was conducted out of the trout fishing season.)

The accommodation offered at Giant's Castle is among the best of the Natal Parks Board reserves (Dr J Vincent, pers. comm.). Visitors surveyed tended to wish for an even greater emphasis on information facilities, rather than on accommodation or recreational facilities:

	Before Ranking		
	FIRST	SECOND	THIRD
Better accommodation	32	76	40
Better information	84	43	21
Better recreation	30	24	94

When asked After, the responses were as follows:

	After Ranking		
	FIRST	SECOND	THIRD
Better accommodation	33	67	48
Better information	90	45	13
Better recreation	24	31	93

Only 27,7% of respondents "strongly agreed" (while 50,7% "agreed") that accommodation in reserves should be geared towards a sense of privacy for the visitor. The vast majority (83,8%) felt that radios should not be permitted to be played aloud in the reserve.

5.2.3. PARTICIPATION

The various interpretative facilities and programmes available during the period of research, and visitor participation therein, were as follows:

5.2.3.1. Information

The comments with respect to information in Hluhluwe (see section 4.2.3.1) are equally applicable here.

5.2.3.2. Literature

The information pamphlets offered were the same as those offered in Hluhluwe. The curio and book shop had a smaller range of books than was available at Hluhluwe (again, none on broader environmental concerns), and the curios received almost all of the floor space.

A booklet on the reserve sold at 30 cents, dealing with (in order) the geology, vegetation, mammals, birds, early human history, public facilities and amenities, checklists of mammals, birds and reptiles, and walks in the area. The booklet was published in 1974. An informative handbook on the Natal Drakensburg published by the Wildlife Society (PR Irwin, Akhurst, D Irwin, 1930) was not on sale during the

period of research.

5.2.3.3. Displays

The visitor lounge had a series of displays on the ecology of the eland, as well as the history of the reserve. Various bushman artifacts and animal specimens were displayed in the office of the warden/naturalist. A display on trout fishing in the reserve was situated outside of the visitor lounge. Trees in the camp area were labelled (in some cases only in latin). The majority of labelled trees lay off of the pathways.

Displays (including those at the site museum) were 'studied' by 106 respondents (71,6%). The researcher seldom saw visitors in the guest lounge, and very few visitors were seen reading the displays in the lounge.

5.2.3.4. Site Museum

The bushman cave site museum is a short walk from camp. Visitors could listen to a tape recording (in English or Afrikaans) interpreting the life and customs of the bushman. The site museum was visited by 94 respondents (63,5%).

5.2.3.5. The Hide

Lammergeiers (bearded vultures) were fed on Saturdays and Sundays during Winter. Visitors were able to book the hide to watch these and other birds feeding. These bookings were in great demand. Up to eight visitors were allowed to use the hide on a feeding day. There was a book into which visitors were encouraged to document their sightings, and this served the interpretative function of cutting down the possibilities for the beginner. Some information on research on the lammergeier, black eagle and Cape vulture, including a few photographs, was available in the hide. The hide was visited by 16 respondents (10,8%).

5.2.3.6. Self-guided Walking Trails

The Bushman's River Trail is a 3 km. trail via the site museum. A booklet interpreting the trail was available at 30 cents. (Many of the visitors were unaware that this was available.) The booklet touches on the geological formation of the Drakensberg, fire and the adaptation of vegetation, Rock 75 (of historical interest), succession, the bushman caves, dassies and the kloof forests. A display of drawings of some of the forest birds was placed along the trail. Eighteen respondents (12,2%) went on the self-guided trail.

The other 'self-guided' walking trails were not interpreted.

5.2.3.7. Shows

Five film shows were given during the period of research. Three films were shown on each occasion. Again, the films tended to be on the aesthetics of wildlife. No film dealing with broad environmental concerns was shown. Before the film show, the warden/naturalist discussed some of the points raised in the film, as well as answering any questions visitors put to him. 74 respondents (68,5% - 40 did not have the opportunity) attended a film show.

No slide show was given during the period of research. One formal talk (on the habits and customs of the bushman, and the Langalibalele Rebellion) was given in the camp to 5 respondents (20%). Such talks were occasionally given in the field on conducted walks.

5.2.3.8. Conducted Walks

Walks of varying length covering a variety of themes were regularly held. The bushman was often the central theme around which the warden/naturalist discussed various ecological and environmental aspects relating to the reserve. Issues such as reserve management (fencing, burning, culling, control of exotics), animal habits, plant

succession, human over-population, erosion and social pressure on the reserve were usually covered. Techniques such as walking at a comfortable pace, the frequency and siting of stops, talking so that all the visitors can hear, encouraging them to use their senses, were well handled. The conducted walks appeared to be very popular with the participants.

One night walk was held during the period of research. It was exceptionally effective in the atmosphere it offered for story-telling.

Twenty respondents (23,5%) went on a conducted walk, with a further 4 respondents (4,7%) going on two conducted walks. 63 respondents did not have the opportunity to go on a conducted walk.

5.2.3.9. Miscellaneous

The warden/naturalist encouraged visitors to discuss any issues they wished with him in his office. Visitors frequently took advantage of this offer. 47 respondents out of a possible 92 (the warden/naturalist being away occasionally) indicated that they asked the advice of the warden/naturalist on some issue. This represents 31,1% of the respondents using Approach (a).

No interpretative amenities specifically aimed at the

children of casual visitors were available. Astronomy was seldom broached in the interpretation.

5.2.3.10. Visitor Reactions

Respondents tended to use other interpretative aids. 19,6% claimed to have done so extensively; 37,2% occasionally; 11,5% seldom, and 31,8% not at all.

56,1% of respondents had access to binoculars; 95,9% to a camera. 45,9% brought radios, and 17,6% tape recorders.

Respondents rankings of "various amenities that may have made your visit more meaningful" are listed below. As with Hlulhuwe, this question was verbally corroborated by the researcher. (The rankings refer to what respondents would prefer, rather than what they experienced.)

	1st	2nd	3rd	4th	5th
Self-guided walks	56	34	25	22	11
Conducted walks	52	32	25	18	21
Literature	25	37	33	26	27
Displays	7	25	39	43	34
Lectures and films	8	19	28	39	54

Most respondents felt that their appreciation of nature had increased as a result of their visit. 58,8% felt it had done so strongly; 34,5% moderately, while 6,8% felt that their appreciation of nature had not really increased.

5.2.4. AWARENESS

The over-all results - i.e. all the responses of all the respondents - are as follows:

H 0: There is NO change in respondents' awareness of conservation issues as a result of their visit to the reserve (Giant's Castle).

H 1: There IS an increase in awareness of conservation issues.

Significance Level: 0,10 (10%)

Critical Region: $X^2 > X^2_{(1; 0,10)}$

$> 2,706$

		After		
		NEGATIVE	POSITIVE	TOTAL
Before	NEGATIVE	1490	696 I	2183
	POSITIVE	524	993 I	1517
	TOTAL	2014	1686 I	3700

STATISTIC	VALUE	D.F.	PROB.
MCNEMAR TEST OF SYMMETRY	23,468	1	.0000

As $25,342 > 2,706$, it will fall within the tail. The null hypothesis is rejected.

Thus, there is an increase in respondents' awareness of conservation issues as a result of their visit to Giant's Castle, using Approach (a). The average positive percentage Before was 41,0%, while the After average was 45,6%. This

represents an 11,1% increase on the Before level. The range of positive responses per individual was 3-20 Before, and 3-20 After. (The possible range was 0-25.)

5.2.4.1. Grouping of Questions

The results when grouping the frequencies into the wildlife, conservation and environmental categories may be summarized thus:

	% Positive Before	% Positive After	McNemar Value	Prob.
Wildlife	34,05	41,55	25,830	.0000
Conservation	30,35	37,11	26,741	.0000
Environmental	46,76	46,82	0,003	.9597

The results indicate that there was a significant increase in awareness in the Wildlife and Conservation categories, but not in the Environmental category. The increase in the Wildlife category was not significantly higher than that in the Conservation category (chi-squared value = 0,001), but was significantly higher than the Environmental category (Chi-squared value of 6,014), taking a 5% level of significance.

5.2.4.2. Individual Questions

In Question 10, fifteen respondents (10,1%) scored positively Before, and 10 (6,8%) After. The 15 respondents who were against the extermination of the tsetse-fly scored higher on the other 24 issues than those in favour, both Before (49,2% : 41,5%) and After (55,8% : 46,2%). The 10 respondents who opposed the eradication of the malaria-carrying mosquito scored lower on the other 24 issues Before (41,3% : 42,4%), but higher After (50,4% : 47,0).

5.2.4.3. Condition Variables

The subgroups of the condition variables are difficult to compare (see section 4.2.4.3). Presented here are the average Before levels of awareness of conservation issues associated with the different condition variables. Where it is felt possible, comparisons of increases shown by the subgroups are made. The reader is referred to Appendix E for a summary of the data for Giant's Castle.

The results for Giant's Castle show a far more definite correlation between involvement in nature conservation and level of awareness than do the results for Hluhluwe. Those who had recently visited a reserve, and those who usually

visited reserves often, had significantly higher Before levels of awareness. The respondents who had visited Giant's Castle more than four times had the highest Before level (43,4%), but the lowest After level. The eight respondents visiting a nature reserve for the first time had levels of 30,0% (Before) and 36,0% (After).

Respondents' levels of awareness showed a positive correlation, too, with their interest in nature conservation, preference for holidaying in a reserve, and membership of a conservation society. Those whose visit was at the instigation of someone else had the lowest average level of awareness. Respondents who "definitely" would try to visit a nature reserve again showed the highest Before level, although those determined to visit Giant's Castle again did not show as clear a difference. Respondents who felt their appreciation of nature had been strongly enriched by the visit did not score higher than those who felt "moderately" enriched by their visit.

Analysis of the correlation of participation in interpreted activities and level of awareness shows that that those who asked the advice of the ranger/naturalist, and those going on conducted walks, had a greater increase in awareness when compared with those who did not do so. (However, as these respondents may have in addition participated in other interpreted activities, these increases must be viewed with caution. Furthermore, the possibility that those more interested in learning participate in conducted activities make comparisons suspect.) The 15 respondents who did not

participate in any interpreted activity had lower levels of, and a smaller increase in, awareness. There is a strong positive correlation between using other aids and levels of awareness.

As with Hluhluwe, the majority of visitors surveyed indicated a preference for better information facilities (before better accommodation or recreational facilities). These respondents had a higher level of awareness.

It is difficult to establish any clear pattern in the rankings of interpretative amenities. The 56 respondents ranking self-guided walks first had lower Before and After levels than did the 52 respondents rating conducted walks first. The 8 respondents who rated lectures and film shows first had (marginally) the highest Before and After levels.

Table 5.1 (see section 5.2.2) lists respondents' ratings of the importance of various reasons for visiting a nature reserve. Those who rated the chance to be taught about nature highly had higher average levels of awareness than the others, as did those for whom walking on trails was important.

Of the 69 respondents who rated game viewing as an extremely important reason, 34 (52,2%) identified the waterbuck as out of place, and 16 (23,2%) that none of the antelope mentioned After were alien to Giant's Castle. 62,3% knew that the hippopotamus is herbivorous; 78,3% that the eland grazes in Summer in the Drakensberg.

Of the 48 respondents who rated bird watching as extremely important, 16 (33,3%) recognized the house sparrow and 21 (43,8%) the European starling as alien. The respective figures for the 100 respondents giving bird watching a rating of "4" or less were 14,0% and 5,0%.

There was no correlation between the rating of studying plants and ability to identify the trees exotic to Giant's Castle. Those giving this a rating of "2" fared better than those for whom studying plants was an extremely important reason! Of the 19 respondents giving this a rating of "5", only 2 (10,5%) recognized the black wattle, and 7 (36,8%) the weeping willow, as exotic to Giant's Castle.

Respondents who realized the potential threat to the environment of the wants and expectations of the affluent scored significantly higher both Before (42,4% : 38,2%) and After (49,0% : 41,0%) when tested on the other 24 issues, against those scoring negatively for this issue.

Of the biographical data, there were higher Before and After levels for males, those with professional occupations, and those with degrees. Of particular interest is that educationalists show only a slightly higher level of awareness than the mean for Giant's Castle (43,3% : 41,0% Before, 50,0% : 45,6% After); politicians averaged lower than the mean (40,0% Before, 45,3% After), and the low averages for respondents between the ages of 14 -19 years (18,7% Before, 34,0% After).

A positive correlation is shown between length of stay and increase in awareness for respondents at Giant's Castle (in contrast to the findings at Hluhluwe). From the table below it would appear that the longer the length of stay, the greater the increase in awareness:

LENGTH OF STAY	n	% POSITIVE		% INCREASE (/Before level)
		Before	After	
1 night	5	44,8	37,6	(16,1)
2 nights	74	41,8	45,0	7,7
3 nights	47	41,5	47,1	13,5
4+ nights	22	36,3	47,1	33,6

[Again it is necessary to point out that such variables were not isolated in this study.]

The discussion and comparison of the results presented in this chapter, and the conclusions drawn, are to be found in the final chapter (Chapter 8).

CHAPTER 6

COMPARISON OF
APPROACHES

In this chapter the results of the surveys in Hluhluwe and Giant's Castle using the cross-sectional design (Approach (b)) are given, and the results of the two approaches are compared.

In testing for a significant increase in awareness of conservation issues, a slightly high significance level (10%) was taken in order to reduce the possibility of a 'Type II Error' (see section 2.5). In essence, this meant a decision to err in saying that there is an increase when there is not (Type II), rather than to say there is no increase when there is (Type I). In comparing the two approaches a more conventional significance level is appropriate (Prof R Fuggle, pers. comm.; Prof M von Broembsen, pers. comm.). The 5% and 1% levels of significance are the most commonly used (Babbie, 1973; Bailey, 1978). A significance level of 5% is taken in comparing the approaches. (The 1% level is reported.)

Only the results relating to respondents' level of awareness, and the increase in this level, are discussed for Approach (b). The results relating to respondents' motivations, participation and preferences are not analysed in the discussion. [There is no substantial difference in the results relating to the respondents' motivations, participation and preferences yielded by the two approaches. Interested readers are referred to Appendix D (Hluhluwe) and Appendix E (Giant's Castle).]

6.1. HLUHLUWE GAME RESERVE

Using Approach (b), 162 out of 200 eligible respondents (81%) were interviewed. (16 refused; 7 left before being interviewed, and 15 overnight visitors were not interviewed timeously.) Of these 162 respondents, 149 were given a rating of three; 10 were given two, and 3 were given one. The number of respondents for analysis was 159.

6.1.1. Visitor Profile

Those interviewed using Approach (b) were again predominantly English-speaking (75,5%); slightly more evenly spread across the age brackets (calculated mean age of 41,7), and with slightly more than half from income brackets above R18 000 p.a. (57,1%). 54,1% of respondents were females. 47,8% had some form of tertiary education. 40,3% had professional or administrative occupations, with 42,1% being classified as not economically active.

The range for the length of stay in the reserve was 1-6 in Approach (b), with a modal value of 2 nights. The mean length of stay was 2,42 nights, slightly longer than the mean of 2,23 nights for Approach (a).

6.1.2. AWARENESS

H 0: There is NO change in respondents' awareness of conservation issues as a result of their visit to the reserve (Hluhluwe).

H 1: There IS an increase in awareness of conservation issues.

Significance Level: 0,10 (10%)

Critical Region: $X^2 > X^2$
 (1; 0,10)
 > 2,706

	BEFORE	AFTER	TOTAL
NEGATIVE	2400	2354 I	4754
POSITIVE	1450	1621 I	3071
TOTAL	3850	3975 I	7825

STATISTIC	VALUE	D.F.	PROB.
PEARSON'S CHI-SQUARE	7,792	1	.0048

As 7,792 > 2,706, it will fall within the tail. The null hypothesis is rejected.

Thus, there is an increase in respondents' awareness of conservation issues as a result of their visit to Hluhluwe, using Approach (b).

The range of positive reponses in Approach (b) was 2 - 21 (Before) and 3 - 22 (After) for individual respondents. (The possible range is 0 - 25.)

6.1.2.1. Grouping of Questions

The grouping of questions into the Wildlife, Conservation and Environmental categories produce the following results:

	% Positive Before	% Positive After	chi- squared Value	Prob.
Wildlife	31,16	36,60	10,308	.0013
Conservation	29,17	31,64	2,929	.0870
Environmental	40,78	41,51	0,172	.6781

The results here indicate that there is an increase in awareness in the Wildlife and Conservation categories, but not in the Environmental category. Furthermore, the increase in the Wildlife category is significantly greater than that in the Conservation category (chi-squared value of 13,037).

6.1.2.2. Individual Questions

Approach (b) is appropriate for the testing of individual issues. Of the 25 issues raised, a significant increase in awareness of two of the issues is shown. These were:

Question	Chi-squared Value	% Positive	
		Before	After
6 (need to burn periodically)	7,391	38,3	54,1
26 (ungulate alien to reserve)	16,950	41,6	64,8

6.1.3. COMPARISON OF APPROACHES (HLUHLUWE)

The two 'After' results were tested against one-another to see if they showed a significant difference:

H 0: There is NO difference between the results obtained using Approach (a) and those obtained using Approach (b).

H 1: There is a difference.

Significance Level: 0,05 (5%)

Critical Region: $X^2 > X^2_{(1; 0,05)}$
 $> 3,841$

	After		TOTAL
	NEGATIVE	POSITIVE	
APPROACH (A)	2354	1621 I	3975
APPROACH (B)	2227	1623 I	3850
TOTAL	4581	3244 I	7825

STATISTIC	VALUE
PEARSON'S CHI-SQUARE	1,5257

As $1,5257 < 3,841$, it will not fall within the tail. Therefore we must accept the null hypothesis. No difference is shown between the results yielded by Approach (a) and Approach (b).

[The critical region value for a significance level of 1% with one degree of freedom is 6,635%. The value obtained

when comparing the approaches is not significant at 1%]

In terms of percentages, the increase in awareness over the Before level is 11,93% in Approach (a), and 8,28% in Approach (b). (The frequencies for Approach (b) are adjusted first to a sample size of 154. The Before level is a constant.)

6.1.3.1. Grouping of Questions

The increase in awareness over the Before level in the three categories are as follows:

	% Positive Before	Positive After APPROACH	
		(a)	(b)
Wildlife	31,17	33,77	36,60
Conservation	29,17	34,62	31,64
Environmental	40,78	44,74	41,51

Although both the Wildlife and the Conservation categories show significant increases in both approaches, there is a significant difference between the extent of this increase in the Conservation category between the two approaches (Chi-squared value of 4,065). [NOTE: This value would not be significant at the 1% level.]

6.2. GIANT'S CASTLE GAME RESERVE

As indicated in Chapter 5, the two approaches were conducted at Giant's Castle between 1 - 22 August, and 30 September - 10 October 1982. Approach (b) was done predominantly in the second period, which coincided with the Natal school holidays (1 - 12 October 1982). 152 visitors out of an eligible 178 (85,4%) were interviewed to complement those interviewed in Approach (a). (12 refused, and 14 left without being interviewed.)

Of the 152 respondents interviewed, 141 were given a reliability rating of 3 (acceptable); 10 a rating of 2 (suspect), and one respondent a rating of 1 (unacceptable). Thus, for the purpose of analysis the number of respondents was 151.

6.2.1. Visitor Profile

Respondents were predominantly English-speaking (87,5%); evenly spread across the age brackets (with a calculated mean age of 41,48 years), and from the upper income brackets (70,8% with an annual income of more than R18 000; 47,0% more than R24 000). 55,6% of respondents were female. 56,3% had some form of tertiary educational qualification. 45,7% of respondents had professional or administrative

occupations (with a further 35,1% being classified as not economically active).

The modal period for length of stay was two nights (28,5%), while the mean period was 3,54 nights. (Note that the mean period was almost one night more than that for Approach (a), which had a mean period of 2,66 nights. This was because much of Approach (b) was conducted during the Natal school holidays.)

