CONSERVATION OPTIONS FOR BLOUBERG, LEBOWA:

PROPOSALS BASED ON A SOCIO-ECOLOGICAL STUDY

C C FERGUSON

Thesis submitted in partial fulfilment of the requirement for the degree of Master of Arts in the Department of Environmental and Geographical Science, University of Cape Town.

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A B S T R A C T

The Blouberg mountain range, in the north-western area of Lebowa, is culturally significant as the traditional royal headquarters of the Bahananwa tribe, and ecologically unique because of the endemic flora located on its slopes. The communities occupying the upper plateaux have remained isolated from the influences of modern development because of the absence of roads. Access is limited to steep and rugged mountain paths. The inhabitants of the mountain have largely lived in harmony with their environment, but a large and growing population around the base of Blouberg is placing stress upon the natural resource base. As a result, research was initiated in order to develop a range of conservation strategy options which would meet the goals of ensuring the sustainability of the natural resources of the area and enhancing the lifestyles of the local inhabitants.

The research procedure adopted consisted of the gathering of secondary data, a social survey, bio-physical survey and panel evaluations. Secondary data was gathered from a wide range of sources and included interviews with individuals and a computer-aided library search. A social survey was conducted amongst inhabitants of the mountain plateaux and locals living around the base of the mountain in order to determine the basic needs, aspirations and attitudes of the communities. The bio-physical survey revealed areas where environmental degradation had occurred and was occurring. Threats to the natural resource base were also identified.

An information document, comprising information compiled during the first three phases of the research was circulated to individuals who had been approached to participate in two workshops convened by the researcher. The purpose of these workshops was to identify environmental characteristics of Blouberg worthy of

conservation, identify hazards to these, establish means to counteract them and suggest specific conservation principles which should be incorporated in conservation strategy options.

Six conservation strategy options which were formulated as a result of the research procedure described above, are presented by the researcher. In the final analysis recommendations as to the choice and implementation of one of the options is proposed.

The advantages of this approach are that a thorough investigation of opinions and alternatives should lead to the implementation of the most viable, equitable and sustainable conservation strategy for Blouberg.

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PREAMBLE

A HISTORICAL SURVEY OF CHANGING CONSERVATION CONCEPTS

DEFINITIONS OF CONSERVATION

The term `conservation' is derived from two Latin words - `servare', meaning `to keep' or `to guard', and `con', which means `together'. Although the principles and practices of conservation are as old as mankind, the concepts have altered through time as man's impact on the biosphere [1] has changed as a result of technological innovations. Literature pertaining to conservation leaves one in no doubt that the term is a broad one with many connotations. Gifford Pinchot, head of the United States Forest Service in the early 1900's, is credited with first having used the term conservation (World Book Encyclopedia, 1991).

Some contemporary definitions of `conservation' are presented below in an attempt to clarify the term as it is used in the context of this research report:

> "... planned management of a natural resource [2][2] to prevent exploitation, destruction or neglect". (Webster's Dictionary, 1961, p.483)
>
> "... a way of looking at the world and a way of action based upon that point of view. Conservation includes the recognition of limits, since we would have no interest in conserving something that was in unlimited supply". (Dassman, 1984, p.7)
>
> "... the management, protection, and wise use of natural resources." (World Book Encyclopedia, 1991 Vol.4, p.974)

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[1] biosphere - The thin layer of soil, rock, water and air that surrounds the planet Earth along with the living organisms for which it provides support (UNESCO, 1970)

[2] natural resource - any environmental element or condition which has the potential to enhance social well being (Stauth, pers. comm.).

> "... the use, management and protection of resources so that they are not degraded, depleted or wasted and are available on a sustainable basis for use by present and future generations".Miller (1990, p.A38)

The conspicuous thread running through each of the above definitions suggests that the most important goal of conservation is to maintain the biosphere, with its rich array of natural resourcesm in a healthy condition. Miller takes the definition one step further by suggesting that the main purpose of conservation is ultimately to sustain man's very existence. If one accepts this tenet, then Aldo Leopold's succint definition of conservation, first coined in 1949, is most appropriate:

> "Conservation is a state of harmony between man and land" (Leopold, 1970, p.243).

For `land' above, the substitution of the word `biosphere' would be more relevant in contemporary jargon.

HUMAN IMPACT ON THE BIOSPHERE

Historical Perspective

It is a popular myth that primitive man lived in harmonious balance with the natural environment by deliberately practising conservation methods that ensured the well-being of the planet. It is certainly true from available evidence that some cultures developed conservation-orientated practices, but for the most part it would seem as if early man's impact on the environment was minimal largely because populations were small and technological expertise limited.

Scientists believe that human life first appeared on earth approximately three million years ago (Goudie, 1990). Estimates of populations are difficult to ascertain, but it is estimated that before the agricultural `revolution', approximately 10 000 years ago, the world population may have been about five million. Three main phases of cultural and technical developments are recognised as having occurred

over the past two to three million years i.e. hunting and gathering; plant cultivation, animal keeping and metal working; and the phase of modern urban and industrial society.

Hunter-Gatherers

For several million years Stone-Age man lived scattered in small groups over most of the globe. Man was distinguished from animals in that he demonstrated cultural development and was able to manufacture crude implements as an aid to manipulating his environment. As Stone-Age man progressed his tools became more sophisticated and his ability to alter his environment more effective. Not only were stone tools used, but wooden implements and animal bones were also utilised as weapons for killing animals. Most of these hunter-gatherer bands were nomadic, moving with the seasons and following the migratory routes of animals. For the most part impact on the environment was minimal. The discovery of the use of fire approximately 1,4 million years ago, however, was a major factor by which man was able to alter the vegetation on a large scale. The development of communication skills, improved tools and hunting weapons enabled people to work together to hunt herds of big game. There is evidence that man contributed to the extinction of certain species of wild animals in different parts of the world although some scientists attribute the extinction of many species with climatic changes (Goudie, 1990).

Despite the deliberate use of fire to manipulate the environment and their efficient hunting skills, the hunter-gatherer society, who inhabited the Earth up to about 10 000 years ago, played a minor role in modifying the biosphere. There is no evidence to suggest that conservation was practised during the hunter-gatherer phase of human history.

Agricultural Societies

The domestication of animals and the cultivation of plants, which began some 10 000 years ago, is regarded as one of the most significant causes of human impact on the environment (Goudie, 1990). Cultivation of food plants and the domestication of animals narrowed the area over which man had to range for his needs. As a result the development of the first major settlements and towns occurred. This provided man with more leisure time and a solid base for cultural advance, heralding urbanisation and the development of sophisticated civilisations.

The invention of the metal plough (7 000 to 5 000 years ago) and the use of irrigation enabled farmers to cultivate larger tracts of land. The invention of the wheeled cart (about 4 000 B.C.) further enhanced farming practices and trade. The shift from hunting and gathering had four major effects:

i) Population began to increase because of a larger and more constant supply of food.

ii) Permanent settlements - villages and towns were established.

iii) Larger tracts of land were cleared for cultivation, and domesticated animals were kept within limited areas in proximity to settlement.

iv) Specialised occupations and long distance trade developed.

The environmental impacts of these occurrences were considerably greater than those produced by the hunter-gatherer societies. Agriculturalists began to simplify the

biosphere's ecosystems[3] eliminating hundreds of species of plants and animals e.g. seeding of a few varieties of cereals in the North American prairies. This simplification has reduced the stability of ecosystems making them vulnerable to disease, pests and climatic fluctuations. The growing populations of emerging civilisations made greater demands on the environment e.g. food and wood (for fuel and building). To meet these needs forests were destroyed and large tracts of land ploughed for cultivation. Large-scale land clearing eliminated the habitats of many species of plants and wild animals. Poor management of cleared areas led to soil erosion and overgrazing.

> "Archaeological evidence and historical records show that a number of agriculture-based urban societies in the Mediterranean area prospered economically between 3 500 B.C. and 500 A.D.. But they did so by degrading their resource base so severely that they eventually helped bring about their own downfall" (Miller, 1990, p.34).

Some philosophers (Merchant, 1980; Capra, 1982) maintain that before 1 500 A.D. man regarded the biosphere in terms of a "nurturing mother" which restrained them from engaging in activities detrimental to the environment:

> "The image of the earth as a living organism and nurturing mother served as a cultural constraint restricting the action of human beings. One does not readily slay a mother, dig into her entrails for gold and mutilate her body... . As long as the earth was considered to be alive and sensitive it could be considered a breach of human ethical behaviour to carry out destructive acts against it" (Merchant, 1980 in Capra, 1982, p.3).

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[3] ecosystems - subdivisions of the biosphere consisting of plants, animals and micro-organism supported by air, water, soil or other substrates. Ecosystems may be large or small, simple or complex e.g. a community of lichens growing on a rock or a tropical rain forest. All ecosystems are dependent upon the sun as an energy source.

Capra regards this relationship between human beings and the biosphere as `organic' and harmonious:

> "Before 1 500 A.D. the dominant world view in Europe, as well as in most other civilisations was organic. People lived in small, cohesive communities and experienced nature in terms of organic relationships, characterized by the interdependence of spiritual and material phenomena and the subordination of individual needs to those of the community" (Capra, 1982, p.37).

Much archaeological and historical research however, indicates that man's impact upon the inhabited areas of the biosphere prior to 1 500 A.D. was considerable given the relatively small population:

> "It is becoming increasingly clear that Neolithic and Bronze Age people were able to achieve very notable changes in the soils, plants and animals of large areas of Europe and the Near East" (Goudie, 1990, p.21).

The mining ores and the smelting of metals, which began between 5 000 to 7 000 years ago, required massive amounts of wood which contributed significantly to deforestation. Destruction of vegetation and the spread of deserts followed the early rise of civilisations in the Middle East and in North Africa (Encyclopedia Britannica, 1977).

Although the destruction and depletion of resources during this period in history was widespread, the Roman and Muslim cultures in particular did possess some sound land use practices which lead to the development of certain conservation practices. Some were accorded added moral authority since they appeared as commands and instructions in the Bible governing the use of land and natural resources. For example:

1) Protection of forest groves, sacred mountains and certain animal species by religious taboos.
2) The use of organic fertilizers to maintain soil fertility.
3) Sophisticated techniques of terracing to prevent soil erosion on hillsides.
4) The proclamation of natural areas as hunting preserves for the use of royalty and the upper classes.

In general terms however, conservation in this pre-industrial era was not of primary concern largely because the natural environment was viewed as a vast and inexhaustible source of natural resources. Man lacked the technology to effect widespread environmental changes and human numbers were small.

Industrial Societies

A revolution in culture and technology leading to far reaching developments in industry, beginning in the early sixteenth century, produced significant and often devastating impacts on the biosphere. Capra maintains that this so-called `industrial era' was heralded by developments in the disciplines of physics and astronomy:

> "This development was brought about by revolutionary changes in physics and astronomy, culminating in the achievements of Copernicus, Galileo and Newton. The science of the 17th century was based on a new method of inquiry, advocated by Francis Bacon, which involved the mathematical description of nature and the analytic method of reasoning conceived by the genius of Descartes. Acknowledging the crucial role of science in bringing about these changes, historians have called the 16th and 17th centuries the Age of the Scientific Revolution" (Capra, 1982, p.38).

Galileo, regarded as the father of science, was instrumental in pioneering the empirical approach and using mathematical

formulae to describe nature. This began an obsession, for the next four hundred years, of scientists with quantification and measurement. Up to this time the goals of science had been qualitative in nature - the pursuit of wisdom, beauty, truth and harmony in the universe. The Scientific Revolution of the 16th and 17th centuries ushered in an attitude which may be regarded as its polar opposite. Capra (1982) argues that this mentality, predominant in our Western cultural tradition, since the advent of the scientific views of Descartes, Bacon, Newton and the technology of the Industrial Revolution, is responsible for the ecological crisis we face today. The empirical methods pioneered by Bacon advocated domination and control over nature. The belief in the certainty of scientific knowledge and the power of analytical reasoning convinced scientists that "nature worked according to mechanical laws, and everything in the material world could be explained in terms of the arrangement and movement of its parts" (Capra, 1982, pp.45-46). This mechanistic view of Nature spawned an attitude to the natural environment that was predominantly anthropocentric and destructive.

