HIKERS' ATTITUDES TO THE NATIONAL HIKINGWAY SYSTEM IN THE SOUTH-WESTERN CAPE

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This report was submitted to the University of Cape Town in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Environmental and Geographical Science.

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ABSTRACT

This research report sets out to determine the trail facility preferences (social carrying capacity) for National Hikingway trails in the south-western Cape. It was found that social carrying capacity is a complex concept, based on perceptive experiences and relative social values. It is not so much the level of use that determines SCC, but a user's perceptions of types and levels of use that are apparent in a recreation area.

The major line of investigation was a cross-sectional attitude study to ascertain trail facility preferences of mountaineers in the study area: the first step was to the establish the social milieu of mountaineering in order to place the research in an ethical and historical context; next, the literature on outdoor recreation was reviewed and the major trends in research indentified in an attempt to place the research in a methodological paradigm; thirdly, the overview and principles established in steps 1 and 2 of the report were used to develop an attitude survey on NHW trail facility preferences.

While a range of preferences was found to exist, it was found to be more supportive of the status quo than expected. An anticipated gradation of preferences according to one's level of hiking experience was not statistically supported by sub-group analysis. The survey results emphasise the importance of evaluating conceptual perspectives with empirical analyses. Social and ecological interests are best served by providing a range of trail types, characterised by various trail facilities, to cater for high and low carrying capacity preferences. Trail management should consider traditional recreational uses in an area, current land uses and the future needs of mountaineers in the region.

DECLARATION

I declare that this research report is my own, unaided work. It is being submitted in partial fulfillment of the requirements for the degree of Master of Arts in Environmental and Geographical Science at the University of Cape Town. It has not been submitted before for any degree or examination at any other university.

signed: Signed by candidate

Signature removed

at: CAPE TOWN date: APRIL 3, 1988

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DEFINITIONS OF TERMS USED

1. **Hike:** an outdoor walking experience of two days or more in a wild, natural mountain environment, carrying a hiking pack with all one's own material needs for the duration. A hike may be on defined paths or off them; basic shelter may be provided or not.

2. **Hiker:** someone who hikes as a recreational activity. The two basic types of hikers are - a) an inexperienced hiker is someone who does not not hike regularly or has not hiked more than three times in the past year; b) an experienced hiker is someone who does hike regularly or has hiked five times or more over the past year. Within these two basic types are two more sub-divisions used in the survey.

3. **Mountaineer:** someone who partakes in any recreational activity in mountains where self-sufficiency and physical exertion are involved; this includes hiking and trekking, kloofing, rock climbing, fell running, alpine climbing and peak expeditions.

4. **The Recreation Opportunity Spectrum:** a method for outdoor recreation planning and management. It considers the range of recreation opportunities offered in a region, attempting to provide a wide range of carrying capacity choices so as to provide for the widest range of recreation preferences and to ensure that some resources are conserved in a wild, natural state.

5. An associated concept is that of **Levels of Acceptable Change:** a method for determining the acceptability to users of various types and

levels of recreational and non-recreational land uses, and a method for monitoring the changes to the bio-physical environment wrought by recreational activities.

6. **Social Carrying Capacity:** the type and level of recreation suggested by an area's facilities and degree of human-induced impacts - the more an area is developed and the greater the degree of impacts, the higher will be its SCC. Likewise, undeveloped wilderness areas will have the lowest SCC possible. It is not so much the level of access permitted, as that which is attracted by the area's character. A road will create a high SCC, while a mountain range will lower it.

7. **Recreational Carrying Capacity:** the economic, bio-physical and social potential of land to offer various types and levels of quality recreational activities, while maintaining the land's natural integrity.

8. **Trail:** a path along or area in which hiking takes place, as well as the area immediately surrounding the route followed which provides stimuli to the hiker. It includes all trail facilities such as shelters, educational information and displays, trail markers, and the natural environment. Trails are confined to wild, natural mountain areas but they may be of high or low SCC.

9. **NHW trial:** a trail managed by the NHWB; paths are marked with painted distance and direction markers, usually at 1 km intervals between huts, and shelters are typically wooden chalets with bunk beds and mattresses provided, as well as long-drop toilets. At the time of writing the NHWB had commissioned the design of standard trail shelter units.

10. **Trail facility:** An aspect of the NHW trail environment, as identified in the Trail Facility list (Appendix A) that can be effected by management intervention or action.

11. **Trail facility category:** the categories used to divide the survey questionnaire into suites of similar questions, as derived from the list of trail facilities (above).

LIST OF ABBREVIATIONS USED IN THE TEXT

1. Engeo - Department of Environmental and Geographical Science, UCT.
2. LAC - Level of Acceptable Change.
3. MCSA - Mountain Club of South Africa.
4. NHW - National Hikingway.
5. NHWB - National Hikingway Board.
6. NHWS - National Hikingway System.
7. ROS - Recreation Opportunity Spectrum.
8. SCC - Social Carrying Capacity.
9. UCT - University of Cape Town.

PREFACE

As a mountaineer and environmentalist I have a particular interest in mountain management. The two years prior to undertaking this investigation were spent compiling a book on mountaineering in southern Africa. Much of this time was spent on NHW trails, where many of the ideas used and tested in this report germinated.

Our mountains areas are threatened, limited resources and an invaluable part of our natural heritage (Fuggle, 1978). Once developed, they are lost as pure wilderness areas, something in short supply and which will be valued more and more as recreation demand increases - a paradox which implies difficult management decisions. A continuous NHWS through the mountains of South Africa has been envisaged, depending on the availability of land and the demands of users. Planning and management of such a system must, therefore, be guided by sound ecological and recreation principles. An attempt has been made in this investigation to outline those principles that apply to social carrying capacity, based on the ethics and aesthetics of mountaineering traditions, both locally and internationally, as well as by reference to pertinent outdoor recreation theory and research.

The National Hikingway Board (NHWB) recognises the probability that the NHW system currently caters more for less experienced hikers, while attempting to follow a policy that caters for the "needs of hikers" (Van Rensburg, pers. comm., 1986). It was therefore suggested that an investigation should be undertaken to determine those needs. This report has attempted to determine the trail facility preferences

of hikers in the south-western Cape, as well as placing the empirical research within a sound sociological and methodological paradigm.

To determine all aspects of appropriate mountain trails would involve an investigation into the economic, physical, biological as well as the social elements of hiking trails. This is beyond the academic capabilities of this researcher as well as beyond the scope of such a research report; only the social aspects of hiking trails have been considered. However, as has been stated in the report, social carrying capacity is derived from the principles of the land ethic (Leopold, 1953) and so it is bound by the area's bio-physical properties.

A summary of this report was presented at a talk to the MCSA, Cape Town section, on 17 November 1986 where great interest was shown in the survey results. These results were not available at that time. Summary papers of chapters 2 and 3 were submitted for publication in the MCSA journal but to date no reply has been received in this connection.

ACKNOWLEDGEMENTS

I would like to express my gratitude to the following people for their help with this investigation:

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The UCT Information Services personnel who assisted and advised in all aspects of data handling, as well as offering a "hot seat" advice bureau for computer users;

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Finally, my gratitude goes to all Engeo colleagues (Econuts) who enriched my stay at UCT and with whom I formed some lasting friendships.

CHAPTER 1 - INTRODUCTION

1.1.1. Hiking - a mountaineering perspective

The mountains of the south-western Cape offer a diverse range of recreational opportunities, with a balance between danger and safety: elsewhere mountaineering has been defined as the crossing of potentially dangerous mountain terrain, in safety (Cleare, 1980). Where no facilities are provided, access will be limited to the more experienced (or foolhardy) hiker who is comfortable with the challenges of wilderness. As a sport, mountaineering borders on the anarchistic, for it does not require the organisation of team sports, it demands self-sufficiency and most often it seeks a high degree of solitude (Cleare, ibid; Levy, 1982). Self-sufficiency implies not only being able to look after oneself, but also accepting the responsibilities of one's own actions in the face of danger.

By tradition, mountaineers are committed to conservation of the mountains' wild, natural integrity and even rock climbers strive to minimise their impacts on the crags they scale. Similarly, the traditions of hiking are to minimise impacts such as erosion, littering and noise, or the disturbance of any natural fauna and flora in the trail environment. Many mountaineers belong to "hack groups" who spend leisure time eradicating alien vegetation from the mountains.

1.1.2. The National Hikingway System

Why is it necessary to develop a national hikingway system (NHWS)? On the one hand it makes available to a large number of people those mountain areas that were previously too rugged and remote for anyone but the most experienced mountaineers. On the other hand, it degrades wild, natural mountain areas that previously were frequented by wilderness lovers and forces them to pursue their sport elsewhere (Levy, 1982). Having decided, however, that a developed and well managed trail system will be to the best advantage of the society (Section 30, Part VII, Forest Act, 1975), what guidelines should determine the types and localities of trails that best caters for mountaineers, both present and future, in the region? This report attempts to determine social preferences for such a trail system, by surveying a wide spectrum of mountaineers in the area, on their attitudes to the National Hikingway System (NHWS).

1.2. Layout of the report

The report follows the logic of the investigation, beginning with a descriptive assessment of the research topic and moving towards an empirical analysis of the research problem. The report is divided into two main parts, with three chapters in each. Part I consists of three chapters. It is largely descriptive and takes the form of an extended literature review: Chapter One is the general introduction, outlining the backround to the investigation; Chapter Two looks at the traditions of mountaineering, both internationally and locally, the establishment of the NHWS and its role in mountain recreation; Chapter

Three defines the social carrying capacity (SCC) of outdoor recreation areas with reference to outdoor recreation literature.

Part II is empirical, in that it uses the assumptions and principles established in Part I to formulate a valid survey methodology to answer the research question. It also consists of three chapters: Chapter Four outlines the methodology used in the survey and the four major steps used in the data collection; Chapter Five is the analysis and interpretation of the survey data; finally Chapter Six offers a discussion and of the main survey findings, and conclusions to the research.

1.3. The research problem

The goal of the National Hikingway Board (NHWB) is to develop a system of public and private hiking trails through the mountain (and coastal) areas of South Africa. The Board has effective recreational control over all public mountain catchment areas, most of which are also traditional mountaineering areas. Because the development of a mountain trail system implies a degradation of those areas from wilderness to "backcountry", a potential conflict of interests exists between traditional mountaineers, who rely on wild mountain areas in which to pursue their sport, and National Hikingway (NHW) hikers who have more recently gained access to these mountains and who prefer marked trails and huts to be provided.

In a Department of Forestry notice (March, 1976) sent to all regional directors, reference was made to providing facilities on trails

according to the "needs of hikers". In discussions with the NHWB it was agreed that the NHWS caters largely for less experienced hikers, who prefer relatively high SCC facilities. As the NHWS expands, however, the Board is aware of the need to cater for more experienced hikers who prefer lower SCC facilities, while at the same time not completely disenfranchising purist mountaineers who prefer completely undeveloped recreation opportunities (Van Rensburg, pers. comm., 1986).

But just what these "needs of hikers" are has not been empirically ascertained (although Van der Walt, 1976, has detailed the attitudes of NHW hikers in the Transvaal to those trails). The needs of hikers is only one consideration in determining the most acceptable recreational management of the study area, but that is the question that has been addressed in this report. The question of appropriate trail development has been placed within the context of recreational carrying capacity - a paradigm and procedure for assessing appropriate outdoor recreation planning.

1.4. The research question

The central question of "what are the needs of hikers in a particular region?" is fraught with generalities that would be difficult to establish; rather, in an attempt to provide managers with specific information about hikers' preferences for trails, it was decided to determine the attitudes of hikers to specific, management-oriented aspects of NHW trails in the S-W Cape. In this way NHW managers and planners would be able to act on specific details and within an

existing system, rather than being offered an ideal but impractical scenario.

In order to establish these attitudes, but without presenting merely average (modal) preferences which tend to obscure essential conflicts of preference between sub-groups of sportsmen (Bryan, 1979), one modal and two comparative analyses were undertaken. The central research question is broken up into four constituent questions:

1) What elements of NHW trails are considered by mountaineers to be most important to high quality hiking experiences, and which of these elements can be acted upon by managers to alter the character of a trail (trail facilities)?;
2) What are the trail facility preferences of a cross-section of mountaineers in the S-W Cape?;
3) What are the various trail facility preferences of four sub-groups of mountaineers, based on their level of hiking experience?;
4) What are the various trail facility preferences of four sub-groups of mountaineers, based on their membership to outdoor-oriented clubs and societies?

1.5. Approach

1.5.1 General perspective

To understand the needs of hikers, it is necessary to understand the social context in which these choices are made; when more than one claim is made to the same public resource, we need to understand

something about the historical context of these conflicts in order to pose equitable solutions to the problems. Bryan (1979) is convinced that much research into outdoor recreation planning has proved ineffective as a predictive tool as it fails to take an historical perspective on the issues at hand.

Another often neglected aspect of so-called objective research is that it does not recognise the fact that all research is set within particular scientific or philosophical paradigms; by so doing many basic assumptions are hidden. It is the intention of this investigation to give an account of social and historical perspectives on mountaineering, as well as to examine the tenets of the recreation carrying capacity paradigm, concentrating on its social constituent. In line with the multi-disciplinary character of Engeo and its holistic approach to environmental issues, this investigation attempts to offer a balanced perspective on what is a multi-faceted problem. Although such a report can pursue only a narrow empirical line of investigation, it would have been unsatisfying not to present a broader perspective on the research problem.

1.5.2. Aims and objectives

This investigation is intended to be a preliminary report, aimed at highlighting some important aspects of mountain recreation management. It is both descriptive and analytical, as it is intended to give an overview of the social and management milieux of the NHWS.

It is assumed that SCC and the ROS are the most relevant concepts applicable to this investigation. Bryan's (1979) approach to resolving conflict in outdoor recreation has also been used as an important assumption of the survey, and although his theory seems to be generally applicable, the data have been analysed to determine to what extent his model applies to this investigation. The report outlines the range of hikers' needs as regards the NHWS in the study area. In this way it is hoped that the principles and preferences desribed here will be found applicable to NHW management in the study area.

1.6. Methods

The descriptive and analytical parts of the investigation demand different methodological approaches and these are outlined below:

A. Descriptive

A review of outdoor and mountaineering and outdoor recreation literature was undertaken. The researcher hiked all NHW and several wilderness trails in the study area over a period of two years (1985/6) and informal interviews were conducted with other hikers concerning general motivations for mountaineering, as well as general attitudes to these trails. The full set of MCSA journals and all available NHW annual reports and other documents were studied to gain an overview of their activities and value systems - these are presented in chapters Two and Three.

B. Analytical

After reviewing a number of social methodologies (including a matrix assessment of NHW trail environments, workbook and workshop planning methods as pioneered in Yosemite National Park, USA), it was decided that an attitude survey was best suited to determining the needs of hikers in the study area. A cross-sectional survey was designed to determine the preferences of mountaineers in the study area; for analysis the sample was further broken down into two sub-groups according to club membership, and again into four sub-groups according to level of hiking experience. This is discussed in detail in Chapter Four.

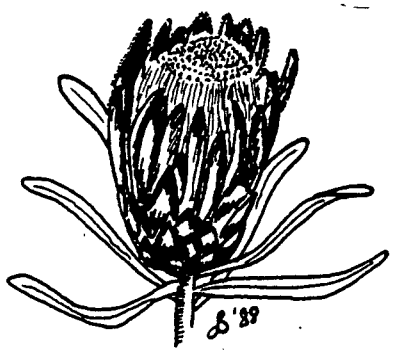
1.7. The study area

A. Geographical

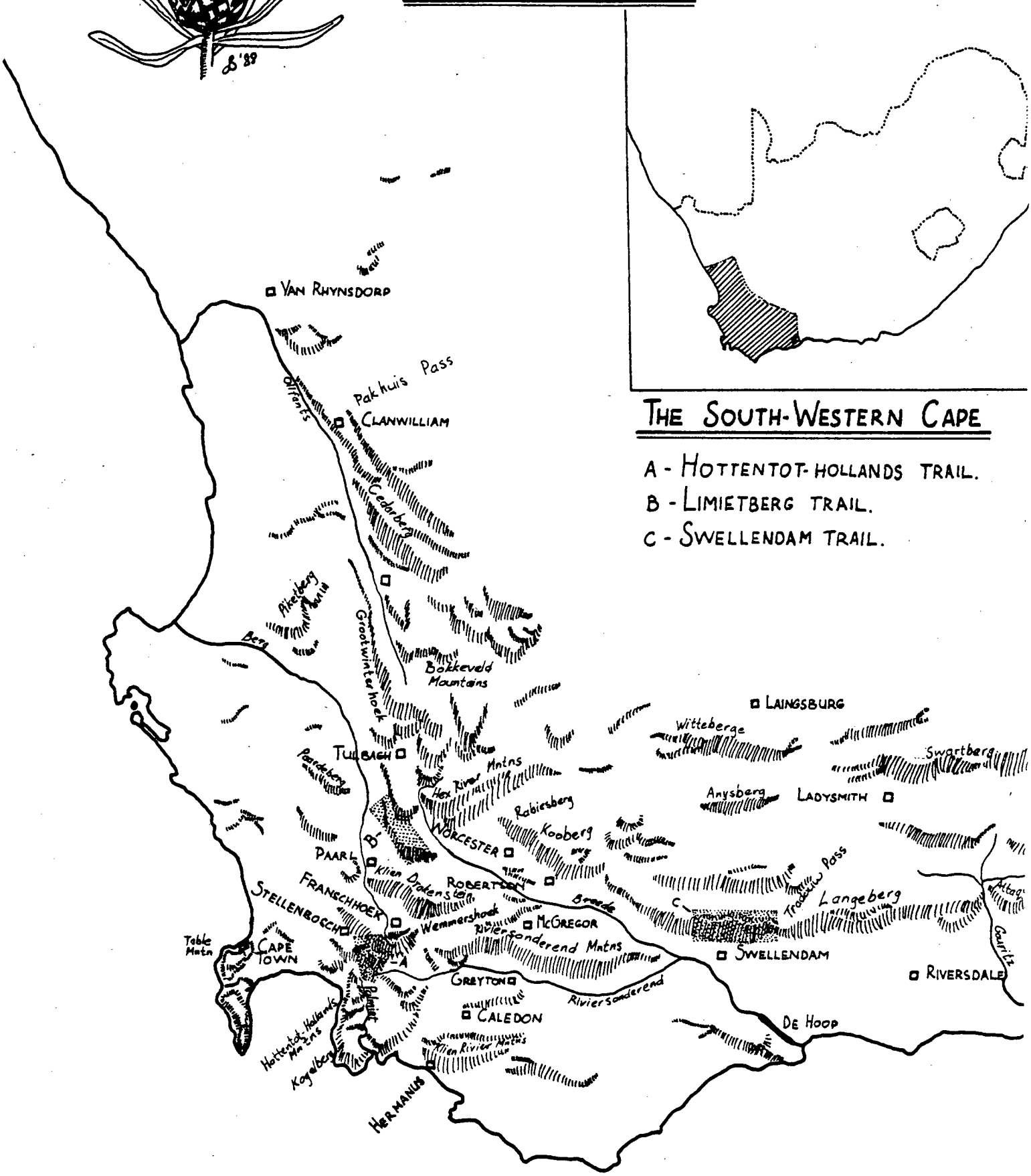
This investigation considers mountain hiking opportunities in the Folded Mountain System of the south-western Cape. The geographical boundary of the area is from the Pakhuis Pass in the Cedarberg, southwards to the Cape Peninsula and then eastwards to the Tradouw Pass in the Langeberg, east of Swellendam (see map on Page 9).

B. Bio-physical

This region is dominated by the steep, folded Table Mountain Sandstone crags of the Cape Supergroup of rocks, underlain by Bokkeveld Shales, older shales and granite horizons. From the upper rocks are derived



THE STUDY AREA



THE SOUTH-WESTERN CAPE

A - HOTTENTOT-HOLLANDS TRAIL.
B - LIMIETBERG TRAIL.
C - SWELLENDAM TRAIL.

(AFTER VOGTS, 1982)

acidic, distrophic soils on which grows Mesic Mountain Fynbos - an element of the Cape Floral Kingdom of the Fynbos Biome (Werger, 1978). This veld type is the major remaining natural component of the biome, but even it is believed to threatened by human-induced impacts (Moll, quoted in Bristow, 1985). Patches of relict Afro-montane forests are found in sheltered river gorges, mainly on the lower southern aspects of the parallel mountain ridges. The Mountain Fynbos is characterised by spectacular flowering diversity but low nutrient status and stress-coping adaptations. There are many endangered species, both flora and fauna, found in this domain, numbering some two-thirds of all endangered species in South Africa (Werger, 1978). The mountain terrain and impressive, endangered flora are of international acclaim.

The Fynbos Biome is a winter rainfall area with strong, dessicating south-easterly winds in summer. Rainfall varies from the highest in the country around the Hottentots-Holland range (about 2 000 mm a year), to Succulent Karoo Biome conditions (less than 200 mm a year) in the valleys between the major ranges.