A further difference is that while 48,0% of the interviewees using Approach (a) had visited Giant's Castle before, the corresponding percentage for Approach (b) was 31,8%.

6.2.2. AWARENESS

The over-all results for Giant's Castle using Approach (b) were as follows:

H 0: There is NO change in respondents' awareness of conservation issues as a result of their visit to the reserve (Giant's Castle).

H 1: There IS an increase in awareness of conservation issues.

Significance Level: 0,10 (10%)

Critical Region: $X^2 > X^2_{(1; 0,10)}$
> 2,706

	BEFORE	AFTER	TOTAL
NEGATIVE	2183	2136 I	4319
POSITIVE	1517	1639 I	3156
TOTAL	3700	3775 I	7475

STATISTIC	VALUE	D.F.	PROB.
PEARSON'S CHI-SQUARE	4,475	1	.0344

As $4,475 > 2,706$, it will fall within the tail. The null hypothesis is rejected.

Thus, there is an increase in respondents' awareness of conservation issues as a result of their visit to Giant's Castle, using Approach (b).

The range of positive responses per individual was 2 - 22 (Before) and 3 - 23 (After). The possible range was 0 - 25.

6.2.2.1. Grouping of Questions

When the results are grouped into the Wildlife, Conservation and Environmental categories, the results are as follows:

	% Positive Before	% Positive After	McNemar Value	Prob.
Wildlife	34,05	43,42	4,475	.0344
Conservation	30,35	31,99	1,216	.2702
Environmental	46,76	45,56	0.429	.5127

Thus, using Approach (b), there is no significant increase in awareness in either the Conservation or the Environmental categories. A significant increase (at 10% significance level) is shown for the Wildlife category.

6.2.2.2. Individual Issues

Approach (b) indicates that at Giant's Castle there was a significant increase in awareness of 4 of the 25 issues questioned. These were:

Question	Chi-squared Value	% Positive	
		Before	After
6 (need to burn periodically)	3,666	42,6	54,3
26 (ungulate alien to reserve)	8,088	50,0	66,2
27 (bird exotic to reserve)	6,290	20,3	33,1
28 (tree exotic to reserve)	9,176	16,2	31,1

However, there was a significantly lower number of positive responses After (chi-squared value of 4,106) to the question,

'South Africa's conservation laws are adequate for the purposes of nature conservation.'

6.2.3. COMPARISON OF APPROACHES (GIANT'S CASTLE)

The two 'After' results were then tested against one-another to see if they showed a significant difference:

H 0: There is No difference between the results obtained using Approach (a) and those obtained using Approach (b).

H 1: There is a difference.

Significance Level: 0,05 (5%)

Critical Region: $\chi^2 > \chi^2$
 (1; 0,05)
 > 3,841

	After		TOTAL
	NEGATIVE	POSITIVE	
APPROACH (A)	2014	1686 I	3700
APPROACH (B)	2136	1639 I	3775
TOTAL	4150	3325 I	7475

STATISTIC	VALUE
PEARSON'S CHI-SQUARE	3,499

As 3,499 < 3,841, it will not fall in the tail. The null hypothesis, that there is no difference between the results obtained using the two approaches, is accepted.

Taking a 1% level of significance (with a critical value of 6,635), there is no significant difference between the results obtained using the two approaches. In terms of percentages, the increases were 5,90% of the Before level

(Approach (b)), and 11,14% of the Before level (Approach (a)). [The Before level is a constant. The frequencies for Approach (b) are first adjusted to a sample of 148, rather than 151.]

6.2.3.1. Grouping of Questions

Both approaches produce a significant increase in the wildlife category, and no significant difference in the environmental category. They differ significantly in the extent of the increase in the conservation category. Results were as follows:

	% Positive Before	Positive After APPROACH (a)	(b)
Wildlife	34,05	41,55	43,42
Conservation	30,35	37,11	31,99
Environmental	46,76	46,82	45,56

6.3. DISCUSSION

The purpose of adopting the cross-sectional Approach (b) was as a check on the results obtained using the longitudinal Approach (a). As mentioned in section 2.2.1, the reasoning was that in the control group (pilot test) respondents did

not have time to mull over the questions. This then acted as a check on any increase being wrongly attributed to the interpretation in the reserve.

What is consistently shown is that there is a statistically significant increase in awareness of conservation issues in visitors to both Hluhluwe and Giant's Castle as a result of their visit. The increases shown in this study are 11,9% and 8,3% in Hluhluwe (on the Before level of 37,7% positive), and 11,1% and 5,9% in Giant's Castle (on the Before level of 41,0% positive). While the increases are slightly higher using Approach (a) in both Hluhluwe and Giant's Castle, there is no statistical difference between the increases yielded by the two approaches in either reserve. Thus, Approach (a) is considered to be adequate in testing the overall increase in awareness in visitors to a nature reserve.

The results yielded by the two approaches when grouping the questions must be analysed with caution. What can be said is that both approaches in both reserves showed the strongest increase to be in the Wildlife category, the weakest to be in the Environmental category. (There was no statistically significant difference in the results obtained in the Wildlife and Environmental categories using the two approaches in either Hluhluwe or Giant's Castle.) This is tempered by the fact that the Before levels in the Wildlife category were lower than those in the Environmental category, probably making it easier for an increase in the Wildlife category.

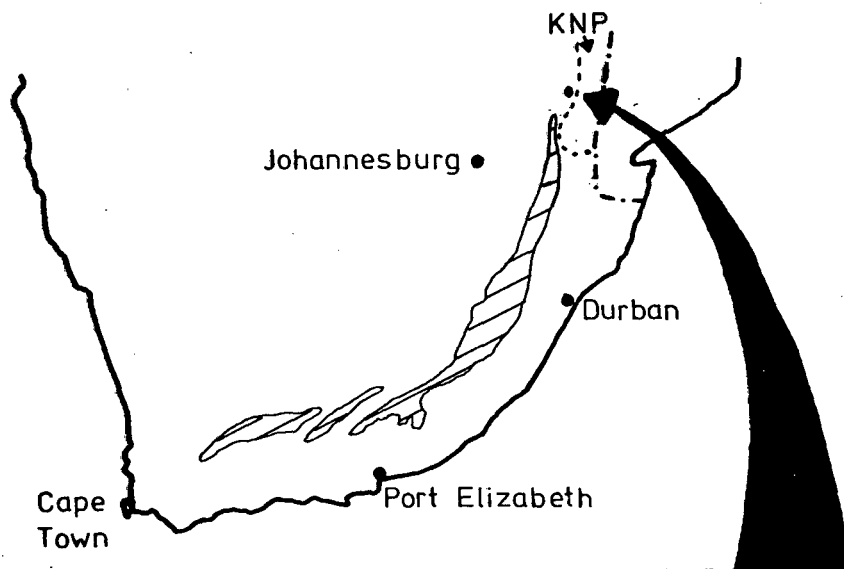
Of possibly greater relevance are the increases in awareness in individual issues. An important point here, too, is that the Before levels to individual questions vary, and that statistically significant increases are almost certainly easier where the Before levels are low. Notwithstanding this, that only the issue of burning of the veld, and the identification of the alien mammals, show a significant increase in both reserves is in accord with the author's subjective appraisal whilst participating in and observing the interpretation in the reserves. (Visitors tend to be most interested in game viewing. During the period of research there were burning programmes in both reserves, which were questioned and interpreted.) The increases to the questions on the exotic bird and the exotic tree in Giant's Castle (where statistically significant increases are shown) must be seen with the perspective of the low diversity in the montane reserve.

Thus, Approach (b) is shown to support the overall finding of Approach (a). The results obtained at Londolozi (where only Approach (a) was used) are consequently believed to be valid.

CHAPTER 7

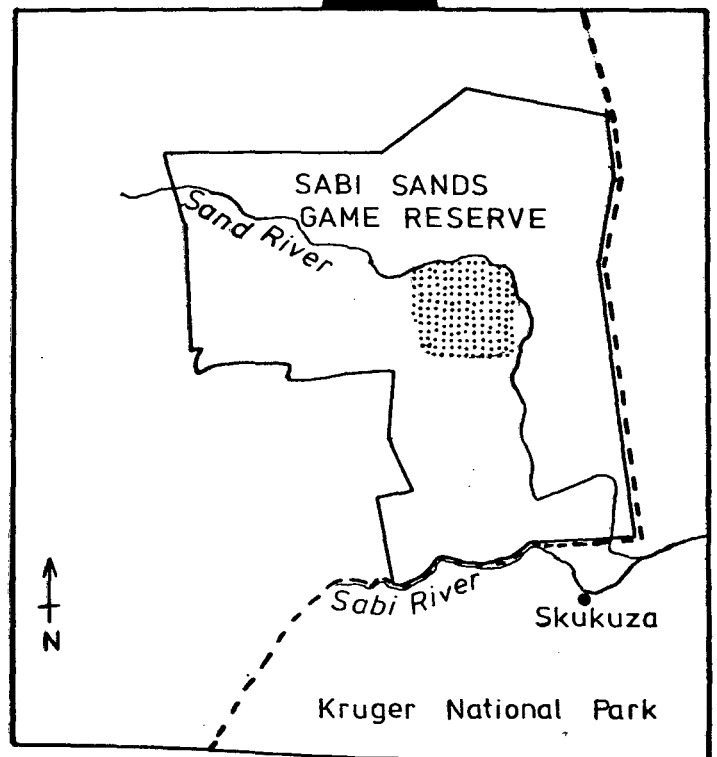
LONDLOLOZI

PRIVATE GAME RESERVE



Farm established: 1926
 Lodge begun: 1973
 Area: 4 000 ha
 Adcocks' (1975)
 veld type: (10) lowveld

0 10 20 km



7.1. OVERVIEW

The Eastern Transvaal boasts a string of exclusive private game reserves. They range from those unashamedly touting a genteel 'wilderness experience' (complete with lavish lounge comforts and a cursory involvement in environmental education) to those intent on provocative interpretation; from those whose interpretation seldom penetrates deeper than chasing after the 'BIG 5' (lion, leopard, elephant, buffalo and white rhino) to those who aim at ecological systems and environmental inter-relationships.

Londolozi lies on the 'provocative interpretation' side of the continuum. It is one of the least expensive of these reserves (consequently enjoying a relatively high proportion of South African guests), and the owners see environmental education (in its broad sense) as part of their responsibility (John Varty, pers. comm.).

The maximum number of guests accommodated is 32. There are eight rangers involved in interpretation in the field, as well as the owners (Dave and John Varty) and the manager. This high ranger:guest ratio allows their interpretation to hinge on personal contact. Irrespective of training (several rangers have degrees) and previous experience, all rangers undergo an induction course at Londolozi.

The interpretation in the reserve tended to cover a broad spectrum: such issues as appropriate land-usage, population,

poverty and sustainable yield were inter-related with wildlife ecology. Of the range of interpretative facilities and programmes offered, the emphasis was on guided drives (including night drives), slide shows and informal contact. This is discussed in detail in section 4.2.2.

No formalized attempt towards a differentiated approach to interpretation had been made. Guests were grouped by convenience rather than by their interests and expertise. This inevitably resulted in a homogeneous message to a heterogeneous audience.

Interpretation was structured in a piecemeal manner. Given the nature of the work, this was understandable (it is simply impossible to plan for many of the experiences that will arise). However, supportive facilities did not encourage a more holistic interpretative structure.

7.2. SURVEY RESULTS

Between 27 June and 30 July 1982, eligible visitors to Londolozi were interviewed. 153 out of 168 possible respondents (91%) were interviewed. (6 refused; 4 did not complete the second questionnaire; 2 guests left after the researcher failed to keep an appointment, and 3 were not interviewed sufficiently early for a genuine Before

response.)

Guests were interviewed as soon as possible after their arrival, and as late as possible before their departure. Only Approach (a) - i.e. one respondent group, two matched questionnaires - was used.

Of the 153 respondents who completed both questionnaires at Londolozi, 130 were given a rating of 3 (reliable); 22 were given 2 (suspect), and one respondent (definitely 'under the weather' for the second questionnaire) was given a rating of 1 (unreliable). Thus, for the purpose of analysis, the number of respondents is 152.

A selected summary of data obtained at Londolozi is presented in Appendix F.

7.2.1. VISITOR PROFILE

The biographical detail shows that the respondents were of roughly equal percentages of males (50,7%) and females; were pre-dominantly English-speaking (92,1%); were evenly spread over the age-brackets (calculated mean of 36,7 years); were mostly from an income bracket of R24 000+ p.a. (73,7%), and generally had some form of tertiary educational qualification (63,8%). The majority of respondents had

professional (32,2%) or administrative (17,1%) occupations. (36,8% were classified as not economically active: scholars, students, housewives and retired persons.)

The range for the length of stay in the reserve was 1 - 6 nights, the mode being 2 nights (59,2%). The average length of stay was 2,46 nights.

53,3% of respondents had stayed overnight in a South African nature reserve within the past 12 months. 49,3% of respondents usually stayed in South African nature reserves at least annually, with a further 28,3% doing so every 1-3 years. The majority of respondents had not visited Londolozi before (65,8%). Those that had were fairly evenly spread over a range of 1 - >9 previous visits.

While 71,1% indicated a preference to visit nature reserves, rather than some other holiday resort, and an even higher percentage rated their interest in nature conservation as very strong (49,3%) or strong (31,6%), only 33,6% of respondents were members of a wildlife / conservation / environmental society.

32,9% of respondents said that the decision to visit the reserve was not their own. Nonetheless, 82,2% would "definitely" try to visit Londolozi again. (Only 60,5% would "definitely" try to visit some other game reserve!) 23,7% had visited or were to visit some other nature reserve on the same trip as when surveyed.

7.2.2. MOTIVATIONS

Visitors' reasons for choosing to visit a nature reserve are listed in order of preference below (respondents rated, rather than ranked, their responses):

TABLE 6.1

	EXTREMELY IMPORTANT 5	4	3	2	NOT AT ALL IMPORTANT 1
Atmosphere	117	27	6	1	1
Game viewing	115	28	5	3	1
"Getting away"	104	27	11	5	5
Relaxation	90	39	16	5	2
Being taught	72	50	24	5	1
Bird watching	60	35	31	17	9
Walking on trails	51	36	45	9	11
The night sky	37	42	40	19	14
Convenience	34	23	33	24	38
Comfort	24	27	56	27	18
Studying plants	23	27	49	32	21
Modest costs	9	29	64	29	21
Proximity	10	14	50	38	40
Recreation	3	9	39	39	62

Responses showed that a strong majority of visitors surveyed would rather see an improvement in information facilities than in accommodation and especially recreational facilities:

	Before Ranking		
	FIRST	SECOND	THIRD
Better accommodation	35	76	41
Better information	106	28	18
Better recreation	10	40	102

	After Ranking		
	FIRST	SECOND	THIRD
Better accommodation	22	78	52
Better information	112	29	11
Better recreation	17	38	97

Those ranking information (interpretation) first in the Before questionnaire totalled 69,7%. This rose to 73,7% in the After questionnaire.

It is of interest that the general response to the question, "Accommodation should be geared towards a sense of privacy for the visitor" was Agree (55,9%), rather than Strongly Agree (15,8%).

7.2.3. PARTICIPATION

The various interpretative facilities and programmes available during the period of research, and visitor participation therein, were as follows:

7.2.3.1. Conducted Drives

These formed the basis for interpretation at Londodlozi. Guests were offered two drives each of 2-4 hours duration daily. (The evening drive allowed guests the opportunity of viewing nocturnal animals.) One of the chief attractions for guests was that vehicles could follow game away from

roads. A maximum of seven guests per vehicle was allowed, and guests usually remained with the same ranger throughout their stay.

On these drives the rangers displayed a good knowledge of the fauna and flora of the area, with some excelling in their specific fields of interest. While all rangers did attempt to illustrate ecological inter-relationships, a greater emphasis could have been placed on ecological processes and evolutionary adaptations. Most interpretation was to do with large mammals. These were discussed in detail. Smaller mammals and birds were usually identified, but their adaptations and habits were seldom discussed in much detail. Other fauna, and the flora, were occasionally identified, and infrequently expanded on. There was little reinforcement - plants and animals were seldom identified, and even less frequently 'explained', more than once. Reference was usually made to research being carried out in the area, and the principles underlying management policies.

The rangers were sensitive to techniques such as stopping for a suitable length of time when watching game, and in a position where all could see; not bombarding guests with too much information, and talking so that all can hear; driving slowly, and trying to create an feeling of 'being in the bush', an atmosphere of suspense when approaching game. (Tracking game from the vehicle and on foot, at which the trackers and rangers excelled, was particularly effective in brewing anticipation). The drinks break at sunset (on the evening drives) was always regarded as a highlight,

inspiring a reflective tranquility.

Radios were fitted to all vehicles. This had the advantage of enabling the rangers to keep one-another informed of interesting sights. In the opinion of the researcher, radios were occasionally used too liberally. Furthermore, their use seemed to increase the visitors' desire to chase after the 'BIG 5'.

Visitors were occasionally encouraged to get out of the vehicle and to look at tracks, crush and smell leaves, or inspect dung and faeces.

On just nine occasions guests declined to go on a day drive. These drives thus had a 97,5% occupancy. On four occasions this happened on night drives (99% occupancy).

7.2.3.2. Shows

Five slide shows were given by John or David Varty. (None of the rangers gave a slide show during the period of research.) These shows covered a broad spectrum of conservation issues: appropriate land use, game farming, sustainable utilization of resources, 'mutualism' (conservation taking cognizance of the poverty existing on the borders of many of our reserves), research and management in reserves, the usefulness of 'disliked' animals

(such as the tsetse-fly), food webs, trophic levels, exotics, and hunting.

45 respondents (78 visitors) attended the five slide shows. Only six respondents who could have attended the slide shows declined to do so.

A film on the translocation of elephants (sponsored by the Londolozi Trust) was shown on two occasions, to 27 respondents. Other films were not, and the owners did not regard formal lectures as fitting in with Londolozi's programme.

7.2.3.3. Informal Contact

Rangers were encouraged to mingle with guests informally. Conversation topics frequently ranged around nature conservation.

7.2.3.4. Conducted Walks

Few conducted walks were undertaken during the period of research. 65 respondents were taken on a very short walk to the Hippo pools, while only 15 respondents went on a longer conducted walk. On walks the rangers were able to interpret in finer detail. The researcher was able to participate on one long conducted walk. On this particular walk there was

a greater emphasis on the flora and on birds than was usual on conducted drives.

7.2.3.5. Literature

While some wildlife magazines and books were available for the guests, this facility was seldom used to advantage. The curio shop sold some reference books, and coffee-table wildlife books. No books on broader aspects of conservation were on sale.

A folder placed in each bedroom included checklists of mammals, birds and trees, as well as a brief history of Londolozi. The researcher saw few adult guests using the checklists. Many children took the checklists on the conducted drives.

7.2.3.6. Self-guided Activities

The facilities and programmes offered at Londolozi did not lend themselves to self-guided activities - the approach was one where activities are conducted. Guests were not permitted to walk or drive around the reserve on their own. Trees in the camp had not been labelled. The owners regarded a self-guided trail around the camp area as of lower priority.

7.2.3.7. Displays

Displays were limited to some photographs on the walls. These were more for aesthetic appeal than for interpretative instruction.

7.2.3.8. Miscellaneous

The hide (overlooking a water-hole) was available to guests. During the period of research, six respondents spent time in the hide. (None slept in the hide, though this experience was offered.) There were no displays in the hide. While rangers were sensitive to children, going out of their way to ensure that the interpretation was appropriate, no facilities and programmes specifically designed for children had been created. Interpretation seldom embraced astronomy.

A news letter is sent out to all visitors wishing to receive it, discussing events, management policies and problems.

7.2.3.9. Visitor Reactions

Respondent reaction indicated that they did not rely entirely on the rangers for interpretation. 20,4% claimed to have used other aids extensively; 45,4% occasionally; 13,8% seldom, and 20,4% not at all. (A subjective impression, having partaken in much of the interpretation,

is that some respondents rated their use of other aids higher than was apparent.)