The voyages of discovery that began in the late fifteenth century ensured that the influence of European man was spread over the globe. Coupled with the invention of fossil-fueled machinery such as the steam engine, steamboat and tractor, the agriculture-based urban cultures of the previous era were rapidly transformed into urbanised industrialised societies. By the seventeenth century, Europeans were equipped with a powerful technology which enabled them to modify large areas of the earth and to subdue less sophisticated people. Colonists, who arrived in the `New Worlds' of North America, Africa, South America and Australasia, had an exploitative mentality, largely concerned with what they could extract from the land for personal gain. As a result, large scale destruction of natural vegetation and wildlife accompanied the spread of European explorers and colonists. The nineteenth century witnessed severe environmental destruction. In the `New

World' many species of wildlife were hunted to extinction and others reduced to numbers which threatened their survival. This destruction was particularly severe in North America where large herds of bison, elk and deer were decimated in large numbers, and large predators such as grizzly bear, cougar and wolf almost exterminated. Many species of birds, which occurred in great abundance e.g. the passenger pigeon, Carolina paroquet and heath hen, were wiped out. Logging and fires reduced luxurious indigenous forests to grassland. Native plants and animals were replaced with exotics of European and Asian origin and soil erosion progressed rapidly as a result. Colonisation in Africa, Australia, South-East Asia and South America followed the same pattern and environmental destruction and depletion occurred on an unprecedented scale.

The development and use of synthetic pesticides in the colonies of the `New World' resulted in the eradication of disease-carrying insects such as the malaria-bearing mosquito. Mortality rates were lowered and populations began to grow rapidly, placing greater stress upon the natural resources of the biosphere.

It is a misconception however, that the incumbent, indigenous civilisations had co-existed in a harmonious union with Nature, conserving and nurturing it. Evidence indicates for example, that the Australian aboriginals were responsible for wiping out certain species of marsupials, the Maoris caused the extinction of the flightless Moa and early man wiped out several animal species in North America (Blainey, 1976). In Madagascar, early man was instrumental in devastating the Elephant Bird (ibid) and in Hawaii, certain species of bird with spectacular plumage were hunted to extinction with the introduction of European firearms (Day, 1981).

Probably as a logical consequence of these developments the advent of the modern conservation movement occurred, not in the settled countries of the Old World but in the New World

colonies, where "within the memory of a single generation, there had been extreme changes in the landscape and in the abundance of wildlife" (Encyclopedia Britannica, 1977, pp.42, 43). In the 1830's, George Catlin, a U.S. author and artist first expressed serious misgivings about the widespread slaughter of the bison and the effect it was having on the indigenous Indian tribes. Over the next few decades other conservation pioneers (Thoreau, Marsh, Muir, Olmstead and others) were instrumental in fostering an environmental consciousness which led to the establishment of the concept of officially proclaimed national parks. The first of these were Yosemite Valley (administered by the state of California) in 1864 and Yellowstone National Park, Wyoming in 1872. This idea spread rapidly in Canada, South Africa and in the British and French colonies throughout the world. The main emphasis of these early conservationists was the preservation and protection of large tracts of land against mining, logging and other forms of development. However this "hands-off" preservationist policy spurned conflict between naturalists and advocates of economic development who resented the increasing government role of withdrawing potentially exploitable land. In 1891, the USA instigated the idea of protecting large forests against exploitation by introducing the system of national forests. The name `conservation' was coined by President Theodore Roosevelt, in 1908, to describe these activities. These initiatives were reinforced during the presidency of Franklin D Roosevelt in the 1930's but did not receive widespread support, however, until the 1960's:

> "Sparked by the student revolt against war and social injustice, a spreading activism was directed against all of the ills brought on by the `American way of life'. There was increasing awareness of the dangers resulting from pollution, increasing population, and the general destruction of nature in favour of economic profit. Conservation under the new name of the `environmental movement' or the `ecology movement', developed enough clout to depose

> congressmen or governors and to influence presidents who, unlike Roosevelt, had little interest in the subject" (Dasmann, 1984, p.9).

In the 1960's the `environmental movement', which had up to this time been isolated and uncoordinated, received international recognition with the publication of Rachel Carson's book `Silent Spring'. Carson described the serious consequences of the use of synthetic pesticides, mainly DDT. By highlighting the severe ramifications on the soil, water and air of these agricultural poisons, she was instrumental in giving major impetus to the international environmental movement.

Towards the end of the 1960's and the early 1970's there was a perceptible change in the approach to conservation largely as a result of four factors (Jones, 1987):

1) The realisation by industrialists that mineral resources and energy supplies were exhaustible.

2) The abundance of high level meetings, scientific colloquia, scientific symposia and other gatherings at local, national and international levels, at which information about the environment was exchanged and action plans prepared.

3) Major concern over rapidly increasing populations and the stresses this would place on the biosphere.

4) Increased media coverage and literacy publications on topics such as overpopulation. pollution, energy crises, extinctions of plants and animals and other forms of environmental depredations.

The concept of conservation broadened in scope as environmentalists began to focus their attention on pollution of the soil, air and water of the biosphere. By the 1970's, the problems of the environment were receiving international media interest. Politicians began to realise that the environmental movement was becoming a popular

lobbying force when about 20 million people gathered throughout the United States to demand better environmental quality, on the first annual Earth Day in April, 1970. People began to recognise that man was inseparable from nature and that human interference, albeit on a small scale, results in widespread detrimental effects which are not always initially obvious. The writings of Paul Ehrlich, Barry Commoner and Garret Hardin in the 1960's and 1970's demonstrated the interlocking relationships of nature and emphasised the relevance of the science of ecology [4].

> "Any society which based its wealth and health upon an infrastructure which includes a sound ecological base could expect to achieve benefits in a wide variety of ways." (Jones, 1987, p.11).

In response to the need for a more integrated (systems) approach [5] to environmental problems and natural resource management, many countries established governmental departments or ministries to deal with these issues. The United States was a precursor establishing a Council on Environmental Quality in terms of the National Environmental Policy Act of 1969. The late 1960's and the late 1970's saw a proliferation of international agencies whose main concerns were environmental e.g.

* The International Biosphere Conference (Paris, 1968), convened by the International Biological Programme (IBP) first used the term sustainable development [6] as an important principle of conservation.

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[4] ecology - "The science concerned with the interrelationships among living things and their non-living environment." (Dasmann. 1984, p.12)
[5] systems approach - an approach which takes into account the "interrelationships and interdependence of all phenomena - physical, biological, psychological, social and cultural" (Capra, 1982, p.285).
[6] Sustainable development - `a pattern of social and structural economic transformations i.e. development which optimises the economic and other societal benefits available in the present without jeopardising the likely potential for similar benefits in the future' (Goodland and Ledec, 1986).

* In 1968 the International Council of Scientific Unions (ICSU) established a high level Scientific Committee on Problems of the Environment (SCOPE).

* In 1968 UNESCO initiated studies for what became, in the early 1970's, the Man and the Biosphere (MAB) Programme.

* The UN General Assembly recognised problems of the environment and scheduled a UN Conference on the Human Environment in Stockholm for 1972.

* The Ecology Party, a forerunner of the Green Movement (1981) in West Germany, was founded in 1972.

* In 1972 the UN Conference on the Human Environment, in Stockholm, developed further the concept of sustainable development (introduced by IBP in 1968).

The OPEC oil embargo in 1973 and the closure of oil production in Iran in 1979 emphasised the need for effective conservation policies based on the principle of sustainable economic development. This principle permeated conservation and economic thinking and provided the rationale for what the International Labour Organisation (ILO) termed a `basic needs strategy' [7]:

> "The 1970's saw the emergence of a major revision in development thinking that presents a fundamental challenge to the conventional concensus on economic development. In common with the call for a `basic needs strategy' (ILO, 1976: Streeten et al.,1981; Stewart, 1985), this revision emphasises improving

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[7] basic needs - `the minimum bundle of goods and services which is required for a basic existence'(Moller, 1985, p.68). Basic needs would include adequate food, shelter, clothing, fuel (for cooking and warmth), access to health and education services, clean water and sanitation. Organisations such as the International Labour Organisation include labour force participation, safety, job security, opportunities to save for the future, provision for leisure needs and political participation. Some maintain that `participation in the definition of basic needs is a basic need in itself' (Moller, 1985, p.68).

> the basic needs of the poor. However, the sustainable development approach additionally argues that `real' improvement cannot occur in Third World countries unless the srtategies which are being formulated and implemented are environmentally sustainable over the long-term, are consistent with social values and institutions, and encourage `grassroots' participation in the development process" (Goulet, 1971, p.333).

The previous, more materialistic economic approach of Man's relationship to Nature, was radically altered and economists began to pay more attention to the importance of biological resources for human welfare. There was a growing realisation of the need to link conservation and socio-economic development. In 1968, Clawson had referred to national parks as `social institutions`, adding that:

> "National parks have always got to be viewed against the background of the broad social structure, the functioning of the economy and of life generally within the country today and as best can be foreseen for, say a generation ahead" (Clawson, 1969, p.60).

Economists and conservationists, who had until recently seen one another as being theoretically and practically at odds in the development debate, were now realising that burgeoning populations in the Third World countries and overconsumptive lifestyles in First World nations were serious threats to the life-support systems of the biosphere. When Myers suggested that ecological requirements of national parks must be balanced against socio-economic restraints in their environs (Myers, 1972), he was ostracised by many old school, protectionist conservationists. Nonetheless the realities of resource depletion and destruction impelled environmental, social and economic planners into growing consensus, and the concept of sustainable development based on the satisfaction of basic human needs, gathered validity. The World Conservation

Strategy (IUCN, 1980), was an indication of how far conservation principles had changed from those of strict protection originally advocated at Yosemite and Yellowstone 100 years previously. This document defined conservation as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations" (IUCN, 1980).

It is evident from this statement that conservation is expected to contribute to social and economic development if it is to be self-sustaining.

The failure of any subsequent projects sponsored by the World Bank and other First World organisations, however, revealed a significant inadequacy in the `new' conservation theory and proxis, i.e. that top-down planning and management practices are inherently unsuccessful. The World Conservation Strategy, valuable as it was, had, according to many critics, said "too little about the cultural dimension, about the values of different ways of life and philosophies or indeed about popular aspirations" (McNeely and Pitt, 1985, p.4). The 15th session of the General Assembly of IUCN, in Christchurch, New Zealand, in 1982 recommended that conservation and socio-economic development should occur simultaneously and that it should:

1) `take into account the still-existing, very large reservoir of traditional knowledge, philosophy and experience within local cultures and must provide a significant basis for the evolution of future management policies and planning actions';

2) `provide the means for local people who maintain ecologically sound practices to play a primary role in all stages of development in the area the identify with, so that they can participate and benefit directly, in a manner which is consistent with their values, time frames and decision-making processes';

3) `seek continuous support of these local people in shaping and implementing conservation strategies, programmes and plans, in order to considerably increase present conservation potentials for achieving the goals of the World Conservation Strategy', and

4) `foster further research into traditional lifestyles and human ecology.' (McNeely and Pitt, 1985, pp.4-5)

In a follow-up meeting in Morges in 1982, the IUCN Commission on Environmental Planning emphasised the need for sensitivity to the needs and cultures of local populations, by involving the local people in the whole process of development planning. In addition it was stressed that `conservation efforts should preferably be combined with efforts to meet other immediate needs of local populations such as health care, rural development etc' (McNeely and Pitt, 1985, p.5). Pitt (1988) later used the term `ethno-conservation' to describe the new concept of conservation. Environmentalist R.F. Dasmann presented a number of important principles at the World National Parks Conference held in Bali in 1982. These guidelines are consistent with the principles of ethno-conservation and were labelled under the term `ecodevelopment'[8]. With regard to Protected Natural Areas, Dasmann placed strong emphasis on the necessity of direct benefits to local communities:

> "The establishment of protected natural areas intended for the conservation of biotic communities or wild species can be of direct benefit to the peoples and communities in surrounding or adjacent areas, but without adequate attention to the interaction between people and the natural

[8] ecodevelopment - `a new approach to development which from the beginning would consider not only economic development as strictly defined, but also the broad social and environmental context into which that development must fit if it is to be successful in benefitting the whole population. Such an approach does not question the kind of development per se only its appropriateness to a particular place and culture, an appropriateness that must be decided by the people themselves' (South Pacific Commission, 1980, in Dasmann, 1984, pp.430-431).

environment such establishments can also have adverse effects on their economies and cultures" (Dasmann, 1984, p.356).