C. Managerial

In the study area there are three NHW trails (Swellendam, Hottentots-Holland and Limietberg), one Wilderness Area (Cedarberg/ Grootwinterhoek) and four other main Forestry-controlled mountain areas (Kluitjieskraal, Hawequas, Hottentots-Holland and Marloth). Together these form a semi-continuous mountaineering region with a wide range of mountaineering opportunities - from Table Mountain walks to Hex River or Swartberg mountain traverses. The area is dissected by a number of major roads, with each resulting segment of land having

its own SCC character, suited to different combinations of recreation opportunities (ruggedness, remoteness, level of development, natural beauty, hiking facilities).

D. Social

Combined with its proximity to Cape Town and other towns of the S-W Cape, the study area is expectedly also the historical home and centre of mountaineering in the country (Bristow, 1985). The three NHW trails vastly increase recreational access in the area. There are five out of 13 MCSA sections based in the study area (Cape Town, Hottentots-Holland, Paarl-Wellington, Stellenbosch and Worcester), which also happen to be the club's five oldest sections.

1.8. Previous research

Glavovic (in progress) established ten factors that constitute the ROS in a study on the Cedarberg. These were ranked by various groups of recreation users there. It was found that "choice of facilities" was the most highly rated factor of the ROS. It was also found that within the site (a Wilderness Area) a range of recreation opportunities exists, each opportunity catering for a different type of user with differing but not necessarily conflicting expectations and preferences.

Van der Walt (1976) conducted an attitude survey of hikers for two NHW trails in the Transvaal (Soutpansberg and Fanie Botha). An average socio-biographical profile was established, as well as modal attitudes

to a wide range of trail facilities and issues. The socio-biographical findings, where they overlap, accord with those in this study. Attitudes were overwhelmingly supportive of the NHWS; interviews were conducted on the trail by collect-and-drop questionnaires.

Sowman (1984) investigated the recreational carrying capacity of Cape Infanta. Sowman used only physical parameters to determine optimal user densities for various coastal and estuarine activities such as angling, boating and windsurfing. Although the objectives are similar to those of this report, the approaches and methods are quite different; while quite different environments were studied, the same paradigm of recreational carrying capacity was used.

De Villiers (1987) looked at hiking as a physical activity. Each NHW trail was graded according to a difficulty percentage system, developed over a five-year investigation into physical landscape and anatomical parameters. (This report was submitted for a Masters' degree in Physical Education at Stellenbosch University, but unfortunately a copy of this work was not available in time to be included here; De Viliers, pers. comm., 1987).

1.9. Limitations of the report

1.9.1. Scope

While the scope of this report allows for only one aspect of recreational carrying capacity (social, economic, physical and

biological) to be explored, it would be preferable to consider all four; it would equally valid to consider any other one. While this investigation is therefore limited, is does not contradict the basic objectives of carrying capacity assessment, which are to provide high quality recreation and to retain the environmental integrity of the area in question.

A full scientific investigation should consider the trade-offs between recreational use and environmental degradation. Because hikers' needs may at times clash with ecological imperatives for a trail area, social parameters should not be considered as a final measure for the appropriateness of mountain trails.

1.9.2. Data analysis

Computer programs, such as BMDP used in this report, offer many powerful statistical routines for data analysis. Because the aim of this report is a preliminary investigation of social attitudes, however, the survey data were analysed only for trends and not to define absolute values. Further refinement and manipulation of the data would render useful results for NHW trail management, especially that of sub-group analysis.

1.10. Importance of the research

The report attempts to place the NHWS in a broader recreational context. Part I outlines the general principles of mountaineering and

outdoor recreation, while Part II deals specifically with the NHWS and mountaineers in the S-W Cape. The survey data therefore, can be said to apply only to hikers' attitudes to the NHW in the S-W Cape. While the study may illuminate aspects of the entire NHWS, of mountaineering and outdoor recreation in general, the results of this report are confined to its specific frame of reference.

NHW utilisation figures reveal a mushrooming demand for access to these trails; each year now sees the opening of more and more trail sections throughout the country (Levy, 1987). With expected demographic and socio-economic trends in the country, demand for outdoor recreation opportunities may be expected to accelerate over the next few decades. At the same time the country's mountains are besieged ecological islands, essential for high quality water yields and important outdoor recreation settings. Because of the human pressures on wild, natural mountain areas, it is crucial that they are managed according to sound principles, in order to maintain their environmental integrity (economic, bio-physical and recreational uses maximised for sustainable yields).

This report places the needs of hikers in a broader recreational context, based on sound ethical and management principles. It also offers a procedure for resolving potential conflicts between various groups of mountaineers who compete for access to the same scarce resource. As access increases and resources become more scarce, these conflicts can be expected to increase.

CHAPTER 2 - THE HISTORICAL TRADITIONS OF MOUNTAINEERING

2.1. Introduction

"Although we may say that the mountains belong to the people, actually they belong to those who love them."

Shobogenzo Sansinkyo, C13 Zen master (from Drasdo and Tobias, 1980)

A National Hikingway System (NHWS) brochure begins by telling us that there are many ways to travel: by air, by road, by rail, but by far the most rewarding way, it says, is on foot. Similarly, it can be argued that there are many ways to walk in the mountains. Himalayan mountaineer and author Frank Smythe believed that all worthwhile journeys in the mountains are those which are undertaken in the spirit of travel in the wilderness - as free and caring people whose behaviour is at one with the rarified freedom and ecological fragility of mountain regions. At the time when the pioneering ecologist Aldo Leopold was developing his ideas on the land ethic, Smythe was advocating the same ethic in regard to mountains the world over: "Nature is part of the great education scheme" he wrote (Smythe, 1946).

In the following section I will outline some of the historical factors that have given rise to this mountaineering ethic; the evolution of mountaineering in the S-W Cape will then be traced, concentrating on the role played by the MCSA. In the next section the NHWS will be presented in its broader recreational context. In this context, it is understood that hiking is not an unrelated pursuit, but rather one of several activities that are embraced by the term "mountaineering" (see Definitions of Terms, pp v-vii). Finally, the chapter will be

summarised. If unreferenced, ideas in this section are a synthesis of the culminised readings of the researcher.

2.2. An Historical Perpective of Mountaineering

In their book "The Mountain Spirit", authors Tobias and Drasdo claim that of all sports mountaineering has the richest, most copious literature (Drasdo and Tobias, 1980). They document the cross-fertilisation of ideas between mountaineering and its literature to show how religion, culture and introspection have influenced mountaineers and how, in turn, mountaineers have been inspired by religious, cultural and artistic trends in developing an attitude to their sport. It may also be true that such a copious literature exists because recreational mountaineers are drawn largely from the most literate social strata (Van der Walt, 1976).

Tobias and Drasdo speak of a universal "mountain wilderness experience". Whereas the unifying element of rock climbing is exposure (Bristow, 1985), they claim that a passion for the wilderness is the underlying element in all mountaineering experiences - a love of the mountains. The theme of lost passion that runs through much of 20th century literature is, they say, a direct consequence of the dual loss of wilderness in the modern industrialised world.

Religion

The social significance of mountains is apparent in all modern religions and central to many cultural philosophies. In the Bible

mountains feature as vehicles for significant spiritual events, such as Moses receiving the Ten Commandments from God, Jesus and the Sermon on the Mount, Noah and the Ark on Mount Ararat, to name but a few. "It is easy to understand how mountains, so unapproachable, their summits so far above the plane of man's own existence, should themselves become sacred. It was only natural that many should become homes of a wide range of assorted deities" (Cleare, 1980).

To the ancient Athenians, Mount Olympus was the home of Zeus and his pantheon of gods. Today in Tibet and Nepal many of the the high peaks of the Himalayan range are sacred places of worship and some are inviolate by law. Most climbing expeditions to the higher peaks there commence with the building of a shrine and a praise ceremony conducted by a local Buddhist lama. Perhaps it is the Zen Buddhists and Taoists of Japan who put the greatest value on mountains as places of worship. Taosism is concerned with the workings of nature and how man, as part of the natural order, can fit in harmoniously with it (not unlike the land ethic concept). All who cultivate Tao must literally go to the mountains to meditate, in order to gain enlightenment.

Culture

Not only have mountains influenced religious doctrines, but some major styles of religious architecture have been directly influenced by their physical forms. In ancient Mesopotamia, for instance, mountains were regarded as concentrations of all natural life; the five-tiered ziggarats were designed to begin in the earthly realm and to culminate in a heavenly fifth tier. Likewise, the pagados of modern-day Nepal echo the forms of the majestic peaks that dominate the country. They

also symbolise the ascent from earth to heaven through a three-step process of purification. But it is the Gothic cathedrals of Medieval Europe that achieve the most sublime technical and spiritual architectural expression. The lofty buttresses and soaring spires of these cathedrals were conceived to transcend the physical realm and lift the mind's eye heavenwards, echoing the geological forms of the Alps, the Dolomites and other ranges in Western Europe that would have been familiar to the learned, well-travelled clergy of the time.

From Renaissance times it became fashionable for the sons of the wealthy to undertake cultural pilgrimages through Europe; a consequence of this was that many of the finest minds of Western Europe over some 400 years were deeply influenced by the landscapes they encountered. It was in the Romantic works of the 18th and 19th centuries that mountain imagery came to its fore in artistic expression. This mood is perhaps best conveyed in the stirring, emotional symphonies of Ludwig von Beethoven and the serene, meditative poetry of William Wordsworth in which he crystalised the essence of England's Lake District:

"...Once again
Do I behold these steep and lofty cliffs,
That on a wild secluded scene impress
Thoughts of a more deep seclusion; and connect
The landscape with the quiet of the sky...
The sounding Cataract
Haunted me like a passion; the tall rock,
The mountain, and the deep and gloomy wood,
Their colours and their forms, were then to me
An appetite; a feeling and a love...
Whose dwelling is the light of setting suns,
And the round ocean and the living air,
And the blue sky, and in the mind of man...

Lines - composed a few miles above Tintern Abbey.

But what is it exactly, that spirit "in the mind of man", that makes mountains places of such emotional, intellectual and spiritual attraction? Most obviously it must be their dominance of the physical and mental landscapes. Secondly, but perhaps more importantly for those who "worship" them, it is their relative inaccessibility and the harsh conditions that make them places of intrigue and challenge. Through the very effort of scaling a mountain, one automatically earns the right of access to the wilderness (not to mention a deep desire to preserve it).

Robert Marshall, the early American exponent of wilderness recreation theory, believed that the wilderness experience is essential to the psychological well-being of mankind as a relief from "man's efficient rush to deadly dullness" (from Drasdo and Tobias, 1980). The doyen of the American Sierra Club, John Muir, combined devoted religion with a passion for nature, tempered by a disciplined scientific mind. Muir's diaries from his study trips around the Yosemite Valley have become an important reference for modern mountaineering ethics. In "My First Summer in the Sierra", Muir's Calvanistic severity pervades his literary charm:

"It seems strange that visitors to Yosemite should be so little influenced by its novel grandeuer. Most of those I saw yesterday were (trout fishing) as if wholey unconscious of anything going on about them while the sublime rocks were trembling with the tones of the mighty chanting congregation of waters gathered from all the mountains about, making music that might draw angels out of heaven... But to play in the Yosemite temple, seeking pleasure in the pain of fishes, while God is preaching his sublimest water and stone sermon!"

Sierra Club Bulletin, Vol. 64, No. 5, 1979.

In summing up "The Mountain Spirit", Tobias and Drasdo (1980) maintain that in our national frenzies to domesticate and make accessible our

mountain areas, we are in fact smothering them. To manage these mountain areas as they should be, we must abide by the ethos that has evolved in humble sympathy to their grandeuer as "sacred and inviolate places".

2.3. The Mountaineering Tradition in the S-W Cape

For many years the mountains that encircle the South-Western Cape were seen by the European colonists as a definite barrier to inland expansion. Passes over the mountains were pioneered and experience gained in moving wagon trains into the "Boland" proved to be invaluable to the Voortrekkers who later traversed the sub-continent.

With the exception of a few isolated cases, it is only the San (Bushmen) who created anything like mountain culture in southern Africa - although for the sake of refuge the Blouberg, the Magaliesberg and Mariepskop in the Transvaal have legacies of human involvement. Parts of the Soutpansberg, including the Modjaji cycad forest and Lake Fundudzi are sacred places of the Venda people. Since 1652 a number of myths and legends concerning Devil's Peak and the Hex River Mountains, for instance, have found their way into local folklore, but the only sustained documentation regarding the mountains of the South-Western Cape is to be found in the journals of the Mountain Club of South Africa (MCSA). Since its inception in Cape Town in 1899, the MCSA has created and maintained its own mountaineering tradition.

Cape Town is not only the "mother city" of modern South Africa; it can

also claim to be the home of mountaineering in the country. As far as history shows, Table Mountain was first scaled in 1503 by Admiral Antonio de Saldanha of the Portuguese Navy. By the 1620s ascents of Table Mountain were a regular event for passing sailors, but it seems that the Dutch colonists were too busy forging a viable economy to partake in recreational pursuits. The British who followed the Dutch eagerly took to climbing this famous landmark and even socialite Lady Anne Barnard made it to the top - with the help of porters, and large picnic baskets in tow. In the 1700s three famous naturalists, Carl Thunberg, Anders Sparrman and Francois le Vaillant enjoyed trips up the mountain, while le Vaillant undertook a five-day hike along the spine of the Peninsula.

By 1890 route-finding up and rambling along the slopes of Table Mountain were popular pastimes, while mountain rescues had become a permanent feature of town life. In 1891 Dr R Marloth called together the first meeting to establish a local mountain club, at which officers were elected from an impressive array of public figures and some of the top climbers of the day. This at once set the tone for the club - one which has ever since pursued a course of high adventure and responsibility to the mountain environment. The club has always attracted a high proportion of naturalists and scientists; accordingly, among its first preoccupations was concern for the natural environment. The club's eight objectives are little changed from its initial aim of preserving the integrity of the mountain heritage. They are:

1. To organise and facilitate mountaineering expeditions;

2. To provide for the safety of mountain climbers, and to organise search-and-rescue parties;

3. To record and describe geological and mineralogical specimens, and specimens of fauna and flora, and to compile topographical, meteorological and climatological records;

4. To procure, extend and protect rights of way to mountains and mountain areas;

5. To assist in the improvement and enforcement of Forest, Game and Wild Flower Protection laws;

6. To investigate historical relics and landmarks and encourage their preservation;

7. To protect and preserve the natural beauty of the mountains and the natural water supplies of South Africa, to prevent and combat mountain, forest and veld fires, and to suppress vandalism;

8. To further the interests of mountaineering generally in South Africa and elsewhere.

Early club activities centered on the Peninsula and later the Stellenbosch area. In 1892 Izak Meiring measured the Matroosberg in the Hex River Mountains to be the highest peak in the S-W Cape (2 249 m), and then the club's activities turned to the Boland, and later as far as the Cedarberg and Langeberg. Meiring became the first president of the club's Worcester section and later president of the MCSA. He was a devout Christian and literally went to the mountains to pray. It is said that he never went climbing without his Bible.

As Prime Minister of South Africa, General J C Smuts was also the honorary president of the MCSA - this was fitting as Smuts was a keen mountaineer. In 1923, addressing the MCSA's memorial meeting on Table

Mountain, he delivered his own "sermon on the mount", saying: "We may truly say that the highest religion is the Religion of the Mountain... The mountains of our lovely land will make a constant appeal to us to live the higher life of joy and freedom" (Pearse, 1982).

In 1913 Sir Charles Sivewright addressed the club's "Coming of Age" meeting, expounding the belief that its usefulness to society could not be guaged by "the pint pot or yard measure of commerce". "The club influences and develops the moral character and well-being of all its members, and these are the most valuable assets in the wealth of a nation," he said (MCSA Journal, 1913).

In club vice-president (later president) George Amphlett's annual address of 1903, he noted: "Selfishness has no place in mountaineering; but we should be sorry indeed to see a mountaineering craze such as occurred in cycling a few years ago. To the mountaineer is permitted the privelege of entering Nature's most sacred reserves, and he does so in reverence and in harmony with the great Spirit of Nature pervading 'the eternal hills'" (MCSA Journal, 1903).

While the "spirit of nature" is still a binding force in the club, a craze far exceeding Amphlett's vision has indeed invaded the mountains. This has possibly led to a conflict of recreational land use interests between club members, who have long enjoyed almost exclusive access to the wildest mountain areas, and hikers who continue to become mountaineers by virtue of the impressive rate at which the NHWS is expanding (Levy, 1982; 1988).

2.4. The National Hikingway System

2.4.1 The Development of the NHWS

In 1975 the Forest Amendment Act legally established the National Hikingway System (NHWS), to be co-ordinated by an autonomous National Hikingway Board (NHWB) operating within the then Department of Forestry. Prior to this Act, the majority of mountain catchment and private mountain lands were accessible only to landowners, limited numbers of permit holders and MCSA members, either by right of way or by agreement. In effect, the general public had only very limited access to the country's mountain regions.

Since its inception the NHWS has proved to be very popular, spurning a new branch of the outdoor recreation industry; it has also meant that far greater numbers of people are now using the mountains for recreation (in the 1984/5 financial year some 113 000 hikers used the 15 NHW trails, but even since then the number of trails and the hikers using them have increased significantly (NHWB Report, 1984/5). The development of these trails in once wild, natural areas must have long-term ecological and social impacts (Fuggle, 1976). American researchers have referred to the "ghettoising of wilderness", and it is this that needs be guarded against when developing recreation opportunities in wild, natural areas.

The general objectives of the NHWB are: "... to promote by means of a national hikingway system the mental and physical welfare of the inhabitants of the Republic and contribute to their environmental education" (The Forest Act; 1984:30). The essence of US Wilderness

legislation (and according to the beliefs of the learned men referred in the last section), physical and mental wellbeing can best be achieved in those environments that induce self-fulfillment through physical and mental challenge; that is, what we perceive as wilderness. Mountaineering author John Cleare says that people seek different things from mountain recreation; but if their involvement is in the spirit of the land ethic, they will find what they seek. "Enjoyment is a personal thing and in pushing ourselves towards our limit - whatever that limit may be - we experience something deep and lasting." (Cleare, 1980).

The first official hiking trail in South Africa was the Otter Trail in the Tsitsikama Coastal National Park, opened in 1973. The Fanie Botha Trail near Sabie in the Eastern Transvaal was the first NHW trail; it was based on the US Appalachian Trail concept and opened to the public in 1975. Since then hundreds of kilometres of NHW trails have been established in many parts of the country, with the system evolving its own indigenous character. The ideal is to develop a semi-continuous hiking system around the country, keeping largely to the Escarpment, other mountain ranges and the coastal belt.

The first NHW trail to be developed in the SW Cape and the fifth in the country was the two- or three-day Hottentots-Holland section of the Boland Trail. The two-day Limietberg section of the Boland Trail and the three- or five-day Swellendam Trail complete the existing NHW trail system in the study area.

The NHWB comprises a chairman from the Department of Environment Affairs, a vice-chairman and two additional members from that body,

single members from the National Parks Board, the TPA Division of Nature Conservation, the OFS Division of Nature Conservation, the Natal Parks Board, the Hiking Federation of SA, the SA Agricultural Union, the Department of Industries and Tourism, the University of Stellenbosch Forestry Faculty, the Voortrekkers, the Boy Scouts and the Girl Guides; two members represent the Department of National Education and four the MCSA (one from each province). Influential private members are also invited to sit on the Board.

Although the Board controls most of the existing official hiking trails in the country, there are others in game and nature reserves, as well as on private land; the control of each trail is vested in the landowner across whose land it goes. It is envisaged that eventually the NHWB will be a co-ordinating body for the system rather than the overall controlling authority. Trails will then be developed according to local conditions and agreements between the Board and private and public landowners. Initially the Board was fully subsidised but now, following privatisation moves in the public sector, the NHWS depends solely on income from trail bookings and donations to cover its expenses. In this regard the authorities must bear in mind the tenets of welfare economics (Stauth, Mishan, Krutilla, in Fuggle and Rabie, 1983) as well as the words of Amphlett (in Section 2.3 above), namely that the yardstick of commerce is not a suitable measure by which to guage the rational management of ecosystems.

Initially trail huts included central fireplaces and cooking utensils, and firewood and pots were provided - and in a few cases even a hut attendant (Blyderivierspoort Trail, circa 1978/9). Today, however,

the tendency is towards greater self-reliance of hikers and standard fare is rustic huts with only bunks and drinking water provided, and in some cases basic cooking utensils (where they still exist). Variety is also a greater concern of the Board, with local conditions determining the character of each trail. On some trails use is made of caves (Brandwater Trail, OFS) and tents (Eerste Liefde Trail, NE Transvaal) for shelter, and it is envisaged that in the future trails may be developed for those who prefer the bare minimum in terms of facilities. The Board is aware that there may be a demand for lower SCC (ie tending to wilderness conditions) trails than are at present available (T van Rensburg, pers. comm., 1986), but no investigation has been undertaken in this regard.

In 1976 the Secretary for Forestry issued a notice announcing the development of trails: overnight facilities were to be in the form of "huts, shelters or defined tent sites depending on environmental factors and the needs of hikers" (Van Zyl, 1976). A firm of architects was commissioned by the NHWB to investigate and plan design norms for overnight shelters. Phase one of the commission was to investigate environmental factors, the use of various building materials and cost analyses. In 1985 the go-ahead was given for phase two - the design of huts for specific trails. Phase three will consist of landscaping details for a variety of cases.