81,6% of respondents had access to binoculars; 94,7% to a camera. Few respondents brought radios (7,9%) or tape recorders (15,1%) to the reserve.

Respondents tended to feel that their appreciation of nature had increased strongly (78,9%). 19,1% felt it had done so moderately; 2% felt that their appreciation had not really increased.

Respondents were asked to rank various amenities that 'may have made your visit more meaningful' - i.e. interpretative amenities they wished to have (see section 4.2.3.11). The rankings were as follows:

	1st	2nd	3rd	4th	5th
Day drives	60	61	17	12	2
Night drives	61	50	27	8	6
Conducted Walks	29	21	69	21	12
Slide/film shows	10	6	17	63	56
Literature	5	4	16	58	69

(Note in some cases respondents were unwilling to show preference between two, and in a few cases three, amenities. These were then given a joint ranking.)

7.2.4. AWARENESS

The over-all results - i.e. all the responses of all the respondents - are as follows:

H 0: There is NO change in respondents' awareness of conservation issues as a result of their visit to the reserve (Londolozi).

H 1: There IS an increase in awareness of conservation issues.

Significance Level: 0,10 (10%)

Critical Region: $X^2 > X^2_{(1; 0,10)}$
 $> 2,71$

		After		
		NEGATIVE	POSITIVE	TOTAL
Before	NEGATIVE	1479	801 I	2280
	POSITIVE	491	1029 I	1520
	TOTAL	1970	1830 I	7600

STATISTIC	VALUE	D.F.	PROB.
MCNEMAR TEST OF SYMMETRY	74.381	1	.0000

As 74,381 > 2,706, it will fall within the tail. The null hypothesis is rejected.

Thus, there is an increase in respondents' awareness of conservation issues as a result of their visit to Londolozi.

This result is borne out by looking at the increase in terms

of percentages. 40,03% of questions scored positively in the Before questionnaire; 48,16% in the After questionnaire. This represents an increase of 20,4% in the After responses over the Before responses.

Within the possible range of 0 to 25, the range of positive responses per respondent was from 2 to 19 in Questionnaire One, and from 3 to 23 in Questionnaire Two.

7.2.4.1. Grouping of Questions

The results when grouping the frequencies into the Wildlife, Conservation and Environmental categories may be summarized as follows:

	% Positive Before	% Positive After	McNemar Value	Prob.
Wildlife	32,17	45,59	75,942	.0000
Conservation	30,47	38,06	33,988	.0000
Environmental	45,26	50,13	12.976	.0003

The results of the McNemar chi-squared test on the frequencies show that there has been a significant increase in awareness in all three categories.

The frequencies were then tested to see if the increases were significantly different. The results may be summarized

thus:

CATEGORY	Before/After	Chi-squared Value
Wildlife	489/693)
Conservation	602/752	) 2,459)
Environmental	688/762	) 2,516)
		) 9,730)

The results show a significantly greater increase in positive responses to the Wildlife questions than to the Environmental questions. However, no significant difference in increases is found between the Wildlife and Conservation categories, nor between the Conservation and the Environmental categories (taking a 5% level of significance, with a critical region value of 3,841).

7.2.4.2. Individual Questions

As only Approach (a) was used at Londolozi, individual questions cannot be discussed as they have been for Hluhluwe and Giant's Castle in Chapter 6.

Despite the issue being covered in the slide presentation, there was no significant increase in positive responses to Question 10 (the eradication of the tsetse fly / malaria-carrying mosquito) :- 29 Before, 33 After, with a McNemar value of 0,258. However, when using attendance of a slide show as a condition variable, the results are as follows:

	ATTENDANCE			NON-ATTENDANCE		
	-A	+A	Total	-A	+A	Total
-B	29	9	38	79	6	85
+B	2	5	7	9	13	22
Total	31	14	45	88	19	107

McNemar value = 3,273

0,600

(+ = positive; - = negative; B = Before; A = After)

This indicates that those attending the slide show did show a significant increase in positive responses to this issue, while those who did not attend a slide show did not show any increase (taking a 10% level of significance). Furthermore, the change in awareness between the two groups is statistically significant (a 5% level of significance is appropriate). However, those scoring positively for question 10 did not score significantly higher on the other 24 awareness questions, either Before or After.

7.2.4.3. Condition Variables

Results given in Appendix F summarize the Before and After levels of awareness for selected condition variables. As mentioned in section 4.2.4.3, the chief emphasis of this project has been on increase of awareness. Because of the inherent constraints when applying the statistical tests to the subgroups of condition variables (see section 2.5), these increases are difficult to compare. Reported here are the average Before levels of awareness of conservation issues associated with the different condition variables.

Analysis of the results shows a strong correlation between involvement in nature conservation and level of awareness. The more recently and the more frequently respondents had visited reserves, the greater their level of awareness. Those who had visited Londolozi before had a significantly higher level of awareness when compared with those that were visiting Londolozi for the first time. (Those visiting for the first time showed a significant increase in awareness, from 36,0% Before to 45,1% After.)

The stronger the desire to visit reserves indicated by respondents, and the stronger they rated their interest, the higher the average level of awareness. Those most determined to return to Londolozi had the highest level of awareness. A higher average level was also shown with membership of a conservation society. Those indicating that it was not their own decision to visit the reserve averaged the lowest level. Respondents claiming that the visit had strongly increased their appreciation of nature showed a lower Before and higher After average than those who rated their increase in appreciation as moderate.

When analysing the correlation between participation in specific activities and level of awareness, cognizance should be taken of the fact that increases in the level of awareness manifested in one variable may be the result of the influences of several variables. Given this, only attendance of a slide presentation showed definite

differences - those attending having both a higher level and a significantly greater increase. The number of conducted day and night drives, and participation on conducted walks, did not produce significant differences. The use of other interpretative aids (reference books or the knowledge of companions) was positively correlated with a higher level of awareness. However, the 31 respondents who indicated that they had not used other aids showed a significant increase in positive responses (from 34,6% to 43,0%).

Tests were conducted on certain of the ratings listed in Table 6.1 (importance of various reasons for visiting a reserve), correlating them with the level of awareness. Of particular interest is the strong positive correlation between the importance respondents attached to the chance to be taught about nature and their level of awareness. Those for whom walking on trails was an important reason for visiting reserves averaged a higher Before level of positive responses. Respondents favouring an improvement in information facilities scored significantly higher than did those ranking accommodation or recreational facilities first.

Respondents were asked to rank amenities that they would prefer (see section 7.2.3.9). Those ranking either of the conducted drives or the slide and film shows first had lower Before levels. Those ranking Conducted Walks first had the highest After average level of awareness.

Of the 115 respondents rating game viewing as an extremely

important reason for visiting reserves, 63,5% knew that the hippopotamus is herbivorous; 52,2% knew that the black rhino is a browser; 59,1% identified the springbuck, and 73,9% the blesbok, as mammals that do not belong in Londolozi. The percentages for the 28 respondents who rated game viewing a "4" were 50,0%; 50,0%; 50,0% and 60,7% respectively.

Of the 60 respondents rating bird watching as extremely important, just 23,3% were able to identify the house sparrow and 26,7% the European starling as not belonging in Londolozi. Only 71,7% (Before) and 81,7% (After) of these respondents were aware that there are species of birds that foster the young of other species. The percentages for the 35 respondents rating bird watching as a "4" were 14,3%; 8,6%; 65,7% and 65,7% respectively.

Of the 23 respondents rating studying plants as extremely important, 30,4% identified the black wattle, and 73,9% the prickly pear, as species that do not belong in Londolozi. The 27 respondents who gave this pursuit an importance rating of "4" scored 11,6% and 42,2% respectively. (After).

Equally indicative of the dichotomy between stated interests and basic knowledge is the fact that while 79 respondents (52,0%) rated the night sky as either an extremely important or an important reason for visiting reserves, only 37,5% knew that a star is a sun.

Respondents answers to the question, "The wants and

expectations of the affluent are (also) a serious environmental threat", were tested against their answers to the other 24 awareness questions. Those scoring positively on this question scored significantly higher overall, both Before (41,35 : 36,9%) and After (50,3% : 46,3%).

Of the biographical data, males showed a greater level of awareness, as did those in the 50 - 59 age bracket. There was no clear correlation between respondents' level of awareness and their language, occupation, education and income. The 12 educationalists interviewed averaged 38,0% (Before) and 49,0% (After). Respondents in the 14 - 19 and 20 - 29 age brackets had slightly lower Before and After levels. No politicians were interviewed at Londolozi.

There was no significant difference in the levels of increase in awareness in visitors spending 1 night (24,2% increase), 2 nights (20,8%), 3 nights (18,4%) or 4+ nights (23,1%) at Londolozi - see Appendix F.

The discussion and comparison of these results, as well as the conclusions drawn, are presented in the final chapter (Chapter 8).

CHAPTER 8

DISCUSSION AND CONCLUSION

8.1. DISCUSSION OF RESULTS

In discussing the findings of this project, the results of the surveys in the three reserves - Hluhluwe, Giant's Castle and Londolozi - are considered jointly. Where the results in individual reserves show a substantive difference, these are referred to. Furthermore, the results of the longitudinal and cross-sectional analysis techniques are considered jointly, reference again being made only to substantive differences. The findings of the survey are supplemented by the researcher's participation observation where appropriate.

Visitor receptivity to interpretation, and the expectations with which interpretative planning must contend, are integral aspects of this study. It would seem pertinent to begin this discussion by considering respondents' motives for visiting the reserves, the interpretative services in the reserves, and visitor participation therein. These are then inter-related with the respondents' level of, and increase in, awareness of the conservation issues raised.

8.1.1. Visitor Profile

There are two striking features in the biographical data of visitors (see Appendix C): Firstly, while all three reserves are 'multi-racial', only four 'non-white' adults (all Indian) stayed overnight in the reserves during the period of research. Secondly, the reserves attracted on average over four times the number of English-speaking South Africans as Afrikaans-speakers. (This is not representative of all reserves in South Africa.)

There were marginally more females interviewed, and most respondents were either in professional (and to a lesser degree, administrative) occupations, or were classified as not economically active. The levels of education were high (particularly at Londolozi), with more than half of the respondents having some form of tertiary qualification. The income levels were exceptionally high. (Not surprisingly, those interviewed at Londolozi, where the tariffs are higher than at the public reserves, had the highest income levels.) There was no obvious trend with regard to age, although 30 - 39 years old was the general modal age bracket. The numbers in the 14 - 19 and 20 - 29 age brackets should be regarded in the light of the survey having been undertaken largely out of the school holidays (as well as many young people not being able to afford to visit a reserve independently). Nonetheless, their numbers are low when one considers that most people involved in conservation education regard the

young as a primary target group. The numbers of respondents professionally involved in education, and in politics (local and national) were proportionately high.

The data for the three reserves (and using both approaches) regarding the percentages of respondents who had stayed overnight in the reserve before; who usually stayed overnight in a nature reserve annually and every few years, and who had last stayed overnight in a nature reserve within the past year and past three years, are presented below:

	% Previously Visited Reserve	% Usually Visit		% Last Visited	
		0-1 years	0-3 years	0-1 years	0-3 years
Hluhluwe (a)	45	46	76	51	64
Hluhluwe (b)	49	48	76	55	70
Giant's Castle (a)	48	59	88	65	84
Giant's Castle (b)	32	52	87	67	84
Londolozi	34	49	78	53	73

The difference between the two approaches at Giant's Castle with respect to respondents having visited the reserve before is substantive. Furthermore, the data shows that visitors to Giant's Castle stay overnight in nature reserves more frequently than do visitors to the other two reserves surveyed (which corresponds with the higher average Before level of awareness of visitors to Giant's Castle).

The profile that emerges suggests very strongly that the reserves in question tend to attract those who have had the opportunity to enjoy (and, further, to continue to command) the full benefits of the South African educational system.

They represent a most privileged sector of the South African public. Moreover, it is evident that whatever knowledge of nature conservation has been fostered has tended to have fairly regular opportunity for re-inforcement and enhancement by visits to nature reserves.

8.1.2. Motivation

The responses of those interviewed in all three reserves, and using both approaches, suggest that respondents tended to regard themselves as strongly interested in and keen to learn about nature conservation. The researcher's participation observation supports this finding.

A factor mitigating against this self concept is "prestige bias" (Oppenheim, 1966, pp 62-4). While not a wholly reliable filter question, the low percentages of respondents who were members of a conservation society - from 23% at Giant's Castle to 34% at Londolozi - contrast strongly with the high self-ratings of interest in nature conservation and preference for visiting nature reserves. A second important mitigating factor is the general ignorance of the breadth of the term, 'nature conservation'.

There is remarkably little difference between the results in the three reserves of respondents' ratings of reasons for

visiting a nature reserve. The only major variation was that 'Walking on trails' was rated higher than 'Game viewing' by respondents at Giant's Castle. Four reasons stand out as the most important for visiting nature reserves: relaxation, "getting away from it all", the atmosphere of being in nature, and (excluding Giant's Castle) game viewing. Considerations such as convenience, low costs and proximity are not prominent, while recreation is adamantly rejected. An interesting comparison is that comfortable accommodation was rated as of lesser importance by respondents at Londolozi, which offers more luxurious accommodation, than at the other reserves.

The reason of greatest relevance to this study is 'The chance to be taught about nature'. Most respondents regarded this as important - from 65% at Hluhluwe to 80% at Londolozi. However, the respondents' limited understanding of what this should entail (i.e. not merely a discourse on 'the big, the hairy and the cuddly') probably exaggerates the interest expressed. This is illustrated by the fact that 'Game viewing' drew roughly twice as many responses of an "extremely important" reason for visiting nature reserves as did 'Bird watching'; and approximately four times that of 'Studying plants'. Few visitors to these nature reserves would seemingly regard 'being taught about nature' as embracing ecological systems and environmental inter-relationships. (Again, the researcher's participation observation supports this finding. In Hluhluwe and Londolozi, where game viewing is the chief attraction, there was relatively little interest in 'general game' such as

impala, zebras and wildebeest. Most visitors appeared intent on seeing the 'big game', and tended to pay scant attention to other fauna, the flora, abiotic factors, or the inter-dependencies. This was a problem for the interpreters - as if the 'lures' have been pushed to the extent of being 'ends' in themselves.

Further evidence for the 'big game motive' was the large number of respondents at Londolozi who, when asked (at the request of the owners) why they had chosen to visit Londolozi, replied that it offered the opportunity to follow big game off of the roads. [Other reasons frequently given were the chance to learn from knowledgeable rangers, and Londolozi's reputation for putting something back into conservation.]

Only 120 respondents (15,7% of all respondents) added reasons of their own to those reasons for visiting nature reserves listed. Of these, 17,5% were related to interpretation in the reserves. The other reasons given were predominantly of a social nature (21,7%), such as privacy, being with one's family, and meeting other people; the spiritual or emotional experience (18,3%), and related to an appreciation of nature (15,0%). Only 7,5% of the added reasons were related to 'creature comforts', mostly from visitors to Giant's Castle.

A very large majority of respondents indicated a preference for better information facilities, rather than better accommodation and especially better recreational facilities.

Although the Before rating of this question does represent a general preference, the results are tempered by the already high standards of accommodation (especially at Londolozi and Giant's Castle). In most nature reserves in South Africa the disparity between the standards of accommodation and of interpretation show that the authorities have in the past given comfortable accommodation priority over interpretation - leading, furthermore, to exaggerated expectations in visitors as to the quality of accommodation.

In all three reserves, and when using both approaches, an overwhelming proportion of respondents indicated that they would "definitely" visit nature reserves again in the future. It would seem from this that the visitors attracted to the reserves have a committed interest in nature. However, while 82,2% of respondents to Londolozi said that they would "definitely" return to Londolozi, the average figures for Hluhluwe and Giant's Castle were 43,8% and 66,2% respectively. Again this may be in part a reflection of visitor expectations. While visitors to Londolozi are almost guaranteed to see lions, leopards and other 'big game', visitors to Hluhluwe are seldom as fortunate.

A further point of relevance is that it is most difficult to obtain bookings for the three reserves, especially during peak seasons. The vast majority of visitors to the three reserves would have had to have gone to the trouble of booking well in advance - again indicative of a committed interest.

Thus the results of the survey indicate that interpretation in all the reserves had a willing and receptive audience, but that the interest is specific and limited. An important factor conditioning narrow expectations of visitors is the generally narrow approach to interpretation in nature reserves in South Africa.

8.1.3. Interpretation in the Reserves

The insular view of nature conservation held by so many visitors to nature reserves poses problems for interpretative planning. Interpretation in the three reserves surveyed did not merely pander to visitors' interests, but rather attempted to challenge and provoke them. However, none of the reserves' interpretative facilities and programmes had developed to adopt an holistic approach inter-relating ecological and environmental concerns.

It is obvious that communication mediums all have strengths and weaknesses. For example, displays may broach an issue in a manner that could be insufferable if handled by a ranger. The balance between interpretation specific to the reserve and that considering broader, influencing factors should be sensitive to visitor expectations; and interpretation should take advantage of the respective

strengths of the various mediums in addressing different issues.

The strongest feature of the interpretation in all three reserves appeared to be the activities conducted by the rangers. Supportive interpretative facilities and programmes did not supplement this strength. A consequence of this is that relatively little attention had been paid to the broader issues of nature conservation in the interpretation in the reserves. Three examples of this are common to all three reserves:

Firstly, while the authorities concerned are known to recognize the need to expose those who have shown an interest in nature conservation (if only by visiting a reserve) to deeper levels of thought and debate, the curios and book shops did not reflect this. The emphasis was decidedly on curios, and the books on sale were limited to wildlife reference and 'coffee-table' books. No books on broad environmental issues - such as Schumacher's Small is Beautiful, Aldo Leopold's A Sand County Almanac, Meadows' (et al) The Limits to Growth, Garritt Hardin's Stalking the Wild Taboo, etcetera - were on sale in any of the reserves. Furthermore, very few books taking an ecological approach to wildlife (e.g. Reader and Croze's Pyramids of Life) were on sale. This, however, is in part a reflection of the inadequacies of many popularly-selling 'wildlife' books. Very few of the books on sale in these reserves were aimed at children. The regulations governing the sale of books are such that the books cannot be sold at cost price in the

reserves (Dr J Vincent, pers. comm.). [Unlike in other reserves in South Africa, popular fiction books were not on sale in the reserves surveyed.]

A second example of inadequate supportive programmes common to all three reserves were the film shows (although Londolozi does not rely on film shows as an important interpretative medium at present). Most of the films shown dealt with big game, and in many cases the ecological content was superficial. Furthermore, those films stressing spectacular incidents, such as dramatic lion kills and cheetah chases, possibly aggravate the already narrow expectations of visitors. A balanced film programme, incorporating ecological films (such as Jean and Alan Root's 'Castles of Clay' and 'The Baobab', and David Attenborough's 'Life on Earth' series), as well as films dealing with broader issues (e.g., from Bronowski's 'The Ascent of Man' to those on urban energy consumption), would have been of far greater instruction. The cost of acquiring films has hindered the Natal Parks Board in this regard (Dr J Vincent, pers. comm.). [Relevant, too, is the paucity of competent, locally produced films on ecological and environmental subjects.]

Thirdly, interpretation in the reserves surveyed was very limited by the lack of suitable displays in an interpretative centre. The displays used did not cover broad issues; tended to deal with 'What?', rather than 'How?' or 'Why?'; and provided answers, rather than posed questions. They thus failed to provoke the average visitor,

and seldom stimulated thought, problem-solving and extrapolation. (Only in the lounge at Giant's Castle was there a definite attempt to utilize displays. These were very specific, dealing with the eland, the bushman, and the history of the reserve. During the period of research visitors were hardly seen in the lounge. A number of respondents asked said that they were content to stay in the comfort of their accommodation unit.)