The principles proposed by Dasmann for consideration, when developing protected areas, stressed consultation with local people from the early planning stages, minimum disruption of traditional ways of life, local involvement with management, economic benefits to be shared with local people, and planning and development of the environment surrounding the protected area to ensure a "viable and sustainable economic future for the people involved" (Dasmann, 1984, p.358). He further suggested that useful models such as Lusigi's (1978) conservation unit [9] approach and the biosphere reserve[10] model (MAB) developed by UNESCO could be particularly useful.

Sachs (1974), was instrumental in articulating the meaning and characteristics of the concept `ecodevelopment'. Eight principles were proposed which included;

1) catering for the fundamental needs of local communities - the needs being defined by the communities themselves;

2) contributing `primarily to human realisation - taking into account employment, security, quality of human relationships and respect for cultural diversity';

3) consideration for future generations (sustainable development);

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[9] conservation unit - establishment of detailed objectives for each category of protected area established. These objectives might include: conservation of wildlife, enhancement of local lifestyles, development of tourism, provision of environmental education, provision of a suitable environment where ecosystem dynamics can be observed and studied and `provision of an ecologically healthy environment, free from deterioration, where all these activities can be realised' (Lusigi, 1978).

[10] biosphere reserve - `an area where representative sample examples of significant ecosystems, original habitats of domesticated plants and animals, and remnant populations of rare and endangered species' are protected (Batiesse 1986, p.1). (See chapter 7 for further details.)

4) recycling human waste;

5) seeking local energy sources and energy efficient transportation methods;

6) new modes of education and social organisation emphasising appropriate (soft) technology[11];

7) establishment of a `new horizontal authority in place of the vertical government hierarchy';

8) education which will replace a value system based on domination over nature with ones based on respect for nature (Sachs, 1974 in Dasmann, 1984, pp.429-430).

Sachs' principles of ecodevelopment were simplified in 1980 to three goals, each with a different emphasis i.e. economic (meeting basic needs), cultural/social (self-reliance and autonomy in decision-making) and ecological (`a working symbiosis between people and environments'). These three principles were seen as representing three sides of the `development triangle', the ecological side being the base, since on it depends the sustainability of development. `Development that is not sustainable must in the long term worsen conditions for everyone' (Dasmann, 1984, p.431).

The Brundtland Report, commissioned by the United Nations in 1983, to suggest ways in which rapidly increasing numbers of people would be able to meet their basic needs in the next century, stressed that the way to "stop using up the earth's ecological capital and begin to draw on the interest we can get from the sustainable husbandry of its resources" (Bruntland, 1987, p.7.), requires two things:

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[11] appropriate `soft' technology - small-scale decentralised technologies `responsive to local conditions and designed to increase self-sufficiency ... They are often called `soft' technologies because their impact on the environment is greatly reduced by the use of renewable resources and constant recycling of materials' (Capra, 1982, p.443). Examples would include solar energy, wind-powered generators, organic farming etc.

1) The concept of sustainable development must be the focus of all planning activities.

2) Nations need to develop a more equitable "international economic structure that begins to narrow the gap between developed and developing nations" (Bruntland, 1987, p.7.).

The report identified the need for integrating economic and ecological factors into the development planning process and stressed the importance of involving local communities in decisions affecting resource use, conservation practices and development in their areas. In general terms the main objective of sustainable development is to reduce the absolute poverty of the world's poor by focusing on the needs and priorities of these people as they see them. In addition, however, the report raised a second issue: overconsumption or wasteful consumption of resources by First World (developed) countries, which has largely been ignored by economists, conservationists, politicians and development planners until quite recently.

The development of such thinking concerning the environment has progressed to a point where, as Capra (1982) maintains, humanity is now facing a `paradigm shift'[12]. We are in the last throes of a paradigm which

> "... has dominated our culture for several hundred years, during which it has shaped our modern Western society and has significantly influenced the rest of the world. This paradigm comprises a number of ideas and values that differ sharply from those of the Middle ages; values that have been associated with various streams of Western culture, among them the Scientific Revolution, the Enlightenment and the Industrial Revolution. They include the belief in the scientific method as the only valid approach to

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[12] paradigm shift - `a profound change in the thoughts, perceptions, and values that form a particular vision of reality' (Capra, 1982, p.11).

knowledge; the view of the universe as a mechanical system composed of elementary material building blocks; the view of life in society as a competitive struggle for existence; and the belief in unlimited material progress to be achieved through economical and technical growth" (Capra, 1982, p.12).

Close scrutiny of the attitudes of man towards his environment from the 16th century to the middle of the 20th century (as documented in this preamble) would bear out Capra's hypothesis. The first stirrings of an environmental consciousness began to manifest in the environmental movement of the late 1950's and 1960's. Up to this time man had little regard for the damage he was wreaking on the environment, a mentality which Chinese (Taoist) philosophers regarded as yang[13] mentality, i.e. demanding, aggressive, competitive, rational and analytic. It may be argued that the early manifestations of a shift towards the new paradigm activity in harmony with nature (`yin'), in the realm of conservation began in the 1950's and 1960's.

Miller (1990, pp.612-613) conceives four levels of Environmental Conservation Awareness which correlate closely with the changing concepts of conservation from the 1950's to the present day:

1) The first level of awareness is of pollution and environmental degradation. The human response to this has been that a growth-orientated economy will provide technological solutions to the problem.

2) The second awareness level is of overconsumption and overpopulation. Broad solutions suggested are to reduce consumption of matter and energy in the developed nations and stabilise and reduce populations in the developing nations.

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[13] YIN and YANG - two types of activity ie. harmony with nature (yin) and against the natural flow (yang) (Capra, 1982).

3) The third level of awareness is termed the `New Age/Spaceship Earth'. The earth is viewed as a spaceship/machine with limited resources and the task of man is to use sophisticated technology and science in the existing economic and political systems to control population growth, pollution and resource depletion.

Levels 2 and 3 have been labelled `Shallow Ecology' (Miller, 1990) as they are human-centered views based on the arrogant assumption "that through technology and human ingenuity we can control nature and create artificial environments and life forms to avoid environmental overload" (Miller, 1990, pp.612-613).

4) The fourth awareness level is called `Sustainable Earth or Deep Ecology'. The essential difference between this philosophy and the previous ones is that it is `earth-centered or life-centered' (Miller, 1990) as opposed to anthropocentric (human-centered). It stresses that man is a part of Nature, not above it, and that all his actions should be attuned to the natural rhythms of the biosphere.

The Deep Ecology movement appears to be ushering in the `new' paradigm, although it must be recognised that its philosophical tenets are not entirely new. Chinese sages, ancient Greek philosophers and even Christian mystics (St Francis of Assisi), professed similar ideas:

> "The deep ecology movement, then, is not proposing an entirely new philosophy but is reviving an awareness which is part of our cultural heritage. What is new, perhaps, is the extension of the ecological vision to the planetary level....." (Capra, 1982, p.459).

CONCLUSIONS

An attempt has been made briefly to trace the changing face of conservation concepts, from the first appearance of man on the Earth, two to three million years ago to the present (1991) in order to locate subsequent theoretical analysis in the case study of the Blouberg. It is apparent that conservation, as defined on page one, is historically a very recent concept. Original emphasis on preservation and protection have altered over the centuries. Philosophers and environmentalists believe that humanity is on the brink of a planetry crisis (exacerbated by environmental disaster) which will usher in a "new `paradigm' - a new vision of reality; a fundamental change in our thoughts, perceptions and values" (Capra, 1982, p.xviii). This `paradigm' will replace the mechanistic view of nature, which has prevailed since the 16th century, with a holistic[14] view, which is manifesting itself strongly in the conservation and environmental movements in this decade.

South African Context

A similar review of the changing conservation concepts in South Africa is useful in order to understand the rationale for the research methodology adopted in order to formulate conservation strategy options for Blouberg.

The development of conservation concepts in South Africa from the time of Van Riebeeck's arrival at the Cape, in 1652, has followed a similar pattern to world trends described previously. Exploitation of natural resources by colonists, coupled with rapid population growth, decimated plant and animal habitats and caused serious soil loss. The earliest protection measures, concerned with hunting, were adopted by Van Riebeek less than five years after his arrival at the Cape. Subsequently a licence system was imposed by Van der Stel, in the 1680's, together with

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[14] holistic - the term is derived from the Greek work `holos' (whole) referring to an `understanding of reality in terms of intergrated wholes whose properties cannot be reduced to those of smaller units' (Capra, 1982, p.1).

prohibition of unlawful hunting. The destruction of wildlife, however, continued unabated, notwithstanding stricter laws (Placaaten) and harsher penalties imposed in the 18th century. However as Fuggle notes:

> "Conservation of wildlife without the protection of its habitat is almost like the protection of fish without water" (Fuggle, 1983, p.212).

The establishment of the Sabie Game Reserve in 1898 (which became the Kruger National Park in 1926), marked an important milestone in habitat and game conservation. As was the case with development of national parks elsewhere in the world in this era, the prevailing philosophy was one of protection. Significantly most conservation measures in South Africa have been formulated to protect animals, particularly the larger species of mammals, with the relative neglect of large ecosystems. The fact that these protected areas have largely been established by a white middle-class, mainly for aesthetic and recreational reasons, and that many of them are surrounded by impoverished rural communities is a cause for concern. In addition conservation "has been historically linked to the implementation of apartheid policies - particularly forced removals" (Kahn, 1991, p.44). The name given to the first rest camp in the Kruger Park (Skukuza), for example, was the title given to the first chief ranger, Major James Steven-Hamilton, by Tsonga tribesmen, who were dispossessed of their land. The English translation is "He who sweeps clean", a severe indictment of the careless regard some past South African conservators have had for the human element in the environment. A "para-military atmosphere pervades most of these reserves and fuels local people's negative perceptions of them" (Koch, 1991, p.44). Koch maintains that conservation in South Africa has been a "highly political issue", especially since most of the protected areas were established in the independent and self-governing states. The main reason for this was that the economic and political costs were much lower, given the price of land in white-

owned areas, coupled with the political influence of white farmers.

> "Antipathy to conservation is thus widespread in rural South Africa, deeply rooted in historical reality" (Koch, 1991, p.45).

Dr Mangosuthu Buthelezi, Chief Minister of Kwazulu, in his opening address at the International Symposium, on `National Parks, Nature Reserves and Neighbours', in Johannesburg on 31 October 1988 (delivered on his behalf by Dr Oscar Dhlomo) attests to this:

> "... a very large number of South Africa's major conservation areas are entirely surrounded by impoverished rural communities. This is certainly true of the Kruger National Park, the Hluhluwe and Umfolozi Game Reserves and many others, including conservation areas in my own region, Kwazulu.

These people daily face a struggle for survival. They exist in circumstances of the most degrading poverty. Their population is increasing and natural resources at their disposal are decreasing. Yet they live alongside what to them is a rich treasure house of materials such as thatch, firewood, craftwork materials, meat, medicinal plants and building materials. The reserves in many if not most cases encompass areas traditionally considered to be tribal land" (Buthelezi, 1991, p.5).

These perceptions have been verified by others (Infield, 1986; Taylor, 1982; Lusigi, 1978; Kandawire, 1981; Thomson, 1991). As early as 1974, Olindo (the Director of the Kenya National Parks Service) stated that:

> "...if conservation of wildlife or any other resource in developing or developed countries is not seen to be within the context of human welfare, and the well-being of the total environment, then the

> future for such a resource cannot be bright" (Olindo in Eidsvik, 1980, p.186).