2.4.2. The NHWS in the SW Cape

As has been noted above, there are three NHW trails in the study area, namely the Swellendam, Hottentots-Holland and Limietberg trails.

These trails vary in their level of strenuousness, their duration and, to some extent, in the types of shelter provided. In all cases the paths are well prepared and marked by painted NHW trail markers (footprints), and distance indicators at regular intervals. In some cases direction arrows and signposts are used at path intersections. These will be dealt with below.

In the study area the most important criteria in trail design (from a anthropomorphic perspective) are the extreme weather conditions and seasonal variations, from frequent winter fronts to hot, dry summer winds. Trails are uni-directional and hikers may spend only one night at each camp. Although trails were initially designed as linear routes, the tendency now is to develop circular hikes "to ensure high utilisation and to avoid transport problems for hikers" (Van Rensberg, pers. comm., 1986); another reason is to make optimal use of the limited suitable land available.

The Boland Trail was opened in 1976 and in the following financial year 371 people used the trail (this is for one month only and so an annual figure of 4 500 would be more accurate). In 1979/80 the number rose to 8 114 and by 1984/5 it was 9 497. The Swellendam Trail was opened in 1979 and in the first financial year 1 396 hikers used the trail. The number rose to 7 956 by 1982/3, but by 1984/5 it had dropped to 4 599. In 1980/1 NHWS utilisation of the entire NHWS numbered 79 415; with the inclusion of two minor trails (Kologha and Magoebaskloof sections of the Soutpansberg Trail) the number rose in 1984/5 to 113 673. Following is a brief physical description of the NHW trails in the study area.

Boland Trail

There are three variations of this trail, two two-day and one three-day. The trail forms a series of wheel spokes in the mountains between Stellenbosch, Franschhoek and Grabouw - there is one central overnight spot and and four paths leading to or away from it. The Eikenhof hut near Grabouw Forest Station is a converted farmhouse with the conveniences of flushing toilets, running water, gas stove, cooking utensils and outdoor fireplace; this hut is usually by-passed as it is a point of departure or destination. The central Landroskop is a large stone hut sleeping up to 40 people; it has a central fireplace and eating hall with partitioned sleeping quarters. The Shamrock Hut nearby is a smaller, wooden chalet on stilts, more typical of NHW trail huts. Boesmanskloof Hut is also a typical wooden chalet, used by those doing the three-day trail. An emergency shelter makes use of an overhang en route from Sir Lowry's Pass to Landroskop.

Limietberg Trail

This is the second section of the Hottentots-Holland trail; it is a uni-directional trail starting in Du Toit's Kloof and ending in Bain's Kloof. The overnight shelter is a wooden hut with an iron roof situated in Wonder Valley, directly below Klein Wellington Sneeukop peak. This trail is shorter and easier than the Boland Trail, and since its opening in 1986 it has been more heavily booked than the Boland section (the hut sleeps one-third fewer people than the Landroskop Hut, but utilisation figures were not available at time of writing). The hut is conspicuously situated with its reflective roof, but its setting is impressive and near to a pleasant pool.

Swellendam Trail

This is a circular trail around the higher peaks of the Langeberg, directly above the town of Swellendam; it is possible to do either a four- or six-day hike (seven days when the proposed Middelrivier Hut is completed). As in the case of the Eikenhof hut on the Boland Trail, most hikers bypass the first, wooden chalet (Koloniebos Hut). Only the third shelter, Goedgeloof Hut, is not a wooden chalet but is a converted farm outbuilding situated near farmlands. This is a relatively strenuous trail with continuous, steep gradients and long between-hut sections (from 10 to 21,3 km).

2.5. Summary and Discussion

Mountains have long been places associated with spiritual fulfillment, and places that offer wild, natural recreational opportunities in an ever increasingly homogenised, industrialised world. Spiritual and physical striving, as well as the evolution of a land ethic, is seen to be a necessary element for the wellbeing of society.

A cultural and ethical tradition has been established in mountaineering, with a code of values and behaviour that preserves the wilderness character of the mountains. In S-W Cape the MCSA has established a pioneering tradition as well as a conservation ethic that allows for responsible and yet adventurous mountain recreation. The NHWS extends access to mountain areas to a growing number of people who would otherwise not partake in the sport. At the same

time, however, this hiking system creates man-induced impacts in these wild, natural mountain areas.

At the time of writing there were 50 trail sections, plus about 29 day walks comprising the NHWS in South Africa. Once these areas are developed, however, they are no longer capable of offering wilderness recreation opportunities. As Fuggle (1976) points out: "Above all South Africans must recognise that time is not favouring the preservation of wild mountain landscapes. Continuous carving of one small area after another is proceeding and even in declared Wilderness areas inadequate attention to management and remedial actions is allowing recreational usage to place undue pressure on popular areas."

In the context of SCC, these recreation developments raise a number of issues that may have implications for future trail development. For instance, does the new level of access afforded by the NHWS to the mountains of the SW Cape create a conflict of interests between NHW hikers and traditional MCSA users who may prefer wilderness conditions? Do the more purist/experienced mountaineers feel disenfranchised by the NHWS and what are their opinions of a future semi-continuous trail system through the study area?

This report attempts to answer some of these questions by surveying a cross-section of mountaineers on their attitudes to the NHWS. In the following sections methodology will be developed in order to identify potentially conflicting groups of mountaineers in the study area and, if a conflict is seen to exist between the groups, to explore ways of ameliorating these conflicts. Ultimately, the report will determine "needs of hikers" in the development of future NHW in the area.

CHAPTER 3. SOCIAL CARRYING CAPACITY - A REVIEW OF SOME APPROPRIATE THEORETICAL FRAMEWORKS FOR OUTDOOR RECREATION MANAGEMENT.

3.1. Introduction - the social milieu.

" 'The visitor... often fails to recognise the increasing and lasting damage done by tourism.' Despite all the regimentation (of the NHWS), when I had the misfortune to walk the Otter Trail in 1977 I had no need to use the sign posts and marks left by a paint-happy vandal - I merely followed the trail of litter from Storms River Mouth to Nature's Valley. The next generation of wilderness lovers will have much cause to regret that Ms Levy ever came to South Africa."

(S Craven, unpublished review of J Levy's Guide to Trailing and Mountaineering in Southern Africa.)

This quote highlights the conflict of interests among hikers due largely to the development of the NHWS and increasing demand for access to these trails, against the behavioural and access preferences of more traditional mountaineers (Craven, above, is a member of the MCSA and chairman of the SA Speliological Society). As social values are ever-changing, we can expect social demands and the criteria governing land use policies to fall in line with these changes. How then are the managers of natural resources to decide what is the best use of these areas, without degrading them beyond a level that will be found suitable by current and future users, or to an extent where the bio-physical environment is degraded?

This chapter considers a number of related approaches that have been developed over the past few decades to deal with the question of outdoor recreation management and the allocation of a scarce, natural

resource (wilderness areas essentially). These approaches can be grouped under the umbrella heading of recreational carrying capacity, with the focus in this report on one aspect of that approach, namely social carrying capacity (SCC).

Within this management paradigm it is possible to isolate a few allied approaches that have been used by researchers in the field of outdoor recreation, to determine social criteria for such management. These include the recreation opportunity spectrum (ROS) (for example Lime, 1979, Stankey, 1984, Lucas and Stankey, 1985), an offshoot of this line of enquiry called the levels of acceptable change (LAC) approach (Stankey *et al*, 1985), and a framework developed to minimise user conflicts based on the levels of specialisation among outdoor sportsmen (Bryan, 1979). Finally, a critique of the literature and a summary will be presented.

3.2. Social Carrying Capacity

The term "carrying cpacity" was first used in US range management in the 1930s; it referred to the physical capacity of range lands to sustain grazing herds on the basis of sustainable economic yields. Today other assumptions or expectations are applied to the term, such as using the universal soil loss equation to determine the absolute carrying capacity of hikers in an area at some set level of erosion (Humphrey, 1984). The term "social carrying capacity" (SCC) was more recently coined in the field of outdoor recreation planning, management and research. The term "social" implies, however, that (unlike physical) there can be no absolute values attached to it, but

rather that it has to be used as a guideline for policy-making according to existing standards. Furthermore, it will be shown how SCC refers not only to user densities, but to all the stimuli that affect a user's perceptions of an outdoor recreation experience.

Much confusion was caused by the term SCC, and still is, as it was used to refer to all aspects of the recreational milieu, from bio-physical to economic aspects. The most recent, and seemingly most appropriate term for recreational planning is, naturally enough, recreation carrying capacity. But still, as one of the major researchers in the field confesses: "Recreational carrying capacity is a complex and troublesome concept that incorporates principles of the social as well as the physical and biological sciences" (Lime,1977; quoted in Sowman, 1986).

As Sowman (ibid) points out, however, the basic concepts of (recreational) carrying capacity have not changed since researchers first used it in the 1940s. According to Sowman, all definitions of recreational carrying capacity have two basic criteria: "maintaining the integrity of the resource-base and providing a recreation experience of high quality to the user". In line with recent research in the UK, Sowman divides recreational carrying capacity into physical, economic, ecological and social carrying capacity. This last sub-category includes perceptual and behavioural aspects and as such is the approach used in this study. It is concerned with users' perceptions of an area or resource and the levels of use that are found to be acceptable in terms of those particular resources.

Sowman (op. cit.) says that social carrying capacity is the least tangible of the four categories of carrying capacity, but since recreation is a user-oriented activity, social criteria are all important in guiding the planning, development and the running of recreational amenities to ensure their eventual acceptance and success: "It is now well recognised that surveying public opinions provides valuable insights into people's perception (sic) of what constitutes a recreational experience of good quality. Such input can greatly assist decision-makers in determining... what will be acceptable to the (majority of) recreationists." (Sowman, 1986).

Despite their different frames of reference, there is often a strong link between the four sub-categories of recreational carrying capacity; for instance, wild, natural mountain areas, because of their steepness and high rainfall, their value as water catchments, their ecological status as bio-geographical islands and the sheer physical difficulty of travelling through them, will have low physical and ecological carrying capacities. Their relative remoteness and ability to provide solitude and wilderness conditions also dictate low social carrying capacities (all the literature assumes that wilderness type opportunities offer the most highly valued recreational experience).

But social carrying capacity is not just the number of people occurring in or allowed into a recreation area, as many researchers assume. It is the complete perceptual experience of a user, as determined by all the sensory stimuli for the duration of the recreation period. Therefore the other carrying capacity categories will affect the social carrying capacity. Environmental impacts, whether caused by other recreational users or management actions and

"improvements", will also affect one's perceptions of an area's SCC (following Stankey *et al*, 1985).

In this way, a NHW hiker's perception of a trail's SCC will be influenced by variables such as the types and numbers of encounters with other parties, the response to physical trail facilities, degree of regimentation, the natural beauty of the setting, any environmental degradation like litter, erosion and non-recreational uses and the strenuousness of the trail. For instance, if power lines cross a trail and there are quarries along the way, the wilderness quality of the experience will be negatively effected and the area will be perceived to have a higher SCC than if the lines and quaries were not there.

3.3. The Literature

The majority of literature available in this field emanates from the USA and concerns attempts to provide management criteria for the allocation of wilderness recreation opportunities. The research is underwritten by that country's Wilderness Act and many assumptions are based on that Act. While the general concepts are applicable to the management of all wild, natural areas (based on basic conservation ethics), attention must be drawn to the unique socio-political conditions in South Africa and the different conditions of land tenure. But even conservation is not a universal phenomenon. The USA is a highly developed First World country, while South Africa is a developing, industrialised Third World country and therefore the criteria for resource management will differ between the two.

The literature has been divided into four sections, more for convenience than for any inherent categorisation as there is considerable overlap between them. They are 1) what has here been termed the "user satisfaction" approach, 2) the Recreation Opportunity Spectrum, 3) the Levels of Acceptable Change and 4) the sports specialisation model of conflict resolution.

3.3.1. User Satisfaction - the willingness to pay and the costs of recreational congestion.

Lime and Stankey (1971) divide carrying capacity into biological, physical and cultural categories. They maintain that the cultural aspect is really aesthetically defined, determined by that which is pleasing to our senses. In calculating (cultural) carrying capacity, they say we should be striving to maximise the economic benefits of use for an area. By this they mean the willingness of users to pay for various recreation opportunities. The lower the SCC, the greater will be people's willingness to pay for access to an area, so market forces will ensure that a certain desired level of carrying capacity is maintained. This approach has been developed and tested in the field by researchers such as Krutilla and Smith (1973), Smith and Cichetti (1976) and in the early (and extensive) work of Stankey. The costs of congestion have been evaluated by Krutilla and Smith (1973), using a "wilderness travel simulator" as a means of cost-benefit analysis.

One of the assumptions of this approach is that of marginal analysis: the more we have of some good or resource, the less we will value any additional units of that thing. Therefore, if we have access to ample developed outdoor recreation opportunities and limited access to wilderness, we will place a higher value on the wilderness opportunities. Continuing this logic, the offering of any more developed opportunities would reduce the overall benefits for all users - the law of diminishing marginal returns. More recent researchers working within a framework of environmental economics argue that it is useless to use this classical approach as we have already exceeded the margin in the case of wilderness (Stauth, in Fuggle and Rabie, 1983) and therefore the user demand is no longer a reliable indicator of appropriate uses and levels of use for wilderness recreation.

In a study of natural recreation, Wohlhill and Heft (1977) found that there was a positive feedback system in operation between outdoor recreationists and managers. Selective forces lead to increasing pressure for further development of many areas, which in turn could be expected to lead to further increases in use, continually displacing the environmental status quo. Attitudes towards development of natural areas was found to be most supportive in the more developed areas, leading to increases in SCC and a deterioration of the areas' natural integrity.

In his study on visitor perception of wilderness recreation, Stankey (1973) found, among other things, that the wilderness experience is adversely effected by encountering other parties *en route*, and the size and number of groups encountered are important variables in

determining the effects of encounters. Hikers would rather meet 10 parties of three people each than one party of 30 people, as the latter lends a "picnic" atmosphere to the experience. He found that most hikers preferred encounters to happen while hiking than at campsites, where solitude was desired.

After extenisve studies in two wilderness areas, Stankey (op. cit.) suggests five actions to increase visitor satisfaction in wilderness areas. They are: 1) stricter limits on party size, 2) better litter control, 3) better maps, information and educational material made available, 4) closure of degraded areas, and 5) more emphasis on informing the public about the ethics and aims of wilderness recreation.

Wagener (1973) and Wagar (1974) point out that any site has a range of possible SCCs, each with a different scenario of consequences. If areas are considered in isolation, mass use of each area will always provide maximum economic benefit to the majority of users (in terms of the "man hours of enjoyment" unit used in willingness to pay models). But they believe that considering one area at a time is a trap that too often leads to their mismanagement and ultimate ruin. Instead of each area being developed to cater for some supposed "average experience", which leads ultimately towards a high SCC, regions should be seen as being capable of providing a range of quality experiences for a variety of outdoor enthusiasts.

3.3.2. The Recreation Opportunity Spectrum

Quality seems to be a highly personalised matter... Building categories around an average can greatly miss the mark.

Clark and Stankey, 1979.

After reviewing the literature it becomes clear that the ROS is both a conceptual framework and a tool designed to give outdoor recreation managers a system in which to work. By providing a range of SCC opportunities in a region, or a specific site, recreation users can be given a choice of opportunities while still preserving some wild, natural areas. Carrying out an inventory of a region and a specific site to determine existing and potential recreational uses is an important aspect of the ROS approach. In this way, it is possible to determine what range of opportunities can be met within a region, and a comprehensive conservation policy can be adhered to.

Possibly the earliest reference to an opportunity continuum in land use planning was that implied by early town and regional planners who argued for the benefits of a graded disolution from urban through rural to primitive land uses on a regional basis. In 1962 the US Outdoor Recreation Commission report lead to the promulgation of that country's Forest and Wilderness Acts, which recognised the need to provide for a mix of outdoor recreation opportunities. Wagar (1966) and Nash (1973) (from Glavovic, unpublished) refer to this mix as being a continuum "from the paved to the primitive".

At the primitive end of the continuum opportunities tend to be threatened, unique and irreplaceable. This point is stressed by Lloyd

and Fischer (1972), who argue for the extension of primitive recreational opportunities outside of declared wilderness areas, as well as for more "rustic" or "backcountry" opportunities (akin to NHW trails). Clark and Stankey (1979) say that diversity means flexibility in land use, which will ensure that adaptation is possible in light of changes in the social, bio-physical and managerial environments. Decisions to develop an area from "primitive" to "modern" must be carefully considered, they argue, because of the general irreversability of such actions.

Clark and Stankey (op. cit.) argue that the type of use in an area is more important than the levels of use in determining the perceptions of users and the social acceptability of those uses. There is a direct link between an opportunity setting, a user's activities, his or her perceptual experience and the satisfaction gained from them. The ROS can be used by managers to describe what a place is like, they say, but not what psychological effects it will have on users. An individual's choice regarding a chosen opportunity completes the communication loop by providing feedback about the social acceptability of an area's opportunities.

Because opportunity factors are under management control, they are regarded as being measurable. Without detailing how it is derived, Stankey (1984) offers the following list of factors that should be considered in ROS management: 1) Ease of access; 2) Other non-recreational resource uses; 3) Outside management improvements; 4) Levels of social interaction between users; 5) Acceptability of visitor impacts on other users; 6) Acceptable levels of regimentation; 7) Natural features of the area.

Driver and Brown (1978) and Buist and Hoots (1982) define six broad opportunity types along the outdoor recreation continuum. According to them "wildlands" may be classified by their ability to provide the following opportunities: primitive, semi-primitive non-motorised, semi-primitive motorised, roaded natural, rural and urban. The five indicator criteria they identify for the classification of an area along the opportunity continuum are: 1) remoteness; 2) size of the area; 3) evidence of other humans; 4) user density; 5) the amount and apparentness of managerial controls. However, it must be pointed out that while these five criteria seem to be generally valid, they in fact pertain to the directives of the US Wilderness Act; number two in particular is less applicable in South Africa.

These criteria are then used to indicate the kinds of experience that a user is likely to have. Each area will be mapped according to its opportunity classification in preparing a regional ROS. Driver, Brown and McConnell (1978) have developed a means of ranking areas along an ROS continuum by using an "opportunity supply inventory" system. An area's potential for providing particular types of recreational experiences (as distinct from opportunities) and general levels of satisfaction are described and classified into various physical, social and managerial categories.

Clark and Stankey's (1979) and later Lucas and Stankey's (1985) work on determining the acceptability of recreational impacts is important to this study because it explores the aesthetic and ethical considerations of wilderness use as well as purely physical ones. The two authors consider the postulation that different cultural values

will lead to different tastes and preferences - which in turn will lead to diverse behaviour and a demand for diverse (recreational) opportunities. It is also important in the growth of outdoor recreation research trends for it anticipates one of the most recent developments in recreational carrying capacity approaches, that of levels of acceptable change (LAC).

A recent paper extends the principles of the ROS to outline a system for determining the levels of change in a wild, natural area that will be found by users and managers to be acceptable recreational "improvements". This line of inquiry picks up on a line of investigation only hinted at by previous research. Stankey, Cole, Lucas, Petersen and Frissell (1985) describe the major aim of wilderness management as being to maintain or restore a state of naturalness and solitude for users. The growth in demand for wilderness recreation makes these goals increasingly difficult, so the challenge to managers is not to prevent change, but to determine what levels of change are acceptable in each area.

The level of acceptable change (LAC) approach requires that managers define what conditions are desired and then undertake the necessary actions to achieve these conditions, for example, attempting to emulate natural fire conditions in the Mountain Fynbos. In a nationwide survey in the USA, it was found that non-recreation uses in wilderness areas were a source of dissatisfaction in 10 % of areas, whereas recreation use was a cause of unacceptable changes to between 25 percent and 75 percent of users in the areas surveyed. Stankey *et. al* (1985) say that use levels are of little value in predicting social or ecological impacts to a system.

Any use of an area will produce some level of impact, but the LAC approach looks primarily at current conditions for the setting of standards. A nine-step planning procedure is used to inventory resources and social conditions, to set standards, take measurements and then to weigh and rank the data. In doing so, a standard will be set against which to monitor and judge any changes (and in effect it will be possible to assess the regional ROS).

3.3.3. Sport Specialisation - a framework for resolving conflict in outdoor recreation

"Different kinds of experiences are sought by participants in the same activity. One may have several reasons for seeking outdoor recreation, and all or some of those reasons may differ from those which attract some other participants to the same activity."

Hendee and Clark, quoted in Bryan, 1979.

Bryan (1979) has developed a model of conflict resolution that divides sportsmen into different types, based on their level of experience. He shows how each "type" category fits into a pattern of attitudes and behaviour that distinguishes it from the others. In following the basic principles of the ROS, he shows that by catering for the different types of sportsmen, maximum recreation quality can be provided for all types.