In Giant's Castle and Hluhluwe the self-guided trails with information pamphlets were not well publicized, and a number of respondents consequently did not have the benefit of participating. The subject-matter in these trails was appropriate, although only the self-guided auto trail stressed adaptations and inter-relationships. There was no re-inforcement of facts presented (e.g. trees were identified only once), and the trails were not graded (unlike trails in other reserves administered by the Natal Parks Board).

As indicated earlier, the most effective forms of interpretation in all three reserves seemed to be the conducted activities. The persons involved were interested and interesting, all displaying a good knowledge of the fauna and flora, and communicating enthusiastically and with conviction. Factual information about the species interpreted tended to be augmented by discussing aspects of their adaptations and behaviour, especially with respect to large mammals. While the content of the interpretation tended to be specific, broader issues were often discussed

when appropriate. The slide presentation at Londolozi, in particular, dealt in depth with many of these broad issues confronting nature conservation.

Only in Hluhluwe was there a formal attempt to categorize visitors by means of a survey, rather than merely relying on experience and intuition.

From the foregoing it is concluded that the various interpretative facilities and programmes have not yet been developed to optimal effect in these reserves. The chief limitations appeared to be the emphasis on identification (the 'What?'), rather than on the evolution, adaptations and behaviour (the 'How?' and 'Why?'); and the failure to structure and integrate interpretation in a manner whereby the various mediums complement one another to provoke an holistic consideration of nature and its conservation.

8.1.4. Visitor Participation in Interpretation

Visitor participation in interpreted activities and use of interpreted facilities at Londolozi is discussed separately from that at Hluhluwe and Giant's Castle, as the participation was higher at Londolozi.

The expectations of visitors to Londolozi are such that there is an extremely high level of visitor participation in the interpreted amenities stressed by the reserve management. Even though many respondents at Londolozi indicated that they used other (interpretative) aids fairly frequently, the emphasis on conducted activities, and the extent of knowledge displayed by the rangers, makes the use of aids less significant as a factor influencing the enhancement of knowledge. The activities most frequently utilized by respondents at Londolozi were conducted drives and slide presentations, as well as informal contact with the rangers. (That only 24% of respondents at Londolozi attended a slide show is a reflection more on irregular presentations of the show than on visitor disinterest - 90% of those who could attend a slide presentation did so.) While conducted drives had an average attendance of 98% of capacity, few respondents went on full conducted walks. This is of relevance in that conducted walks would seem to be one of the best forms of interpretation.

The participation in interpreted amenities was not as high at Hluhluwe and Giant's Castle. The most common activity in Hluhluwe is for visitors to view game from their vehicle, using whatever aids they may have at their disposal, while at Giant's Castle visitors commonly walk unaccompanied by a ranger. The fact that during the periods of research the ranger/naturalists were frequently away exacerbated these tendencies. However, when available, certain interpretative amenities were well supported. The conducted walks and the film presentations, as well as the site museum, were the

amenities most frequently utilized in Giant's Castle; the film presentation, self-guided trails, and visiting the hide (though this had no formal interpretative aids) were the most frequent at Hluhluwe. It may be that the lower levels of participation are a result of visitor expectations being conditioned by infrequent interpretation, and thus an attitude of 'self-sufficiency' possibly develops. The responses in both Hluhluwe and Giant's Castle indicated that visitors tend to use other interpretative aids. As would be expected, a positive correlation was found between the (Before) levels of awareness and participation at both Hluhluwe and Giant's Castle. What respondents may have gained from specific forms of interpretation is beyond the scope of this project.

Respondents at Londolozi indicated a general preference for conducted drives (by far the most stressed interpretative activity in the reserve), while the most preferred forms of interpretation at Giant's Castle were the conducted walks and the self-guided trails. A very strong majority of respondents at Hluhluwe indicated a preference for conducted walks, rather than for the other options offered. In Hluhluwe and Londolozi those showing a preference for conducted walks above the other interpretative options offered had significantly higher levels of awareness than did the rest. [The popularity of conducted walks and self-guided trails is influenced by the likelihood of those old or incapacitated rating them as of less importance.]

Eighty percent of respondents at Londolozi felt that the

visit had strongly increased their appreciation of nature. Giant's Castle and Hluhluwe averaged 60%, and 53% respectively for this question.

Thus, although there would appear to have been a generally strong desire to participate in conducted activities (especially at Londolozi), limiting factors were the visitor ignorance of the scope of interpretation in the reserves; the interpretative emphases in the reserves, and visitor expectations favouring specific amenities.

8.5.1 AWARENESS OF CONSERVATION ISSUES

The results of both survey techniques show a statistically significant increase in awareness of conservation issues in visitors to the three reserves studied. The results are summarized below. The extent to which the respondents increased their level of positive responses is calculated both as a percentage of the Before level (e.g. 8,2 over 40,0 for Londolozi) and as a percentage of the possible increase (i.e. 8,2 over 60,0 - see over):

	% Positive		% INCREASE	
	BEFORE	AFTER	/Before	/Possible
Londolozi	40,0	48,2	20,5	13,7
Giant's Castle (a)	41,0	45,6	11,2	7,8
Giant's Castle (b)	41,0	43,4	5,9	4,1
Hluhluwe (a)	37,7	42,2	11,9	8,2
Hluhluwe (b)	37,7	40,8	8,2	5,0

This table suggests that the greatest increase in awareness of the conservation issues raised was at Londolozi, which has the most intense interpretative programme of the three reserves. The data suggests, furthermore, that those choosing to visit Hluhluwe tended to be less aware of the conservation issues raised than did those to Giant's Castle and Londolozi. This difference in the average Before levels, as well as slight variations in the questions asked, make it difficult to compare the increases in awareness in visitors to Hluhluwe and to Giant's Castle. There would appear to be very little difference.

It is feasible that the awareness shown by respondents was enhanced by 'osmosis', that merely being in the reserves influenced dispositions to an extent possibly affecting answers to some of the questions asked. While this factor was borne in mind in the phrasing of the questions, it remains an uncontrolled variable in this project.

That the surveys show a statistically significant increase in awareness of conservation issues raises the question of whether these increases are substantive. Given the average Before levels, and bearing in mind that some respondents are simply not interested enough for interpretation to succeed,

what percentage increase could be regarded as 'good' in the short time spans available for interpretation?

A literature search did not reveal examples of 'substantive' increases. The higher increases by individuals in this survey cannot be regarded as a reliable indication of a 'substantive' increase as the questionnaires were balanced on overall, average scores.

In the absence of a comparative yardstick it is difficult to judge the extent of the increases found in the reserves. Consideration should be given to the general ignorance of (and apathy towards) nature conservation, and the piecemeal and sporadic efforts to redress this in South Africa (Wildlife Society, 1980); the very real limitations in formal environmental education in South Africa (Hurry, 1977; Irwin, 1982; Hurry, 1982); the relatively infrequent opportunities visitors to nature reserves have for environmental education through nature reserve interpretation, and their tractability whilst in a reserve: all place an added responsibility on interpretation in nature reserves. In the light of such considerations the increases in awareness of conservation issues found cannot be regarded as high.

It is prudent to consider where these increases most commonly occurred (i.e. the groupings and individual issues), and to examine the levels of awareness of individual issues in respondents LEAVING the reserves.

As mentioned in Chapter 6, the data relating to the grouping of issues (into Wildlife, Conservation and Environmental groups) should be analysed with caution. Perhaps the most definite conclusions using these groupings are that they show the greatest increase in knowledge to be in the Wildlife group of questions, and the lowest increase in the Environmental group. The Before levels for the Wildlife group of questions were lower than those for the Environmental group, thus possibly allowing for an easier increase. However, the extent of the differences between the increases suggests that it is valid to conclude that the increases were generally of a specific, wildlife-orientated nature. Moreover, the very strong emphasis on wildlife issues observed by the researcher in the interpretative activities in the reserves supports this.

Even though the cross-sectional design (Approach (b)) is valid for considering increases in awareness of specific issues, the different Before levels associated with the questions makes it difficult to draw full conclusions (see section 6.3). Nonetheless, the only issues that showed a significant increase in understanding were the need for burning as a management tool and identification of the alien ungulate (for Hluhluwe and Giant's Castle), as well as the identification of the exotic bird and tree for Giant's Castle. All of these were part of the Wildlife group of questions. It is not possible to discuss specific issues for Londolozi, as only Approach (a) was used.

Analysis of the five sets of data for respondents LEAVING the reserves (see Appendix G) shows that the levels of awareness of individual issues were generally very low. In most cases the examples below are drawn from the reserve where respondents fared worst for each particular issue (though there was seldom a substantive difference between the results obtained in the three reserves):

Of the wildlife-orientated questions, only 34,4% of the respondents left Hluhluwe (famous for its rhinoceroses) aware that the black rhinoceros is a browser, and 64,8% left knowing that the springbuck does not occur in the reserve. Two of South Africa's problem exotics, the black wattle and the prickly pear, were identified as not belonging in Hluhluwe by 26,4% and 24,7% of respondents respectively. Only 17,6% of respondents at Giant's Castle left aware that another problem exotic, the European starling, did not belong (nor does occur) in the reserve, while 15,2% were opposed to the introduction of an exotic but endangered species. Only 26,6% of respondents at Londolozi left aware that it is occasionally necessary to cull lions.

Amongst the broader issues, 38,8% of respondents at Londolozi recognized that pesticides do work their way up through food webs; 34,4% at Giant's Castle were opposed to farmers being encouraged to concentrate on monoculture, and 18,5% knew that the majority of South Africa's marine and terrestrial ecosystems are not represented in nature reserves. Only 47,8% of respondents leaving Hluhluwe were

aware that the enforcement of the laws protecting the environment in South Africa are inadequate.

A slight majority of respondents at Hluhluwe (57,2%) agreed that it is in nature conservation's interest to use surplus resources to upgrade the lives of those living in poverty on the boundaries of reserves, while 39,6% knew the expected doubling period of the South African population. A low 47,4% at Londolozi agreed that the wants and expectations of the affluent are an environmental threat in South Africa, while 45,5% of respondents at Hluhluwe regarded fashion as an environmental threat. Just 58,5% of respondents at Giant's Castle left agreeing that people should be prepared to have their sewage purified and the water recycled. Of the respondents leaving Hluhluwe and Giant's Castle, a mere 11,0% opposed the extermination of the tsetse-fly; 9,6% disagreed with the eradication of malaria-carrying mosquitoes. At Londolozi, 21,7% of respondents left opposed to the eradication of malaria-carrying mosquitoes.

The condition variables, analysed in the respective chapters, show a definite correlation between interest and involvement in nature conservation, and knowledge of the issues raised. However, no subgroup isolated by a condition variable (e.g. members of a conservation society) recorded levels of awareness that could be considered to be 'high'. Furthermore, it is shown conclusively that the professed interest in specific aspects of conservation was not necessarily reflected in specific knowledge (e.g. only 23,3% of respondents at Londolozi who rated bird watching as an

'extremely important' reason for visiting nature reserves identified the house sparrow as alien to the reserve). Considering that the examples of indigenous mammals, birds and trees, and the choices of species exotic to the reserves, were as common as was felt possible, the levels of knowledge of the local fauna and flora in those who are (or say they are) very interested are exceptionally low.

No definite correlation was found between length of stay in the reserves and increase in awareness. (Only at Giant's Castle did there seem to be a positive correlation.) Of the biographical variables, only the sex variable showed a consistent difference - males having the higher averages.

The positive correlation found between average Before levels of awareness and participation in interpretation suggests that the more knowledgeable respondents are more willing to take advantage of interpretative amenities.

The range of positive responses per respondent (from 8% to 92%) highlights the need for graded interpretation. No structured gradation of interpretation was found in the three reserves, although there was a degree of improvization in the conducted activities.

Finally, an interest in astronomy (and especially the possibility of life elsewhere in the universe, and its adaptations) seems a logical extension for those interested in ecology. It is thus notable that a mere 34% of respondents in the three reserves knew that a star is a sun.

SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

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- 2. It is absurd to kill spiders indiscriminately. SA A N D SD ? 11
- 3. Suitable supplementary methods of feeding should be provided for game animals in Winter. SA A N D SD ? 12
- 4. There is no need to cull (reduce the number of) lions in game reserves - their numbers are adequately controlled by their available food (prey). SA A N D SD ? 13
- 5. The roan antelope, a somewhat threatened species adapted to bushveld but not known to have occurred in Hluhluwe Game Reserve, should be introduced into Hluhluwe if it becomes endangered. SA A N D SD ? 14
- 6. The advantages of controlled burning of the veld in this reserve outweigh the deaths of tortoises and other animals unable to escape the fire. SA A N D SD ? 15
- 7. Private radios should not be allowed to be played aloud in this camp. SA A N D SD ? 16
- 8. The enforcement of laws protecting the environment in South Africa is seriously inadequate. SA A N D SD ? 17
- 9. Nature conservation cannot be divorced from political decision making. SA A N D SD ? 18
- 10. The malaria-carrying mosquito should be eradicated, if economically possible. SA A N D SD ? 19

SURVEY

OF VISITORS TO

HLUHLUWE GAME RESERVE

NAME Sample Questionnaire Two

DATE

<input checked="" type="checkbox"/>				1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
				3
				4
<input type="checkbox"/>	<input type="checkbox"/>			5
				6

A. Please answer this question in the light of your stay in this reserve. If it were possible to channel the revenue from increased tariffs into improved visitor facilities, in which priority would you like the money so raised to be spent? Please rank the following options in order of preference (i.e. first, second and third):

- Better accommodation facilities
- Better information facilities
- Better recreational facilities

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<input type="checkbox"/>				7
<input type="checkbox"/>				8
<input type="checkbox"/>				9

PLEASE READ EACH STATEMENT AND DECIDE WHETHER YOU AGREE OR DISAGREE WITH IT. USE THE FOLLOWING SIX CATEGORIES TO DESCRIBE YOUR RESPONSES:

SA = strongly agree / A = agree / N = neutral / D = disagree / SD = strongly disagree / ? = don't know

CIRCLE THE ABBREVIATION OF YOUR CHOICE. Please be as accurate as possible.

1. I should be prepared to make sacrifices in order that we pass on to future generations as many of the environmental options we have inherited as possible.

SA A N D SD ? 10

(QUESTIONNAIRE 1)

6. Which one of the following does not belong in this reserve:

- | | | | | | |
|-------------------|--------------------------|----------------|--------------------------|------------|--------------------------|
| Grey rhebuck | <input type="checkbox"/> | Hyrax (Dassie) | <input type="checkbox"/> | None | <input type="checkbox"/> |
| Mountain reedbuck | <input type="checkbox"/> | Waterbuck | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| Eland | <input type="checkbox"/> | | | | |

57

7. Which one of the following does not belong in this reserve:

- | | | | |
|-------------------|--------------------------|-------------------------------|--------------------------|
| Malachite sunbird | <input type="checkbox"/> | Bearded vulture (Lammergeyer) | <input type="checkbox"/> |
| Jackal buzzard | <input type="checkbox"/> | Red-wing starling | <input type="checkbox"/> |
| House sparrow | <input type="checkbox"/> | None | <input type="checkbox"/> |
| Black crow | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |

58

8. Which one of the following does not belong in this reserve:

- | | |
|---|-------------------------------------|
| Sagewood/Saliehout (<u>Buddleja salviiflolia</u>) | <input type="checkbox"/> |
| White stinkwood/Witstinkhout (<u>Celtis africana</u>) | <input type="checkbox"/> |
| Black wattle/Swartwattel (<u>Acacia mearnsii</u>) | <input type="checkbox"/> |
| Common sugarbush/Gewone suikerbos (<u>Protea caffra</u>) | <input type="checkbox"/> |
| Real yellowwood/Opregte geelhout (<u>Podocarpus latifolius</u>) | <input type="checkbox"/> |
| | None <input type="checkbox"/> |
| | Don't know <input type="checkbox"/> |

59

28. Which one of the following does not belong in this reserve:

- Sweet thorn/Soetdoring (Acacia karroo)
- Black wattle/Swartwattel (Acacia mearnsii)
- Magic guarri/Powergwarrie (Euclea divinorum)
- Tree fuschia/Huilboerboon (Schotia brachypetala)
- Tamboti/Tambotie (Spirostachys africana)
- None
- Don't know



THANK YOU FOR YOUR CO-OPERATION.

SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

21. 'Fashion' is an environmental threat. SA A N D SD ? 52
22. The South African population is expected to double its present total in roughly how many years:
- | | | | | |
|--------------|--------------------------|--------------------|--------------------------|-----------------------------|
| 0 - 10 years | <input type="checkbox"/> | 50 - 65 years | <input type="checkbox"/> | |
| 15 - 25 " | <input type="checkbox"/> | More than 75 years | <input type="checkbox"/> | |
| 30 - 45 " | <input type="checkbox"/> | Don't know | <input type="checkbox"/> | <input type="checkbox"/> 53 |
23. The hippopotamus does not eat fish. A D ? 54
24. While colour vision in mammals is still somewhat controversial in ecology, it would seem that all birds have well-developed colour vision. SA A N D SD ? 55
25. Some species of birds rear (bring up) the young of other species. A D ? 56
26. Which one of the following does not belong in this reserve:
- | | | | | | |
|-----------------|--------------------------|------------|--------------------------|------------|-----------------------------|
| Blue wildebeest | <input type="checkbox"/> | Reedbuck | <input type="checkbox"/> | None | <input type="checkbox"/> |
| Bushbuck | <input type="checkbox"/> | Springbuck | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
| Kudu | <input type="checkbox"/> | Zebra | <input type="checkbox"/> | | <input type="checkbox"/> 57 |
27. Which one of the following does not belong in this reserve:
- | | | | |
|----------------|--------------------------|---------------|--------------------------|
| Cape vulture | <input type="checkbox"/> | House sparrow | <input type="checkbox"/> |
| Egyptian goose | <input type="checkbox"/> | Tawny eagle | <input type="checkbox"/> |
| Grey hornbill | <input type="checkbox"/> | None | <input type="checkbox"/> |
| Hammerkop | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
- 58

Please be as accurate as possible.

SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

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13. The eradication of a little-known species of insect is an important conservation question. SA A N D SD ? 4
14. Desert encroachment in South Africa is being accelerated by our changing climate. SA A N D SD ? 4
15. Deforestation in South Africa has definitely reached crisis point. SA A N D SD ? 4
16. Farmers should be encouraged to concentrate on monoculture (i.e. single crop) farming methods. SA A N D SD ? 4
17. It has become essential in virtually all of South Africa that people be prepared to have their sewage purified and the water recycled. SA A N D SD ? 4
18. Many game reserves in South Africa are bordered by people unable to adequately feed themselves. It is in nature conservation's interests that 'surplus' resources (e.g. meat) from these reserves be used to upgrade the lives of these people. SA A N D SD ? 4
19. No circus should be allowed to use wild animals in its show. SA A N D SD ? 50
20. This question relates to soil erosion. Please would you indicate which figure below you feel is closest to the annual loss of top soil in South Africa:
- | | | | |
|----------------|--------------------------|-------------------------|--------------------------|
| 100 000 tonnes | <input type="checkbox"/> | 100 000 000 tonnes | <input type="checkbox"/> |
| 1 000 000 " | <input type="checkbox"/> | More than 100 000 000 " | <input type="checkbox"/> |
| 10 000 000 " | <input type="checkbox"/> | Don't know | <input type="checkbox"/> |
- 5

SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

- | | | |
|---|---------------|---|
| 4. Elephant numbers are dropping at an alarming rate, worldwide. We should thus <u>not</u> cull them (reduce their numbers by killing some) in game reserves, even if moving the 'excess' to other areas is <u>impossible</u> . | SA A N D SD ? | FOR OFFICE USE
<input type="checkbox"/> 35 |
| 5. Endangered species not found in this reserve (and not thought to have occurred here) should still be afforded the protection of this reserve. | SA A N D SD ? | <input type="checkbox"/> 36 |
| 6. The veld in this reserve should be deliberately burned periodically. | SA A N D SD ? | <input type="checkbox"/> 37 |
| 7. Accommodation in game reserves should be geared towards a sense of privacy for the visitor. | SA A N D SD ? | <input type="checkbox"/> 38 |
| 8. South Africa's conservation laws are adequate for the purposes of nature conservation. | SA A N D SD ? | <input type="checkbox"/> 39 |
| 9. The social conditions in South Africa <u>are</u> a most important conservation issue. | SA A N D SD ? | <input type="checkbox"/> 40 |
| 10. The tsetse-fly (responsible for sleeping sickness in man and nagana in cattle) should be exterminated, if economically possible. | SA A N D SD ? | <input type="checkbox"/> 41 |
| 11. The preservation of habitats should be regarded as a more important priority in conservation than is the preservation of endangered species. | SA A N D SD ? | <input type="checkbox"/> 42 |
| 12. The majority of South Africa's terrestrial (land) and marine (sea) ecosystems are represented in nature reserves. | SA A N D SD ? | <input type="checkbox"/> 43 |

If it were possible to channel the revenue from increased tariffs into improved visitor facilities, in which priority would you like the money so raised to be spent? Please rank the following options in order of preference (i.e. first, second and third):

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- Better accommodation facilities
- Better information facilities
- Better recreational facilities

10

11

12

Here are some reasons why people visit nature reserves. Please indicate how important each is for you when you choose to holiday in a (any) nature reserve by circling the appropriate number on the five-point scale. Space is provided for other reasons that may be important to you.