Burt and Fearnley-Whittingstall (1991), suggest that the spectrum of philosophers existing in Africa has been spawned by the `colonial approach'. The philosophy which may be identified closely with the colonial era, they have termed `PURISM' which may be associated with a 'PROTECTIONIST' approach. This concept of conservation was the prevailing philosophy at the time of the establishment of the Kruger National Park and, to a large extent, is prevalent in the conservation planning and management approach utilised by many conservation bodies in South Africa today. As recently as 1979, the establishment of the Pilansburg National Park in Bophutatswana which was initially developed according to the principles of utilisation and participation by the community, emphasises how strongly the purist philosophy is ingrained in the minds of South African conservators. Although local communities were consulted in the early planning phases, they were neglected to a large extent over the next six years as conservators became engrossed in the development of the infra-structure, re-introduction of wildlife and the general day to day running of the Park:

> " Perceptions began to develop (in the local community) that the Parks Board did not care about the communities or its people and the uninformed majority perceived that the Parks Board had failed in its original mission" (Molope, 1991, p.31).

Fortunately the management of the Park were made aware of the problem before it was too late and, acting on the advice of social researchers, moved timeously to rectify the situation.

Although the purist approach, which is strongly entrenched in the minds of the 'old school' conservators, has been the prevailing philosophy in South Africa, there are indications that the attitudes are changing, albeit often caused by the force of circumstance. The recent controversy over the

establishment of a National Park in the Richtersveld, Namaqualand, is an example of this. Top-down planning by the Government-appointed authorities (including the National Parks Board, the Minister of Environmental Affairs and the local authority) ignored pleas by the local inhabitants (mainly stock farmers) to be allowed to remain in the area It took Supreme Court intervention to get the Parks Board to change their minds and agree to a more flexible management plan, which will incorporate participation by the local residents (Hill and Archer, 1989).

The management philosophies of some of the conservation authorities in the independent and self governing states have largely transcended the purist approach to embrace the ideas of modern conservation thinking in the Western World today. The Kwazulu Bureau of Natural Resources, Bophutatswana Parks Board and Kangwane Parks Corporation and, to a lesser extent the Natal Parks Board, have shown flexibility in adopting more innovative conservation policies in recent years. Namibia is setting a trend in conservation management that South Africa would do well to emulate. She has become the first Southern African nation to enshrine "specific environmental protection clauses" into her new constitution (Montgomery, 1991).

> "Conservation cannot be separated from the socio-economic realities and the problems of poverty, drought and related hunger, unemployment, the high birth rate, low educational standards and lack of funds..." (Montgomery, 1991, p.14).

The creative, people-centered approaches of Owen-Smith and Jacobsen in Namibia, are gaining momentum in South Africa across a broader spectrum of individuals and organisations. The following comments by leading personalities in the realm of conservation are clear evidence of this:

1) Steve Johnson, Deputy Director of the Bophutatswana National Parks Board, maintains that "the fundamental issues that will determine the environmental quality of

Southern Africa in the future" will include "the impact forced removals have had on certain areas, access to water in adequate quantity and of an adequate quality; the availability of appropriate energy for fuel and lighting ... Poverty, land distribution, education..." (Johnson, 1990, p.5.).

2) John Hanks, Director of the Southern Africa Nature Foundation says that "It's understandable that when individuals are still concerned with survival on a day to day basis, the approach of trying to promote environmental awareness on aesthetic or ethical grounds, has little chance of success. The challenge, really, is to get over this whole concept of 'humanising' conservation and relating conservation to human survival in that order, in that sector of the South African community. That's the one aspect that HAS to receive priority attention" (Hanks, 1990, pp.13-14).

3) Jonathen Hobbs, Principal of ESKOM's Environmental Impact Management section believes that "... development that does not take account of environmental constraints is not really development at all, it is exploitation. By the same token, conservation failing to accomodate the development aspiration of all sectors of South African society will alienate the majority of the population. Somehow we all have to win - the environment must provide sustainable profits for all" (Hobbs, 1990, pp.4-5).

4) Roger Collinson, Director of Bophutatswana National Parks Board argues that "Conservation will succeed if it is relevant to a society's needs and aspirations ... it will not succeed - no matter how innovative our education programmes, and sincere our liaison - in communities suffering extreme poverty and a break-down of the social structure. Addressing these community problems should therefore be seen as the number one priority in a changing Southern Africa.

The top-down approach must go, and we must respect the fact that there is a whole variety of culture and ethics here in Southern Africa, and there is also a variety of ways of achieving conservation. Conservation is not a science, ultimately it is based on values and attitudes" (Collinson, 1990, pp.14-15).

5) Farieda Kahn, freelance environmental journalist, sees conservation "as being holistic, incorporating social, political and economic aspects, as well as ecological aspects" (Kahn, 1991, p.19).

6) Clem Sunter, a Director of the Anglo American Corporation, stresses that "Each project must be judged individually - the pros for economic development and job opportunities, against the cons for the environment. Local communities MUST be involved, and only after all sides have been addressed, should a final decision be taken" (Sunter, 1991, p.33).

7) Max Sisulu, head of the ANC's economic desk, maintains that 'ANC policy in a free South Africa will emphasise state assistance to the communities involved in the management of wildlife resources, particularly in rural ares on a sustainable basis.' "The ANC supports the policy approach of some of the frontline states which advocate full community participation in the management of wildlife resources and in the economic benefits flowing from these resources" (Koch, 1991, p.45).

In a review of the conservation situation in Namibia, on the first anniversary of that country's independence, journalist Sharon Montgomery made these comments:

> "....it has become essential for research to become more `people'-orientated. More stress is now being laid on socio-economic and socio-anthropological research"
> (Montgomery, 1991, p.14.).

It is in the context of this 'new', human-centered approach to conservation that the methodology for this research

document was adopted and the subsequent conservation strategy option, proposed in chapter seven, conceived.

CHAPTER 1

INTRODUCTION

Blouberg is a mountain range situated in the north-western region of Lebowa, approximately 100 kilometres north-west of Pietersburg. It is culturally significant as the site of the royal headquarters of the Bahananwa people since the middle of the 19th century. Ecologically it is unique because of the many endemic plant species to be found there. It therefore has intrinsic value both for the local populace and South Africa as a whole.

A number of communities occupy sites on the upper plateaux of the mountain range, the most important of which is the royal headquarters, (mošate), of Hananwa (Fig.2). These communities, which are accessible only via steep and rugged mountain paths, have remained isolated from Western influences, and information concerning their lifestyles is scarce. In addition to the communities occupying the mountain plateaux, a large and growing population occupies the area around the base of the mountain range.

The Blouberg range is unusual in that it stands out as an island of relatively pristine natural vegetation in a region otherwise characterized by overgrazing and environmental degradation. In the past the mountain dwellers, in particular, lived in harmony with the environment and damage to the natural vegetation appears to have been minimal. Furthermore, the mountain range is of great ecological interest because it:

i) is the site of one of the largest contiguous areas of indigenous Afro-montane forest remaining in the Northern Transvaal,

ii) is a vital water catchment area, providing for the needs of over 20 000 people living on and around the base of the mountain,

iii) shelters many species of endemic, rare and endangered plant species,
iv) is home to some of the finest specimens of Outeniqua yellowwoods (*Podocarpus falcatus*) in South Africa.

As a result of these features, Blouberg is known far beyond the borders of Lebowa. There are however, signs that the situation is changing fairly rapidly. Recent visits to the mountain plateaux have revealed that vegetal cover in and adjacent to sensitive water courses is being destroyed. Uncontrolled burning on the mountain slopes poses a threat to the indigenous montane forests, and a growing population around the base of the mountain is placing stress on the natural resources of the area.

Research Problem

Because of the concerns described above, there is a need to develop an appropriate conservation strategy which will meet the needs of the local inhabitants and also protect the mountain's natural resources and the tribe's cultural heritage.

The Blouberg falls within a region which has one of the largest rural black populations in South Africa. Many of these people depend on the mountain for water, wood (fuel and timber), thatching grass, medicinal plants, fruit, and grazing for livestock. This leads to a great deal of pressure being exerted on the natural resources and therefore conservation of the area is a priority. Because of the inaccessibility of the area, very little is known about the demography and population dynamics of the communities, and no information on agricultural practices or livestock statistics is available. A meaningful conservation strategy can therefore not be developed at this stage. As recent research has clearly indicated that the conservation of African wildlife and natural reserves depends ultimately upon the integration of the local people in the planning and management

process, it is essential that the local people should be involved from the outset to ensure their support.

Goals, Aims and Objectives

The broad goals of this research project were twofold, namely:

i) to ensure the conservation of the natural resources,
ii) to enhance the quality of life of the people in the region.

As a first stage towards the attainment of these goals the aim was to produce a range of conservation strategy options. The second stage would require that these options be considered by a relevant responsible executive authority, and that ultimately one of these options be adopted or adapted.

The specific objectives are to:

i) Determine the nature and extent of utilization of natural resources by the local inhabitants.

ii) Determine the basic needs of the communities in the area and assess whether they are being met.

iii) Attempt an assessment of the quality of life of the local inhabitants.

iv) Identify environmental characteristics of the region deserving of conservation.

v) Identify threats to these conservation priorities.

vi) Produce a range of conservation strategy options for Blouberg which will reconcile conservation priorities with social needs.

The concept of land stewardship as defined by Fuggle was the guiding philosophy of the research;

"The environmental concern that is common to all the peoples of South Africa is the protection of our land resource so that it will continue to be the foundation of our economic and social well-being. In order to achieve this it is necessary to adopt the concept of land stewardship in which we may discern the notions of making full use of the land and taking all its fruits without degrading it, of active possession without denying possession to others, of nurturing a proper respect for this fragile and limited resource so that those who come after us will benefit equally" (Fuggle, 1983 p.443).

Report Summary

This dissertation consists of eight chapters. Following is a brief summary of each of the remaining chapters.

Chapter 2

This chapter begins by describing the bio-physical[1] and socio-economic and political components of the study area. Historical perspectives are also examined dating from the 1820's to the present. Reference is made to botanical excursions to the Blouberg and certain conservation actions proposed by various bodies and individuals. The chapter concludes with an examination of perceived hazards to the Blouberg environment.

Chapter 3

An outline of research methods employed, in order to formulate conservation strategy options for Blouberg, is presented in this chapter. Contemporary research concerning proclamation of nature reserves in sub-Saharan Africa is cited to justify the methodology employed in the social survey conducted in the study area. Other research techniques employed, such as gathering of

[1] bio-physical - The natural features of the environment which comprise the biological (fauna and flora) and physiographic (geology, hydrology and geography) elements.

secondary data, bio-physical surveys and group techniques, are described.

Chapter 4

This chapter reports the results of the social survey conducted on the mountain plateaux and surrounding plains. It is emphasized that the data gathered pertaining to the basic needs of the communities, their aspirations and attitudes to the environment, was of primary importance in formulating the conservation strategy options presented in Chapter 7. Some hazards posed by the people to the natural resource base of the mountain were also identified during the social survey. These were perceived as important factors which enabled the panelists, assembled for two workshops (described in Chapter 6) to make more informed decisions. A significant factor, arising from the survey, was the perceived uncertainty regarding the Kgoši's[2] kgoro[3] to make decisions concerning future conservation strategy options acceptable to the headmen as representatives of the community.

Chapter 5

This chapter analyses the results of the bio-physical survey carried out on the mountain. Areas where vegetal stress and path erosion have occurred are identified with reference to a map (Fig.4). The over-exploitation which has caused deterioration to the environment is described. Attention is also drawn to the damage which is occurring in the

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[2] Kgoši - Sotho term meaning tribal chief. The position of the tribal chief is hereditary and he is traditionally succeeded by the eldest son of his principal wife (who is not necessarily his first wife).

[3] kgoro - The tribal council usually consisting of the councillors, headmen and influential members of the kgoši's family. They represent the tribe and act as advisors to the kgoši. The kgoro is actually the government of the tribe, for it controls and approves all decisions, legislation and administrative duties. Even the kgosi cannot act contrary to the wishes of the kgoro

upper reaches of mountain streams, and destruction of ground cover caused by overgrazing on the slopes of the mountain.

The primary aim of the bio-physical survey was to highlight hazards to Blouberg's natural resource base. Access to this information was regarded as fundamental to formulating relevant conservation strategy options for the mountain.

Chapter 6

The purpose of this chapter is to present the information generated by panelists at two successive conservation workshops convened by the researcher. At the first workshop the panelists listed the main environmental characteristics of Blouberg worthy of conservation, identified threats to them, suggested possible responses to alleviate these threats and proposed issues that should be considered when formulating conservation strategy options. At the second workshop the same panelists (with two exceptions) were given the task of identifying a range of conservation principles recommended for incorporation by the researcher into conservation strategy options.