He argues that priority in outdoor recreation planning be given to the lower SCC types (that section of the ROS represented in this study), both in the interests of environmental conservation and to protect the rights of sports specialists (the lowest SCC type), whose sporting

activities are all-dependent on the quality of the resource setting (in this case wild, natural mountain areas). Unless otherwise stated, all the ideas put forward in this section are attributed to Bryan (ibid).

A premise which invalidates much SCC research is that hikers or fishermen constitute homogeneous groups. The motivations of sporting types can be ordered on a continuum, from general to specific. The more general outdoor sportsmen will have lower standards (less developed ethics) by which to judge a recreational experience and there will generally be more opportunities in a region from which to choose, as their criteria for a setting is general. Specialised sportsmen are most likely to be disenfranchised by the loss of primitive resource settings, such as the development of wild, natural mountain areas (the NHWS would fit into the semi-primitive non-motorised category of Driver and Brown (1978) and Buist and Hoots' (1982) opportunity types).

Researchers fail to recognise the existence of diverse sub-groups in outdoor sports and therefore conflicting preferences within any sport may be hidden from decision-makers. Bryan also criticises the lack of historical perspectives in current research; traditions will help to define what activities are likely to be found rewarding by individual sportsmen, especially newcomers who might not have an appreciation of the environmental context of an outdoor activity. (In the researcher's experience, this situation has led to a conflict between many young rock gymnasts who are mountaineers only as far as getting to cliffs is concerned, and more traditional mountaineers, as

represented by the MCSA, who value the ecological and spiritual setting of their activity.)

After extensive surveying of sportsmen, it was found that all types of outdoor sportsmen could be divided into four types:

1. Beginners - who participate infrequently in an activity because they are new to it, or because they have not developed a keen interest in the activity;
2. Generalists - who have established a particular sport as a regular activity, but who have no particular setting preference;
3. Technique specialists - who emphasise the achievement aspects of a sport, with great attention given to the equipment used;
4. Setting specialists - who are highly committed and demand high quality settings in which to pursue their sport and who regard the sport as a means of personal fulfillment.

Specialised sortsmen tend to form cohesive social groups that are effective in propounding the values of so-called minority recreationists. As one's level of sporting specialisation increases, attitudes and behaviour concerning the sport will also change; there will be a shift from consumptive to conservatory values concerning the setting. Fishermen, for example, will use lighter lines and tag and release their catches. The values of the sport become inextricably linked with the integrity of the activity's resource base.

Newcomers to hiking will tend to restrict themselves to overnight trails where little specialised equipment is required. The novice will generally just want to get from beginning to end with as few blisters as possible. The generalist will begin exploring more

diverse trails of varying length and difficulty. More and more the object of covering as much distance as possible will be pursued, on well used and marked paths. The technique specialist will develop an obsession with the latest equipment and will attempt to "notch up" trails, exploring their physical limits. For the setting specialist the naturalness of the trail setting is all important; equipment is often old but of good quality (sometimes self-made) and the pursuit of related activities like photography or botany is likely.

A major variable indicating the level of specialisation in hiking appears to be whether or not it is restricted to marked or unmarked paths, or no paths at all. The more specialised hiker tends to place greater emphasis on wilderness qualities and associated skills and values. What Bryan seems to be arguing for, in fact, is an ROS, based not so much on the regional resource as the actual social and psychological motivations of recreationists; the end, however, is synonymous.

3.4. Critique of the literature

Stauth's (1983) refutation of using economic marginal analysis to determine maximum benefits of wilderness recreation has been mentioned. Heberlein and Selby (1977) point to some weaknesses in the user satisfaction model of outdoor recreation planning: 1) Users choose the opportunity that accords with their idea of a good time and so they represent only a fraction of potential users; 2) Changes in perceptions and densities may cause changes in one's definition of "wilderness"; 3) Satisfaction is related to a number of multi-variate

factors (such as socialisation, expectations, bio-physical conditions, etc.) that defy most attempts at measurement.

A number of Australian researchers have pointed out some shortcomings of the ROS method. Van Oosterzee (1984) says that there is a bias towards instrumental and economic values in the ROS approach; opportunities are seen as being a function of user preferences, where quality is the quality of personal desire rather than the integrity of the resource. Likewise, impacts are regarded as those impacts which detract from a user's experience, not those which affect the eco-system.

As a product of US utilitarian values, land is seen as a supplier of social opportunities, responding to changing demand patterns. Van Oosterzee (ibid) suggests that we should rather examine recreational demands in the spirit of Leopold's "land ethic" and she quotes Leopold: "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community". This means, she says, that we must examine environmental questions in terms of what is ethically and aesthetically appropriate.

Clark (1982) says that the ROS is really part of a broader land use continuum and in practice it should be supplemented by a conservation spectrum. Each continuum needs to be adapted to local conditions; both Clark and Van Oosterzee (op. cit.) note the American cultural bias in the literature, inasmuch as it pertains to social and political norms of that country. However, Clark believes that it is a state-of-the-art method for understanding the relationships between settings (bio-physical), usage (recreational) and management

requirements in outdoor recreation planning. The user bias referred to in this section is possibly even more true of the LAC approach, which attempts to manipulate an environment according to the demands of users (who are, in the tradition of US democracy, acknowledged to be the group most suited to judging these issues).

3.4. Summary.

From the literature it becomes clear that offering a variety of carrying capacity opportunities is seen to be the best means of catering for a diverse range of outdoor recreation demands on limited resources. The principle feature of the ROS is a method that allows for such a variety to be achieved within the environmental parameters of a region, while still maintaining environmental integrity. This conceptual framework underpins the general assumptions of this survey. Distinct details of the research findings were used to define the trail facility categories of the questionnaire, as well as some of the discrete variables.

This report, by definition, looks at only the primitive and semi-primitive non-motorised or lowest SCC third of the continuum; that is, settings appropriate to mountaineering. A major concern of the survey analysis is to determine the subtle differences between the two lowest SCC opportunity types in terms of user preferences.

SCC forms part of the recreation carrying capacity procedure for assessing appropriate uses and levels of use in outdoor recreation settings. While SCC forms only a part of that procedure it is,

nevertheless, a complex concept, comprising all the factors that influence a user's perceptual experience (quality of experience being a managerial criterion). It incorporates the effects of user densities, place and types of encounters, levels and apparentness of management controls and improvements to the natural settings, other non-recreational uses, and aesthetic considerations. In the next chapter it is shown how specific SCC categories were chosen to test in the survey questionnaire.

CHAPTER 4 - SURVEY METHODOLOGY

4.1. Introduction

This chapter outlines the assumptions made and the procedures followed in the attitude survey used to collect data regarding hikers' attitudes to the NHWS in the study area. The limitations of the methodology and its implementation are also discussed.

Section one gives a general overview of the survey methodology, the aims of the survey, the data analysis and the references used. Sections 4.2, 4.3 and 4.4 are synopses of the preparatory survey phases; that is the Preliminary Survey, the Pretest Survey and the Pilot Test Survey. Sections 4.5.1 to 4.5.6 outline the Final Survey in more detail, including the aims and objectives, survey design, questionnaire design, choice of survey population and samples, questionnaire administration and response, and lastly the data analysis methods.

4.1.1. Aims of the survey

The first aim of the survey is to determine average preferences of hikers in the study area and whether or not the NHWS is meeting these demands. Secondly it is to ascertain whether, and to what extent, the system caters for i) less, and ii) more experienced hikers in the study area. Thirdly, it aims to determine whether, and to what extent, membership of a mountaineering and/or conservation oriented club affects one's preferences as regards NHWS opportunities.

The survey was not designed to provide definitive conclusions on the types of trail facilities that should be developed in the study area; rather the trends of hikers' preferences were to be recorded, as well as specific hiker sub-categories and their respective preferences. The underlying assumption of the study is that hikers at different levels of experience will have varying preferences fitting a general spectrum of opportunities in the area, from generalised to specific. To this end the survey sample was calculated to represent a cross-section of hikers, from novices to seasoned mountaineers.

The survey sets out to measure only attitudes to physical trail elements of the NHWS environment which can be affected by management actions. The derivation of these elements (trail facilities) is detailed in section 4.3. A major limitation of the survey is that it in no way considers attitudes to any other mountaineering opportunities in the study area and no inferences can be made in this connection. It is presumed, however, that such a range does exist and that the attitudes reflected in this study will be affected by various levels of access to the fuller range of opportunities available. This point will be more fully discussed in the conclusions to the statistical analysis (section 6.1).

Four trail scenarios were presented, intended to satisy four levels of hiker experience (based on Bryan's <1976> theory of sports specialisation as presented in section 3.4). It was then ascertained to what extent these scenarios fitted actual levels of hiker experience and their preferences. The assumption was that while the NHWS caters for the needs of certain hikers at the lower end of the

experience range (high SCC), it may not cater for hikers who prefer, for example, longer, unmarked paths with more basic accommodation than is available, and to meet fewer people on the trail than is currently probable (low SCC).

The aims of the Preliminary, Pretest and Pilot surveys are:

1) To determine those factors that hikers consider most important to the hiking experience and other issues raised about the NHW that might be used in the survey;

2) From the Preliminary Survey and other sources to define those elements that constitute the NHW trail environment, to be used as trail facility categories in the Final Survey;

3) To develop, refine and then test the Final Survey questionniare and its administration.

4.1.2. Procedures

In determining that the correct procedures and methods were followed in the survey, the following references were used: Babbie (1973) and Oppenheim (1966) were the two main sources of social research methodology, while Meyers and Grossen (1974) and Bailey (1982) were also used. While these texts offer much useful information as regards general techniques and pitfalls, they cannot provide the specific details needed to make a particular survey successful. To ensure maximum reliability of the methods and approach I relied heavily on the expertise of Engeo and other UCT staff and post-graduate researchers with experience in the field.

Oppenheim (1966) identifies 10 basic steps in survey research:

1. Identify the aims of the study and pose a hypothesis;
2. Undertake a literature review;
3. Design the study and make the hypothesis specific;
4. Design research methods and techniques - undertake a pilot study;
5. Sampling;
6. Field work;
7. Data processing;
8. Analysis of statistics;
9. Testing the hypothesis;
10. Writing up the results.

The steps do not have to follow in exactly this order, but they provide a solid guideline as to the necessary tasks and phases of such a project. Because of my research aims, the literature review is far more extensive than would normally be the case (Chapters 2 and 3).

It is often presumed that some perfect survey design exists, that can simply be "plugged in" to obtain reliable statistics for any occasion. This is erroneous, but there are standard references which can guide the researcher in his or her efforts to reduce error and increase reliability. Inappropriate survey populations and samples, the length of the questionnaire, question wording and order, biased responses, the way in which the survey is administered, incorrect statistical analysis and invalid conclusions being drawn are some of the most common areas in which errors occur. The three preliminary test surveys are largely an attempt to highlight shortcomings in these areas, as well as refining the questionnaire design.

According to Meyers and Grossen (1974) there should be four phases in a social survey: 1) a preliminary survey to collect information on the subject that will lead to formulating the questionnaire design; 2) a pretest survey to formulate and refine the questionnaire; 3) a pilot test that acts as a run-through "dress rehearsal" for the final survey, checking data-gathering techniques, response rate and data analysis techniques. This study follows these steps.

4.2. The Preliminary Survey

In April, 1986, a Preliminary Survey was conducted, primarily to collect information from groups interested and active in outdoor recreation, about what factors constitute a satisfactory hiking experience. Fifty copies of a three-page questionnaire were disseminated to members of the UCT Mountain and Ski Club and 30 copies of the same questionnaire to Engeo staff and post-graduate students.

The questionnaire was implicitly based on the paradigm of SCC and the ROS concept that has been used throughout this study. With the exception of the first question, the survey data were not empirically analysed. Question One asked respondents to list, in a ranked order, the six factors they considered to be most important in a satisfactory hiking experience. The data were processed manually and were used to determine the ten highest scoring factors (trail facility categories) to be synthesised for the Pretest Survey (discussed in section 4.3). The next three questions asked respondents what mountain trails they had hiked, what NHW trails they had hiked, and what they had liked and disliked about these trails. These data were used to help formulate

the individual questions (discrete variables) of the Pretest Survey questionnaire.

The most common "likes" were the wild, natural mountain environments, ease of access to trails, well designed paths and comfortable but rustic huts. The common "dislikes" were over-use of trail markers, poor siting of huts, restrictions on freedom, trails running too close to human-impacted areas, and litter and erosion on trail sections.

There was consensus that some trails, for example the Boland and Otter, were overused. Camaraderie of a small party (three to six people) was almost unanimously favoured, while meeting too many or too large groups was another dislike of the respondents. By analysing the levels of trail experience, it was found that "moderate" and "above average" hikers were in the majority, one respondent had never hiked before and about 10 per cent were experienced. While the results of this survey are academically irrelevant, they are important in the development of the final questionnaire. In the first place, they seem to reinforce the results of the SCC research quoted in earlier chapters, and the sample is presumed to be an educated and informed one, and the responses therefore pertinent to the aims of the survey.

4.3. The Pretest Survey

4.3.1. Pretest Survey Design

According to Babbie (1973) the purpose of a pretest is to design and test the design of a questionnaire. A ten-page questionnaire was

designed according to the aims of the survey and the results of the Preliminary Survey and in August 1986, 10 Pretest Survey questionnaires were handed out to Engeo staff and post-graduate students who have experience with social surveys. Most of these people are involved in outdoor recreation research as well. Seven Pretest surveys were returned in time for use (a two-week period was alloted for this, considering that they were hand-delivered and collected from within the department concerned). Respondents were asked to evaluate the questionnaire. After evaluating data and making the necessary corrections, a Pilot Test questionnaire was formulated.

The first concern in this survey was to devise a question which would order respondents into one of four "hiking type" categories that would correspond to Bryan's types, as proposed in section 3.4, and that would indicate the preferred range of NHW trails in the study area. Four scenarios were presented, each with a different combination of the three trail facilities (namely trail duration, shelter type and degree of trail markings). An example is: "Option B - you prefer hikes of 4 to 6 days' duration, on well marked paths, with wooden huts with bunks and mattresses".

From category A to D, the scenarios offered facility choices tending to more specialised options; so shelter options ranged from fully equipped chalets, to tents, caves and "no shelter" preferences. Hikers were asked to indicate which trail scenario they most preferred. The weakness of this question, as was pointed out by some respondents, is that a hiker may not necessarily choose the same level of specialisation for all trail facilities. Furthermore, a hiker may well like all four scenarios to be available to him or her on

different occasions. From this I deduced that Bryan's specialisation theory is faulty and so in the Pilot and Final surveys, four questions offered five trail facility options each and respondents were asked to choose one facility option in each facility category, thus creating their own scenarios.

4.3.2. Questionnaire variables

In deciding what category (trail facilities) and discrete variables to use in the survey, four lists of the essential trail elements were generated from independent sources. These four lists were then synthesised by rating and ranking each item and then choosing the ten highest scoring. The four sources for trail element lists are as follows:

1. A subjective list of the ten factors was drawn up with the factors that were considered to be most important in creating a satisfying hiking experience;
2. The results of the Preliminary Survey, Question 1 were analysed, generating a list of already ranked trail elements that the respondents felt were most important in creating a fulfilling hiking experience. The elements were scored according to their given rankings and also to their frequency in the returned questionnaires;
3. The list of factors compiled by Glavovic (1986) to test the ROS in the Cedarberg was used, even though it was stated that the elements given were not ranked;
4. I extracted from the literature reviewed for this study, a list of six non-ranked trail elements used in ROS research.

When the four lists were compared they were found to have a large degree of overlap. First the elements appearing in all four lists were extracted, then those appearing in any three. The four lists used to derive the final trail facility categories are given in Appendix A. In formulating the final list of trail elements some subjective interpretation was necessary. For instance, "camaraderie" and "sociability" were interpreted as being equivalent elements and grouped together under the derived category "social interaction". In some cases an element in one list had to be either combined with another or split in two to give elements of similar scale. For instance, "limited facilities" in one list was to equal both "paths" and "shelter" in another.

As a final step in selecting the trail facility categories to be used in the Pretest Survey, all available NHW literature was reviewed, including annual reports from 1975 to 1985 and commissioned reports, to compile a list of the most important factors making up the managerial environment of the NHWS (those elements of the NHWS that can be directly acted upon by managers to alter a trail's SCC). When compared with the list of elements derived from the four above-detailed sources, it was found that seven trail facility categories were applicable to this study. In the light of their derivation it was not possible to rank them. They are:

1. Trail development;
2. Freedom of choice;
3. Rights of access;
4. Shelter;
5. Paths;

6. Social interaction;

7. Trail information.

For the purposes of the Pilot Survey, two extra categories were introduced, one to refine the selection of trail scenarios and another on questionnaire evaluation. Within the category variables, 49 discrete variables were compiled, reviewed by experts within Engeo, a senior co-ordinating member of the NHWB and a member of the UCT Department of Information Technology Services familiar with the statistical program used in the final analysis; then edited, rechecked and rewritten. The NHWB member was also requested to comment on the choice of trail facility categories chosen and these were found to be appropriate to the study.

In analysing and reworking the Pretest Survey, the guidelines for questionnaire construction, especially the general rules for word order as laid down by Bailey (1978) as well as Oppenheim's (1966) ten basic steps for survey design were followed. The results of the Pretest Survey were analysed and used to redesign the questionnaire for the Pilot Test phase. The Pretest Survey questionnaire appears in Appendix B.

4.4. Pilot Test Survey

According to Babbie (1973) a pilot test should be a mini run-through of the final survey, to check that all aspects of the administration and data analysis work as planned, and that the questionnaire is suitable to the aims of the survey. In October 1986, 50 Pilot Test

questionnaires were placed in a collection box at a weekly meeting of the MCSA in Cape Town. The meeting was addressed by the researcher on the aims of the research and people were requested to take a copy of the questionnaire and to return it by mail in the self-addressed and stamped envelopes provided. At the end of the meeting all 50 questionnaires were taken (approximately 200 people attended the meeting).

Within the two-week period following the meeting that was alloted as the response time, 32 questionnaires had been returned, representing a 62 % response rate, albeit from people who had volunteered to take the questionnaires and not a randomly chosen sample. (Altogether more than 40 Pilot Test questionnaires were eventually received.) The responses were computer coded and run through the BMDP (Bio Medical Data Program) on the UCT Sperry Univac mainframe computer. This program was found to be suitable for the data and the limited aims of study (J Nash, UCT Information Technology Services Dept., pers. comm., 1986).

The data were not analysed but the questionnaire was seen to be workable as an administrative exercise and as an academic proposition. Apart from the standard, impersonal survey responses, lengthy annotations were received from many of the respondents. When carefully considered these comments were found to be very helpful, but few of them rejected the basis of the study or the choice of trail facility categories; rather, they mainly criticised the wording, the grammar and ambiguities among discrete variables.

Those comments regarding the issues involved in the questionnaire design were acknowledged but considered too subjective to warrant further investigation. (One person returned the questionnaire uncompleted with an accompanying letter rejecting the motivation for the research, stating the mountains were already "over managed" and in danger of being smothered in red tape. After further correspondence, the person involved retracted his earlier comments and expressed an interest in the results of the research.)

The MCSA was used as a non-random sample population in the Pilot Test and a random population in the Final Survey, something that would normally be avoided. However, on considering the alternatives it was felt that the benefits of using this group would outweigh the shortcomings. The probable duplication of respondents was deemed likely to be minimal, and therefore acceptable, and that in the event of duplication, responses were unlikely to differ much from the one to the other. On the other hand, no other population could be identified and surveyed within the available time. Furthermore, it was felt that the expert opinion of many MCSA members would be helpful in identifying any conceptual errors still evident but as yet unnoticed in the questionnaire variables.

4.5. Final Survey

4.5.1. Aims and objectives

A number of methods for assessing recreation facilities were considered. These included workshop and workbook planning methods

used in various US national parks, as well as checklist rankings based on conventional EIA methods. On the basis of logistical constraints and the assumption that democratic processes are essential to successful resource planning, social survey methods were found to be most appropriate for measuring the acceptability of trail facilities.

The general aim of the survey is to assess the attitudes to NHW trail facilities of a cross-section of mountaineers in the study area. Secondary aims were: 1) to identify the range of hikers in the chosen population and the range of trail scenarios preferred by this population, and 2) to find out whether or not there is a significant difference between the trail preferences of various groups of hikers, based on their levels of mountaineering experience.

Four levels of experience were used, in turn based on Bryan's (1979) model of sports specialisation and conflict resolution; respondents were asked to classify themselves under one of the following categories - "beginner", "moderate", "above-average" and "seasoned". This was checked against their actual level of NHW and non-NHW hiking experience, as well as membership of outdoor resource-based clubs and societies. According to Bryan, each sub-group of outdoor sportsmen will have a different, but consistent, level of commitment to goals and resource-setting preferences.

Questionnaires are usually used to measure across-the-board mean values, with built-in statistical tests to ensure accuracy in this. When data are normally distributed (parametric) this can render much useful information about a population and allow one to draw far-reaching assumptions based on probabilities of the average. When data

are not normally distributed (non-parametric), however, mean values are of limited use in the analysis. In this study there was a strong possibility (based on the assumption of a divergence of opinions emerging from various hiker groups) that non-parametric data would be obtained in the survey. For this reason, it was suggested that modal values should be looked at to identify group trends, rather than "absolute" mean values (G. Cooke, pers. comm., 1986).