	Extremely important					Not at all important		
Proximity of the reserve	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 13
Relatively modest costs involved	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 14
Comfortable accommodation	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 15
No need to cook, wash up, etc	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 16
Walking on trails ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 17
Recreational facilities	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 18
Chance to be taught about nature	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 19
The atmosphere of 'being in nature'	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 20
Relaxation ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 21
Game viewing ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 22
Bird watching ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 23
Studying plants ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 24
The night sky ...	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 25
"Getting away from it all"	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 26
.....	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 27
.....	5	4	3	2	1		<input type="checkbox"/>	<input type="checkbox"/> 28

SURVEY
OF VISITORS TO
HLUHLUWE GAME RESERVE

This survey, together with those undertaken in Giant's Castle Game Reserve and Londolozi Private Nature Reserve, is in part fulfilment of a Master's degree in Environmental Studies from the University of Cape Town. Your name is needed purely for logistic convenience - replies shall be confidential.

3

NAME *Sample Questionnaire One*

HUT NUMBER DATE

DURATION OF VISIT TO THIS RESERVE

A. When did you last stay overnight in a nature reserve in South Africa?

- First visit 3 - 12 months ago
- More than 3 years ago Within the last 3 months
- 1 - 3 years ago

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B. How often do you usually stay in nature reserves in South Africa?

- First visit Annually
- Seldom Twice yearly
- Every few years More than twice a year

8

C. Have you visited this reserve before?

- Yes ... Roughly, how many times?
- No



APPENDIX A

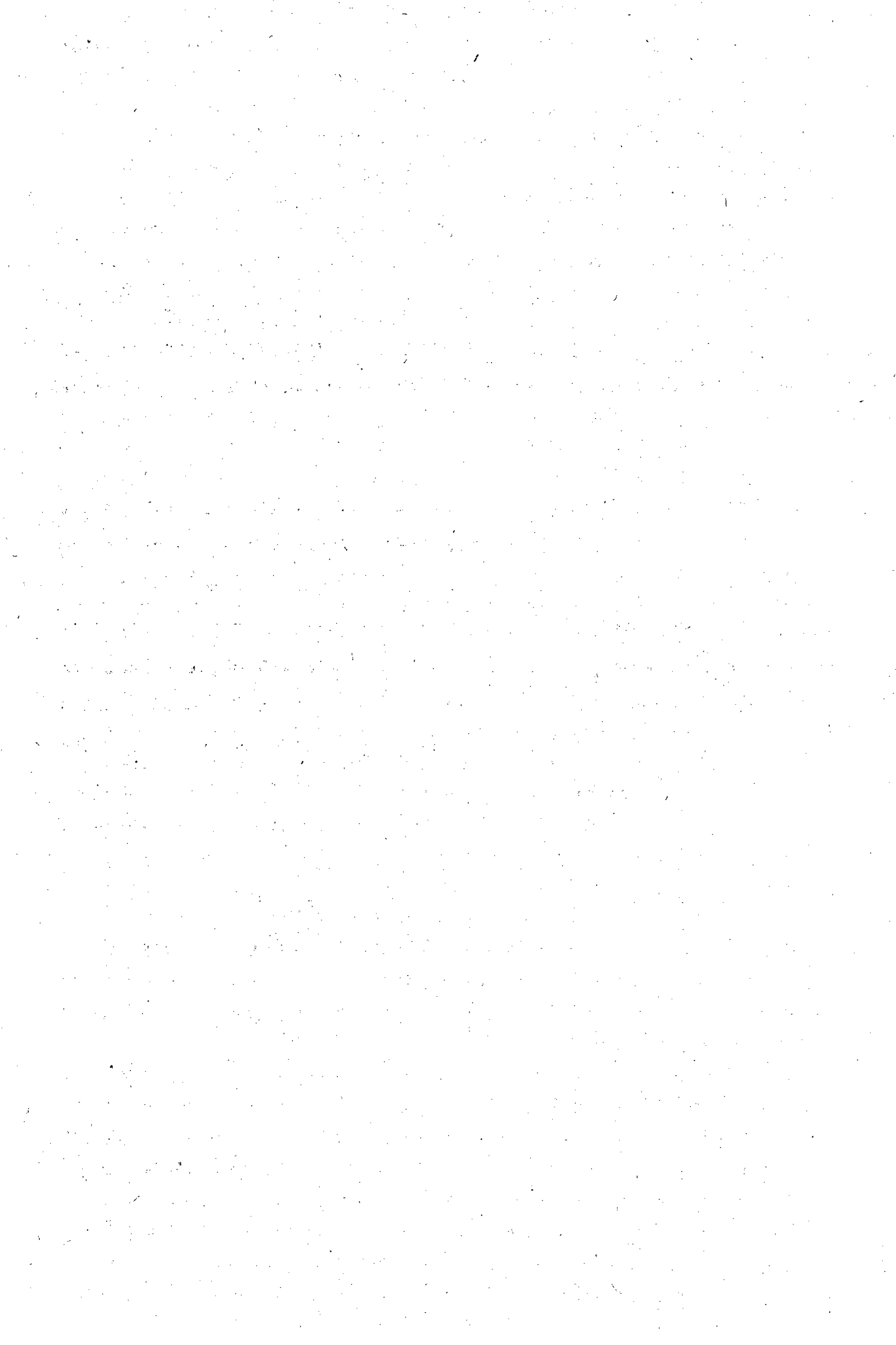
QUESTIONNAIRES
USED

(in English)

The interpretative amenities offered in the reserves are shown to have the benefit of an interested and receptive audience. However, visitors' preference for better information facilities, and their willingness to utilize interpretative facilities and programmes, are constrained by an insular perspective of, and narrow interest in, nature conservation.

Insufficient resources are available for interpretation in the three reserves considered, resulting in a stress on particular interpretative mediums. The strengths of the conducted activities in the reserves were not augmented by supportive interpretative facilities (which might often be more appropriate mediums through which to raise broad issues in conservation). Even more intense efforts to make the less spectacular interesting, and to integrate ecological and environmental inter-relationships, are felt necessary. It is vital that in addition to information on the reserves, visitors be provoked to consider objectives of nature conservation, and means of attaining these objectives.

The chief conclusion of this project is that visitors to the nature reserves studied do develop an enhanced awareness of issues in conservation as a result of their visit. While this is encouraging, the degree of enhancement is not high, and the scope is limited.



8.2. CONCLUSION

This study has shown a statistically significant increase in awareness of conservation issues in visitors to Hluhluwe, to Giant's Castle, and to Londolozi. These results, using a longitudinal design, are verified by the cross-sectional design adopted as a check. The greatest increase shown was at Londolozi, which has the most intense interpretation of the three reserves. However, the increases are not high, especially when considering that these reserves are at the very forefront of reserve interpretation in South Africa.

The levels of awareness found are low, and despite the increases as a result of visiting the reserves remain low in visitors leaving the reserves. The issues showing the strongest increase were specific to the reserve, and there was little increase in the broader issues raised.

The visitor profiles show that interpretation in the three reserves reaches socio-economically and educationally privileged sectors of the South African population. This highlights the importance of environmental education outside of reserves (such as the Natal Parks Board's extension programmes). The very low levels of awareness of those privileged to visit reserves (and especially 'target groups' such as educationalists, politicians and those in the lower age brackets) is an indictment of environmental education in South Africa.



8.1.6. Methodology

As this study was exploratory in nature, it is pertinent to briefly discuss the two approaches used. It is recommended that if financial and time considerations allow, a cross-sectional design such as Approach (b) be used in any further studies. This is felt to be a stronger approach for the following reasons:

- (a) there was little doubt that the Before questionnaires in Approach (a) occasionally stimulated interest and debate;
- (b) not being inhibited by a pre-test effect allows a wider and better graded range of questions to be used;
- (c) it is possible to directly compare individual issues;
- (d) the inherent weakness of the McNemar test of symmetry (see section 2.5) is avoided.

The biggest draw-backs in adopting Approach (b) are the difficulties in assessing the condition variables. The extended period of field work necessary when using Approach (b) could create profile variables (e.g. school holidays). A consideration is to test the 'After' sample (i.e. those leaving) first, so as to minimize any influence the survey may have on the interpretation in the reserve(s). A 5% level of significance would be more testing than the 10% level felt appropriate for this exploratory study.

Please be as accurate as possible.
SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

- | | | |
|--|---------------|--|
| 11. We cannot afford to rank the preservation of the Knysna elephants as a conservation <u>priority</u> in South Africa - there are many more important conservation issues. | SA A N D SD ? | FOR OFFICE USE <input type="checkbox"/> 20 |
| 12. The majority of vegetation-types found in South Africa are inadequately protected. | SA A N D SD ? | <input type="checkbox"/> 21 |
| 13. We <u>cannot</u> justly accuse farmers who use pesticides of causing the deaths of birds of prey. | SA A N D SD ? | <input type="checkbox"/> 22 |
| 14. The appalling rate of desert encroachment in South Africa has nothing to do with a change in climate. | SA A N D SD ? | <input type="checkbox"/> 23 |
| 15. Deforestation in South Africa has <u>definitely</u> reached crisis point. | SA A N D SD ? | <input type="checkbox"/> 24 |
| 16. It is <u>man's</u> actions that are responsible for plants and animals which become 'weeds' and 'pests'. | SA A N D SD ? | <input type="checkbox"/> 25 |
| 17. In most of South Africa there is an urgent need to adopt a policy of purifying sewage and recycling the water. | SA A N D SD ? | <input type="checkbox"/> 26 |
| 18. <u>Nature conservation</u> cannot afford to ignore the poverty that exists on the borders of many of the reserves in South Africa. | SA A N D SD ? | <input type="checkbox"/> 27 |
| 19. Cosmetic firms should <u>not</u> be allowed to test their products on animals. | SA A N D SD ? | <input type="checkbox"/> 28 |

SA = strongly/ A = agree/ N = neutral/ D = disagree/ SD = strongly/ ? = don't know
agree disagree

20. South Africa loses roughly how many tonnes of soil through erosion annually:

- 10 000 - 50 000 10 000 000 - 50 000 000
- 100 000 - 500 000 100 000 000 - 500 000 000
- 1 000 000 - 5 000 000 Don't know

FOR OFFICE USE

29

21. The wants and expectations of the affluent (rich) are (also) a serious environmental threat in South Africa.

SA A N D SD ?

30

22. The world population is expected to double its present total in roughly how many years:

- 0 - 10 years 50 - 65 years
- 15 - 25 " More than 75 "
- 30 - 45 " Don't know

31

23. The black rhinoceros does not usually graze (eat grass).

A D ?

32

24. Carnivorous (meat-eating) mammals have forward-facing eyes.

A D ?

33

25. Some species of birds rear (bring up) the young of other species.

A D ?

34

26. Which one of the following does not belong in this reserve:

- Blesbok Nyala None
- Buffalo Steenbok Don't know
- Impala Waterbuck

35

27. Which one of the following does not belong in this reserve:

- Emerald-spotted wood dove
- European roller
- Fork-tailed drongo
- European starling
- European swallow
- Pied kingfisher
- None
- Don't know

FOR OFFICIAL USE

36

28. Which one of the following does not belong in this reserve:

- Knobthorn/Knoppiesdoring (Acacia nigrescens)
- Sycamore fig/Gewone trosvy (Ficus sycomorus)
- Prickly pear/Doringturksvy (Opuntia ficus-indica)
- Marula/Maroela (Sclerocarya caffra)
- Buffalo thorn/Blinkblaar wag-'n-bietjie (Ziziphus mucronata)
- None
- Don't know

37

29. One of the attractions of this reserve is the night sky. What, simply and briefly, is a star?

.....

.....

..... Don't know

38

30. Will you try to visit this reserve again?

Definitely Probably Possibly Definitely not

OFFICE
 39

31. Will you try to visit other nature reserves in the future?

Definitely Probably Possibly Definitely not

40

32. Have you visited or will you visit another reserve on this trip?

Yes

No

41

33. Which of the following interpretative (information) facilities and/or programmes, if any, did you attend whilst in this reserve on this visit?

Please indicate the number of times you did so (where applicable) in the space provided:

Formal talk by a ranger number of times

42
 43

Slide show " " "

44
 45

Film show " " "

46
 47

Guided walking trail " " "

48
 49

Self-guided trail " " "

50
 51

Study displays

52
 53

Ask advice of a ranger

54
 55

Visit the site museum

56
 57

Visit the hide

58
 59

None of the above

60

34. Did you use any other aids (e.g. Roberts' Birds of South Africa, Palgrave's Trees of Southern Africa, etc. - or even the knowledge of a companion) on this visit:

Extensively Occasionally Seldom Not at all 61

35. Which of the following did you (or someone in your party) bring along on this visit:

Binoculars Tape recorder 62
Camera None 63
Radio 64
65

36. Who was chiefly responsible for the decision to visit this reserve:

Myself Someone else in my party 66
It was a joint decision

37. Please rank, in order of importance to your mind, the following amenities which may have made your visit more meaningful:

Literature on the reserve 67
Conducted walk with ranger 68
Interpretative displays at view sites 69
Self-guided walks with information pamphlets
Lectures and film shows 70

38. Would you say this visit has enriched your appreciation of nature:

Strongly Moderately Not really 71
72

PLEASE WOULD YOU ANSWER THE FOLLOWING PERSONAL QUESTIONS.

Country in which you reside 73

Home language Sex 74
 75

Occupation 76
 77

Age 15 - 19	<input type="checkbox"/>	Family income group 0 - 500 per month	<input type="checkbox"/>	
20 - 24	<input type="checkbox"/>	501 - 1000	<input type="checkbox"/>	
25 - 29	<input type="checkbox"/>	1001 - 1500	<input type="checkbox"/>	
30 - 39	<input type="checkbox"/>	1501 - 2000	<input type="checkbox"/>	
40 - 49	<input type="checkbox"/>	2000+	<input type="checkbox"/>	<input type="checkbox"/> 78
50 - 59	<input type="checkbox"/>			<input type="checkbox"/> 79
60+	<input type="checkbox"/>			

Education	Some high school	<input type="checkbox"/>	
	High school completed	<input type="checkbox"/>	
	Some university	<input type="checkbox"/>	
	University completed	<input type="checkbox"/>	
	Other post-school	<input type="checkbox"/>	<input type="checkbox"/> 80

MY SINCERE THANKS FOR YOUR CO-OPERATION.

ALTERNATIVE QUESTIONS FOR GIANT'S CASTLE

(QUESTIONNAIRE 2)

23. The eland tends to graze (eat grass) in Summer in this reserve.

A D ?

32

26. Which one of the following does not belong in this reserve:

Eland Grey rhebuck None

Reedbuck Bushbuck Don't know

35

27. Which one of the following does not belong in this reserve?

Red-wing starling

Black eagle

Emerald-spotted wood dove

Hadedda ibis

Cape white-eye

Lanner falcon

None

Don't know

FOR OFFICE USE

36

28. Which one of the following does not belong in this reserve?

Oldwood/Ouhout (Leucosidea sericea)

Mountain cabbage tree/Bergkiepersol (Cussonia paniculata)

Sagewood/Saliehout (Buddleja salviifolia)

Weeping willow/Traurwilg (Salix babylonica)

Natal bottlebrush/Natalse baakhout (Greyia sutherlandii)

None

Don't know

37

(QUESTIONNAIRE 2)

33. Which of the following interpretative (information) facilities and/or programmes, if any, did you attend whilst in this reserve on this visit?

Please indicate the number of times you did so (where applicabls) in the space provided:

Formal talk by a ranger	<input type="checkbox"/> number of times	<input type="text"/>	<input type="text"/>	42 43
Slide show	<input type="checkbox"/> " " "	<input type="text"/>	<input type="text"/>	44 45
Film show	<input type="checkbox"/> " " "	<input type="text"/>	<input type="text"/>	46 47
Guided walking trail	<input type="checkbox"/> " " "	<input type="text"/>	<input type="text"/>	48 49
Day drive with ranger	<input type="checkbox"/> " " "	<input type="text"/>	<input type="text"/>	50 51
Night drive with ranger	<input type="checkbox"/> " " "	<input type="text"/>	<input type="text"/>	52 53
Study displays	<input type="checkbox"/>		<input type="text"/>	<input type="text"/>	54 55
Visit the hide	<input type="checkbox"/>		<input type="text"/>	<input type="text"/>	58 59
None of the above	<input type="checkbox"/>			<input type="text"/>	60

37. Please rank, in order of importance to your mind, the following amenities which may have made your visit more meaningful:

Literature on the reserve	<input type="text"/>	67
Conducted walk with ranger	<input type="text"/>	68
Day drive with ranger	<input type="text"/>	69
Night drive with ranger	<input type="text"/>	70
Lectures and film shows	<input type="text"/>	71

APPENDIX B

VRAELYSTE
GEBRUIK

(in Afrikaans)

1.

OPNAME

VAN BESOEKERS AAN

HLUHLUWE WILDRESERVAAT

Hierdie opname, tesame met die wat in die Giant's Castle Wildreservaat en Londolosi Privaatnatuurreservaat onderneem word, word uitgevoer ter gedeeltelike vervulling van die vereistes van 'n Meestersgraad in Omgewingsleer aan die Universiteit van Kaapstad. U naam word benodig bloot om logistiese verwerking te vergemaklik - antwoorde word as vertroulik beskou.

3

NAAM *Monster van Jaquelys Een*

RONDWEL NOMMER DATUM

DUUR VAN BESOEK AAN HIERDIE RESERVAAT nagte

A. Wanneer het u laas oornag in 'n natuurreservaat in Suid-Afrika?

- Eerste besoek 3 - 12 maande gelede
- Meer as 3 jaar gelede Binne die afgelope 3 maande
- 1 - 3 jaar gelede

VIR
KENT
GEBR

B. Hoe gereeld bly u gewoonlik in natuurreservate in Suid-Afrika?

- Eerste besoek Jaarliks
- Selde Twee keer per jaar
- Elke paar jaar Meer as 2 keer per jaar

C. Het u hierdie reservaat voorheen besoek?

- Ja ... Ongeveer hoeveel keer?
- Nee

Indien dit moontlik was om die inkomste uit verhoogde tariewe aan verbeterde fasiliteite vir besoekers te bestee, op watter prioriteit sou u verkies dat die geld wat sodoende ingewin word, gespandeer moet word? Rangskik asseblief die volgende keuses na gelang van voorkeur (d.w.s. eerste, tweede en derde):

- Beter huisvesting 10
- Beter inligtingsdiens 11
- Fasiliteite vir ontspanning 12

Hier volg sommige redes waarom mense natuurreservate besoek. Dui asseblief aan hoe belangrik elk in u geval is wanneer u besluit om u vakansie in 'n natuurreservaat deur te bring, deur die gepaste syfer op die vyfpunt-skaal te omring. Ruimte word verskaf om ander redes wat vir u belangrik mag wees, aan te vul.