Chapter 7

This chapter presents a range of conservation strategy options for Blouberg proposed by the researcher. It is stressed that conservation should provide benefits for man and ensure the sustainability of the resource base. In addition, it is recommended that conservation strategies proposed for Blouberg should incorporate three of the core concepts highlighted in the Brundtland Report (1987) *viz.* sustainable development, social upliftment of local communities and empowering local inhabitants in the planning and management of conservation and development in their area. The reliance of the local communities on the natural resources of the mountain precludes two

management tools traditionally employed by conservation planners, *viz.* fencing and relocation of people. Six conservation strategy options are presented and discussed namely; no action, limited control, biosphere reserve, tribal natural resource area, high cost tourism and basic needs first.

Chapter 8

In the final chapter it is suggested that the conservation strategy options presented in Chapter 7 be considered by a relevant, responsible executive authority. In view of the difficulties encountered previously, by the Lebowa Department of Agricultural and Environmental Conservation in negotiations with Kgoši Maleboch and the Bahananwa Local Government Authority, coupled with the Kgoši's anomalous situation with regard to his perceived lack of support from headmen, it is suggested that a comprehensive procedure such as Integrated Environmental Management (IEM) be initiated at this stage. This is recommended in order to produce a conservation strategy which will achieve two objectives *viz.* ensuring economic upliftment for the local people and involving them in the planning and implementation of relevant strategy options.

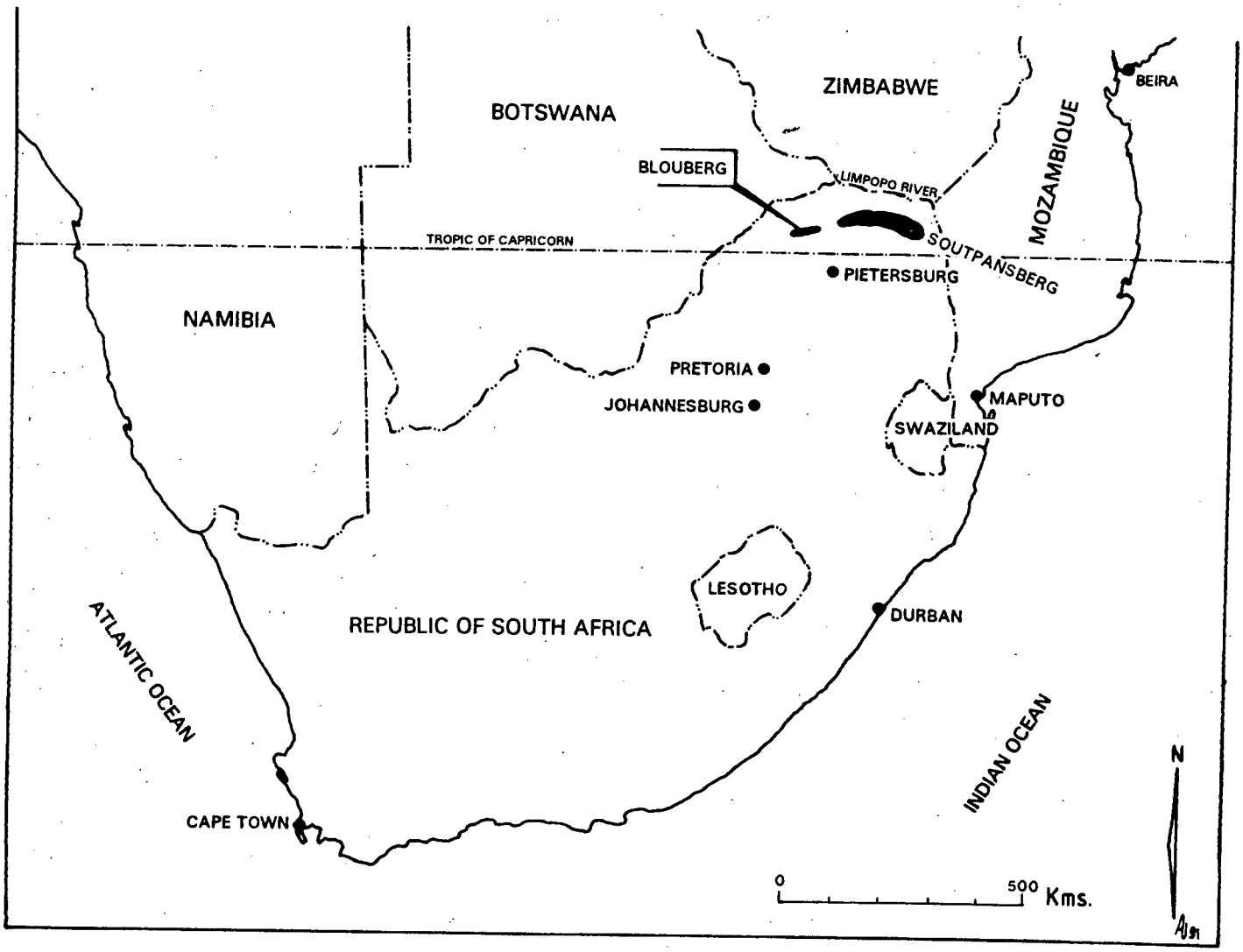

FIG. 1 LOCATION OF BLOUBERG MOUNTAINS

CHAPTER 2

DESCRIPTION OF THE STUDY AREA

OVERVIEW

This chapter begins by presenting a description of the study area. The bio-physical components of the Blouberg are examined, including a classification into vegetation zones utilized by Scholes (1978). Reasons for the Blouberg having been the focus of conservation interest are presented.

The chapter continues by describing socio-economic and cultural issues. Historical perspectives are traced from the early 1820's to the present. Reference is made to the Maleboch War of 1894, which appears to have initiated a legacy of mistrust of whites and officialdom by the Bahananoa[1] people. Other issues described include the communities inhabiting the mountain slopes and those living adjacent to the mountain, land tenure, infra-structures, tribal structure, and local politics. The latter topic includes details of recent political intervention by the African National Congress (ANC).

Reference is also made to botanical excursions to Blouberg from the 1930's to the present, and to conservation proposals for the mountain by different individuals and organizations. A significant factor, highlighted by the researcher, is how some of these proposals served only to antagonize the Bahananwa people and further aggravate their inherent mistrust of whites.

The chapter concludes by examining perceived environmental hazards to the Blouberg. These are divided into endogenous

[1] Bahananoa - The people of the Bahananoa tribe who settled in the vicinity of Blouberg. They belong to the Sotho group who settled in the central parts of South Africa. The term Bahananwa is more commonly used.

and exogenous threats. Endogenous threats identified include depletion of natural resources by a rapidly increasing population around the base of the mountain, overgrazing, destruction of vegetation by uncontrolled burning and inherent mistrust of white people and government officials on the part of the locals. The latter is perceived as implying serious consequences in that future conservation efforts are likely to be regarded by the locals with suspicion. Exogenous threats are present in the form of potential, uncontrolled increases in tourism and a recent application for prospecting and mining rights.

BIO-PHYSICAL ENVIRONMENT

Owing to the scarcity of secondary bio-physical data on the Blouberg, most of the information on the geology, topography, climate, vegetation and fauna has been transcribed from the ecological survey of the Blouberg by R J Scholes (1978).

Geographic Location

Blouberg is a mountain range situated in the north-western region of Lebowa at co-ordinates 23 05'S and 29 00'E (Fig 1). It is separated from the Soutpansberg range of the Northern Transvaal by a gap of approximately 30 kilometres. The area is administered from the regional magisterialü capital[2], Bochum, 20 kilometres south.

Geology and Topography

Although there has been speculation that Blouberg is an inselberg mountain system, it would appear that it is the western-most outlier of the Soutpansberg range, separation having occurred via extensive block faulting. The higher peaks are composed of rocks of the Wylliespoort Formation

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[2] regional magisterial capital - The rural areas and villages of Lebowa are divided into 13 districts. Bochum is the northern-most of these.

which links it to the Soutpansberg Group, but elsewhere, strata of the Waterberg Group occur. Blouberg is the only place where strata of these two groups are in contact with one another. Sequences which can be related to neither these two groups have been identified in the Blouberg Formation.

The highest point, Ga Monnaasenamoriri[3], is 2 050 metres above sea level, while the average altitude of the surrounding plains is 900 metres. The higher peaks are characteristically light-coloured medium-to-coarse-grained quartzites which make popular climbing rock-faces. The entire mountain range is split by numerous fault lines with vertical displacements of up to one kilometre. These faults are often intruded by dolerite or diabase dykes. The cliffs are composed of resistant quartzites and the forested plateaux are of larval rubble forming reddish-brown, sandy clay loam soils of pH5.

Climate

No meteorological data exist for the mountain range and therefore considerable extrapolation from neighbouring stations is required. As a consequence of height variation of the order of 1100 metres and differential aspects, a considerable range of climatic conditions may be experienced at different sites.

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[3] Ga Monnaasenamoriri - Sotho term meaning 'the man with no hair' - an allusion to the lack of vegetation on the rocky summit.

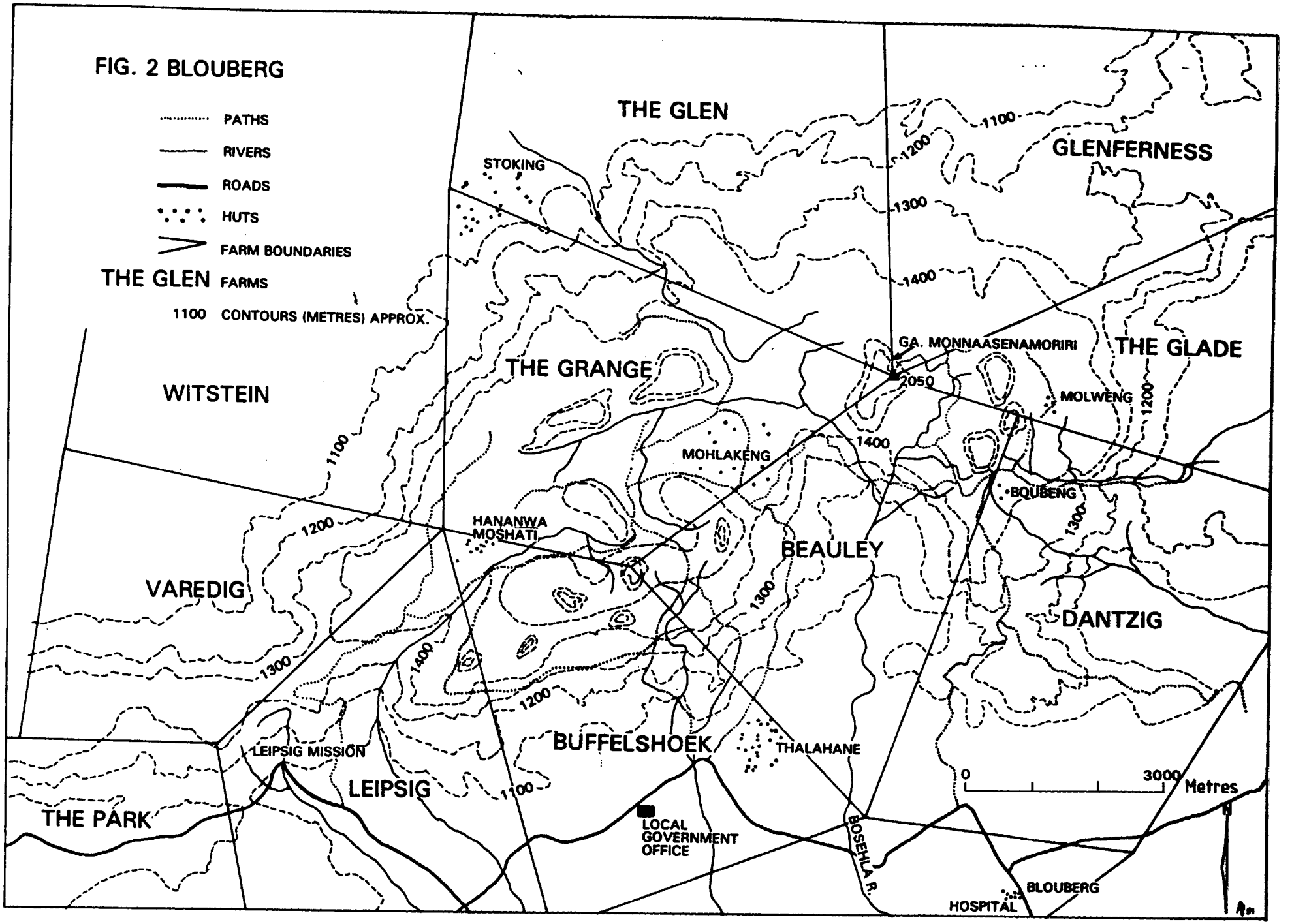
FIG. 2 BLOUBERG
PATHS
RIVERS
ROADS
HUTS
FARM BOUNDARIES
THE GLEN FARMS
1100 CONTOURS (METRES) APPROX.
THE GLEN
GLENFERNESS
STOKING
WITSTEIN
THE GRANGE
GA. MONNAASENAMORIRI
2050
THE GLADE
MOLWENG
MOHLAKENG
BOQUBENG
HANANWA MOSHATI
BEAULEY
VAREDIG
DANTZIG
LEIPSIG MISSION
LEIPSIG
BUFFELSHOEK
THALAHANE
THE PARK
LOCAL GOVERNMENT OFFICE
BOSEHLA R.
HOSPITAL
BLOUBERG
0
3000
Metres
1100
1200
1300
1400