Bi- or multi-modal distributions were assumed to be a possible spread of the data for at least some of the variables and this reinforced the decision to identify trends instead of calculating mean values, and to use these statistics to test a null hypothesis. The statistics will be further discussed in section 4.5.5.

In order to establish the areas of significant consensus and conflict among hikers in the study area, those questions that gave the most convergent and the most divergent spreads of data were emphasised in the discussion and conclusion sections. It was deemed tedious and unproductive to the aims of the survey to offer lengthy discussions on all the variables.

4.5.2. The Survey Design

A. The Survey Variables

In survey research there are three main types of variables involved: the independent research variable, the dependent research variable, and uncontrolled or confounding variables such as socio-economic

characteristics of the sample, or unforeseen error. Most social surveys attempt to explain the values of a dependent variable on the value of the independent variable (Preston, 1983). In this survey the independent variable is NHW trail facilities, while the dependent variable is hikers' attitudes to those facilities.

To minimise the effects of uncontrolled variables on the data, random sampling techniques were used. This ensures the probability that if such error does occur, it will be evenly distributed throughout the sample. A random sample means that at the onset of selection, every member of the population has an equal chance of being selected. According to Selltitz (in Bailey, 1982), if a number of random samples is drawn from a population with normal distribution, the mean sample values would all be the population mean. Furthermore, by using a four-phase questionnaire method, survey error was kept to an acceptably low level.

In order to isolate the independent variable it is necessary to control the other variables. To achieve this, one randomises the socio-biographical variables such as age, gender and profession. While socio-biographical variables were included in case cross-checking for uncontrolled variables was necessary, they were not used in the analysis, as specialisation type was used as the control category.

8. Response Options

From Preston (1983) the following modified Likert scale was used for responses; I - always, Sm - sometimes, Nl - neutral, Nr - never and DK

- don't know. This five-point scale has been found to be most reliable in representing the preferences of respondents (Fuggle, pers. comm., 1985). It is necessary to include "neutral" and "don't know" categories so as not to force a respondent into an inaccurate category and possibly alienate him or her from the survey.

For reasons discussed in section 4.3.1, it was anticipated that in many cases the distribution of data would be heavily skewed to favour the "sometimes" option, and to a lesser extent the "never" option. Bi-modal distributions were also anticipated to favour these options.

This non-normal distribution implies one or more of the following three explanations:

1. The "sometimes" option represents a preference for a range of trail facility choices. For example Question 16 - "There should be NHW trails in the SW Cape with only tent camps for overnight shelter". One could answer "Sm" to all four of the shelter option questions without invalidating the data;

2. The need for more data. Given that a range of facilities is generally preferred, it would be useful to explore the need for diverse facility options more fully than this study has set out to do;

3. Badly worded questions may lead to confusion and ambiguous responses.

C. Population and Sample Groups

A cross-sectional survey was used to sample mountaineers in the study area. The alternative would be to use a longitudinal survey, which is

used for obtaining "before" and "after" responses. While the recommended sample size for this study's population is less than 100, the minimum sub-group size for any survey should be 30 to ensure valid statistical results at a 90 percent level of confidence (Nash, pers. comm., 1986). Due to the four sub-group analyses of this survey the sample size was therefore increased to 300 to ensure a reasonable return, with an expected response rate of half (final response 57%).

Thought was given to the problem of identifying a suitable survey population, which demanded a cross-section of mountaineers, from beginner NHW hikers to experienced climbers and trailists. Early observations identified the shorter, two-day NHW hikes as representing the low end of the mountaineering spectrum, whereas MCSA members were considered to be the best available group of mountaineers to represent the most experienced end of that spectrum. From the researchers own mountaineering experience, it was deduced that the overlap of NHW, Boland Trail hikers over one year and MCSA, Cape Town section members would render as wide a cross-section of mountaineers as possible, without sampling non-mountaineers. Only leaders of NHW parties could be identified from the NHW register and this number was comparable to the club's membership.

It is known that the MCSA does not represent all experienced mountaineers in the south-western Cape, especially the younger, serious climbing fraternity. At the same time the Boland Trail (Hottentots-Holland section), since the opening of the Limietberg section of that trail in 1986, is no longer the easiest NHW trail in the area. This study therefore does not represent the full spectrum of mountaineers in the study area.

4.5.3 Questionnaire design

In summary, the eight category variables used for the survey dependent variable that make up the questionnaire are: 1) trail development, 2) freedom of choice, 3) rights of access, 4) shelter, 5) paths, 6) social interaction, 7) trail information, and 8) hiker profile. The final category was used to establish the sub-groups of hikers, as well as to obtain socio-biographical information in case of uncontrolled variables. Five factors were considered most important in the design and these are discussed below.

A. Error

In all research one aims to minimise error. Even at the broadest level of social surveying, for instance, we cannot be sure that what respondents say is what they actually believe. However, there are statistical analyses built into most modern computer programs that can test for reliability, to within an *n*th degree of probability. Babbie (1973) warns researchers at all times to be critical of their own work and to avoid giving the impression of "spurious exactitude". Error is inevitable, suggests Oppenheim (1966), but standard sampling techniques are the best we can do to accurately measure social phenomena.

B. Closed and open questions

To facilitate easy coding and also to help eliminate possible error, only closed-ended questions were used in the Final Survey. Studies

show that responses to open-ended questions, when answered in mailed surveys, are less reliable than are closed-ended responses (Bailey, 1982; Preston, pers. comm., 1986). However, many of these questions were developed from closed-ended questions in previous survey phases where the generation of ideas was considered to be more important than precision. Bailey (ibid) offers a comprehensive account of the benefits and shortcomings of these two approaches.

C. Question wording and order

The literature points out that these two factors are crucial in determining whether or not a questionnaire is biased, and whether or not it will be reliably answered. Due attention was given to these aspects in the buildup phases of the survey. Double-barrelled and ambiguous questions, use of negative tense, use of abstract idioms and biased wording such as "experts believe..., therefore..." are common mistakes in question wording. On the issue of order, there seems to be no absolute guideline but all writers emphasise its importance.

D. Format

Questionnaire layout is often disregarded. Attention should be given to visual appearance, to ensure that respondents are not visually distracted and confused. It is vital to have clearly discernible instruction at the top of each page, for instance, and a balance between black and white space on each page. With regard to optimal length, there is again no absolute measure, but research has shown that up to 75 not-too lengthy questions in a survey, this factor will not produce a measurable difference in response rate.

E. Relevance of questions

Every item in a questionnaire should be relevant to the central research question. Before the Final Survey is undertaken, it should be known how each discrete variable will be analysed and used to illuminate the research question. This should be determined in the Pilot Test.

4.5.4. Questionnaire Administration

From the lists of MCSA members and Boland Trail bookings for the 1984/5 financial year, 150 names were selected from each group, using a random numbers table. There was found to be an overlap of eight names. Bailey (1982) points out five advantages and five disadvantages of using mailed surveys, but again logistics made it necessary to use the mailed alternative.

In October 1986, 296 questionnaires in English and Afrikaans (to those who had completed NHW booking forms in Afrikaans) were mailed off, together with a covering letter of explanation and a self-addressed, stamped return envelope. These are contained in Appendices B and C. The response rate was recorded over the following five weeks, which was the cut-off period.

After two weeks 120 responses had been received and the return rate had dropped off significantly. A follow-up letter was then mailed off to all the people who had not yet responded and over the next two

weeks an upturn was recorded in the response rate. By the end of the cut-off period 170 questionnaires had been returned, representing a response rate of 57,4 percent. A further 14 responses were finally received, but these were not used in the analysis.

Altogether 23 responses had to be rejected due to bad addresses, as late or unreliable. For instance, some respondents claimed no hiking experience and yet placed themselves in an "experienced" category. Three MCSA members declined to complete the questionnaire on the grounds that they were either rock climbers or "mountaineers" and therefore against organised hiking, while one respondent circled the "sometimes" option for every question and this was rejected as contradictory.

Because of a personal interest on the part of the researcher in the subject, a high response rate had been anticipated. A 40 to 50 percent response rate is considered for social surveys to be acceptable, 50 to 60 percent good and 70 percent very reliable (Fuggle, pers. comm., 1985). The final, analysed response rate was 54,4 percent.

4.5.5. Data Analysis

The nature of responses will greatly affect the type of data received and the ways in which they can be analysed. Categorical (nominal) and ranked (ordinal), interval and ratio data will produce different statistical results. All the data in this survey are categorical (non-parametric) and therefore statistically less precise than would be parametric data. On the other hand, by using non-parametric data

the validity (the accuracy of the measuring instrument) as well as the reliability (the consistency of the measurements) of the data are not affected.

In analysing the data emphasis was given to those variables showing the most divergent and the most convergent distributions. The differences as well as the similarities between hiker categories, having been shown to partly exist, were interpreted to indicate the range of trail facilities preferred by the survey. In fact, a secondary aim of the survey was to determine the differences between the sub-group analysis and the across-board preferences of hikers. For thoroughness one could closely examine and cross-analyse every variable, but that was not an aim of this study (these statsitics are, however, available for analysis).

Because the data are categorical, parametric tests based on normal distribution curves (standard deviations) are irrelevant to this study. Furthermore, mean values used to calculate standard deviation, standard error and variance are misleading when applied to categorical data. Standard BMDP (Bio-Medical Data Package) was used to analyse the data. Coded responses were punched and verified by UCT Information Services staff. BMDP routines #1D and #2D were used to describe the data while trends were identified from the histograms generated using routine #5D.

Values were converted to percentages for analysis. These were then used to check data distributions for convergence and divergence, while the histograms were used to identify modal distributions of data. With categorical data, it was pointed out that using histograms would

be less error-prone than using mean values for determining trends (Cooke, pers. comm., 1986).

Routine #4F was used to generate two-way tables for the sub-group analyses. In this way it was possible to determine the extent to which Bryan's specialisation categories affected the preferences of hikers as regards trail facilities.

The non-parametric Pearson's Chi-square test of significance for independent samples was used to test null hypothesis (H_o) of the two-way tables. The Chi-square test measures the relationship between two variables - the column and row values - to see whether or not they are independent of each other.

In any population a certain percentage of people is expected to have a particular preference, irrespective of the influence of any other factor (variable). Chi-square tests the hypothesis that, irrespective of any one variable (in this case hiking experience), hikers will have certain facility preferences. In other words, the null hypothesis assumes that hiking experience and club membership will not affect the trail facility choices of hikers. The null hypothesis states that there is no dependent association between variables; if H_o for these tables is rejected, then the data confirm that experience determines facility preferences, as proposed by Bryan (1979).

The null hypothesis is calculated to a certain degree of probability, but there is no magic number where one can accept or reject H_o. A Chi-square value 0,3 means that there is a 33,3 percent chance of a cell value (preference score) coming about by chance; this would be

too small a probability to be able to reject H_0. In attitude research with parametric data a probability of between 90 and 95 percent is considered to be acceptable (Chi-square value of 0,1 or less). For non-parametric an 80 percent probability (Chi-square value of 0,2 or less) is an acceptable level to work on. So the objective of this is not to accept or reject H_0, as much as it is to observe trends of the data (Cooke; Stewart, pers. comm., 1986).

Even if the statistics show a significant association between variables this does not mean that it is a cause-and-effect relationship, as some other unmeasured (or unidentified) factor may influence both the variables under observation.

CHAPTER 5 - SURVEY ANALYSIS AND INTERPRETATION

5.1. Introduction

5.1.1. Outline

This chapter is divided into three sections. The first section analyses the data of discrete variables for the entire survey. In each case percentages are given, with a brief interpretation of the data. The second section analyses the trail scenario preferences of hiker sub-groups, based on their hiking experience. Four two-way tables were generated, one for each trail scenario facility (duration, party size, path type and shelter type) and in each case the null hypothesis or H_o was tested. The third section analyses the data for the second sub-group analysis; here two-way tables were generated to compare club membership with the discrete survey variables to see if this factor affected trail facility choices. Once again H_o was tested.

In both the first and third sections, only those variables showing interesting convergent or divergent distributions of data are considered in the analysis, otherwise percentages of all the variables are given in Appendix B, with modal value highlighted.

5.1.2. Scoring

From Preston (1983) a five point Likert scale was used for scoring responses, with the options being "always", "sometimes", "neutral",

"never" and "don't know". In most instances the data were not collapsed into dichotomous positive and negative values (as was done by Preston, ibid), as this would obscure those values where, for instance, a "sometimes" response might imply that a range of facilities is preferred, as opposed to a straight "yes" or "no" preference for a particular facility. These subtle preferences may also be implied by responses to other variables. Where a possible range of options could not be implied and it was possible to collapse the data into positive and negative responses, this was done as a secondary consideration.

While the modal value is the most convenient comparative measure of analysis, the full spread of data is usually referred to where it offers useful information for the interpretation. It must be remembered that preferences stated here apply only to NHW trails in the study area, and cannot be assumed to apply to types of wild, natural recreation opportunities such as wilderness trails or even to NHW trails in other areas - although in many cases these can be inferred.

5.2. General analysis of the survey

Trail duration (Q1a):

This question showed a relatively close clustering of preferences around the modal preference at 36,4 percent for three-day trails. Four-day trails showed up with a 29,4 percent preference, 20,3 percent for 5+ day trails, with two-day trails scoring the low 11,9 percent.

In the study area there are two 2-day NHW trails, one with a three-day option (the Boland Trail, Hottentots-Holland and Limietberg sections) and a seven-day trail with a four-day option (the Swellendam Trail). These data suggest that if further trails are developed in the area they should offer three-, four- and five-day options in that order (as has already been documented, this is the stated opinion of the NHWB).

Hiking party size (Q1b):

A hiking party of four to six people was chosen by 65 percent of respondents, while only 3,8 percent chose a group of 12 people or more. This agrees with the literature as well as the preliminary investigations which indicated the importance of small group camaraderie in the mountaineering experience. Mountains, as wild, natural places are seen as retreats from the pressures of an urbanised world. Studies of group dynamics have shown that eight people is the maximum size of a group in outdoor recreation before inter-group tensions become a negative facet of the experience (Raimondo, 1985).

Q29 was posed in an open-ended way and then coded into various categories and a four- to six-person group option was chosen by 50 percent of respondents, while a seven- to ten-person group scored second-highest with 27 percent (the 7- to 12-person option in Q1b scored 18,2 %). The preference for small hiking groups (4-10 people) must be seen in the context of mountains as "sacred, inviolate places" (Drasdo and Tobias, 1980).

Type of trail path (Q1c):

Of the four options, 70 percent of respondents chose the "long, marked" option, while 23,8 percent chose the "long, unmarked" option. This result is verified in Q28 where 50 percent of respondents chose the five- to six-hour option (out of five open-ended but coded options between 1 and 9+ hours). Other studies (Van der Walt, 1976 for instance) have shown that this duration is the optimal duration between huts, giving time for meals and tea breaks, as well as for pursuing interests such as photography, and relaxing. The term "long" is interpreted as being between four and eight hours of actual walking, while "marked" refers to the typical painted NHW trail markers, usually placed 1 km apart along paths (see Q20 and Q35).

Type of trail shelter (Q1d):

Huts were preferred by 69,2 percent of respondents, despite it being the most luxurious option offered; other options were tents and caves, leantos and "no shelter". From this response two things may be inferred: firstly, that at least one more-luxurious option should have been included in the questionnaire, although the three test surveys did not indicate this; secondly, that there is little demand for other types of NHW shelter. In Q14, however, it is shown that 60,8 percent of respondents felt that more luxurious types of shelter should never be provided on NHW trails. Q11, on whether or not alternative types of shelter should be made available at campsites provided a modal "sometimes" response of 40 percent, followed by nearly even "neutral" and "never" scores of 23,1 and 22,4 respectively.

The overwhelming preference for huts was reiterated in questions 16 and 17, in which modal "never" responses rejected the idea of developing trails with tents for shelter, while in Q15 a less than decisive modal 42 percent of questionnaires showed that more trails should "sometimes" be provided with leanto shelters.

Hiking experience (Q2 and Q3):

The modes out of five coded categories each for NHW and non-NHW hiking experience showed that 27,3 percent of respondents had hiked more than five non-NHW mountain trails, while 26,6 had never hiked a non-NHW trail. In Q3 the mode again favoured the more experienced hikers, with 24,5 percent having hiked NHW trails on more than five occasions. This implies a high percentage of experienced hikers, but does not show the overlap between the two groups. Q45 shows that 36,6 percent of respondents considered themselves to be "seasoned" hikers (defined in the verification coding as having hiked 8 NHW and/or non-NHW trails). The curve from "beginner" (7 %) to "seasoned" is parabolic.

Military access to the NHWS (Q4):

An overwhelming 64,3 percent of the sample felt that the military should never have access to the NHWS. This question was used as the NHWB does allow the SADF training access to its trails, but the background investigation as detailed in chapters 2 and 3 implied that such access may lead to a conflict of interests between mountaineers and SADF personnel (one respondent referred to the vast areas of undeveloped land used by the SADF for training purposes, and suggested an agreement be reached between it and the NHWB for dual access to the

land under each party's jurisdiction). In the absence of a significant bi-modal value it must be interpreted as conclusive proof that a conflict of interests does exist between SADF use and mountaineering ethics.

Access by different race groups to the NHWS (Q4):

An effective 80 percent of the sample felt that there should never be discrimination on the grounds of race for access to the NHWS. Given the demographic and socio-economic trends in South Africa, it is likely that greater demand for outdoor recreation is made by the "non-white" groups. While NHWB policy in the study area is to do away with racial discrimination, given the political climate of South Africa this cannot be said to apply to all regions.

Club membership as a prerequisite for access to sensitive areas (Q6):

A small overall majority of respondents (51 %) felt that membership of a conservation-oriented club should be a prerequisite for gaining access to environmentally sensitive mountain areas. This figure is made up of 56 club members and 17 non-members (from section 5.4). The combined "always/sometimes" response was a convincing 76,2 percent. The following question reveals that an overwhelming 94,4 percent of respondents felt that a code of ethics should govern access to NHW trails. While the result is the most conclusive of the survey it is, however, inconclusive in that ethical criteria are by definition temporally and spatially relative. While a code of ethics has been proposed for NHW hikers (Van Rensburg, undated NHWB pamphlet), it is

not in the nature of ethics that they be instilled through enforcement, but through social conditioning.

Enforcement of a behavioral code for hikers (Q8):

A bi-modal response shows that strict enforcement of behaviour by trail patrol officers only just outweighs party leadership control (36,2 to 31,2 %) to ensure the desired behaviour of hiking parties. It is not as important here to debate the best method of ensuring that a code of behaviour is adhered to as it is to recognise the perceived need among virtually all hikers questioned for such a code to be followed.

The need for a range of NHW trails (Q9):

An interesting negative exponential curve links the response option scores from "always" (58,7 %) to "don't know" (0,7 %), with the added "always" and "sometimes" score being 86,7 percent and "never" scoring 4,2 percent. This question becomes meaningful only when analysed in terms of the respondents' hiking experience, and then cross-referenced with the trail scenario preferences of the four experience categories. In this way it can be seen to which end of the ROS this range, if shown to exist, should be biased. At present a range exists in the duration of trails, but not in between-camp distances which all fit the "long, marked" type (see Q1c). Shelters differ to some extent but all are huts, which again is the preferred shelter type (see Q1d). The size of parties is controlled only by the maximum number of hikers allowed at each campsite, and this varies between 40 for the Boland Trail and 24 for the Swellendam Trail.

The variable options for each trail facility need to be carefully examined to determine what range of trail types is actually called for. For instance, huts are overwhelmingly preferred, but they are ubiquitous. Therefore, if a range of shelter types is to be offered, what other types of shelter should be offered, or how and where should huts differ? Q1d shows that tents and caves scored second highest (14 %) and leantos third (7,7 %); but tents were generally disfavoured (see Q1d) so caves can be assumed to be a favoured alternative shelter type. It may be that only greater variety in hut types is called for (see Q14).

Choice of shelters, paths and campsites (Q10 - 13):

The results of this group of questions were less conclusive than any other showing, perhaps, that greater conflict exists on this issue than any other. The only interpretation that can be drawn from the data is that there is an observed desire among hikers to have a choice of paths between campsites ("always" and "sometimes" scoring 80 percent collectively; but "never" was the mode with 55,9 %). The choice of shelter best suited to future NHW trails is further analysed in questions 15 to 17.

Type of NHW hut preferred (Q14):

While the demand for huts is overwhelming, the data here appears to set a limit to the standard of hut that should be provided on NHW trails. Over 60 percent of respondents felt that huts more luxurious than the standard wooden chalet should never be provided. The only

other significant response was a 13,3 % "sometimes" score (although the 13,3 % "don't know" response does not represent a valid opinion). One respondent did annotate the questionnaire to the effect that an Alpine hut option should have been offered. (This possibility was in fact raised by the Department of Forestry in the 1940s with the first such hut to be built on the ecologically sensitive Kogelberg, but since then policies and attitudes appear to have changed.)