	Uiters belangrik					Van geen belang	VIR KANTOOR GEBRUIK	
	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	
Nabyheid van die reservaat	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	13
Relatief matige onkoste betrokke	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	14
Gerieflike huisvesting	5	4	3	2	1			
Nie nodig om kos te kook, skottelgoed te was, ens. nie	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	15 16
Stap langs wandelpad ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	17
Ontspanningsgeriewe ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	18
Geleentheid om iets oor die natuur geleer te word	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	19
Om in die natuur te wees ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	20
Rustigheid ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	21
Wild besigtiging ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	22
Voëlwaarneming ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	23
Studio van plante ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	24
Die naghemel ...	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	25
"Om van alles weg te kom"	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	26
.....	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	27
.....	5	4	3	2	1		<input type="checkbox"/> <input type="checkbox"/>	28

E. Hoe sou u u begeerte om in 'n natuurreservaat in plaas van 'n ander vakansieoord te besoek, skat? Omring asseblief die gepaste syfer op hierdie skaal:

5 4 3 2 1
sterk swak

VIR
KANTO
GEBRU

F. Is u 'n lid van 'n natuurlewe-/bewarings-/omgewingsvereniging?

Ja

Nee

G. Skat asseblief u belangstelling in natuurbewaring:

5 4 3 2 1
sterk swak

LEES ASSEBLIEF ELKE STELLING EN BESLUIT OF U DAARMEE SAAMSTEM OF VERSKIL.

GEBRUIK DIE VOLGENDE SES KATEGORIEË OM U ANTWOORD TE BESKRYF:

BS = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
saamstem sterk

OMRING DIE AFKORTING WAT U VERKIES. Wees asseblief so akkuraat as moontlik.

(LEWE GERUS ENIGE KOMMENTAAR AS U WIL.)

1. Dit is my verantwoordelikheid om te help verseker dat natuurgebiede vir toekomstige geslagte bewaar bly.

BS S N V VS ?

2. Die onoordeelkundige doodmaak van haais is verkeerd.

BS S N V VS ?

S = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
 saamstem sterk

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GEBRUIK

- | | | |
|---|----------------------|------------------------------------|
| <p>3. Sommige van ons wildreservate behoort toegelaat te word om 'n totale natuurlike balans te bereik.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 34</p> |
| <p>4. Olifantgetalle daal wêreldwyd teen 'n skrikwekkende tempo. Ons moet dus <u>nie</u> hulle getalle in wildreservate verminder deur sommige te dood nie, selfs al is dit <u>onmoontlik</u> om die 'oorskot' na ander gebiede te verskyf.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 35</p> |
| <p>5. Bedreigde spesies wat nie in hierdie reservaat voorkom nie (en wat, sover ons weet, nie voorheen hier voorgekom het nie) behoort nogtans in hierdie reservaat beskerming te kry.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 36</p> |
| <p>6. Die veld in hierdie reservaat behoort periodiek opsetlik gebrand te word.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 37</p> |
| <p>7. Huisvesting in wildreservate behoort ingestel te word om 'n sin van privaathed aan die besoeker te verskaf.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 38</p> |
| <p>8. Suid-Afrika se bewaringswette voldoen aan die doelstellings vir natuurbewaring.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 39</p> |
| <p>9. Die sosiale omstandighede in Suid-Afrika <u>is</u> 'n hoogs belangrike bewaringsaak.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 40</p> |
| <p>10. Die tsetsevlieg (verantwoordelik vir slaapsiekte in die mens en nagana in vee) behoort uitgeroei te word, indien ekonomies moontlik.</p> | <p>BS S N V VS ?</p> | <p><input type="checkbox"/> 41</p> |

BS = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
 saamstem sterk

- | 11. | Die beskerming van habitat is uit 'n bewarings-
oogpunt 'n belangriker prioriteit as die beskerming
van bedreigde spesies. | BS | S | N | V | VS | ? | | VIR
KANTO
GEBRU
<input type="checkbox"/> |
|-----|--|----|---|---|---|----|---|--|---|
| 12. | Die meeste van Suid-Afrika se land- en see-ekosisteme
word in natuurreservate verteenwoordig. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 13. | Die uitwissing van 'n minder bekende insekspesie
is <u>wel</u> 'n belangrike bewaringsvraagstuk. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 14. | Woestynverspreiding word in Suid-Afrika deur die
veranderende klimaat versnel. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 15. | In Suid-Afrika het ontbossing <u>beslis</u> 'n krisis-
punt bereik. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 16. | Boere moet aanmoedig word om op enkelgewas-
boerderymetodes te konsentreer. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 17. | Dit het feitlik oral in Suid-Afrika noodsaaklik
geword dat mense bereid moet wees om hulle riool-
water te suiwer en die water te hersirkuleer. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 18. | Baie natuurreservate in Suid-Afrika word begrens
deur mense wat nie in staat is om hulself voldoende
te voed nie. Dit is in die <u>belang</u> van natuur-
bewing dat 'oorskot' (bv. vleis) van hierdie
reservate gebruik word om die lewensstandaard van
hierdie mense te verbeter. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |
| 19. | Geen sirkus behoort toegelaat te word om wilde
diere in hul vertonings te gebruik nie. | BS | S | N | V | VS | ? | | <input type="checkbox"/> |

BS = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
 saamstem sterk

20. Hierdie vraag het betrekking op gronderosie. Sal u asseblief aandui watter van die onderstaande syfers na u mening naaste is aan die jaarlikse verlies aan bôgrond in Suid-Afrika:

- | | | | |
|--------------|--------------------------|-----------------------|--------------------------|
| 100 000 ton | <input type="checkbox"/> | 100 000 000 ton | <input type="checkbox"/> |
| 1 000 000 " | <input type="checkbox"/> | Meer as 100 000 000 " | <input type="checkbox"/> |
| 10 000 000 " | <input type="checkbox"/> | Weet nie | <input type="checkbox"/> |

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GEBRUIK
 51

21. 'Mode' is 'n bedreiging vir die omgewing.

BS S N V VS ?

52

22. Die grootte van die Suid-Afrikaanse bevolking sal na verwagting in ongeveer hoeveel jaar verdubbel?

- | | | | |
|-------------|--------------------------|-----------------|--------------------------|
| 0 - 10 jaar | <input type="checkbox"/> | 60 - 70 jaar | <input type="checkbox"/> |
| 15 - 25 " | <input type="checkbox"/> | Meer as 75 jaar | <input type="checkbox"/> |
| 30 - 45 " | <input type="checkbox"/> | Weet nie | <input type="checkbox"/> |

53

23. Seekoeie eet nie vis nie.

S V ?

54

24. Terwyl kleurvisie in soogdiere in die ekologie nog 'n twisvraag is, lyk dit as of alle voëls goed ontwikkelde kleurvisie het.

S V ?

55

25. Sommige voëlspesies maak die kuikens van ander spesies groot.

S V ?

56

26. Watter een van die volgende hoort nie in hierdie reservaat nie?

- | | | | | | |
|----------------|--------------------------|-----------|--------------------------|----------|--------------------------|
| Blou wildebees | <input type="checkbox"/> | Rietbok | <input type="checkbox"/> | Geen | <input type="checkbox"/> |
| Bosbok | <input type="checkbox"/> | Springbok | <input type="checkbox"/> | Weet nie | <input type="checkbox"/> |
| Koedoe | <input type="checkbox"/> | Zebra | <input type="checkbox"/> | | |

57

27. Watter een van die volgende hoort nie in hierdie reservaat nie?

- Krans-aasvoel["] (Cape vulture)
- Kolgans (Egyptian goose)
- Grys neushoringvoel["] (Grey hornbill)
- Hammerkop (Hammerkop)
- Huis mossie (House sparrow)
- Kouvoël["] (Tawny eagle)
- Geen
- Weet nie

VIR
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GEBRU
 5

28. Watter een van die volgende hoort nie in hierdie reservaat nie?

- Soetdoring/Sweet thorn (Acacia karroo)
- Swartwattel/Black wattle (Acacia mearnsii)
- Towerghwarrie/Magic guarri (Euclea divinorum)
- Huilboerboon/Tree fuschia (Schotia brachypetala)
- Tambotie/Tamboti (Spirostachys africana)
- Geen
- Weet nie

5

DANKIE VIR U SAMEWERKING.

ALTERNATIEWE VRAE VIR GIANT'S CASTLE

(VRAELYS EEN)

6.. Watter een van die volgende hoort nie in hierdie reservaat nie?

- Vaalribbok Dassie Geen
Rooiribbok Waterbok Weet nie
Eland

57

27. Watter een van die volgende hoort nie in hierdie reservaat nie?

- Jangroentjie (Malachite sunbird)
Jakkalsvoël (Jackal buzzard)
Huis mossie (House sparrow)
Swart kraai (Black crow)
Lammergeyer (Bearded vulture)
Rooivlerk-spreu (Red-wing starling)
Geen
Weet nie

VIR
KANTOOR
GEBRUIK

58

28. Watter een van die volgende hoort nie in hierdie reservaat nie?

- Saliehout/Sagewood (Buddleja salviifolia)
Witstinkhout/White stinkwood (Celtis africana)
Swartwattel/Black wattle (Acacia mearnsii)
Gewone suikerbos/Common sugarbush (Protea caffra)
Opregte geslhout/Real yellowwood (Podocarpus latifolius)
Geen
Weet nie

59

BS = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
 saamstem sterk

VIR
KANTOOR
GEBRUIK

- | | | |
|---|---------------|-----------------------------|
| 2. Dit is belaglik om spinnekoppe onoordeelkundig dood te maak. | BS S N V VS ? | <input type="checkbox"/> 11 |
| 3. Geskikte aanvullende voedingsmetodes behoort in Winter aan wild verskaf te word. | BS S N V VS ? | <input type="checkbox"/> 12 |
| 4. Daar is geen rede om lecus in wildduine uit te vang (getalle te verminder) - hulle getalle word voldoende beheer deur die beskikbaarheid van kos (prooi). | BS S N V VS ? | <input type="checkbox"/> 13 |
| 5. Die bastergemsbok is 'n ietwat bedreigde spesie wat by die bosveld aangepas is, maar sover ons weet nie in Hluhluwe Wildreservaat voorgekon het nie. Hierdie diere behoort in Hluhluwe ingebring te word indien dit blyk dat hulle bedreig word. | BS S N V VS ? | <input type="checkbox"/> 14 |
| 6. Die voordele verbonde aan gekontroleerde veldbrande in hierdie redervaat oortref die sterftes van skilpaapie en ander diere wat nie in staat is om van die vuur te ontsnap nie. | BS S N V VS ? | <input type="checkbox"/> 15 |
| 7. Dit word <u>nie</u> toegelaat te word dat privaat radios hard in die ruskamp gespeel word nie. | BS S N V VS ? | <input type="checkbox"/> 16 |
| 8. Die toepassing van wette wat die omgewing beskerm is in Suid-Afrika uiters onvoldoende. | BS S N V VS ? | <input type="checkbox"/> 17 |
| 9. Natuurbewaring kan <u>nie</u> van politiekebesluitneming geskei word nie. | BS S N V VS ? | <input type="checkbox"/> 18 |
| 10. Die malariadruende muskiet behoort uitgewis te word indien dit ekonomies moontlik is. | BS S N V VS ? | <input type="checkbox"/> 19 |

BS = beslis / S = saamstem / N = neutraal / V = verskil / VS = verskil / ? = weet nie
 saamstem sterk

- | | | | | | | | | VIR
KANTOOR
GEBRUIK |
|-----|--|-----|---|---|---|----|---|-----------------------------|
| 11. | Ons kan nie bekostig om die beskerming van die Knysna-
olifante as 'n bewaringsprioriteit in Suid-Afrika -
daar is ander bewaringsvraagstukke wat belangriker
is. | 'BS | S | N | V | VS | ? | <input type="checkbox"/> 20 |
| 12. | Die meerderheid van veldtipes wat in Suid-Afrika
voorkom word nie voldoende beskerm nie. | BS | S | N | V | VS | ? | <input type="checkbox"/> 21 |
| 13. | Sommige boere wat gifstowwe gebruik kan nie na regte
daarvan beskuldig word dat hulle die dood van
roofvoëls veroorsaak nie. | BS | S | N | V | VS | ? | <input type="checkbox"/> 22 |
| 14. | Die ontsettende tempo van woestynverspreiding in
Suid-Afrika het <u>niks</u> met 'n verandering in die
klimaat te doen nie. | BS | S | N | V | VS | ? | <input type="checkbox"/> 23 |
| 15. | In Suid-Afrika het ontbossing <u>beslis</u> 'n krisispunt
bereik. | BS | S | N | V | VS | ? | <input type="checkbox"/> 24 |
| 16. | Menslike optrede is verantwoordelik vir plante en
diere wat as 'onkruid' en 'peste' beskou word. | BS | S | N | V | VS | ? | <input type="checkbox"/> 25 |
| 17. | Dit is dringend nodig om 'n beleid te aanvaar om
rioolwater te suiwer en die water te hersirkuleer
in meeste dele in Suid-Afrika. | BS | S | N | V | VS | ? | <input type="checkbox"/> 26 |
| 18. | <u>Natuurbewaring</u> kan nie die armoede wat op die grense
van baie van ons reservate in Suid-Afrika bestaan
ignoreer nie. | BS | S | N | V | VS | ? | <input type="checkbox"/> 27 |
| 19. | Vervaardigers van kosmetiese middels behoort <u>nie</u>
toegelaat te word om hulle produkte op diere te
toets nie. | BS | S | N | V | VS | ? | <input type="checkbox"/> 28 |

BS = beslis / S = saamstem/ N = neutraal/ V = verskil/ VS = verskil/ ? = weet nie
saamstem sterk

20. Suid-Afrika verloor omtrent hoeveel tonne grond elke jaar deur erosie:

- 10 000 - 50 000 10 000 000 - 50 000 000
- 100 000 - 500 000 100 000 000 - 500 000 000
- 1 000 000 - 5 000 000 Don't know

VIR
KANTOOR
GEBRUIK

29

21. Die behoeftes en verwagtinge van die welgestelde mense is (ook) 'n ernstige bedreiging vir die omgewing.

BS S N V VS ?

30

22. Die wêreldbevolking sal na verwagting in ongeveer hoeveel jaar verdubbel:

- 0 - 10 jaar 50 - 65 jaar
- 15 - 25 " Meer as 75 "
- 30 - 45 " Weet nie

31

23. Gewoonlik eet die swartrenoster nie gras nie.

S V ?

32

24. Vleisetende soogdiere het oë wat na voor gerig is.

S V ?

33

25. Sommige voëlspesies maak die kuikens van ander spesies groot.

S V ?

34

26. Watter een van die volgende hoort nie in hierdie reservaat nie:

- Blesbok Njala Geen
- Buffel Steenbok Weet nie
- Rooibok Waterbok

35

27. Watter een van die volgende hoort nie in hierdie reservaat nie:

- Groenvlek-duifie (Emerald-spotted wood dove)
- Europese troupan (European roller)
- Mikstert-byvanger (Fork-tailed drongo)
- Europese spreeu (European starling)
- Europese swael (European swallow)
- Bont visvanger (Pied kingfisher)
- Geen
- Weet nie

VIR
KANTOOR
GEBRUIK

36

28. Watter een van die volgende hoort nie in hierdie reservaat nie:

- Knoppiesdoring/Knobthorn (Acacia nigrescens)
- Gewone trosvy/Sycomore fig (Ficus sycomorus)
- Doringturksvy/Prickly pear (Opuntis ficus-indica)
- Maroela/Marula (Sclerocarya caffra)
- Blinkblaar wag-'n-bietjie/Buffalo thorn (Ziziphus mucronata)
- Geen
- Weet nie

37

29. Deel van die aantreklikheid van hierdie reservaat is die naghemel.

Verduidelik, eenvoudig en kortliks, wat is 'n ster.

.....

.....

..... Weet nie

38

VIR
KANTOOR
GEBRUIK

30. Sal u probeer om hierdie reservaat weer te besoek?

Beslis Moontlik Miskien Beslis nie

39

31. Sal u in die toekomst probeer om ander natuurreservate te besoek?

Beslis Moontlik Miskien Beslis nie

40

32. Het u of sal u enige andere natuurreservate besoek gedurende hierdie vakansie?

Ja
Nee

41

33. Van watter van die volgende inligting fasiliteite en/of programme, indien enige, het u gebruik gemaak gedurende hierdie besoek aan hierdie reservaat? Dui asseblief aan (waar toepaslik) die aantal keer in die ruimte wat verskaf word:

VIR
KANTOOR
GEBRUIK

Formele toespraak deur bewaringsbeampte aantal keer

42
 43

Vertoning van skyfies " "

44
 45

Filmvertoning " "

46
 47

Begeleide staptoer " "

48
 49

Selfbegeleide wandelpad " "

50
 51

Bestudeer uitstallings

52
 53

Vra raad van bewaringsbeampte

54
 55

Besoek aan museum op terrein

56
 57

Besoek die skerm (hide)

58
 59

Geen van bogenoemde

60

34. Het u ander hulpmiddels tydens u besoek gebruik? (Bv. Roberts' Birds of South Africa; Palgrave's Trees of Southern Africa - of selfs die kennis van 'n metgesel.):

VIN
KANTOOR
GEBRUIK

Dikwals Af en toe Selde Glad nie

61

35. Watter van die volgende het u (of iemand in jou groep) saamgebring op hierdie vakansie:

Verkykers

Kamera

Radio

Bandopnemer

62
 63

64
 65

36. Wie het besluit om hierdie reservaat te besoek?

Selfs besluit

Iemand ander

Saam besluit

66

37. Rangskik asseblief, volgens u meening in order van belangrikheid, die volgende geriewe wat tot die sinvolheid van u besoek kon bygedra het:

Literatuur oor die reservaat

Staptoer vergesel deur bewaringsbeampte

Verklarende uitstallings by sekere uitsigpunte

Selfbegeleide wandelpaaie met inligtingspamflette

Lesings en filmvertonings

67

68

69

70

71

38. Sal u se dat hierdie besoek jou waardeering van die natuur verryk het?

Sterk Matig Nie eintlik nie

72

SAL U ASSEBLIEF DIE VOLGENDE PERSOONLIKE VRAE BEANTWOORD.

Land van verblyf	<input type="checkbox"/>	<input type="checkbox"/>	73
Huistaal	<input type="checkbox"/>	<input type="checkbox"/>	74
			75
Geslag	<input type="checkbox"/>	<input type="checkbox"/>	76
Beroep	<input type="checkbox"/>	<input type="checkbox"/>	77

<u>Ouderdom</u>	15 - 19	<input type="checkbox"/>	<u>Benaderde inkomste van familie</u>		
	20 - 24	<input type="checkbox"/>	0 - R500 per maand	<input type="checkbox"/>	
	25 - 29	<input type="checkbox"/>	501 - 1000	<input type="checkbox"/>	
	30 - 39	<input type="checkbox"/>	1001 - 1500	<input type="checkbox"/>	
	40 - 49	<input type="checkbox"/>	1501 - 2000	<input type="checkbox"/>	
	50 - 59	<input type="checkbox"/>	2000+	<input type="checkbox"/>	<input type="checkbox"/> 78
	60+	<input type="checkbox"/>			<input type="checkbox"/> 79

<u>Opleiding</u>	Gedeelte van hoerskool ["] voltooi	<input type="checkbox"/>	
	Hoerskool ["] voltooi	<input type="checkbox"/>	
	Gedeelte van universiteitsopleiding	<input type="checkbox"/>	
	Universiteitsopleiding voltooi	<input type="checkbox"/>	
	Ander naskoolse opleiding	<input type="checkbox"/>	<input type="checkbox"/> 80

My opregte dank vir u samewerking.