Temperature

Allowing for an environmental lapse rate of 0,6 degrees centigrade per 100 metres, the temperature at the summit will be at least 6 degrees cooler than those of the plain, excluding the effect of wind chill. This would mean a daily mean maximum temperature of approximately 20 degrees at the summit compared to 26 degrees centigrade on the plain. The annual maximum temperature occurs in December. In May, June, July and August, mean monthly minimum temperatures can drop below 6 degrees in the lowlands and thus frost conditions can be expected on the summit.

Precipitation

The main rainbearing winds are easterly to north-easterly. The rain-shadow effect of the mountain, accentuated by the additional radiation load on the northern slopes means that the north-western and western slopes are much drier than the north-east and eastern slopes. This is borne out by the vegetation distribution. The average annual rainfall on the eastern lowlands is approximately 500mm, increasing with altitude particularly on the eastern flanks due to the orographic effect. Interpolation would indicate an increase in rainfall of approximately 70mm per 100 metres increase in altitude. This would give a figure of about 1 200mm at the summit. If a lower rainfall limit for montane forest of 1 000mm is assumed (Grubb and Von Breitenbach, in Scholes, 1978), then the high forest which occurs on Blouberg approximately between the 1 400m and 1 700m contours (on the farms Glenferness, The Glade, Beauley, Buffelshoek, The Grange and The Glen; Fig.2) would rely on mist to supplement the rainfall. Regions above the 1 400m contour were often observed by the researcher to be covered by cloud during both summer and winter especially in the mornings.

Vegetation

"The combination of geological, topographic and microclimatic conditions which occur in the Blouberg leads to an exceptionally broad spectrum of plant habitats. Within these broadly defined habitats the vegetation exhibits a high degree of variability" (Scholes, 1978, p.14).

Scholes classifies the vegetation types under six headings as follows:

Indigenous Forest
Scrub Forest
Woodland
Scrub and Thicket
Wooded Grassland
Grasslands

Although botanical research has been carried out on the mountain since 1931, the inaccessibility of the region has discouraged comprehensive studies. Blouberg is botanically significant in that it shelters six species of endemic plants *i.e.* *Ledebouria* sp. nov.; *Jatrotha* sp. nov.; *Streptocarpus bloubergensis*; *Polygala* sp. nov.; *Cineraraia* sp. nov. and a new, unnamed species of Restionaceae (S. Venter, pers. comm.). In December 1990, the largest botanical expedition ever mounted in South Africa, spent seven days investigating the vegetation of the area on the northern side of the mountain, in the South African Development Trust Reserve (on the farm Mon Plaiser to the north-east of The Glade) and the area of schlerophyllous thicket above the high forest in the vicinity of Ga Monnaasenamoriri (Fig. 2). Many undescribed species were discovered and the forthcoming report is being anticipated with excitement in botanical circles.

The high forest on the north-eastern slopes above the 1 400m contour (on the farms The Glade, Dantzig and Beauley, Fig.2) is one of the largest, unspoiled, contiguous Afro-montane forest in the Northern Transvaal. It is reputed to contain some of the finest specimens of *Podocarpus falcatus* (Outeniqua yellowwood) in South Africa (S. Venter and G von dem Bussche, pers. comm.).

Because of the extent of the area, its inaccessibility and the high degree of variability, further research is required to define the full range of vegetation types present on the mountain (Scholes, 1978).

Fauna

No quantitative study has been made of the fauna of Blouberg and the following assessment is based on incidental observation, conversations with local people and collections of the Transvaal Museum (Scholes, 1978).

Reptiles

Skinks and agamas are common on rocky habitats and the following snakes have been recorded: African Python; Boomslang; Southern Bird Snake; Skaapsteker; Egyptian Cobra; Rinkals; Black Mamba; Puff Adder; Single-horned Adder and Mozambique Spitting Cobra.

Birds

As a result of the broad spectrum of vegetation types a wide variety of birds is encountered. The raptors are particularly prominent with Martial Eagles, Black Eagles and the second largest known colony of Cape Vultures in South Africa nesting on the cliffs.

Mammals

The following species have been observed, or in the case of the nocturnal species, are probably present as indicated by

distribution patterns: Cape hedgehog; elephant shrew; Maquassi musk shrew; vervet monkey; chacma baboon; lesser galago; black-backed jackal; white-naped weasel; zorilla; civet; genet; slender mongoose; banded mongoose; dwarf mongoose; brown hyaena; aardvark; leopard; serval; caracul; African wild cat; rock dassie; yellow-spotted dassie; warthog; bush-pig; greater kudu; grey duiker; mountain reedbuck; impala; klipspringer and steenbok.

Hunting, snaring and destruction of habitat has decimated a large percentage of the mammalian fauna which existed here in the past. The Sable Antelope was known to occur on Blouberg in the late 1960's, making it the last area in the Transvaal where sable existed outside the game reserves. Rock rabbits (dassies), although abundant until fairly recently, have not been observed in the last five years (C. Thompson, pers.comm.) and the leopard population appears to have diminished considerably as a result of trapping by tribal cattle-owners.

Insects

Virtually nothing has been recorded on invertebrates until a small party of entomologist from the University of the Witwatersrand joined the botanical excursion to Blouberg in December 1990. Over 2 000 specimens were collected and it is anticipated that the forthcoming excursion report will generate much interest.

SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

Historical Perspectives

The mountain precinct has been occupied by the Hananwa tribe under the hereditary chieftainship of Lebogo[4] since at least the early 1820's. This tribe subsequently divided

[4] Lebogo - Family name of the royal household of the Bahananwa (also referred to as Leboho).

acrimoniously into two groups, one remaining loyal to Kgosi Maleboch[5] (the Bahananoa), occupying the southern section of the mountain and the other (the Gananwa), owing allegiance to Kaptein Kibi[6], settling in the north.

Maleboch and his followers fled to the upper slopes (village of Hananwa, Fig.2) on the southern section of the mountain during the Mfecane[7], between 1824 and 1840, when marauding bands of Zulus, under Mzilikazi, descended on the area. The Bahananoa established a royal kraal (mošate) on the mountain and inhabited this stronghold until 1894 when conflicts with the Boers of the Zuid Afrikaanse Republiek, over the issue of taxation, led to war and the subsequent defeat of the tribe and the imprisonment of Maleboch in Pretoria (Rae, 1898; Weideman, 1946; Sonntag,1983). Rivalry between Maleboch and Kibi was intensified when the latter joined forces with the Boers in an attempt to annihilate the royal family and its followers (Sonntag, 1983).

Following defeat, the Bahananoa were banished from the mountain and Kibi was granted permission by the resident Boer magistrate, Vorster, to hunt out and kill any members of the tribe found in the mountain (Sonntag,1983). After the defeat of the Boers by the British, Maleboch was

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[5] Kgosi Maleboch - The traditional name of the incumbent tribal chief of the Bahananwa.

[6] Kaptein Kibi - The leader of the group which broke away from the main body of the Bahananwa in the 1880's after a dispute with Kgoši Maleboch over claim to the chieftainship of the tribe. Kibi declared himself a kgoši, but was regarded as an upstart by the majority of the Bahananwa. It is believed that he may have had the title Kaptein conferred on him by the Boer Native Commissioner of the Zoutpansberg District, Vorster, whose favour he attempted to win in an effort to de-throne Maleboch.

[7] Mfecane - The period of dispersal and fragmentation of the Bantu tribes of South Africa caused by the Zulu group, initially under the chieftainship of Shaka. Between 1824 and 1840, invasion of areas in the Northern Transvaal by Mzilikazi (a breakaway general in Shaka's army) wreaked havoc amongst the tribes (including the Bahananwa) inhabiting the area.

released in 1902 and allowed to return to his royal mosate on the mountain. Access to this royal settlement is via steep mountain paths, which has led to isolation of the tribe and very little is known, to this day, about this community. As a result of this unfortunate stage in their history the Bahananoa appear to have cultivated a legacy of inherent suspicion of `whites' in general and government officials in particular. This legacy has continued down the years and, coupled with geographic isolation, has ensured that Blouberg has remained in a political and economic vacuum. The ruling Maleboho[8] refused to recognise the legitimacy of the self-governing state[9] of Lebowa, which was established on 2 October 1972. The incumbent chief of the Bahananwa, Kǧosi Colin Maleboch, was only persuaded to take his traditional place in the Lebowa Legislative Assembly [10] late in 1989. This change of heart, it is

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[8] Maleboho and Maleboch are both singular. The latter is a European spelling while Maleboho is the correct North Sotho spelling. Both refer to the chieftaincy of the Bahananwa. The meaning of the name is "the generous person;" literally describing a person with a hand that gives..
[9] self-governing state - The Promotion of Self-government Act (1959) divided South Africa into ethnic units, each group being assigned specific areas. Lebowa (North Sotho group) became a self-governing state on 2 October 1972 (by Proclamation) in terms of the National States Constitution Act of 1971).
[10] Lebowa Legislative Assembly - This is composed of 96 members *viz.* 57 elected magosi, 38 elected members and one member who is the permanent representative of the Rain Queen, Modjadji. The seat of government is the capital, Lebowakgomo.

TABLE: 1: INFORMATION ON FARMS ON AND ADJOINING BLOUBERG ; (Source Agricultural Development Offices, Bochum)

NAME	LAND TYPE	SIZE Ha	ALLOCATED TO	POPULATION 1988/89
Mon Plaiser	Nature Res.(A)	-	SADT	6 020
Glenferness	Trust Farm	3 460	Maleboch	908
The Glade	Tribal Farm	1 699	Kibi	521
Dantzig	Trust Farm	-	Maleboch	633
Beauley	Trust Farm	1 944	Maleboch	-
Buffelshoek	Trust Farm (B)	1 619	Maleboch	662
Leipsig	Tribal Farm	2 666	Maleboch	602
The Park	Trust Farm	1 563	Maleboch	-
Springfield	Trust Farm	3 002	Maleboch	2 239
Varedig	Trust Farm	1 848	Maleboch	754
Gorkum	Trust Farm	2 705	Maleboch	-
Witstein	Nature Res.(C)	2 674	Maleboch	Grazing
The Glen	Trust Farm	3 769	Maleboch	810
The Grange	Tribal Farm	2 359	Maleboch	219

NOTE:

A) South African Development Trust Reserve

B) Portion of Buffelshoek was declared as `Maleboch's location' (Hananwa).

C) Blouberg Nature Reserve (Lebowa Department of Agriculture & Environmental Conservation).

surmised, was as the result of the government's offer of a free, chauffeur-driven vehicle and a house at the foot of the mountain (T, Whitehead, pers. comm.). This action has precipitated controversy within the Bahananwa tribe, with some members, particularly those resident in the royal village, being strongly opposed to Maleboch's abandonment of the mosate.