Types of shelter preferred for future NHW trails (Q15 - 17):

The data for these three questions show a conclusive aversion to either permanent or hikers' own tents being used for shelter on future NHW trails ("never" scoring modal 49 and 47,6 % values respectively). The "sometimes" options are significant at 29,4 and 35,7 percent respectively, which is justification to consider these preferences in the sub-group analyses. With leanto shelters there was a similar spread of data, with "sometimes" being the mode at 42 and 29,1 percent respectively. Again this result needs to be checked against the sub-group preferences to ascertain which groups are being catered for and which not, what the respective group numbers are, and what their *locus standii* is in the matter (that is, what their claim is to being catered for); according to this report this claim should be substantiated by one's degree of hiking experience and the extent to which mountaineering preferences in the area are already being met.

Rubbish bins should be provided at campsites (Q18):

This variable was introduced to test the level of mountaineering ethics and general environmental awareness among mountaineers. The

96,7 percent positive response is indicative of a low level of ethics and awareness, based on the following two reasons: 1) it is an entrenched mountaineering ethic, widely advocated by NHW media and also deeply instilled in MCSA and other mountaineering clubs, that hikers must carry out all their own litter and leave as little trace as possible of their passage through the area; 2) research has shown that litter which accumulates at places with vehicular access or other service routes is likely to provide corridors for invasion by the alien Argentine ant (*Iridomyrmex humilis*). This ant is an invasive species in the Cape Floral Kingdom and it threatens the survival of myrmecochorous Fynbos plants (Bristow *et al*, 1985).

While this response may be attributed in part to hikers identifying litter as a negative aspect of NHW trails (as suggested by Craven, undated, and the Preliminary Survey), it must be accepted that: 1) the data show a level of environmental awareness below that which could render the opinions of respondents to be acceptable guages in the management of ecologically senstive areas; and 2) the mountaineering ethics of respondents are below that which would be expected of the mountaineering fraternity sampled.

Cairns should replace painted NHW markers (Q20):

While previous data show a preference for marked trails (see Q1c), this question gives a 48,3 percent "always" and 34,3 "sometimes" (total positive 82,6 %) preference that traditional mountaineering stone cairns should replace currently used NHW trail markers. The "never" response is insignificant.

Trails should be planned as circular routes (Q22):

A 70 percent "sometimes" (88,8 % positive) against a 0,7 percent "never" response is conclusive here. Few existing NHW trails are circular, although both the Swellendam and Hottentots-Holland trails do have circular options. It is now NHWB policy to design circular trails to make maximum use of limited land and to streamline logistics for hikers (Van Rensburg, pers. comm., 1986).

Acceptability of trails passing human-impacted areas (Q23 - 26):

The Preliminary Survey suggested this as a possible negative aspect of NHW trails. While 40,6 percent of respondents felt that trails should sometimes skirt rural areas to provide diversity, 29,4 percent felt that they never should. A 65 percent "sometimes" response indicates a general acceptance of trails passing through plantations, as opposed to an 11,9 percent "never" value. Trails following farm roads to connect separate trail areas was found to be sometimes acceptable to 61,5 percent of the sample and always acceptable by another 15,4 percent, while 16 percent found it to be an unacceptable solution. This trend is somewhat reversed on the issue of trails following public roads to connect hiking areas (as does the Limietberg Trail, the most popular in the area) - there was a 58,7 percent "never" response against a 23,1 percent "sometimes" response.

Trail encounters (Q27, Q31 and Q32):

When encounters are assessed for the general trail environment, only the 59,4 percent "sometimes" is significant (dismissing the 16,8 %

"neutral" value). On closer analysis 61,3 percent of respondents felt that there were.sometimes too many encounters at NHW campsites while 16,2 percent felt that there were always too many.

The response for *en route* encounters was slightly different, with 56 percent of respondents saying that the level of encounters there is sometimes too high and 13,4 saying it is never too high (this last figure being more than double the "never" value for campsite encounters). This last set of figures could be attributed to the fact that as hikers all move in the same direction between campsites, encounters are fewer than at the campsites. Also, campsites are traditionally places of peace and reflection and this atmosphere could easily be disturbed by extra-group interference.

Path layouts (Q33):

A conclusive majority of respondents stated a preference for varied path layouts, with 78,9 percent choosing a combination of zig-zagging up and down slopes, gentle contouring and traversing interesting peaks. Although the NHWB requested that this type of question be included in the survey, it is felt that too many variables have been included in one question to make for meaningful analysis of the data. Of the three individual path layout options, however, it is interesting to note that traversing of peaks scored higher than the other two (although the actual value is statistically insignificant). To satisfactorily deal with this issue it would be necessary to separate the distinct variables into a suite of questions (a trail facility category) on path layouts.

HW experience should enhance environmental awareness (Q34):

n overwhelming 93,7 percent indicated an "always" preference to this uestion. From this we can conclude that although awareness of actual nvironmental issues and ethics was found to be wanting (see Q18), here was shown to be a definite desire for environmental education. he Preliminary Survey yielded a number of related factors, from nvironmental education to botanical interests, which were collapsed nto the "trail information" facility category. In a study of the ROS or the Cedarberg, Glavovic (unpublished MSc thesis, Engeo) included a ategory for "spiritual enhancement", but such a category was found to unsuited to this study. At the same time the literature referred in Chapter 2 strongly suggests that spiritual enhancement is a ntral motivation of mountaineers.

ps should replace trail markers (Q35):

ile the mode here is a 31,7 percent "never" response, the data are st interesting, with "sometimes" scoring a close 28,9 percent and lways" at 26,1 percent adding a challenging positive value of 55 rcent. But it is really the "never" and "always" responses that ow the real conflict here, with apparently no compromise. If, wever, trail markers were replaced with stone cairns, it is probable onsidering Q20) that the data here would be shifted. This response quires sub-group analysis to determine how the various sub-groups sponded to this issue, as a means of resolving the apparent nflict.

Need for NHW trail field guides (Q36 and Q37):

The 66,2 percent "always" and 21,8 percent "sometimes" responses (total 88 %) show a demand for more detailed environmental information than the maps and hut displays currently offer. These data may be related to those of Q35, but no cross-analysis was done. They do, however, reinforce the results of Q34 and may be one way of satisfying the desire for NHW trails to enhance environmental awareness. Q37 shows an 81 percent preference for environmental information to be displayed at shelters; the sum of the two positive values is 94,4 percent.

Perceptions of the NHWS (Q39 and Q40):

There was a modal 46,5 percent "always" preference for a continuous NHWS to be developed in the study area, supplemented by a 21 percent "sometimes" response. This question was posed as it was originally the aim of the NHWB to achieve this throughout the country. It was thought that this issue might present a conflict between the more and the less experienced hikers (perhaps split between mainly NHW and non-NHW hikers, or club and non-club members), but this was shown not to be the case. There was also an overwhelming negative (44,4 %) response to the question of NHW trails aesthetically detracting from their settings, and a lesser 31,7 percent "sometimes" score. The "sometimes" value might be further scrutinised to determine whether it refers to parts of trails or some trails, or trails at some times of the year, or other possible inferences. The sub-group analysis shows the same distribution of data as does the general analysis and so it was no more revealing on this issue.

Development of new NHW trails (Q41 - 43):

There was a bi-modal distribution of data concerning the development of new NHW trails of higher SCC (catering for less experienced hikers) - that is, of short duration, less strenuous paths, larger groups and more comfortable accommodation. While 47,2 percent chose the "sometimes" option, 31 percent felt that high SCC trails should never be developed. This issue becomes more meaningful when considered in light of the next one, concerning the development of low SCC trails.

A 67,6 percent of respondents thought that trails with lower SCCs than currently exist should sometimes be developed and 16,2 percent felt that they should always be developed (other scores were irrelevant). Therefore, there is an 83,8 percent positive preference for new trails to be of lower SCC than at present, against a 54,2 percent positive preference for higher SCC trails than exist to be developed (including the statistically insignificant "always" response). From this apparent contradiction one can conclude that there is an overriding preference for lower SCC NHW trails.

In designing this study, the assumption was made that the Boland Trail, Limietberg section represents the highest SCC trail in the study area (appealing to the less experienced hikers). This assumption is also held by the NHWB (Van Rensburg, pers. comm., 1986); in light of the above data this will have implications for the development of future trails.

A strong possible conflict was pointed to in Q43, on the question of whether or not new NHW trails developed through traditional mountaineering areas would ruin these areas for the traditional users (sometimes - 33,1 %, never - 28,2 % and always - 20,4 %). Given this coinflicting data, the sub-group analysis should be cross-referenced to determine more precisely where the conflict lies and whether it will be averted to some extent by supplying lower SCC trails in the more remote, rugged areas (a natural assumption is that existing low SCC areas will have only low SCC trails developed there).

Question 44 was found to be repetitive and possibly ambiguous and so it was excluded from this analysis, although a more detailed analysis than is afforded in this study may well reveal useful information for understanding the nuances in attitudes about the preferred location of future NHW trails.

Hiker profile by hiking experience (Q45):

In this question respondents were asked to assign themselves to one of four hiking experience categories - beginner, moderate, above average and seasoned. It was found that both above average categories outweighed the two below average categories by 71 percent to 29 percent. This skewed distribution was anticipated from the sample chosen, for although Boland Trail (high SCC) hikers comprised half the sample, the actual hikers surveyed were those who had booked the trail and were therefore probably the party leaders and more experienced than the rest of their parties.

Club membership (Q46 and Q47):

While it is known from the sample chosen that at least half the respondents were MCSA members, a total 62,7 percent of respondents belong to an outdoor-oriented club or society, which includes the Western Province Mountain Club, Wildlife Society, Botanical Society, The Ramblers, SA Climbers Club, and other lesser known public organisations. The breakdown of those who belong to one or more club is as follows: 1 club - 38,6 percent; 2 clubs - 19,3 percent; 3 clubs - 3,6 percent; 4 clubs - 1,4 percent.

Questions 48 to 50 were used to obtain socio-biographical data but it was found unnecessary to use them in the analysis. Van der Walt (1976) gives a more extensive socio-biographical profile of NHW hikers, based on research on two Transvaal trails; his data correspond closely with those recorded in this study. Basically, NHW hikers are drawn from the upper socio-economic groups, are mostly white, professional males of middle age.

5.3. Sub-group analysis: hiking experience

In this section various trail scenarios are analysed in terms of hikers' trail experience. Four two-way tables were generated, one for each trail facility preference, identified by Bryan (1979) as constituting the essential factors that distinguish hiker types. These trail facilities are trail duration, party size, path type and shelter type. The four hiking experience categories subjectively determined in Q45 and cross-checked against actual number of trails hiked are - beginner, moderate, above average and seasoned.

In the tables the hiker category is a constant factor comprising the horizontal axis, while the vertical axis shows four facility options for each of the four trail facilities referred to above. The values given are percentages, but these may not always total 100 percent as an "other" category offered in the questionnaire is left out of the analysis as it never scored above 2 percent. According to Bryan's sports specialisation theory, as hiking experience increases so trail facility preferences should tend towards the low end of the SCC scale (the wilderness end of the ROS continuum). This theory is used as a major assumption of the report.

To test statistically for the validity of Bryan's theory relative to this study, the H_o will be tested for each table. The null hypothesis states that trail facility preferences are not determined by hiking experience, within a 90 percent level of probability. If the Chi-square value is 0,1 or less then H_o must be rejected; that is, the table's cell values show that there is a relationship between the two variables (but not necessarily a causal one).

Table A - trail duration:

	beginner	moderate	above av.	seasoned	total
2 days	2	3	4	3	12
3 days	2	8	13	12	36
4 days	1	9	8	11	30
5 days	1	1	8	10	20
total	6	21	33	36	98

The table shows that although on a limited scale the data do correlate SCC preferences according to hiking experience, the modal 3-day preference applies to all categories of hiker types (to within 1 %). An inconsistent and therefore interesting score is the "4 days x moderate" cell value of 9. This is the highest cell value for the "moderate" type category and proportionately the highest score in the table, showing a low SCC trail facility choice by a high SCC group. On the whole, however, proportionately more high SCC hikers chose high SCC facilities and low SCC hikers chose low facility preferences than *vice versa*.

The Chi-square value for the table is 0,4411 and so the null hypothesis must be accepted - that there is no statistical evidence to support the sport specialisation premise that hiking experience determines trail SCC preference.

-ɔle B - party size:

	beginner	moderate	above av.	seasoned	total
+ people	1	1	1	1	4
- 12 "	2	4	5	7	18
- 6 "	4	13	24	23	65
"	0	4	4	5	13
tal	7	22	34	35	100

the three highest SCC trail facility options (from 4 to 13+ people a party) there is a consistent increase in hikers' preferences from ghest to lowest SCC option. The lowest SCC facility option (3 ɔple), while being out of sequence on the vertical axis, does nsistently increase from highest SCC hiker type to lowest type; nplistically this indicates that beginners favour high SCC options ile seasoned hikers favour low SCC options.

e modal cell value for all table rows is the 4- to 6-person party tion, which corresponds with the general survey result. But while ere would seem to some support for the sport specialisation ɔothesis, the data do not quite fit the expected trends. For ample, if the sport specialisation hypothesis was correct, then the easoned x 3- person" cell value should have been the highest value that column; in other words, the lowest SCC hiker type should have ɔred highest in the lowest SCC trail facility option row, second vest to second lowest and so on. The Chi-square value turns out to a high 0,7227 so once again H_o must be accepted and Bryan's ɔothesis rejected.

Table C - trail type:

	beginner	moderate	above av.	seasoned	total
short, marked	0	1	1	0	3
short, unmarked	1	0	1	0	2
long, marked	6	18	25	22	70
long, unmarked	0	3	7	14	24
total	7	22	34	36	99

Although the modal row value is the relatively low SCC "long, marked" trail facility option, there is still a clearly visible trend for "high SCC x high SCC" and "low SCC x low SCC" preferences across the board. This can best be demonstrated by dividing the table into quadrants (top left = high/high; bottom left = high/low; top right = low/high; bottom right = low/low) and comparing the high/low SCC cell values in each. In each quadrant the trend is that high SCC hikers score highest for the high SCC facility options, while low SCC hikers score highest for the low SCC facility options.

One seemingly deviant score is the "moderate x long, unmarked" cell. The relatively high score of 3 by a high SCC hiker for the lowest SCC facility option would possibly unbalance the statistical trend referred to above, and increase the Chi-square value. A look at the Chi-square value shows a 0,0012 score for this table so the H_0 must be rejected and for this suite of trail facility options the sports specialisation hypothesis be acknowledged to apply within the bounds of probability set by the methodolgy.

Table D - shelter type:

	beginner	moderate	above av.	seasoned	total
huts	6	18	22	24	70
leantos	1	1	4	2	8
tents/caves	1	2	6	5	14
none	0	1	1	4	6
total	8	22	33	35	98

The modal score for all SCC hiker categories is the lowest SCC shelter option to the extent that no other cell value is significant. The row and column totals do show a slight trend to "high SCC option x high SCC" and "low SCC x low SCC" choices in the extreme corners of the four quadrants (as explained in Table C), but not convincingly enough to anticipate a Chi-square value of near 90 percent probability. In fact this value is 0,5591 or nearly 40 percent probability. H_o must therefore be rejected.

5.4. Sub-group analysis: club membership

A second major assumption of the study is that membership of an outdoor-oriented club or society would have an effect on a mountaineer's attitudes to trail management. Also, as with actual hiking experience, it was assumed that club membership would reveal a preference for lower SCC trail facility choices than otherwise. As with section 5.2, only those variables showing remarkable concensus or conflict, plus those whose sub-grouping shows interesting information about variables in the other sections. The first suite of questions

are of course central to the analyses of all three sections. The "other" options for all four trail facility questions (Q1a to 1d) were all found to be insignificant and so are not included in the analysis.

Of the 142 questionnaires that where used in the survey analysis, 89 were members of an outdoor oriented club or society, representing 63 percent of the respondents, while 53 respondents, or 36 percent of the sample, did not belong to such an organisation. This criterion was thought to be important in determining the attitudes of hikers because, as with hiking experience, it might show a preference for low SCC trail facilities. It was not tested whether or not the number of clubs belonged to, or which specific clubs, might influence one's trail facility choices.

Trail duration (Q1a):

	club	no club
2 days	10	7
3 days	33	18
4 days	24	18
5+ days	19	10

A superficial look at the data here does not show an expected overall high SCC choice for the "no club" group and *vice versa* for the "club" group. The lowest SCC option of 5+ days was chosen by 21 percent of club members and 19 percent of non-club members, which does suggest that this variable does not influence the trail duration preference. The Chi-square value of 2,634 shows that there is only a 62 percent probability that club membership influences the facility choice.

Hiking party size (Q1b):

	club	no club
13+ people	0	4
7 - 12 "	15	11
4 - 6 "	60	32
3- "	12	6

The modal four to six people option applies to both sub-groups and their scores for other options is more or less proportional, with perhaps an even stonger proportional preference among non-club members for the lower SCC choices. The Chi-square value of 8,561 shows only a 7 percent probability of club membership effecting facility choice.

Paths (Q1c):

	club	no club
short, marked	3	1
short, unmarked	2	1
long, marked	53	47
long, unmarked	30	4

The overwhelming preference for the modal "long, marked" option for both sub-groups leaves little else for analysis, except perhaps to point out in passing the proportionally large club group preference for the low SCC "long, unmarked" option. But even with this result the probability of the two variables being dependent is only 0,5

percent. However, statistics aside, if 30 out of 89 club members choose a certain option ("long, unmarked" in this case), it represents the only other significant score for this variable and, subsequently, a direction of the likely trend. This observation is reinforced by the non-club members' second-highest score also favouring the lowest SCC option of long, unmarked paths.

Shelters (Q1d):

	club	no club
huts	54	44
leantos	9	2
tents/caves	16	4
none	6	3

Once again an overwhelming modal score for both groups suggests that the two axes are not dependent. The Chi-square value of 9,1 means that there is only a 0,5 percent probability that the two axes are dependent. Therefore, there is no empirical evidence to suggest that membership of an outdoor oriented club or society will determine a hiker's choice of NHW trail duration, party size, path or shelter type. (As regards the tent/cave choice, questions 16 and 17 show a general rejection of using tents on NHW trails, therefore it must be assumed that the second choice shown here is for caves.)

Military and racial NHW access (Q4 and Q5):

Both these questions showed an ovewhelming concensus for the modes, so the sub-group differentiation does not significantly affect the data.

Shelter options, other than huts (Q15 to Q17):

Both club and non-club members preferred there to be leantos "sometimes" on future NHW trails, so the general distribution of data is much the same as the sub-group distribution, with the other options following suite. The same applies for Question 16 on the demand for tent shelters, where "never" followed closely by "sometimes" scored far above the rest. On the question of no shelter, while the non-club members favoured the general "never" mode, the club members preferred the "sometimes" option over the "never" by four votes or 2 percent (38 to 34). Otherwise the results are the same. The non-club members in fact preferred the "never" option over "sometimes" by 34 to 13 votes, or 64 percent to 25 percent. The only other significant statistic for the no shelter question was the club members' 15 percent "neutral" response.

Rubbish bins should be provided at campsites (Q18):

	club	no club
Al	55	49
Sm	17	2
Nl	5	1
Nr	12	1
Dk	0	0

Both sub-groups overwhelmingly chose the "always" option, 62 percent for club members and 92,5 percent in the case of non-members. As was shown in section 5.2, however, this was a "planted" question to cross-

check for environmental awareness and ethical values among hikers. The fact that the member sub-group showed a 19 percent vote for "sometimes" and 13,5 percent for "never" does perhaps show a degree of environmental awareness among the group, whereas this cannot be said about the non-club members. (There was no score for "neutral" so at least all respondents had a firm opinion.)

Cairns should replace NHW markers (Q20):

Both sub-groups showed the same order of preference for cairns to replace painted markers in both this analysis and the general one; a rather unexpected result as NHW hikers are presummably less used to seeing cairns used as markers. This may reinforce the subjective opinion, which led originally to this question being used, that painted markers particularly (as opposed to the overall trail) detract aesthetically from their mountain settings.

Trail encounters (Q29 to Q32):

In all questions of the "social interaction" trail facility category on trial encounters, there was a remarkably close proportional matching of scores in all option categories. The results of the sub-group analysis do not differ from the general survey results so as to warrant separate discussion.

Maps should replace all trail markers (Q35):

	club	no club
Al	27	10
Sm	28	13
Nl	9	7
Nr	23	22
Dk	2	1

This was seen to be a fairly radical suggestion for inexperienced (high SCC) hikers who have probably hiked only on NHW trails and who have come to rely psycologically on trail markings. For both sub-groups the "always", "sometimes" and "never" options scored significantly, but the spread of data is interesting. While the mode for club members is "sometimes" (31,5 %), for the non-club members it is "never" (41,5 %). But for club members the "always" option is only one percent lower, while they scored 26 percent for the "never" option. There may therefore be said to be a conflict between the two sub-groups as well as within the club members on this issue.