(VRAELYS TWEE)

23. Gedurende Somer eet die eland gewoonlik gras in hierdie reservaat.

S -V ?

 32

26. Watter een van die volgende hoort nie in hierdie reservaat nie:

Eland Vaalribbok Geen
Rietbok Bosbok Weet nie

 35

27. Watter een van die volgende hoort nie in hierdie reservaat nie:

Rooivlerk-spreu (Red-wing starling)
Witkruis-arend (Black eagle)
Groenvlek-duifie (Emerald-spotted wood dove)
Hadededa (Hadededa ibis)
Kaapse witogiel (Cape white-eye)
Edelvalk (Lanner falcon)
Geen
Weet nie

VIR
KANTOOF
GEBRUIK 36

28. Watter een van die volgende hoort nie in hierdie reservaat nie:

Ouhout/Oldwood (Leucosidea sericea)
Bergkiepersol/Mountain cabbage tree (Cussonia paniculata)
Saliehout/Sagewood (Buddleja salviifolia)
Treurwilg/Weeping willow (Salix babylonica)
Natalse baakhout/Natal bottlebrush (Greyia sutherlandii)
Geen
Weet nie

 37

(VRAELYS TWEE)

33. Van watter van die volgende inligting fasiliteite en/of programme, indien enige, het u gebruik gemaak gedurende hierdie besoek aan hierdie reservaat? Dui asseblief aan (waar toepaslik) die aantal keer in die ruimte wat verskaf word:

- Formele toespraak deur bewaringsbeampte aantal keer
- Vertoning van skyfies " " "
- Filmvertoning " " "
- Begeleide staptoer " " "
- Daguitstappie in motor met bewarings-
beampte " " "
- Naguitstappie in motor met bewarings-
beampte " " "
- Bestudeer uitstillings
- Besoek die skerm (hidé)
- Geen van bogenoemde

VIR
KANTOOR
GEBRUIK

- 42
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50
- 51
- 52
- 53
- 54
- 55
- 58
- 59
- 60

7. Rangskik asseblief, volgens u mening in orde van belangrikheid, die volgende geriewe wat tot die sinvolheid van u besoek kon bygedra het:

- Literatuur oor die reservaat
- Staptoer vergesel deur bewaringsbeampte
- Naguitstappie in motor met bewaringsbeampte
- Daguitstappie in motor met bewaringsbeampte
- Lesings en filmvertonings

- 67
- 68
- 69
- 70
- 71

APPENDIX C

COMPARATIVE
BREAKDOWN OF
BIOGRAPHICAL DATA

APPENDIX C

COMPARATIVE BREAKDOWN OF BIOGRAPHICAL DATA

RESERVE	Hluhluwe	Hluhluwe	Giant's Castle	Giant's Castle	Londolozi
APPROACH	a	b	a	b	a
SAMPLE SIZE	154	159	148	151	152
SEX					
Male	77	73	68	67	77
Female	77	86	80	84	75
LANGUAGE					
English	126	120	133	132	140
Afrikaans	21	30	10	15	6
Both	7	9	5	3	4
Other	0	0	0	1	2
AGE					
14 - 19 years	7	17	6	9	20
20 - 29	29	29	32	24	34
30 - 39	40	30	45	40	36
40 - 49	24	26	29	34	34
50 - 59	23	31	22	28	18
60+	31	26	14	16	10
OCCUPATION					
Not working	62	67	43	53	56
Professional	48	45	54	49	49
Administrative	14	19	16	20	26
Clerical	12	11	11	10	7
Sales	3	3	10	5	3
Service	0	0	5	3	2
Agricultural	5	6	2	3	1
Production	6	6	4	5	2
Unclassified	4	2	3	3	6
INCOME					
R. 0- 500 p.m.	9	8	8	4	2
501-1000	17	31	17	17	5
1001-1500	22	28	25	23	15
1501-2000	34	30	41	36	18
2000+	72	59	57	71	112
EDUCATION					
Some school	27	29	17	20	19
Matric	41	44	28	37	13
Some university	9	10	8	9	23
Degree	46	39	39	51	63
Other tertiary	30	37	56	34	34

APPENDIX D

HLUHLUWE

DATA: MOTIVATION, PARTICIPATION
AND AWARENESS

APPENDIX D

HLUHLUWE

DATA: MOTIVATION, PARTICIPATION AND AWARENESS

Listed below is a selected summary of data obtained at Hluhluwe. The order of questions below follows that in the questionnaires (with the exception of respondents' rating of better information facilities in Questionnaire Two, which is presented here directly after their rating of this in Questionnaire One.) Consult Appendix A for the actual wording of the questions. The average number of positive responses were 37,7% Before and 42,2% After using Approach (a). [Condition variable values have not been calculated for data obtained using Approach (b).]

QUESTION	..... approach (a) .....		...(b)...	
	(/154) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE AFTER	(/159) NUMBER OF RESPONDENTS	
LENGTH OF STAY				
1 night	39	40,5 41,9	21	
2 nights	64	36,3 43,4	87	
3 nights	35	37,1 40,5	33	
4 nights	8	42,0 42,5	4	
5 nights	8	33,0 40,0	10	
6 nights	0	-- --	4	
LAST VISITED A RESERVE				
0 - 3 months ago	31	42,2 44,5	27	
3 - 12 months	48	37,0 42,7	61	
1 - 3 years	20	29,6 39,2	24	
More than 3 years	39	41,4 44,6	30	
Never visited before	16	31,8 33,8	17	
USUALLY VISIT RESERVES				
More than 2 per year	16	37,1 41,1	14	
Twice a year	19	42,7 45,1	12	
Annually	36	41,4 47,4	50	
Every few years	46	37,8 47,7	44	
Seldom	21	30,3 34,3	22	
Never visited before	16	31,8 33,8	17	
VISITED HLUHLUWE				
More than 4 times before	20	42,6 47,6	24	
1 - 3 times	49	40,8 46,2	54	
Never before	85	34,7 38,5	81	

[Hluhluwe]	..... approach (a) .....	... (b) ...		
QUESTION	(/154) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/159) NUMBER OF RESPONDENTS
BETTER INFORMATION (Before)				
Ranked First	86	39,8	43,4	--
Second	47	36,4	42,7	--
Third	21	31,6	36,0	--
BETTER INFORMATION (After)				
Ranked First	85	41,2	43,9	91
Second	52	34,7	42,2	45
Third	17	28,9	33,4	23
WALKING ON TRAILS				
Rated 5 (Very NB reason)	40	41,1	45,0	36
4	38	37,6	41,6	43
3	34	34,8	41,3	36
2	13	42,5	45,9	25
1 (Not at all NB)	29	34,2	38,3	19
CHANCE TO BE TAUGHT				
Rated 5 (Very NB reason)	69	36,5	43,3	56
4	35	37,5	44,8	48
3	36	34,8	39,1	35
2	10	32,8	37,2	11
1 (Not at all NB)	4	35,0	39,0	9
PREFERENCE FOR RESERVES				
Rated 5 (Strong)	57	40,8	43,9	73
4	45	37,2	42,6	50
3	48	34,9	40,7	33
2	3	36,0	28,0	2
1 (Weak)	1	16,0	40,0	1
MEMBER OF A SOCIETY				
Yes	37	45,5	47,2	49
No	117	35,2	40,6	110
INTEREST IN CONSERVATION				
Rated 5 (Strong)	79	39,3	47,2	91
4	53	32,9	42,8	47
3	19	32,2	33,9	17
2	1	32,0	38,0	3
1 (Weak)	1	12,0	12,0	1
WHAT IS A STAR?				
Correct	49	42,5	45,4	51
Incorrect	105	35,4	40,7	108
WILL VISIT HLUHLUWE AGAIN				
Definitely	60	39,3	43,2	77
Probably	48	39,2	43,6	46
Possibly	41	33,8	39,0	30
Definitely not	5	33,6	41,6	6

[Hluhluwe]	..... approach (a) .....			...(b)...
QUESTION	(/154) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/159) NUMBER OF RESPONDENTS
WILL VISIT OTHER RESERVES				
Definitely	128	38,4	42,5	136
Probably	18	32,7	41,6	20
Possibly	8	37,0	37,5	2
Definitely not	0	--	--	1
ATTENDED FILM SHOW				
Yes	23	38,0	41,7	47
No	131	35,8	44,9	112
WALKED ON CONDUCTED TRAIL				
Once	4	53,0	59,0	4
None	150	37,3	41,7	155
DID SELF-GUIDED TRAIL				
Both	8	35,5	41,5	28
One of the trails	71	38,4	42,1	48
None	75	37,1	42,3	83
ASKED ADVICE OF RANGER				
Yes	52	42,9	45,1	58
No	102	35,6	40,2	101
VISITED SITE MUSEUM				
Yes	36	38,0	42,4	58
No	118	37,6	42,1	108
VISITED THE HIDE				
Yes	126	38,1	41,6	130
No	28	35,6	44,6	29
INTERPRETATIVE PARTICIPATION				
One of the above	141	38,1	42,2	146
None	13	32,6	42,2	13
USED OTHER INTERPRETATIVE AIDS				
Extensively	38	44,4	47,9	34
Occasionally	49	40,1	43,8	57
Seldom	12	30,3	37,0	10
Not at all	55	32,2	37,6	58
WHOSE DECISION TO VISIT				
Mine	28	41,0	47,7	36
Somebody else's	34	33,2	38,1	40
Joint	92	38,8	42,0	83
RANKED LITERATURE				
First	34	37,7	41,5	38
Second	26	37,1	42,0	34
Third	35	36,6	39,1	33
Fourth	28	38,3	44,4	28
Fifth	27	39,0	44,9	30

[Hluhluwe]	..... approach (a) .....	... (b) ...		
QUESTION	(/154) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/159) NUMBER OF RESPONDENTS
RANKED CONDUCTED WALK				
First	77	38,9	44,0	86
Second	24	36,8	40,3	20
Third	24	34,7	39,2	19
Fourth	19	35,0	41,7	17
Fifth	10	42,8	40,4	17
RANKED DISPLAYS				
First	13	31,4	37,9	13
Second	28	40,4	41,7	38
Third	29	37,5	43,6	40
Fourth	50	38,2	41,6	38
Fifth	34	37,1	43,8	30
RANKED SELF-GUIDED WALKS				
First	9	35,6	38,2	17
Second	52	37,9	42,9	40
Third	35	41,9	46,7	35
Fourth	30	36,1	40,8	37
Fifth	28	33,9	37,9	30
RANKED SHOWS				
First	17	38,1	40,7	9
Second	24	35,0	43,2	27
Third	31	36,5	41,4	32
Fourth	27	39,6	42,7	39
Fifth	55	38,4	42,3	52
APPRECIATION OF NATURE				
Strong increase	78	36,5	44,4	87
Moderate	68	38,7	42,9	59
No real increase	8	40,0	43,0	13
LANGUAGE				
English	126	37,6	41,9	120
Afrikaans	21	38,5	43,1	30
Both	7	37,1	44,0	9
OCCUPATION				
Professional	48	43,7	46,7	45
Administrative	14	39,7	41,4	19
Clerical	12	32,3	36,7	11
Sales	3	28,0	41,3	3
Service	0	--	--	0
Agricultural	5	40,0	52,8	6
Production	6	26,6	29,3	6
Not classified	4	49,0	46,0	2
Not working	62	34,2	40,1	67
[Educationalists	8	43,5	46,5	12
Wildlife occupation	2	44,0	50,0	1
Politicians	5	41,6	40,0	4]

[Hluhluwe]	..... approach (a) .....		...(b)...	
QUESTION	(/154) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/159) NUMBER OF RESPONDENTS
SEX				
Male	77	41,1	44,6	73
Female	77	34,2	39,7	86
INCOME				
R 0 - 500 p.m.	9	25,3	39,1	8
501 - 1000	17	38,1	40,5	31
1001 - 1500	22	40,2	40,0	28
1501 - 2000	34	37,7	43,9	30
2000+	72	38,3	42,8	59
Not classified	0	--	--	3
AGE				
14 - 19 years	7	36,0	36,6	17
20 - 29	29	36,8	41,2	29
30 - 39	40	41,9	43,9	30
40 - 49	24	38,8	41,5	26
50 - 59	23	36,1	43,3	31
60+	31	33,6	41,7	26
EDUCATION				
Some school	27	33,0	38,7	29
School completed	41	32,8	37,9	44
Some university	9	36,9	40,9	10
University completed	46	45,8	46,6	39
Other post-school	30	36,4	44,8	37
Not classified	1	32,0	40,0	0
RELIABILITY				
Reliable	136	38,0	42,0	149
Suspect	18	35,1	43,1	10

APPENDIX E

GIANT'S CASTLE

DATA: MOTIVATION, PARTICIPATION
AND AWARENESS

APPENDIX E

GIANT'S CASTLE

DATA: MOTIVATION, PARTICIPATION AND AWARENESS

The selected summary of data obtained at Giant's Castle is presented in the same format as that for Hluhluwe (Appendix D). Consult Appendix A for the actual wording of the questions. The average number of positive responses were 41,0% Before and 44,2% After using Approach (a). [Condition variable values have not been calculated for data obtained using Approach (b).]

QUESTION approach (a) (b) ...	
	(/148) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE AFTER	(/151) NUMBER OF RESPONDENTS	
LENGTH OF STAY				
1 night	5	44,8 50,0	16	
2 nights	74	41,8 45,0	43	
3 nights	47	41,5 47,1	38	
4 nights	12	39,3 47,3	14	
5 nights	8	33,5 43,0	16	
6 nights	2	30,0 50,0	17	
7 nights	0	-- --	4	
8 nights	0	-- --	3	
LAST VISITED A RESERVE				
0 - 3 months ago	50	48,3 49,9	43	
3 - 12 months	46	37,3 43,9	58	
1 - 3 years	28	38,3 43,3	26	
More than 3 years	16	39,0 45,5	14	
Never visited before	8	30,0 36,0	10	
USUALLY VISIT RESERVES				
More than 2 per year	33	47,5 48,7	18	
Twice a year	22	44,7 48,9	17	
Annually	33	39,4 43,4	44	
Every few years	42	37,6 45,0	52	
Seldom	10	39,6 45,2	10	
Never visited before	8	30,0 36,0	10	
VISITED GIANT'S CASTLE				
More than 4 times	20	43,4 41,6	8	
1 - 3 times	51	41,6 47,6	40	
Never before	77	40,0 44,0	103	

[Giant's Castle]	..... approach (a) .....	....(b)....		
QUESTION	(/148) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/151) NUMBER OF RESPONDENTS
BETTER INFORMATION (Before)				
Ranked First	84	44,1	47,6	--
Second	43	38,2	44,3	--
Third	21	34,1	40,0	--
BETTER INFORMATION (After)				
Ranked First	90	44,4	47,6	86
Second	45	37,2	42,1	38
Third	13	30,8	38,2	27
WALKING ON TRAILS				
Rated 5 (Very NB reason)	78	42,8	47,3	87
4	38	38,3	43,1	34
3	21	39,8	43,4	19
2	8	37,5	39,5	9
1 (Not at all NB)	3	45,3	52,0	2
CHANCE TO BE TAUGHT				
Rated 5 (Very NB reason)	45	42,2	46,4	57
4	52	41,7	46,0	45
3	36	40,7	45,1	25
2	11	33,8	40,4	16
1 (Not at all NB)	4	41,0	49,0	8
PREFERENCE FOR RESERVES				
Rated 5 (Strong)	66	42,7	48,1	77
4	45	40,0	44,2	48
3	32	39,9	42,9	22
2	3	40,0	44,0	3
1 (Weak)	2	28,0	38,0	1
MEMBER OF A SOCIETY				
Yes	35	47,7	53,0	41
No	113	38,9	43,3	110
INTEREST IN CONSERVATION				
Rated 5 (Strong)	67	43,6	49,2	82
4	55	38,5	43,6	46
3	24	40,0	40,7	20
2	1	36,0	36,0	2
1 (Weak)	1	32,0	52,0	1
WHAT IS A STAR?				
Correct	54	44,7	49,6	49
Incorrect	94	38,8	43,2	102
WILL VISIT GIANT'S C. AGAIN				
Definitely	97	42,3	47,2	101
Probably	27	41,2	47,0	42
Possibly	24	35,5	37,5	8
Definitely not	0	--	--	0

QUESTION	..... approach (a) .....		...(b)...	
	(/148) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/151) NUMBER OF RESPONDENTS
WILL VISIT OTHER RESERVES				
Definitely	119	42,1	46,4	136
Probably	25	37,3	43,4	13
Possibly	4	31,0	34,0	2
Definitely not	0	--	--	0
ATTENDED FORMAL TALK				
Yes	5	49,6	60,8	0
No	143	40,7	45,0	151
ATTENDED FILM SHOW				
Yes	74	41,4	47,1	41
No	74	40,6	44,0	110
WALKED ON CONDUCTED TRAIL				
Three	0	--	--	2
Two	4	40,0	53,0	4
One	20	42,6	53,2	27
None	124	40,2	44,4	118
DID SELF-GUIDED TRAIL				
Yes	18	42,9	48,4	41
No	130	40,7	45,2	110
STUDIED DISPLAYS				
Yes	106	41,2	45,4	114
No	42	40,6	44,4	118
ASKED ADVICE OF RANGER				
Yes	47	40,4	49,0	64
No	101	41,3	44,0	87
VISITED SITE MUSEUM				
Yes	94	40,4	44,6	114
No	54	42,1	47,3	37
VISITED THE HIDE				
Yes	16	45,8	47,8	12
No	132	40,4	45,3	139
INTERPRETATIVE PARTICIPATION				
One of the above	133	41,1	46,0	139
None	15	39,7	41,3	12
USED OTHER INTERPRETATIVE AIDS				
Extensively	29	47,0	50,1	33
Occasionally	55	42,3	47,6	50
Seldom	17	36,7	44,7	13
Not at all	47	37,7	40,7	55

[Giant's Castle]	..... approach (a) .....	... (b) ...		
QUESTION	(/148) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE	AFTER	(/151) NUMBER OF RESPONDENTS
WHOSE DECISION TO VISIT				
Mine	85	38,4	43,3	88
Somebody else's	35	35,8	41,9	31
Joint	28	44,0	47,8	32
RANKED LITERATURE				
First	25	41,1	45,3	27
Second	37	37,6	43,6	45
Third	33	47,2	49,5	27
Fourth	26	42,0	46,3	26
Fifth	27	37,0	43,1	26
RANKED CONDUCTED WALK				
First	52	41,5	47,3	60
Second	32	43,4	47,6	23
Third	25	39,4	41,6	27
Fourth	18	37,8	42,7	27
Fifth	21	41,0	45,3	14
RANKED DISPLAYS				
First	7	43,4	40,0	11
Second	25	41,8	45,6	31
Third	39	37,7	44,9	43
Fourth	43	39,7	44,7	33
Fifth	34	45,3	48,5	34
RANKED SELF-GUIDED WALKS				
First	56	39,9	44,4	50
Second	34	43,7	46,5	31
Third	25	36,2	43,2	26
Fourth	22	46,2	49,8	29
Fifth	11	39,3	45,8	15
RANKED SHOWS				
First	8	43,5	48,5	3
Second	19	39,0	45,9	21
Third	28	43,4	44,0	28
Fourth	39	40,9	46,4	36
Fifth	54	41,2	45,3	63
APPRECIATION OF NATURE				
Strong increase	87	41,2	47,1	92
Moderate	51	42,1	48,8	53
No real increase	10	33,2	36,4	6
LANGUAGE				
English	133	41,1	45,7	132
Afrikaans	10	39,2	42,0	15
Both	5	42,4	48,0	3
Other	0	--	--	1

[Giant's Castle]	..... approach (a) .....		...(b)...	
QUESTION	(/148) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE BEFORE AFTER		(/151) NUMBER OF RESPONDENTS
SEX				
Male	68	45,6	49,2	67
Female	80	38,1	42,3	84
OCCUPATION				
Professional	54	47,0	48,7	49
Administrative	16	38,3	45,3	20
Clerical	11	38,9	37,5	10
Sales	10	34,0	42,4	5
Service	5	40,0	43,2	3
Agricultural	2	40,0	54,0	3
Production	4	36,0	44,0	5
Not classified	3	29,3	36,0	3
Not working	43	38,0	45,2	53
[Educationalists	12	43,3	50,0	10
Wildlife occupation	1	56,0	64,0	2
Politicians	6	40,0	45,3	2]
INCOME				
R 0 - 500 p.m.	8	36,5	44,5	4
501 - 1000	17	42,8	48,2	17
1001 - 1500	25	38,9	43,0	23
1501 - 2000	41	43,1	46,8	36
2000+	57	40,5	45,1	71
AGE				
14 - 19 years	6	18,7	34,0	9
20 - 29	32	44,3	42,8	24
30 - 39	45	42,8	46,7	40
40 - 49	29	43,6	46,8	34
50 - 59	22	34,9	39,5	28
60+	14	38,6	52,3	16
EDUCATION				
Some school	17	32,9	39,8	20
School completed	28	37,6	40,7	37
Some university	8	39,5	37,5	9
University completed	39	50,2	53,4	51
Other post-school	56	39,0	35,4	34
RELIABILITY				
Reliable	139	40,9	45,3	141
Suspect	9	42,2	49,3	10

APPENDIX F

LONDOLOZI

DATA: MOTIVATION, PARTICIPATION
AND AWARENESS

APPENDIX F

LONDOLOZI

DATA: MOTIVATION, PARTICIPATION AND AWARENESS

The selected summary of data obtained at Londolozi is presented in the same format as that for Hluhluwe in Appendix D. (Note that only Approach (a) was used at Londolozi.) Consult Appendix A for the actual wording of questions. The average positive responses for Londolozi were 40,0% Before and 48,2% After.