Communities on the Upper Slopes

There are five separate villages situated on high plateaux on Blouberg *i.e.* Hananwa and Kgatalala in the south, Mohlakeng in the central area and Boubeng and Molweng in the north-east (Fig. 2). The largest village is Hananwa consisting of approximately 69 households[11], followed by Mohlakeng with 36, Kgatalala (16), Molweng (6) and Boubeng (4). All the households owe allegiance to Kgoši Maleboch, although the village of Molweng is located on the farm The Glade, which was allocated to Kgoši Kibi as a trust farm (Table 1).

Community Around the Base of the Mountain

A large population occupies the area around the base of the mountain. Recent statistics (Modjadji, 1988) indicate that approximately 20 000 people inhabit these areas immediately adjacent to the Blouberg ranges. Apart from their dependence on the mountain as a water catchment area, these people also draw natural resources such as building timber, fencing poles, wood for carving and fuel, grass for thatching and grazing, natural fruit, as well as herbs, bark, roots and leaves for traditional tribal medicines.

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[11] households - The household may be defined as all those who eat together (the extended family being common in African cultures).

Although the mountain has been used as a venue for traditional dikoma (initiation schools) in the past, it would appear that this practice is waning rapidly and that the mountain itself is no longer a venue on the rare occasions when these dikoma do occur.

Land Tenure

Of the fourteen farms on and immediately adjacent to the mountain (see Table 1 and Fig. 2), twelve are allocated to the Bahananwa (under Maleboch), the boundaries of which were defined in the Government Gazette, No 2503, 15 August 1969. Of the two remaining farms, one (Mon Plaiser) is a South African Development Trust (SADT) nature reserve and the other, `The Glade', is allocated to Kibi.

The families on these farms occupy the land under traditional usufruct leasehold from the ruling Magoši (Maleboch and Kibi). Under this system the family is given certain use-rights to the land, but never owns it.

Tribal Structure and Local Politics

The Bochum region is represented in the Lebowa Legislative Assembly by the two traditional leaders, Kgoši Maleboch and Kibi and two elected members of Parliament, Mr Tshula and Mr M T D Leboho. The two elected leaders owe their positions largely to the support they enjoy from the traditional leaders who openly canvass for their support. The people are expected to vote for the `Kgoši's man'.

Traditionally, relations between the ruling Maleboho and Kibi have been strained (since the Maleboch War of 1894, described previously). Kibi had hoped that, by siding with the Boers, he would inherit the headship of the Bahananwa tribe (Sonntag, 1983). When this did not materialise, Kibi unilaterally declared himself a Kgoši but he has never been

recognised as such by the Maleboho, who see him as an upstart headman.

In the rapidly changing political circumstances in South Africa a new power struggle is developing in the Bochum magisterial district, including Blouberg. In August 1990, the South African Youth Congress (SAYCO), an ANC affiliate, called on the two elected Members of Parliament, Mr Tshula and Mr M T D Leboho, to resign, maintaining that they were `puppets' of the Lebowa Government who made no contribution to furthering economic upliftment in the Blouberg area. When their demands were not met they called for a boycott of Mr Tshula's shop and cafe and Mr Leboho's bottle store. Pamphlets to this effect were distributed in the area and according to reports, Mr Tshula had to close his shop and cafe for several weeks. Reliable sources in the area maintain however, that popular sentiment is more in favour than against him. The people resident in the Blouberg are not aggressive and indications are that the issue is being instigated from outside the area.

The ANC and SAYCO want the so-called `Bantustans' (self-governing states) dismantled, although they apparently support the traditional leaders, Kgoši Maleboch and Kgoši Kibi. Representatives from the ANC met with Maleboch and his councillors in September 1990 and used the hall at the Local Government[12] offices to explain their aims and principles to the local people.

School boycotts and stayaways, until recently, relatively unusual occurrences in the Blouberg region, have taken place more frequently.

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[12] Local Government - Each of the 13 districts of Lebowa has a regional (tribal) authority comprising chiefs, headmen and councillors. A regional or tribal authority is a local government authority established in terms of the Black Authorities Act of 1951.

Conversations with local people indicate that support for Kgoši Maleboch and his kgoro is still fairly strong, although somewhat ambivalent because the Kgoši appears both ill-equipped to make decisions and unwilling to do so because of feelings of insecurity. It is surmised that this insecurity derives from the fact that the Kgoši believes his father to have been poisoned and that he has received threats on his life from people who believe he should never have vacated the royal mošate on the mountain (T Whitehead, pers.comm). Although most people interviewed by the researcher were reticent to express views about the effectiveness of the Bahananwa Local Government Authority, the general impression gained was that there is dissatisfaction, but that they were powerless and even unwilling to do anything about it. The Kgoši's uncle, Philip Leboho, went so far as to admit to the researcher that the people living down on the plains have no respect for the Kgoši and he personally felt the Kgoši should be relocated in the royal `mošate' on the mountain in order to re-establish his authority and stature.

Infra-Structure

The main roads from the regional capital, Bochum, to the Leipsig Mission and Blouberg Hospital (Fig.2) are gravel and rarely graded. Travel is particularly difficult in the rainy season when washaways occur frequently.

The Blouberg Hospital and clinic are understaffed and struggle to cope with large numbers of people seeking medical care. The nearest post office is at Bochum, twenty kilometres away. Electrification, refuse disposal and toilet facilities are non-existent for the majority of residents. Water is available from communal taps, fed by boreholes spaced every few kilometres, around the base of the mountain. People complain that borehole pumps break

down regularly and that delays occur before water officialsrepair them. Recreational facilities are totally lacking and a source of concern to the local residents.

Shopping facilities are perceived to be adequate although prices are high and many residents indicated they make their main purchases in Pietersburg, ninety kilometres away. Bus transport is available to Bochum once per day, but despite higher costs, because of their greater convenience, taxi mini-buses are more popular. The schools in the area are overcrowded and shortages of staff, books and equipment is commonplace.

The communities residing on the mountain plateaux are even further removed from these facilities as access is limited to steep, winding paths which take time to traverse on foot (1-3 hours).

CONSERVATION EFFORTS IN BLOUBERG (1933 - 1990)

As a result of Blouberg's inaccessibility, little interest was shown in the area until the 1930s when botanists from the Transvaal Museum (Bremekamp, 1933 and Leeman, 1935 in Scholes, 1978) made the first known collections on the mountain. This was followed in the 1950 s by collecting excursions organized by the Botanical Research Institute (Scholes, 1978).

In the late 1960s, after a serious fire on the mountain, Haenertsburg farmer and naturalist, Mr Clifford Thompson, who had been walking and climbing on the Blouberg since 1946, asked the botanist Mrs Lynette Davidson to motivate conservation efforts. The fire, which followed a prolonged drought, burnt for three weeks and destroyed sections of the high Afro-montane forest on the north-eastern section of the mountain on the farms the Glade and Dantzig (Fig.4). The most positive effect of the fire was to re-motivate an idea,

first voiced by Leeman in 1935, to proclaim the area a nature reserve. Edwards(1974, in Scholes, 1978), stressed the ecological significance of this area maintaining that serious soil erosion was occurring as a result of destruction of the high forest. Scholes, supported this view in his ecological survey of the Blouberg (Scholes, 1978).

In 1979, a visit by the Wildlife Society's Director of Conservation, Keith Cooper, prompted an impassioned plea to Dr P Koornhof, then Minister of Plural Relations and Development, entreating intervention to persuade Kgoši Maleboch to relocate the four families residing on the north-eastern plateau who, in his opinion, were causing serious damage to the ecosystem. This correspondence eventually involved Mr G von dem Bussche, then Regional Director of Forestry, Louis Trichardt, Mr Clifford Thompson, Lebowa's Department of Agriculture and Environmental Conservation (LDAEC) and Mr H W Thompson of Haenertsburg, over a protracted period of six years. One of the positive outcomes was an agreement, between Kgoši Kibi and the LDAEC, to a land swap. The farm, `Blaauwbokspruit' was promised "as dispensational land for re-settlement" in exchange for The Glade (letter of 28/11/84 from Mr J H Botha to Mr K Cooper). The Wildlife Society had made an offer of R10 000 to compensate the people whom they believed should be moved off the top of the Mountains from the farms The Glade and Dantzig. This offer of compensation for relocation received adverse publicity in an article in `The Sunday Express' of December 18, 1983 which cast the Wildlife Society's motives in a bad light and stalled the conservation efforts which had hitherto taken place. A hiatus seems to have been reached in January 1985. One of the reasons for this appears to have been the inappropriate channels and actions adopted by the Wildlife Society. Officials in the Lebowa Government were concerned that the matter was not taken

directly to them in the first instance. In addition, Lebowa officials were perturbed that no conservation effort had been forthcoming for Blouberg during the many years that the mountain range was part of the Republic of South Africa. They regarded it as an affront that only when Blouberg fell within Lebowa's jurisdiction, South Africans were publicly claiming that the conservation of the mountain had suddenly become an urgent priority (J. Rencken, pers. comm.).

In December 1990, Mr Stephanus Venter, curator of the Botany Herbarium, University of the North organized the largest botanical collecting trip ever mounted in South Africa. A team of nearly fifty botanists, funded by Barlow Rand and the Council for Scientific and Industrial Research, Foundation for Research and Development (FRD), collected specimens (mainly woody plants and monocotyledons) between 2 and 9 December. Seventeen undescribed species were collected and a comprehensive report is expected. So much enthusiasm was generated by the Blouberg flora, that an international follow-up expedition is being planned.

The `land swap' (mentioned previously) agreed to in 1985 has yet to be officially proclaimed in the Government Gazette, but is `imminent' according to Mr J Roos of Lebowa's Department of Tourism and Land Planning (pers. comm.). Lengthy negotiations between the LDAEC and the Bahananwa Local Government have led to an agreement in principle by Kgoši Maleboch and the Bahananwa Local Government (September 1989) for the Blouberg to be conserved as a `Natural Resource Area'[13] although the agreement has yet to be signed.

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[13] Natural Resource Area - A designated area where access to natural resources is controlled and monitored so as to ensure that resource destruction does not occur.