NHW trails detract from mountain environments (Q40):

	club	no club
Al	8	2
Sm	36	9
Nl	15	7
Nr	30	33
Dk	0	2

The non-club members scored overwhelmingly in the "never" option (62 %) with a relatively small (17 %) "sometimes" score. The conflict revealed in the general anaylsis, however, relates both to the two sub-groups as well as among the club members. This is borne out by the data shown above, which show a modal "sometimes" option " of 40,5 percent for club members, followed by a "never" preference of 34 percent. One cannot hope to solve all conflicts and the data suggest that this may well be one of them. In the conclusions, however, positive suggestions will be made in this regard.

New trail development (Q41 - 43):

On the questions of whether future trails should favour inexperienced or experienced hikers, the sub-group analysis did not show any unexpected data or any distribution that warrants discussion here. On the question of whether or not new NHW trails will degrade the mountain environment, however, the data shows a reasonable conflict in their distribution - Q43:

	club	no club
Al	27	2
Sm	31	16
Nl	9	10
Nr	18	22
Dk	4	3

While the general modal option of "sometimes" is favoured by the club members, the non-club members preferred the "never" option.

Furthermore, while the club members chose the "always" option as a close second (34 % and 30 % respectively), non-club members scored 30 percent for the "sometimes" option (against 42 % for "never") and only 4 percent for "always". This is rather surprising since both groups favoured the development of a continuous NHWS in the study area (Q39), both scoring nearly 45 percent for the "always" option and 20 percent for the "sometimes" option. The seeming contradiction of a "sometimes continuous" hiking system was not considered, but is presumed to refer to a preference for a semi-continuous NHWS.

CHAPTER 6 - DISCUSSION AND CONCLUSIONS

6.1. General survey

Despite an expected conflict of preferences to be shown between various sub-groups in the sample, there was found to be a high degree of consensus for most questions in the survey. From this and the general acceptance of existing NHW trail facilities, it can be concluded that most mountaineers surveyed agree with the development of a NHWS in its current form. While there was a stated preference for a greater range of trail facilities to be offered, the preference shown was for only a small digression from existing trail facilities.

In the general survey analysis, as well as the two sub-group analyses, there was a strong preference in all groups for the following trail scenario: trails of three to four days' duration, hiking parties of between four and six people, wooden chalet shelters and long, marked paths. In the sub-group analyses the more experienced groups did tend towards a low SCC path choice with the "long, unmarked" option scoring significantly.

It should be noted, however, that although sub-group preferences tended to support those of the general survey, this does not mean that conflict does not exist. If the aim is to cater for the majority of mountaineers, then all other data are irrelevent; this report has argued, however, that catering for the average recorded attitude is contrary to the broader demands of recreational carrying capacity. In this case attention must in every instance be given to significant, non-modal values in order to identify attitudinal trends.

While the sub-group analyses refute the assumption that the preferences of more experienced and club member hikers will conflict with those of less experienced and non club-member hikers, the general principles of the investigation - namely, the ROS and SCC - are still seen to be relevant frameworks for the investigation. To use a scientific metaphor, while the hypothesis has been rejected the methodology is sound. There follows a brief discussion of the results for each trail facility category, after which there is a discussion for each of two sub-group analyses.

6.1.2. Freedom of choice

This facility category was used to define the degree to which ranges of trail facilities were "needed". It was found that while nearly all respondents wanted a range of NHW trails, there was little support for a range of specific facilities. Those surveyed tended to prefer what the NHW offers. In every case, when asked if a choice of facilities (paths, shelters) was desired, the mode was "sometimes". Given the this response, it is concluded that "sometimes" means "where found to be appropriate", but by whom is not determined.

These results would seem to oppose those of Glavovic (unpublished), in which "freedom of choice" was found to be the most important element in wilderness recreation within an overlapping study area. It is likely, therefore, that people have different goals and expectations in different settings. This factor could account for the lack of

supporting evidence for the sports specialisation theory (see section 6.2, point number 2).

6.1.3. Access

Considering Glavovic's (op. cit.) finding that freedom of choice is the most important factor in wilderness hiking, it is surprising to find almost unanimous support in this investigation for the enforcement of a behavioural code on NHW trails. Once again, it is presumed that mountaineers set themselves different standards for different recreational settings. It may also be true that Craven's (unpublished) fears about NHW degradation of the environment is a widespread sentiment. This point will be followed up in section 6.1.7.

6.1.4. Paths

There is a general accord with the duration and layout of NHW paths, but like Craven (op. cit.), it seems that most hikers feel that painted trail markers are inappropriate to their mountain settings. Traditional stone cairns built from locally collected stones are favoured by most hikers. For permanence these would have to be cemented together rather than just balanced like they are traditionally made. In much the same way that a lack of conflict among various groups was unexpected, so too was the result for this question, especially since inexperiencd hikers were expected to favour the existing trail facility.

The strong preference for circular routes is in accordance with NHWB policy, and as with the Swellendam Trail, internal loops could be designed so that a range of SCC opportunities could be offered within one trail. In this case, different types of facilities could be provided along different sections of trails to create a range of SCC settings within one trail area.

6.1.5. Shelter

While 70 percent of the sample preferred huts to other NHW shelters, 60 percent rejected more luxurious shelter than the standard NHW wooden chalet with bunk beds, thin foam mattresses and utensils (where these are still found). Thus it would appear that NHW hikers "like what they get", but whether as a result of conditioning or because of an absolute preference is unknown. Referring to Glavovic's (op. cit.) findings, it is possible that the NHW offers an occasional "soft" hiking option for the more experienced mountaineers, who sometimes prefer the relative luxury of huts and well maintained paths on which to hike. This would also accord with Preliminary Test responses which showed "different preferences for different occasions". The premise of different expectations being met by different opportunities is therefore suggested here, as in previous sections.

6.1.6. Social interactions

It was generally found that there were too many encounters on NHW trails, especially at campsites. The finding is suggested by the ROS

and SCC literature. This would appear to be a difficult conflict to resolve in light of the growing demand for NHW access. It could, however, be ameliorated by developing more low SCC trails, or by developing lower SCC loops within existing trails. For hikers who feel particularly strongly about this issue, it is possible to avoid peak periods. The trails are heavily booked over week-ends and public holidays but otherwise greatly under-utilised (not all conflicts can be resolved).

Camaraderie is shown to be an important aspect of hiking, and it may be possible to preserve this aspect while minimising extra-group encounters at campsites by providing more, smaller shelter units. This has been achieved with some degree of success at Landroskop on the Boland Trail (Hottentots-Holland section), where the smaller Shamrock Hut is used by hikers wishing to avoid the usual "party" atmosphere in the Landroskop Hut.

6.1.7. Trail information

This group of questions yielded the most consistently high "always" responses. From this it would seem that the role of the NHWB is seen to be largely one of environmental education. If litter, erosion and other unacceptable behaviour is seen as a negative aspect of NHW hiking, then perhaps education is a more realistic, long term solution than is stricter control. Only 1,4 percent of respondents did not feel that the NHW experience should enhance environmental awareness, and in each case a large majority said that more information was needed on shelter displays, on maps and in the form of field guides.

Education is likely to increase environmental enhancement, which in turn is likely to foster a greater sense of ethics among hikers and so lead to a greater degree of conservation values. This would most likely lessen the need for external control on trails, as well as catering for the information demands of hikers. The data are convincing enough to suggest that: 1) the NHWB consider the introduction of guided educational trails (in place of military use); 2) education/information officers be appointed to help manage NHW trails; 3) the Board commission educational publications that can be sold at a profit, especially comprehensive trail field guides. An education or publications fund could be launched to help recover the costs of these projects.

The more one knows about the trail environment the more deeply one is likely to appreciate it; for this reason more attention could be given to interpreting scientific research in hut displays. Well informed hikers are more likely to contribute to the overall integrity of trail environments. In the long term this might prove to be an easier and cheaper solution to preventative management.

6.1.8. Trail development

There is an overall demand among respondents for the development of lower SCC trails than exists. This finding echoes the assumption of the NHWB on the issue. While the data here do argue for the development of both high and low SCC trails, the trend for a range of trail types is not as strong as anticipated, but in line with the rest

of the survey results. The most pronounced conflict of the survey is revealed in Q43, on whether or not new NHW trails will ruin sensitive mountain areas (sometimes - 33,1 %, never - 28,2 % and always - 20,4 %). If it is accepted that all mountain areas in the Fynbos Biome are ecologically sensitive areas, then all new trails will degrade these areas within the perceptions of hikers.

Despite this acceptance, the majority of respondents still preferred the development of a continuous NHWS in the study area. Whether or not such a development is possible, however, is uncertain. This question suggests that the extensive development of private trails (like Natural Heritage sites) will be necessary to achieve this aim.

6.2. Hiker experience sub-group

It was assumed (according to Bryan, 1979) that a conflict would exist between the more and less experienced hikers, but this was shown not to be the case. Four trail facilities were used to determine SCC preferences for four experience types of hikers, but in only one out of the four cases was it shown that level of hiking experience influenced choice of trail facility - in this case, path type. Although the mode for all four hiker types was the "long, marked" option, secondary preferences here showed that there was a dependency between the two axes.

On the whole though, Bryan's sports specialisation theory cannot be said to apply to this investigation. This may be attributed to any or all of the following four (untested) reasons:

1. The survey sample represents a middle section of the mountaineering spectrum in the study area. Although a high SCC group was identified in Boland Trail hikers, those actually sampled had booked the trails and so were probably party leaders. The low SCC group chosen were MCSA members, who were presumed to be experienced mountaineers but do not represent the more purist mountaineers who avoid organised mountaineering. While there is no need to cater for these people within the NHWS, they should be identified as mountaineers in the overall ROS.

2. The survey data apply only to the respondents' preferences as regards NHWS facilities, but do not apply to Wilderness trails or other mountaineering opportunities. The trail facility choices used in the sub-group analysis were extrapolated from Bryan's work, but they may not apply to this investigation. To fully test the hypothesis that one's level of sports specialisation determines one's choice of trail facilities would, in itself, constitute an entire research report.

3. While Bryan presents his extensive research, with results and conclusions, he does not outline the methodology used to obtain this data. The methodology used to test hiker preferences was therefore not reproduceable in this report.

4. It is likely that the conditions encountered by Bryan in the USA, both socially and environmentally, are not the same as those found in this study area. It is possible that if conflict was shown to exist in a context similar to this investigation (if, for instance, a more

representative population had been used), then Bryan's theory for conflict resolution might apply.

6.3. Club membership sub-group

As with the previous sub-group analysis, membership of an outdoor-oriented club or society was shown in most cases not to effect choice of trail facility; so once again a major assumption of the investigation has to be rejected. In many instances the club members did favour lower SCC options, but not to the degree that one could identify a serious conflict between the two groups. This consensus is especially relevent in the four trail scenarios (questions 1a to 1d) that were used in the sub-group analysis above.

As in the case of the general analysis and the sub-group analysis based on hiker experience, both sub-groups here clearly favoured trails of three days' duration, with four- to six-person parties, huts and long, unmarked paths. The only cases in which club members showed a definite lower SCC choice than non-club members was in their 34% preference for long, unmarked trails and the 15% for cave shelters.

In the trail facility categories, the only place where club members seriously disagreed with non-club members was on the question of aesthetics: a majority of club members said they thought that NHW trails detracted from their mountain environments, and also that future NHW trails would degrade currently undeveloped areas. Despite these views, club members were shown to overwhelmingly support the NHWS as presented within the limitations of this report.

In conclusion it must be stated that the low level of environmental awareness shown by respondents (Q18) may have important implications for the management of sensitive natural environments. If hikers' needs are inconsistent with the conservation needs of land, then public opinion, even when it is the attitudes of interested parties, may not be the best measure by which to determine the management of such land.

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APPENDIX A

SCC LISTS

TRAIL FACILITY LISTS

FIRST PRELIM LIST

1. Appreciation of nature;
2. Wilderness solitude;
3. Freedom of choice;
4. Camaraderie;
5. Physical exertion;
6. Relaxation - "getting away from it";
7. Mountain scenery;
8. Suitable weather;
9. Rudimentary shelter;
10. Trail diversity;
11. Environmental education;
12. Defined paths;
13. Good hiking equipment;
14. Streams en route & at camps;
15. Circular routes;
16. No litter;
17. Minimum habitat degredation;
18. Minimum human impact;
19. Communion with nature;
20. Maintained, basic campsites.

RANKED PRELIM LIST

1. Freedom of choice
2. Isolation
3. Camaraderie
4. Mountain scenery
5. Shelter
6. Paths
7. Physical exertion
8. Solitude
9. Environmental degredation
10. Education

GLAVOVIC's LIST (not ranked)

1. Solitude
2. Aesthetics
3. Spiritual exp,
4. Pioneer spirit
5. Anticipation/ reflextion
6. Education
7. Exit civilisation
8. Relaxation
9. Physical exertion
10. Sociability.

RESEARCHER'S LIST

1. Wilderness exp.
2. Rugged terrain
3. Freedom of movement
4. Communion with nature
5. Educational exp.
6. Regimentation
7. Solitude
8. Campsite at water
9. Physical exertion
10. Isolation

ROS LIST

1. Access
2. Non-rec. uses
3. Development
4. Sociability
5. Rec. impacts
6. Regimentation
7. Natural features

SYNTHESISED SURVEY LIST

1. Freedom of choice
2. Access
3. Paths
4. Shelter
5. Social interaction
6. Information
7. Trail development
8. Hiker Profile

APPENDIX B

ENGLISH QUESTIONNAIRE

APPENDIX B1

UNIVERSITY OF CAPE TOWN
DEPT ENVIRONMENTAL & GEOGRAPHICAL SCIENCE
HIKING TRAIL SURVEY

Dear Mountaineer,

I am doing research in the The Department of Environmental and Geographical Science at UCT, into appropriate mountain trails for the SW Cape. This work is being done in collaboration with the National Hiking Way Board - the ultimate decision-making body as regards recreational use of our mountain areas.

Enclosed is a survey questionnaire, designed to establish the attitudes and preferences of hikers as regards trails in the SW Cape mountains. This questionniare has been sent out to both Mountain Club of South Africa and non-Mountain Club hikers in the region.

The survey is confidential but, some personal details are required for use in the statistical analysis. Please try to fill in something for every question - even if it is a short comment, but do not use the space provided for office use.

A high response rate is necessary to make the research meaningful: that is, your personal opinion is vital to ensure the correct management of our mountains. From the results of my research I will make recommendations to the National Hiking Way Board on how and where to develop future hiking trails - and where and why not to.

I would appreciate it you would complete the questionnaire and return it to me as soon as possible in the self-addressed envelope provided. I appreciate your co-operation in this matter and look forward to receiving your early response.

Yours faithfully,

Signed by candidate Signature removed

David Bristow.

FOR OFFIC' USE ONLY

National Hiking Way Questionnaire - Page 1

1. If you were to describe yourself as a hiker, which item in each of the following categories would you choose? Please circle the one letter in each of the four categories that best describes your hiking preferences - even though you may hike various types of trails.

I. TRAIL DURATION:

A - 2 days

B - 3 days

C - 4 days

D - 5 or more days

E - other (specify) .....

II. YOUR PARTY SIZE:

A - more than 12 people

B - about 7 to 12 people

C - about 4 to 6 people

D - 3 or less people

E - other (specify) .....

III. PATHS:

A - 1 to 4 hours and well marked

B - 1 to 4 hours and unmarked

C - 4 to 8 hours, well marked

D - 4 to 8 hours and unmarked

E - other (specify) .....

IV. SHELTER:

A - huts with bunks and mattresses

B - lean-tos

C - tents or caves

D - no shelter provided

E - other (specify) .....

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2. Which non-National Hiking Way trails, of at least two day's duration, have you hiked in the SW Cape ? 10

.....

.....

.....

3. Which NHW trails have you hiked? (If you have not hiked a NHW trail, go to Question 4). 11

.....

.....

.....

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

4. The military should have access to National Hiking Way (NHW) trails in the SW Cape for training purposes. 13

Al Sm Nl Nr Dk

5. People of all races should have equal access to the NHW trails of the SW Cape. 14

Al Sm Nl Nr Dk

6. NHW trails that give hikers access to environmentally sensitive mountain areas, should be open only to hikers who belong to a recognised hiking or conservation club or society. 15

Al Sm Nl Nr DK

7. NHW hikers in the SW Cape mountains should adhere to a basic code of hiking ethics. 16

Al Sm Nl Nr Dk

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8. If you answered Nl, Nr or DK to Question 5, go to Question 9. If you answered Al or Sm, how should this code be enforced? Please ring the letter/s of your choice.

A - trail access should be controlled by a grading system, with hikers graded according to experience

B - hikers must belong to a recognised club/society

C - a leader must control his/her party

D - trails must be patrolled and offenders fined

E - other (please specify) .....

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

9. There should be a range of mountain trails in the SW Cape. The NHW System should cater for hikers who want shorter walks with comfortable accommodation as well as those who want longer walks with minimal facilities.

Al Sm Nl Nr Dk

10. On NHW trails hikers should have a choice of different paths to follow between campsites.

Al Sm Nl Nr Dk

11. At each campsite, hikers should have a choice of different kinds of shelter to use.

Al Sm Nl Nr Dk

12. Hikers on NHW trails should be able to camp overnight where they choose.

Al Sm Nl Nr Dk

13. At each campsite on NHW trails, hikers should have a choice of whether to use an existing shelter, or to provide their own.

Al Sm Nl Nr Dk

FOR OFFIC
USE ONLY

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

14. NHW trails in the SW Cape should provide better equipped shelter than the typical wooden huts with bunks and mattresses presently provided on these trails.

Al Sm Nl Nr Dk

15. There should be NHW trails in the SW Cape with only unobtrusive lean-to shelters provided.

Al Sm Nl Nr Dk

16. NHW trails in the SW Cape should provide only tent camps for overnight shelter.

Al Sm Nl Nr Dk

17. NHW trails in the SW Cape should not provide shelter at overnight campsites, that is hikers must carry their own tents.

Al Sm Nl Nr Dk

18. Rubbish bins should be provided at NHW campsites.

Al Sm Nl Nr Dk

19. Firewood and fireplaces should be provided at NHW campsites.

Al Sm Nl Nr Dk

20. Stone cairns should be used as markers on NHW trails.

Al Sm Nl Nr Dk

21. NHW paths should have as many vantage points as possible, to give hikers mountain views.

Al Sm Nl Nr Dk

FOR OFFICE USE ONLY

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

22. NHW trails should be circular routes so that hikers can end a trail near to their starting point.

Al Sm Nl Nr Dk

23. To give NHW trails diversity, paths should skirt rural settings, such as agricultural fields and farm buildings.

Al Sm Nl Nr Dk

24. To provide diversity, NHW paths should follow Forestry roads within plantations.

Al Sm Nl Nr Dk

25. To connect separated areas of Forestry land, it is acceptable for NHW paths to follow farm roads.

Al Sm Nl Nr Dk

26. To connect separated areas of Forestry land, it is acceptable for NHW paths to follow public (tarred) roads.

Al Sm Nl Nr Dk

27. One encounters too many people on mountain trails in the SW Cape.

Al Sm Nl Nr Dk

28. The time taken to hike between overnight camps should average: Please fill in your preference.

..... hours

29. In your opinion, what is the optimal party size on a NHW trail:

..... people

30. In your opinion, the maximum number of people that should be allowed to walk on each section of a NHW trail per day is:

..... people

FOR OFFICE USE ONLY

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

31. Hikers should encounter other parties at overnight campsites. 45

Al Sm Nl Nr Dk

32. Hiking parties should encounter other parties while hiking between campsites. 46

Al Sm Nl Nr Dk

33. In your opinion, NHW paths should: 47

a) zig-zag up and down mountain slopes

Al Sm Nl Nr Dk

b) gently contour around peaks and valleys

Al Sm Nl Nr Dk

c) traverse interesting mountain peaks

Al Sm Nl Nr Dk

34. The NHW experience should enhance the hikers' environmental awareness. 50

Al Sm Nl Nr Dk

35. A comprehensive trail map should eliminate the need for painted markings along NHW paths. 51

Al Sm Nl Nr Dk

36. Pocket field guides on the trail environment, giving more information than the map is able to, should be available to NHW hikers. 52

Al Sm Nl Nr Dk

FOR OFFICE USE ONLY

PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER OR NOT YOU AGREE WITH IT. PLACE A CIRCLE AROUND ONE OF THE FOLLOWING FIVE CATEGORIES THAT BEST DESCRIBES YOUR RESPONSE: Al - always; Sm - sometimes; Nl - neutral; Nr - never; Dk - Don't know.

---

37. Trail information (for example notes and pictures on fauna and flora, historical information, a code of hiking ethics) should be displayed at trail shelters.

Al Sm Nl Nr Dk

38. Trail information (for example notes and pictures on fauna and flora, historical information, a code of hiking ethics) should be printed on trail maps.

Al Sm Nl Nr Dk

39. The NHW System should form a continuous, unbroken system of trails through the mountains of the SW Cape.

Al Sm Nl Nr Dk

40. NHW trails (that is: trails with painted markers, and wooden chalets with benches, tables, bunk beds and mattresses) visually detract from their mountain environments.

Al Sm Nl Nr Dk

41. New NHW trails in the SW Cape should cater mainly for inexperienced hikers (who generally prefer shorter distances, less strenuous paths, larger groups and more comfortable facilities).