QUESTION	(/152) NUMBER OF RESPONDENTS	PERCENTAGE POSITIVE	
		BEFORE	AFTER
LENGTH OF STAY			
1 night	8	33,0	41,0
2 nights	90	38,9	47,0
3 nights	40	43,4	51,4
4 nights	8	35,5	42,0
5 nights	2	34,0	56,0
6 nights	4	56,0	65,0
LAST STAYED IN A NATURE RESERVE			
0 - 3 months ago	43	45,3	54,7
3 - 12 months	38	42,6	49,3
1 - 3 years	30	37,5	47,1
More than 3 years	30	32,3	41,9
Never visited before	11	35,6	38,9
USUALLY VISIT NATURE RESERVES			
More than 2 per year	30	52,3	59,9
Twice a year	15	43,7	50,4
Annually	30	42,9	50,0
Every few years	43	34,7	45,7
Seldom	23	29,7	38,1
Never visited before	11	35,6	38,9
VISITED LONDOLOZI			
More than 4 times before	32	50,6	57,8
1 - 3 times before	20	42,8	47,0
Never before	100	36,0	45,1
BETTER INFORMATION (Before)			
Ranked First	106	42,9	51,4
Second	28	33,4	42,0
Third	18	33,1	38,9

[Londolozi]	(/152)	PERCENTAGE	
QUESTION	NUMBER OF RESPONDENTS	BEFORE	AFTER
BETTER INFORMATION (After)			
Ranked First	112	42,7	51,1
Second	29	31,3	39,4
Third	11	33,3	40,7
WALKING ON TRAILS			
Rated 5 (Very important reason)	51	43,5	51,1
4	36	39,9	50,3
3	45	37,2	45,4
2	9	32,9	45,8
1 (Not at all important)	11	41,2	40,7
CHANCE TO BE TAUGHT ABOUT NATURE			
Rated 5 (Very important reason)	72	42,8	50,9
4	50	40,4	47,2
3	24	34,7	44,3
2	5	22,4	34,4
1 (Not at all important)	1	32,0	56,0
PREFERENCE FOR RESERVES			
Rated 5 (Strong)	46	45,2	54,9
4	62	41,4	47,5
3	37	34,1	43,1
2	6	27,3	39,3
1 (Weak)	1	12,0	20,0
MEMBER OF A SOCIETY			
Yes	51	48,2	56,3
No	101	35,8	44,0
INTEREST IN CONSERVATION			
Rated 5 (Strong)	75	44,5	51,8
4	48	37,9	45,8
3	26	32,6	43,2
2	3	25,3	36,0
1 (Weak)	0	--	--
WHAT IS A STAR?			
Correct	57	43,6	52,8
Incorrect	95	37,9	45,4
WILL VISIT LONDOLOZI AGAIN			
Definitely	125	41,1	49,5
Probably	15	38,1	46,9
Possibly	12	31,0	35,0
Definitely not	0	--	--
WILL VISIT OTHER RESERVES			
Definitely	93	42,5	50,5
Probably	41	36,5	45,8
Possibly	18	34,9	41,6
Definitely not	0	--	--

[Londolozi]	(/152)	PERCENTAGE	
QUESTION	NUMBER OF RESPONDENTS	BEFORE	AFTER
ATTENDED SLIDE SHOW			
Yes	45	41,9	54,2
No	107	39,2	45,6
WALKED ON TRAIL			
Full	15	39,7	48,3
Short (Hippo Pools)	65	39,3	47,9
None	72	40,7	48,3
WENT ON CONDUCTED DAY DRIVE			
Six times	1	56,0	72,0
Five	1	48,0	64,0
Four	6	40,0	52,7
Three	59	39,0	45,7
Two	63	40,3	48,8
One	22	40,7	50,0
WENT ON CONDUCTED NIGHT DRIVE			
Six times	2	62,0	68,0
Five	2	50,0	62,0
Four	6	40,0	52,7
Three	50	41,4	48,2
Two	75	39,9	49,6
One	15	33,6	39,5
USED OTHER INTERPRETATIVE AIDS			
Extensively	31	45,0	52,8
Occasionally	69	42,0	49,9
Seldom	21	34,1	43,4
Not at all	31	34,6	43,0
WHOSE DECISION TO VISIT			
Mine	38	43,9	49,2
Somebody else's	50	36,7	45,0
Joint	64	40,3	50,0
RANKED LITERATURE ON THE RESERVE			
First	5	48,4	54,4
Second	4	49,0	61,0
Third	16	37,0	41,0
Fourth	58	38,5	48,1
Fifth	69	40,8	48,7
RANKED CONDUCTED WALK			
First	29	45,8	56,3
Second	21	39,6	45,0
Third	69	37,4	45,5
Fourth	21	42,7	50,0
Fifth	12	37,0	46,7

[Londolozhi]	(/152)	PERCENTAGE	
QUESTION	NUMBER OF	POSITIVE	
	RESPONDENTS	BEFORE	AFTER
RANKED CONDUCTED DAY DRIVE			
First	60	38,9	44,9
Second	61	39,3	50,0
Third	17	42,4	51,3
Fourth	12	45,3	50,7
Fifth	2	44,0	48,0
RANKED CONDUCTED NIGHT DRIVE			
First	61	37,3	45,7
Second	50	39,9	47,6
Third	27	43,7	51,4
Fourth	8	44,0	53,5
Fifth	6	46,0	56,0
RANKED LECTURES AND FILMS			
First	10	36,8	46,0
Second	6	46,0	50,0
Third	17	44,0	57,4
Fourth	63	40,2	47,1
Fifth	56	38,5	46,7
APPRECIATION OF NATURE			
Strong increase	120	38,8	48,1
Moderate	29	42,8	46,2
No real increase	3	57,3	60,0
LANGUAGE			
English	140	40,4	48,3
Afrikaans	6	46,0	52,0
Both	4	24,0	36,0
Other	2	24,0	34,0
SEX			
Male	77	41,9	48,3
Female	75	38,1	48,0
OCCUPATION			
Professional	49	39,6	49,4
Managerial	26	44,2	51,4
Clerical	7	23,4	30,1
Sales	3	50,7	58,7
Service	2	38,0	44,0
Agricultural	1	52,0	44,0
Production	2	66,0	70,0
Not classified	6	41,3	48,0
Not economically active	56	37,8	46,7
(Educationalists	12	38,0	49,0)

[Londolozhi]	(/152)	PERCENTAGE	
QUESTION	NUMBER OF RESPONDENTS	BEFORE	AFTER
INCOME			
R 0 - 500 p.m.	2	38,0	34,0
501 - 1000	5	44,8	48,0
1001 - 1500	15	37,3	45,9
1501 - 2000	18	37,6	48,7
2000+	112	40,6	48,6
AGE			
14 - 19 years	20	38,8	45,2
20 - 29	34	37,6	45,3
30 - 39	36	36,8	48,1
40 - 49	34	42,0	51,4
50 - 59	18	47,1	52,0
60+	10	42,4	46,0
EDUCATION			
Some school	19	35,4	39,8
School completed	13	42,5	52,0
Some university	23	46,3	53,7
University completed	63	40,7	49,3
Other post-school	34	36,1	45,5
RELIABILITY RATING			
Reliable	126	40,2	48,2
Suspect	26	39,1	48,0

APPENDIX G

POSITIVE
RESPONSES TO
INDIVIDUAL
QUESTIONS AND
GROUPINGS

APPENDIX G

POSITIVE RESPONSES TO INDIVIDUAL QUESTIONS AND GROUPINGS

Listed below are the total number of positive responses to the individual questions for the five separate surveys, as well as the percentages for the totals and the Wildlife, Conservation and Environmental groupings. Note that the Before questionnaire is the same for both approaches.

VENUE	HLUHLUWE			GIANT'S CASTLE			LONDOLOZI	
	Before	After		Before	After		B	A
APPROACH	a/b	a	b	a/b	a	b	a	a
SAMPLE	154	154	159	148	148	151	152	152
1	142	145	150	145	140	146	141	143
2	98	118	105	90	116	100	98	112
3	17	36	25	18	32	28	25	65
4	55	49	55	59	47	71	65	42
5	19	20	20	18	23	23	13	33
6	59	69	86	63	81	82	50	59
8	36	76	37	43	80	41	52	85
9	87	76	99	102	91	87	82	96
10	21	19	15	15	10	19	29	33
11	54	41	67	59	35	57	66	44
12	26	71	34	33	79	28	39	69
13	93	44	94	88	50	88	74	59
14	22	40	30	33	49	24	14	47
16	71	98	79	51	98	52	66	91
17	92	110	93	86	99	90	87	107
18	91	112	91	106	118	106	108	133
20	13	12	7	14	14	15	11	13
21	69	70	75	76	73	88	98	72
22	55	29	63	72	19	72	66	33
23	94	53	93	90	104	88	91	78
24	5	93	8	9	84	12	11	104
25	125	130	128	119	119	125	103	112
26	64	62	103	74	39	100	84	106
27	13	12	22	30	26	50	23	23
28	29	38	42	24	60	47	24	71
TOTAL	1450	1623	1621	1517	1686	1639	1520	1830
Total (%)	37,7	42,2	40,8	41,0	45,6	43,4	40,0	48,2
Wildlife	31,2	33,8	36,6	34,1	41,6	41,5	32,2	45,6
Conservation	29,3	34,6	31,6	30,4	37,1	32,0	30,5	38,1
Environmental	40,8	44,7	41,5	46,8	46,8	45,6	45,3	50,1

APPENDIX H

HLUHLUWE

COMPARISON OF APPROACHES

(a) AND (b): MOTIVATION

APPENDIX H

HLUHLUWE

COMPARISON OF APPROACHES (a) AND (b): MOTIVATION

Listed below are the tables showing the ratings given by respondents to the various reasons why people visit nature reserves. Note that the order is approximate, as respondents rated, rather than ranked and weighted, their responses. Approach (a) had 154 respondents, while Approach (b) had 159.

	EXTREMELY IMPORTANT 5	Approach (a)			NOT AT ALL IMPORTANT 1
		4	3	2	
Game viewing	113	33	7	1	0
Atmosphere	112	28	10	3	1
"Getting away"	111	24	11	5	3
Relaxation	101	34	16	2	1
Being taught	69	35	36	10	4
Comfort	52	50	35	14	3
Bird watching	52	33	43	18	8
Low costs	36	34	61	19	4
Walking on trails	40	38	34	13	29
Convenience	45	22	38	22	27
The night sky	26	20	49	32	27
Proximity	13	27	65	30	19
Studying plants	19	24	49	37	25
Recreation	7	14	36	36	61

	EXTREMELY IMPORTANT 5	Approach (b)			NOT AT ALL IMPORTANT 1
		4	3	2	
Game viewing	123	26	8	1	1
Atmosphere	116	30	8	2	3
Relaxation	90	46	10	4	9
"Getting away"	92	37	13	3	14
Being taught	56	48	35	11	9
Bird watching	57	44	34	13	11
Comfort	39	45	53	14	8
Low costs	34	36	56	22	11
Walking on trails	36	43	36	25	19
Convenience	34	32	36	24	33
Studying plants	25	26	34	41	33
The night sky	17	32	43	42	25
Proximity	16	22	69	24	28
Recreation	10	16	24	43	66

APPENDIX I

GIANT'S CASTLE

COMPARISON OF APPROACHES
(a) AND (b) : MOTIVATION

APPENDIX I

GIANT'S CASTLE

COMPARISON OF APPROACHES (a) AND (b): MOTIVATION

Listed below are the tables showing the ratings given by respondents to the various reasons why people visit nature reserves. Note that the order is approximate, as respondents rated, rather than ranked and weighted, their responses. Approach (a) had 148 respondents, while Approach (b) had 151.

	EXTREMELY IMPORTANT	Approach (a)				NOT AT ALL IMPORTANT
		5	4	3	2	
Atmosphere	113	23	10	2	0	
Relaxation	109	30	7	2	0	
"Getting away"	106	21	16	3	2	
Walking on trails	78	38	21	8	3	
Game viewing	69	43	30	5	1	
Being taught	45	52	36	11	4	
Comfort	54	36	42	8	8	
Bird watching	48	27	49	13	11	
Low costs	41	37	47	22	1	
Convenience	45	26	32	19	26	
Proximity	22	23	58	28	17	
Studying plants	19	26	54	27	22	
The night sky	17	38	51	38	17	
Recreation	8	10	36	35	59	

	EXTREMELY IMPORTANT	Approach (b)				NOT AT ALL IMPORTANT
		5	4	3	2	
Atmosphere	111	31	5	2	2	
Relaxation	106	30	10	3	2	
"Getting away"	107	21	10	2	11	
Walking on trails	87	34	19	9	2	
Game viewing	63	53	24	6	5	
Being taught	57	45	25	16	8	
Bird watching	50	43	32	18	8	
Comfort	43	44	42	17	5	
Low costs	39	42	41	21	8	
Convenience	40	25	43	19	24	
Proximity	20	28	62	26	15	
Studying plants	22	30	46	30	23	
The night sky	23	27	44	27	30	
Recreation	12	16	31	26	66	

APPENDIX J

SCIENTIFIC NAMES
OF PLANTS AND
ANIMALS
MENTIONED
IN THE TEXT

APPENDIX J

SCIENTIFIC NAMES OF PLANTS AND ANIMALS MENTIONED IN THE TEXT

Listed below are the scientific names of the plants and animals mentioned in the text. These have deliberately been restricted to an appendix - while the value of Latin names to science is recognized, it is felt that their role in interpretation is small. Numbering follows that in the references.

TREES

18	Real yellowwood	(<u>Podocarpus latifolius</u>)
39	White stinkwood	(<u>Celtis africana</u>)
66	Sycomore fig	(<u>Ficus sycomorus</u>)
87	Common sugarbush	(<u>Protea caffra</u>)
145	Oldwood	(<u>Leucosidea sericea</u>)
172	Sweet thorn	(<u>Acacia karroo</u>)
178	Knobthorn	(<u>Acacia nigrescens</u>)
202	Tree fuschia	(<u>Schotia brachypetala</u>)
341	Tamboti	(<u>Spirostachys africana</u>)
360	Marula	(<u>Sclerocarya caffra</u>)
446	Natal bottlebrush	(<u>Greyia sutherlandii</u>)
447	Buffalo thorn	(<u>Ziziphus mucronata</u>)
563	Mountain cabbage tree	(<u>Cussonia paniculata</u>)
595	Magic guarri	(<u>Euclea divinorum</u>)
637	Sagewood	(<u>Buddleja salviifolia</u>)
-	Black wattle	(<u>Acacia mearnsii</u>)
-	Prickly pear	(<u>Opuntia ficus-indica</u>)
-	Weeping willow	(<u>Salix babylonica</u>)

MAMMALS

Blesbok	(<u>Damaliscus dorcas phillipsi</u>)
Buffalo (African)	(<u>Syncerus caffer</u>)
Bushbuck	(<u>Tragelaphus scriptus</u>)
Cheetah	(<u>Acinonyx jubatus</u>)
Eland	(<u>Tautotragus oryx</u>)
Elephant (African)	(<u>Loxodonta africana</u>)
Hippopotamus	(<u>Hippopotamus amphibius</u>)
Hyrax (Dassie)	(<u>Procavia capensis</u>)
Impala	(<u>Aepyceros melampus</u>)
Kudu	(<u>Tragelaphus stepsiceros</u>)
Leopard	(<u>Panthera pardus</u>)
Lion	(<u>Panthera leo</u>)
Nyala	(<u>Tragelaphus angasi</u>)
Reedbuck	(<u>Redunca arundinum</u>)
Reedbuck (Mountain)	(<u>Redunca fulvorufula</u>)
Rhebuck (Grey)	(<u>Pelea capreolus</u>)
Rhinoceros (Black)	(<u>Diceros bicornis</u>)
Rhinoceros (White)	(<u>Ceratotherium simum</u>)

Roan antelope	(<u>Hippotragus equinus</u>)
Springbuck	(<u>Antidorcas marsupialis</u>)
Steenbok	(<u>Raphicerus campestris</u>)
Waterbuck	(<u>Kobus ellipsiprymnus</u>)
Wildebeest (Blue)	(<u>Connochaetes taurinus</u>)
Zebra (Burchell's)	(<u>Equus burchelli</u>)

BIRDS

72	Hammerkop	(<u>Scopus umbretta umbretta</u>)
84	Hadeda ibis	(<u>Hagedashia hagedash hagedash</u>)
89	Egyptian goose	(<u>Alopochen aegyptiacus</u>)
114	Lanner falcon	(<u>Falco biarmicus biarmicus</u>)
106	Cape vulture	(<u>Gyps coprotheres</u>)
133	Black eagle	(<u>Aquila verreauxi</u>)
134	Tawny eagle	(<u>Aquila rapax rapax</u>)
150	Bearded vulture	(<u>Gypaetus barbatus meridionalis</u>)
152	Jackal buzzard	(<u>Buteo rufofuscus rufofuscus</u>)
320	Emerald-spotted wood dove	(<u>Turtur chalcospilos chalcospilos</u>)
394	Pied kingfisher	(<u>Ceryle rudis rudis</u>)
517	Fork-tailed drongo	(<u>Dicrurus adsimilis adsimilis</u>)
523	Black crow	(<u>Corvus capensis</u>)
412	European roller	(<u>Coracias garrulus garrulus</u>)
424	Grey hornbill	(<u>Tockus nasutus epirhinus</u>)
493	European swallow	(<u>Hirundo rustica rustica</u>)
733	European starling	(<u>Sturnus vulgaris vulgaris</u>)
745	Red-wing starling	(<u>Orychognathus morio morio</u>)
751	Malachite sunbird	(<u>Nectarinia famosa famosa</u>)
775	Cape white-eye	(<u>Zosterops pallidus basuticus</u>)
784	House sparrow	(<u>Passer domesticus indicus</u>)

INSECTS

Malaria-carrying mosquito	(<u>Anopheles species</u>)
Tsetse-fly	(<u>Glossina species</u>)

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