Al Sm Nl Nr Dk

42. New NHW trails in the SW Cape should cater mainly for experienced hikers (who generally prefer longer distances, strenuous paths, smaller groups and more rugged facilities).

Al Sm Nl Nr Dk

43. If new NHW trails are developed in remote, traditional mountaineering areas, they will ruin these areas for current and future mountaineers .

Al Sm Nl Nr Dk

FOR OFFICE USE ONLY

44. If new NHW trails are developed in remote, traditional mountaineering areas, they will open up excellent hiking opportunities.

Al Sm Nl Nr Dk

PLEASE ANSWER THE FOLLOWING PERSONAL QUESTIONS

45. How would you rate yourself in terms of mountain hiking expertise. Place a tick in the box that best describes your level
of hiking experience.

beginner/occasional	moderate	above average	seasoned
A	B	C	D

46. Do you belong to an outdoor-oriented club or society? Place a tick in the appropraite box.

YES ☐ NO ☐

47. If you answered "YES" to Question 46, which one/s: if "NO" then go to Question 48.

.....

48. Into which age group you fit. Place a tick in the appropriate box.

19 or younger	☐	20 to 29	☐
30 to 39	☐	40 to 49	☐
50 to 59	☐	60 to 69	☐
70 or older	☐		

49. What is your gender? Place a tick in the appropriate box.

M F

50. What is your occupation? .....

THANK YOU.

APPENDIX C

AFRIKAANSE VRAELYS

APPENDIX C1.

UNIVESITEIT VAN KAAPSTAD
DEPT OMGEMWINGS- EN GEOGRAFIESE WETENSKAP
VOETSLAANPADOPNAME

Bergklimmer,

oesig met 'n navorsingsprojek in die Departement van Omgewings-
grafiese Wetenskap aan die Universiteit van Kaapstad, ten
van geskikte voetslaanpaaie in die Suidwes-Kaapland omgewing.
e navorsing word gedoen in oorleg met die Nasionale
aanpadraad, wat die finale besluitnemende liggaam is wat die
ningsgebruik van ons berge betref.

eg hierby vind u 'n vraelys wat opgestel is met die oog daarop
menings en voorkeure van stappers vas to stel sover dit die
aanpaaie in die berge van SW-Kaapland aangaan, vas te stel.

naame is vertroulik, maar daar word sekere persoonlike
erhede vir statistiese ontleding verlang. Probeer asseblief om
raag te beantwoord - selfs al is dit net 'n kort opmerking.
gter asseblief die spasie oop wat vir kantoor gebruik bedoel is.

navorsing kan alleen betekenisvol wees indien ons baie
er van u ontvang. U persoonlike opinie is essensieel om die
benutting van ons berge te verseker. Die resultate van my
ing sal my in staat stel om aan die Nasionale Voetslaanpadraad
elings te maak, met betrekking tot hoe en waar toekomigste
aanpaaie ontwikkel kan word, en waar nie.

dit baie hoog op prys stel as u die vraelys kan voltooi en dit
edig moontlik aan my kan terugbesorg. Ingeslote vind u 'n
sseerde koevert vir die doel. Ek waardeur u samewerking in
e verband en sien uit daana om u spoedige antwoord to ontvang.

Signed by candidate Signature Removed

Bristow

KANTOOR GEBRUIK

1 2

As u uself as 'n stapper sou beskou, watter item in elkeen van die gende kategorieë sou u kies? Maak 'n sirkel om slegs een letter in een van die vier kategorieë wat by uitstek u stap voorkeure die .e beskryf - selfs indien u miskien op 'n verskeiedenheid van .slaanpaaie mag stap.

Duur van staptoer:

A - 2 dae

B - 3 dae ✓

C - 4 dae

D - 5 of meer dae

E - ander (spesifiseer) .....

5

Groepgrootte:

A - meer as 12 mense

B - van 7 tot 12 mense ✓

C - van 4 tot 6 mense

D - 3 of minder mense

E - ander (spesifiseer) .....

6

Voetslaanpaaie:

A - 1 tot 4 uur en goed aangedui

B - 1 tot 4 uur en onaangedui

C - 4 tot 8 uur en goed aangedui

D - 4 tot 8 uur en onaangedui

E - ander (spesifiseer) .....

7

Skuiling

A - hutte met slaapbanke en matrasse

B - afdakke

C - tente of grotte ✓

D - geen skuiling voorsien nie

E - ander (spesifiser) .....

8

KANTOOR GEBRUIK

Nasionale Wandelsport Vraelys - Bladsy 2

. Op watter Nasionale Voetslaanpadsisteem voetslaanpaaie wat minstens 2 dae duur het u in SW-Kaapland gestap? Indien u nog nooit o NV-voetslaanpaaie gestap het nie, verways na vraag 3. 10

.....

.....

.....

. Op watter ander berg voetslaanpaaie in die gebied het u gestap? 11

.....

.....

.....

ees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u eaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, - nooit, Wn - weet nie.

. Die Weermag moet vir opleidingsdoeleindes toegang tot die NV-paaie n SW-Kaapland he. 13

Al Sm Nl Nt Wn

. Alle rassegroepe behoort gelyke toegang tot die NV-paie van die W-Kaapland he. 14

Al Sm Nl Nt Wn

. NV-paaie wat stappers toegang verleen tot berggebiede wat ensitief is, moet slegs opgestel word vir stappers wat lede van kende bergklubs of bewaringsvereenigings is. 15

Al Sm Nl Nt Wn

. NV stappers in die berge van SW-Kaapland behoort gehoorsaam te ees aan 'n basiese stappersgedragskode. 16

Al Sm Nl Nt Wn

KANTOOR GEBRUIK

8. As u op vraag 5 "Nl", "Nt" of "Wn" geantwoord het, gaan asseblief oor na vraag 9. As u antwoord "Al" of "Sm" is, hoe moet hierdie kode toegepas word? Plaas asseblief 'n sirkel om die letters van u keuse. 17

A - Toegang tot paaie moet duer middel can 'n gradeeringsisteem bepaal word. Die stappers moet na aanleiding van ondervinding gegradeer word;

B - Stappers moet lid can 'n erkende klub wees;

C - 'n Leier moet sy/haar groep beheer;

D - Voetslaanpaaie moet patroleer word en oortreders moet beboet word;

E - Ander (spesifiseer) .....

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

9. Daar behoort 'n verskeidenheid voetsalaanpaaie in SW-Kaapland te wees. Die NV-sisteem behoort voorsiening te maak vir stappers wat korter afstande met gerieflike akkommodasie verkies, sowel as vir diegene wat langer afstande met min geriewe verkies. 19

Al Sm Nl Nt Wn

10. Stappers behoort 'n keuse van verskillende paadjies tussen kampe te he. 20

Al Sm Nl Nt Wn

11. By elke kamp behoort stappers 'n keuse van verskillende tipe van skuiling te hê. 21

Al Sm Nl Nt Wn

12. Stappers op NV-paaie behoort te kan oornag op einege plek van hulle keuse. 22

Al Sm Nl Nt Wn

13. By elke NV-padkamp behort stappers die reg te hê om gebruik te maak van bestaande skuilings of om hulle eie skuiling te verskaf. 23

Al Sm Nl Nt Wn

KANTOOR GEBRUIK

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

14. NV-paaie in SW-Kaapland behort beter toegeruste skuilings as die tipiese houthutte met slaapbanke en matrasse te verskaf, wat tans op die voetslaanpaaie gevind word. ✓ 25

Al Sm Nl Nt Wn

15. Daar behort NV-paaie in SW-Kaapland te wees wat slegs van onopsigtelike afdakke voorsien word. 26

Al Sm Nl Nt Wn

16. NV-paaie in SW-Kaapland behoort slegs tentkampe vir oornagskuilings te voorsien. ✓ 27

Al Sm Nl Nt Wn

17. NV-paaie in SW-Kaapland behoort geen oornagskuilings by kampe te verskaf, sodat stappers hulle eie tente moet dra. 28

Al Sm Nl Nt Wn

18. Vullisdromme behoort by elke NV-kamp verskaf te word. ✓ 30

Al Sm Nl Nt Wn

19. Vuurmaakhout en vuurmaakplekke behort by NV-kampe voorsien te word. ✓ 31

Al Sm Nl Nt Wn

20. Klipstapels behoort as bakens op NV-bergpaaie gebruik te word. ✓ 32

Al Sm Nl Nt Wn

21. NV-paaie behoort soveel uitkykpunte as moontlik te hê om stappers berguitsigte te gee. ✓ 34

Al Sm Nl Nt Wn

KANTOOR GEBRUIK

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

22. NV-paaie behoort sirkelvormig te wees sodat die begin en die einde op dieselfde plek is. 35

Al Sm Nl Nt Wn

23. Ten einde verskeidenheid te verseker, NV-paaie behoort sodanige paaie langs landerye en plaasgeboue verby te loop. 36

Al Sm Nl Nt Wn

24. Ten einde verskeidenhied te verseker, behoort Bosboupaaie in plantasies deel van NV-paaie uit te maak. 37

Al Sm Nl Nt Wn

25. Om afsonderlike gebied van Bosbouland te verbind, is dit aanvaarbaar dat NV-paaie plaaspaaie volg. 38

Al Sm Nl Nt Wn

26. Om afsonderlike gebied van Bosbouland te verbind, is dit aanvaarbaar dat NV-paaie teerpaaie volg. 39

Al Sm Nl Nt Wn

27. Mense vind te veel mense op voetslaanpaaie in SW-Kaapland. 41

Al Sm Nl Nt Wn

28. Die afstand tussen oornagkampe behoort gemiddeld 42

..... ure te wees.

29. Wat beskou u as die optimale grote van 'n groep op 'n NV-voetslaanpad? 43

..... mense.

SLEGS KANTOOR GEBRUIK

30. Wat beskou u as die grootste aantal wat op een dag elke seksie van die NV-voetslaanpaaie toegelaat behoort te word? 44

..... mense.

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

31. Stappers behoort ander groepe by oornagplekke te kan ontmoet. 45

Al Sm Nl Nt Wn

32. Stappers behoort ander groepe te kan ontmoet terwyl hulle tussen kampe stap. 46

Al Sm Nl Nt Wn

33. Volgens u mening behoort NV-paaie (trek 'n sirkel om die letters wat toepaslik is): 48

A - steiler heen en weer berghange aangele te word zig-zag

Al Sm Nl Nt Wn

B - die geleidelike kontoere om bergpieke en valleie te volg

Al Sm Nl Nt Wn

C - Dwars te loop tussen interessante bergpieke

Al Sm Nl Nt Wn

34. Die NV-ondervinding behoort die stappers se omgewingsbewustheid te prikkel. 50

Al Sm Nl Nt Wn

35. 'n Omvattende padkaart behoort weg te doen met die noodsaaklikheid van bergwysers wat langs die NV-paaie geverf word. 51

Al Sm Nl Nt Wn

Nasionale Wandelsport Vraelys - Bladsy 7

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

36. Sakboekies met meer inligting omtrent die voetslaanpadomgewing verskaf as wat die kaart kan, behoort beskikbaar gestel te word. ✓ 52

Al Sm Nl Nt Wn

37. Inligting oor die voetsalaanpad (bv. notas, fotos van fauna en flora, geskiedkundige agterground, 'n stappers gedragskode) behoort by oornagskuilings vertoon to word. ✓ 53

Al Sm Nl Nt Wn

38. Inligting oor die voetslaanpad (bv. notas, fotos van fauna en flora, geskiedkundige agtergrond, 'n stappers gedragskode) behoort in voetslaanpoadkarte te verskyn. 54

Al Sm Nl Nt Wn

39. Die NV-sisteem behoort uit 'n aaneenlopende en ononderbroke stelsel van voetslaanpaaie dwars deur die berge van SW-Kaapland te bestaan. 56

Al Sm Nl Nt Wn

40. NV-voetslaanpaaie (dit is, voetslaanpaaie met geverfde bakens en houthutte met banke, tafels, slaapbanke en matrasse) skend die bergomgewing. ✓ 57

Al Sm Nl Nt Wn

41. Nuwe NV-voetslaanpaaie in SW-Kaapland behoort in die behoeftes van onervare stappers (diegene wat in die algemeen korter afstande, minder veeleisende paadjies, groter groepe en meer gerieflike fasiliteite verkies) te voorsien. ✓ 58

Al Sm Nl Nt Wn

42. Nuwe NV-voetslaanpaaie in SW-Kaapland behoort in die behoeftes van ervare stappers (diegene wat in die algemeen langer afstande, veeleisende paadjies, kleiner groepe en minimum fasiliteite verkies) te voorsien. ✓ 59

Al Sm Nl Nt Wn

KANTOOR GEBRUIK

Lees elke stelling noukeurig deur en besluit of u daarmee saamstem of nie. Maak 'n sirkel om een van die volgende vyf kategorieë wat u reaksie die beste beskryf. Al - altyd, Sm - somtyds, Nl - neutraal, Nt - nooit, Wn - weet nie.

---

43. As nuwe NV-voetslaanpaaie in ver afgeleë, tradisionele bergklimgebiede ontwikkel word, sal hulle hierdie gebiede vir huidige en toekomigste bergklimmers bederf. 60

Al Sm Nl Nt Wn

44. As nuwe NV-voetslaanpaaie in ver afgeleë, tradisionele bergklimgebidede ontwikkel word, sal hulle weg baan vir uitstekende voetslaangeleenthede. 61

Al Sm Nl Nt Wn

1 70

BEANTWOORD ASSEBLIEF DIE VOLGENDE PERSOONLIKE VRAE:

45. Tot watter mate is u bedrewe ten opsigte can bergklim? Maak 'n merkie indie ruimte wat die valk van 'n voetslaanondervinding die beste beskfryf. Maak 'n merkie in die ruimte wat die vlak van u voetslaanondevinding in die beste beskryf. 5

beginner/geleentheids gemiddeld bo gemiddled ervare

A	B	C	D

46. Behoort u aan 'n klub of vereeniging wat buitelug aktiwiteite voorstaan? Maak 'n merkie in die gepaste ruimte. 6

Ja ☐ Nee ☐

47. Indien u antwoord op vraag 46 bevestigend was, noem hule: Indien ontkennend, verwys na vraag 48. 7

.....

SLEGS
KANTOOR
GEBRUIK

48. In watter ouderdomsgroep val u? Maak 'n merkie in die gepaste ruimte. ☐ 8

19 of jonger	☐	20 tot 29	☐
30 tot 39	☐	40 tot 49	☐
50 tot 59	☐	60 tot 69	☐
70 of ouer	☐		

49. Wat is u geslag? Maak 'n merkie in die gepaste ruimte. ☐ 9

M ☐ V ☐

50. Wat is u beroep? ..... ☐ 10

Dankie. 2 70

APPENDIX D 1

Q1a. Trail duration:

2 days	3 days	4 days	5+ days	
36,4	29,4	20,3	11,9	%

Q1b. Party size:

<4	4-6	7-12	>12
12,6	65	18,2	3,8

Q1c. Path type:

shrt, mrkd	shrt, unmrkd	lng, mrkd	lng, unmrkd
3,5	2,1	70	23,8

Q1d. Shelter type:

hut	tent/cave	leanto	none
69,2	14	7,7	6,3

Q2. Non-NHW Experience:

one	two	three	four	five+ trails
17,5	13,3	8,4	7	27,3

Q3. NHW Experience:

one	two	three	four	five+ trails
21,7	14,7	18,2	9,1	24,5

Q4. Military access:

Al	Sm	Nl	Nr	Dk
4,9	18,2	9,8	64,3	2,8

Q5. Different races access:

Al	Sm	Nl	Nr	Dk
79,7	10,5	7	2,1	0,7

Q6. Club membership necessary for access:

Al	Sm	Nl	Nr	Dk
51	25,2	11,9	11,2	0,7

Q7. Code of ethics needed:

Al	Sm	Nl	Nr	Dk
94,4	0,7	2,8	1,4	0,7

Q8. Code enforement:

patrol/fine	leadership	grading	club memb.	other
36,2	31,2	10,9	10,9	10,9

Q9. Need for range of NHW trails:

Al	Sm	Nl	Nr	Dk
58,7	28	8,4	4,2	0,7

Q10. Choice of paths needed:

Al	Sm	Nl	Nr	Dk
16,3	64,8	16,5	7,7	0,7

Q11. Choice of shelters needed:

Al	Sm	Nl	Nr	Dk
14	39,9	23,1	22,4	0,7

Q12. Choice of campsites needed:

Al	Sm	Nl	Nr	Dk
5,6	30,8	7,7	55.9	0

Q13. Choice of shelters needed:

Al	Sm	Nl	Nr	Dk
27,3	36,4	17,5	18,9	0

Q14. More comfortable huts needed:

Al	Sm	Nl	Nr	Dk
4,9	13,3	18,9	60,8	2,1

Q15. More leantos needed:

Al	Sm	Nl	Nr	Dk
11,2	42	22,4	23,1	1,4

Q16: More permanent tents needed:

Al	Sm	Nl	Nr	Dk
2,1	35,7	10,5	47,6	2,8

Q17. More own tents needed:

Al	Sm	Nl	Nr	Dk
3,5	35,7	10,5	47,6	2,8

Q18. Rubbish bins needed:

Al	Sm	Nl	Nr	Dk
73,4	13,3	4,2	9,1	0

Q19. Firew needed:

Al	Sm	Nl	Nr	Dk
55,2	35	3,5	5,6	0,7

Q20. Cairns should replace painted markers:

Al	Sm	Nl	Nr	Dk
48,3	34,3	12,6	4,9	0

Q21. Paths should have vantage points:

Al	Sm	Nl	Nr	Dk
44,8	18,9	10,5	0	0

NHW trials should be circular:

Al	Sm	Nl	Nr	Dk
18,9	69,9	10,5	0,7	0

Trails should skirt rural settings:

Al	Sm	Nl	Nr	Dk
11,2	40,6	18,2	29,4	0,7

Trails should follow Forestry roads:

Al	Sm	Nl	Nr	Dk
4,9	65	17,5	11,9	0,7

Trails can follow farm roads:

Al	Sm	Nl	Nr	Dk
15,4	61,5	16,1	7	0

Trails can follow public roads:

Al	Sm	Nl	Nr	Dk
2,1	23,1	12,6	58,7	0

Too many encounters on NHW trails:

Al	Sm	Nl	Nr	Dk
7,7	59,4	16,8	9,1	7

. Path duration preference:

1-2	3-4	5-6	7-8	9+ hours
0	2,1	50,7	45,7	1,4

. Party size preference:

<4	4-6	7-10	11-15	16-25	25+ people
2,9	50	27,1	13,6	5	1,4

. Booking numbers per day preference:

<11	11-15	16-24	25-34	35-45	45+ people
12,7	18,3	32,4	21,1	11,3	4,2

. Too many encounters at campsites :

Al	Sm	Nl	Nr	Dk
16,2	61,3	15,5	6,3	0,7

. Too many encounters *en route:*

Al	Sm	Nl	Nr	Dk
7	56	22,5	13,4	0,7

. Path layout preference:

zig-zag	contour	traverse	2x-comb0	3x-combo
1,8	1,8	7	10,5	78,9

NHW trails should enhance environmental education:

Al	Sm	Nl	Nr	Dk
93,7	4,9	0,7	0	0,7

Maps should replace path markers:

Al	Sm	Nl	Nr	Dk
26,1	28.9	11,3	31,7	2,1

Need for NHW field guides:

Al	Sm	Nl	Nr	Dk
66,2	21,8	9,9	2,1	0

Envirnmental info. needed at shelters:

Al	Sm	Nl	Nr	Dk
81	13,4	3,5	2,1	0

Environmental info. needed on map:

Al	Sm	Nl	Nr	Dk
83,1	12,7	4,2	0	0

NHWS should be continuous through study area:

Al	Sm	Nl	Nr	Dk
46.5	21,1	21,1	9,2	2,1

40. NHW detract from settings:

Al	Sm	Nl	Nr	Dk
7	31,7	15,5	44,4	1,4

41. More NHW trails needed for inexperienced hikers:

Al	Sm	Nl	Nr	Dk
7	47,2	15,5	31	1,4

42. More NHW trails needed for experienced hikers:

Al	Sm	Nl	Nr	Dk
16,2	67,6	8,5	7,7	0

43. NHW trails can ruin sensitive mountain areas:

Al	Sm	Nl	Nr	Dk
20,4	33,1	13,4	28,2	4,9

44. New trails will be open up good opportunities:

Al	Sm	Nl	Nr	Dk
43	37.3	14,2	14,1	1,4

45. Self-percieved hiker profile:

Beginner	Moderate	Above average	Seasoned
7	21,8	34,5	36,6

Q46. Club members:

Yes	No
62,7	37,3

Q47. Number of clubs belonged to:

0	1	2	3	4+ clubs
37,1	38,6	19,3	3,6	1,4

Q48. age:

<19	20s	30s	40s	50s	60s	70+
4,2	21,8	23,2	16,2	16,2	12	6,3

Q49. Gender:

Male	Female
76,1	23,9

Q50. Occupation:

Managerial	7,8 %
Professional	46,1
Teacher/academic	11,3
Skilled	0,7
Self-employed	1,4
Public service	8,5
Variously unemployed	24,1