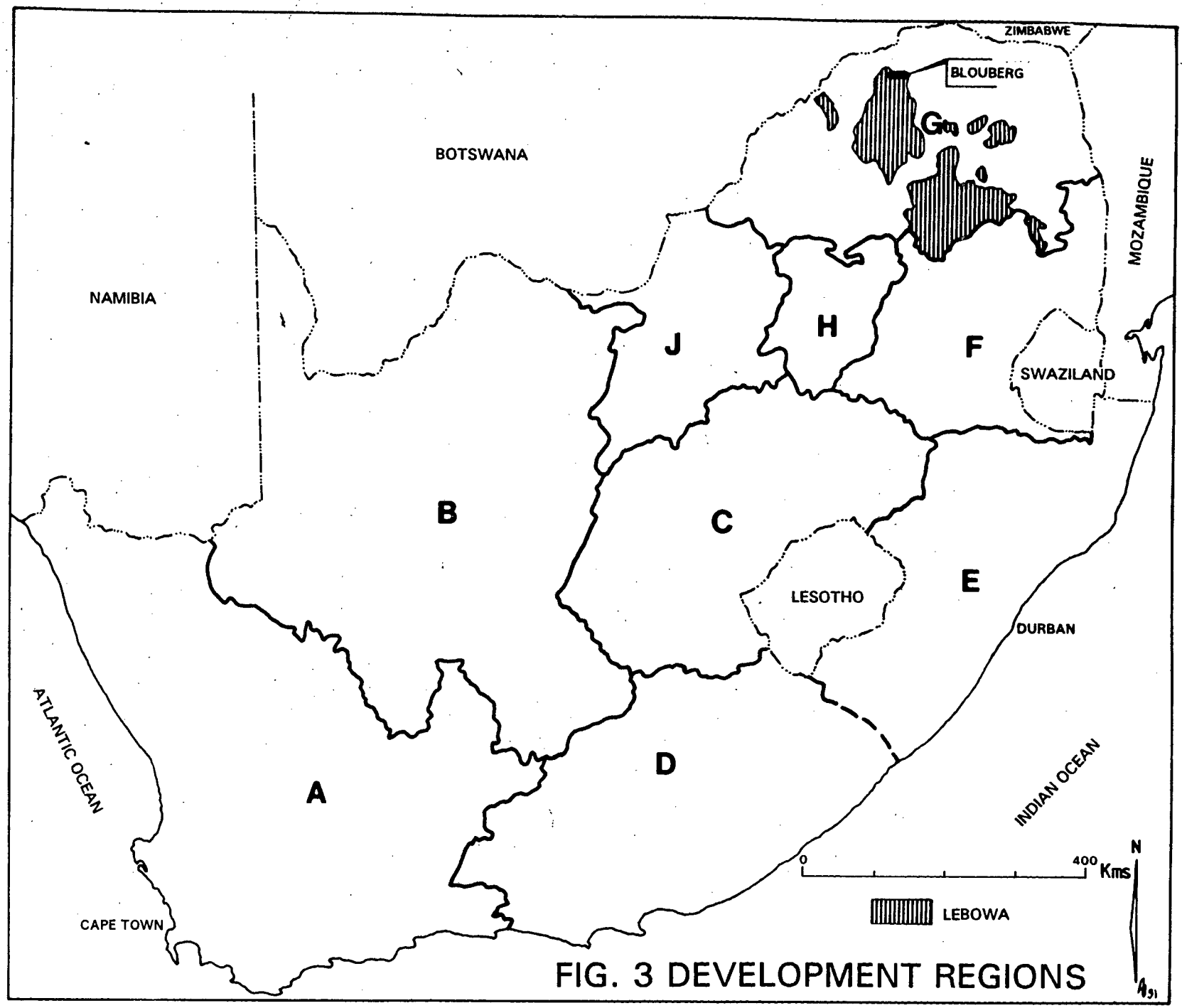

FIG. 3 DEVELOPMENT REGIONS

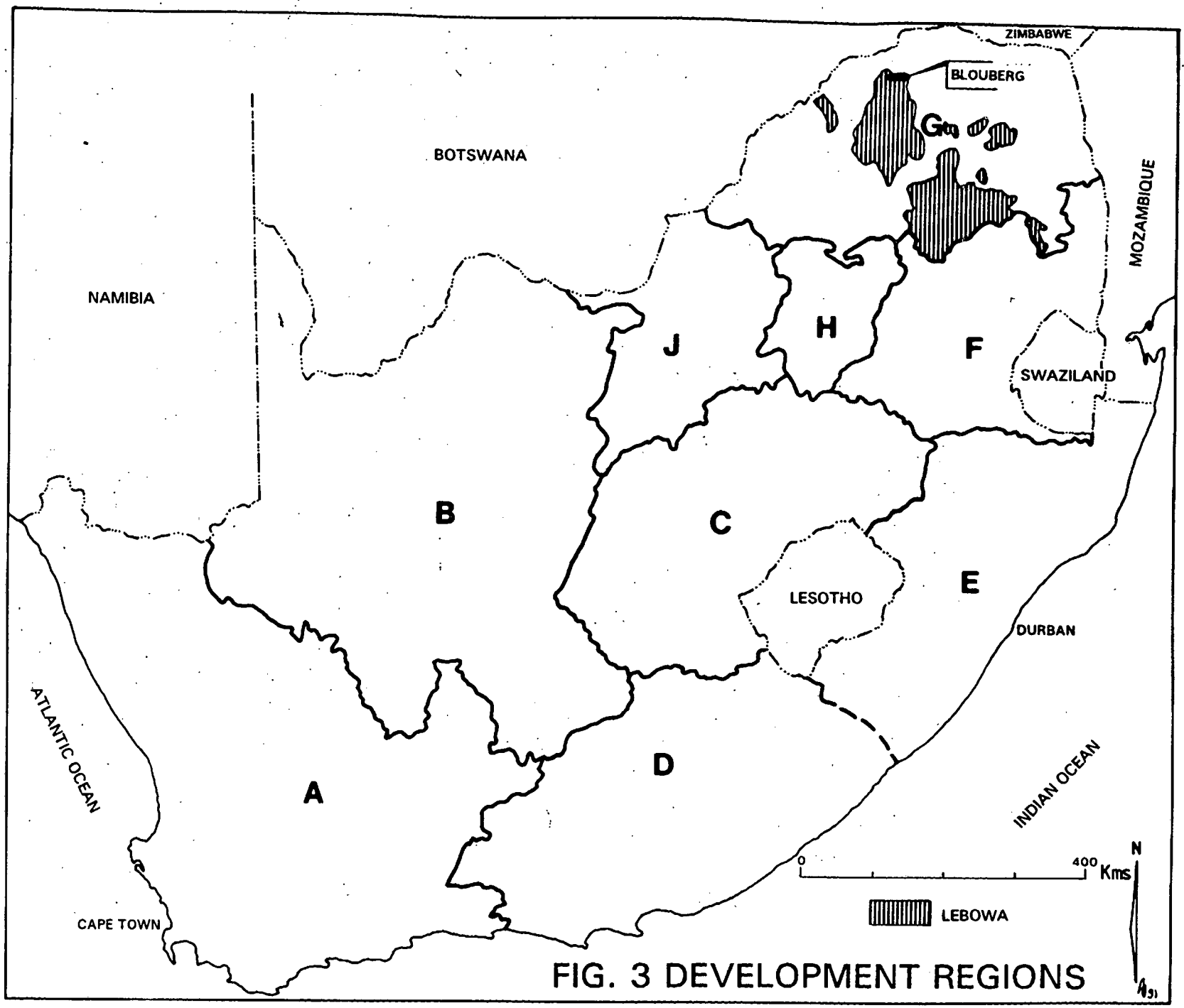

FIG. 3 DEVELOPMENT REGIONS

Review and Appraisal

Years of negotiation between different interest groups have failed to produce any form of conservation strategy for Blouberg. Correspondence between Lebowa's Department of Agriculture and Forestry (now the LDAEC) the Department of Bantu Administration and Development and Mr P S Grobbelaar, Regional Director (Agriculture and Forestry), Seshego, between 1977 and 1981, highlights the deep-seated antagonism, of the people living on the mountain, to any attempts to have them move, or to the incorporation of their land into a nature area. Much harm appears to have been caused by high-handed action on the part of the LDAEC (prior to Mr I Terblanche's office) and over zealous non-government organizations (NGO's).

Conservation efforts in the Blouberg seem to have been a case largely of officials attempting to impose typically First World `top-down' solutions on an uninformed local population. This has caused inherent suspicion of government officials. Tact and diplomacy appear to have been missing elements in efforts to achieve a sustainable conservation strategy in which there should be a healthy mix of `top-down' and `bottom-up' planning and management.

THE BLOUBERG: ENVIRONMENTAL HAZARDS

Endogenous Threats

The island of relatively pristine natural vegetation on the slopes, plateaux and summits of Blouberg is surrounded by an area characterized by over population, poverty and environmental degradation. In an effort to obtain diminishing natural resources (mentioned previously), encroachment and degradation is occurring further up the slopes of the mountain. What is of serious concern is that the area falls within Development Region G (Fig.3), which according to the President's Council Report (1987), has one of the largest rural black populations in South Africa, with

an annual growth rate of 2,36 per cent. This implies a doubling time of approximately 29 years. The potential pressure on resources is highlighted by the fact that over 44 per cent of the local population has no education at all and 58 per cent is under the age of 19 years (President's Council Report, 1987). The implications for Blouberg are serious in that this will mean an increase in unemployment and a lowering of purchasing power among the locals. As a result there will be greater reliance on the rapidly decreasing natural resources of the area.

On the higher plateaux, slash and burn methods to clear ground for cultivation has, in the past, made serious inroads in the montane forest (Fig.4). Destruction of vegetation by fire and livestock in sensitive seepage areas and watercourses of upper catchments is evident. This will have increasingly serious negative consequences on the water supplies for the large expanding population around the base of the mountain. Fire remains a threat as the slopes are burned each year in order to stimulate improved grazing for livestock. In addition, fire is deliberately used by the locals to enhance vigorous growth of sedge grasses used in the manufacture of hand-brooms and ornamental bangles. These sedge grasses only occur in seepage areas of upper-slope catchments. Invariably fires are uncontrolled and remain a serious threat, especially in drought years.

The inherent suspicion, mentioned previously, may also be seen as an endogenous threat in that conservation efforts by government officials and non-government-organisations (NGO's) in the last fifteen years have further alienated the locals.

Attempts by the then Lebowa Department of Agriculture and Forestry, between 1977 and 1981 to include parts of the farms The Glade and The Grange (Fig.2) in a proposed nature

reserve met with determined resistance from the resident population. The adverse publicity generated by the media, in response to the South African Wildlife Society's offer of monetary compensation for the relocation of the local inhabitants, only further served to alienate the locals.

In 1985, proclamation of the Blouberg Nature Reserve on the farms Leno, Witstein, Tuskow and Weimar (Fig.5) on the northern side of the mountain, although with the tacit approval of Kgoši Maleboch, has not been without problems. Initial fencing was perceived by the locals as a hindrance to movement of livestock to grazing areas on the mountain. They accordingly waged a battle with the authorities, removing fencing virtually as quickly as it was erected. This was eventually solved amicably but other areas of conflict still remain over an agreement by which Kgoši Maleboch would receive compensation for the loss of a family dwelling which fell within the Reserve boundaries. Compensation has not been forthcoming and mistrust of the authorities by Maleboch is still apparent (pers.comm.).

This inherent mistrust must be regarded as a serious threat to the conservation of Blouberg. The lack of sensitivity with which conservation efforts have been undertaken in the past, has created an atmosphere in which it will be difficult to address the growing problem of environmental degradation.

Exogenous Threats

In addition to the above (endogenous) threats, are exogenous threats in the form of uncontrolled increases in tourism activity and mining exploration. Both these threats are already present. In the case of the former, the recent highly publicised botanical excursion to the Blouberg, in December 1990, has already generated increasing interest in the area among nature enthusiasts, researchers and others

(Die Noord Transvaaler, 21/12/90). In the case of mining exploration, the discovery of what is believed to be a potentially larger source of diamonds than the Kimberley strike, in the Alldays area approximately fifty kilometres north-west of Blouberg, has sparked an interest in mining exploration in the region. The LDAEC received a formal application from Messina Diamonds (Pty) Ltd in October 1990, for prospecting rights in the Blouberg area.

CONCLUSION

This chapter has presented a general description of the Blouberg, which provides a background for a clearer understanding of the research which was conducted in the study area. The most salient features which are perceived to be of primary concern in attempts to develop conservation strategy options are identified as being particular endogenous and exogenous threats to the principal environmental characteristics of the Blouberg. Especially significant is the legacy of mistrust which the Bahananwa people have for whites and officialdom in general. This is perceived to be a serious obstacle to future negotiations for conservation strategies, which must include input from the local inhabitants.

The next chapter presents a summary of the various research methods employed in order to gather the socio-ecological data necessary to formulate sustainable conservation strategy options for Blouberg.

CHAPTER 3

RESEARCH METHODOLOGY

OVERVIEW

The primary concern of this chapter is to present an overview of the research methods employed to gather socio-ecological data. The aims and objectives of the research are clarified. With regard to the social survey, reference is made to contemporary research concerning proclamation of nature reserves and game parks in sub-Saharan Africa. The principal conclusion of this research is that, until fairly recently, conservation programmes have neglected the needs and aspirations of impoverished communities. The need to address these issues by involving local people in the planning and management of conservation strategies is stressed.

Other research techniques employed *i.e.* gathering of secondary data, the bio-physical survey and group techniques are summarized.

GOALS, AIMS AND OBJECTIVES

It bears reiteration here that given Blouberg's unique biophysical and historical features, contemporary socio-ecological threats to the region and the failed attempts of past conservation efforts, the aim of this project was to attempt to identify a range of strategy options for the Blouberg which would meet the goals of;

i) ensuring the conservation of the natural resources on Blouberg and
ii) enhancing the quality of life of the people in the region.

To this end the specific objectives of the project were to:

i) Determine the nature and extent of utilization of natural resources by the local inhabitants.

ii) Determine the basic needs of the communities in the area and assess whether they are being met.

iii) Attempt an assessment of the quality of life of the local inhabitants.

iv) Identify environmental characteristics of the region deserving of conservation.

v) Identify threats to these conservation priorities.

vi) Produce a range of conservation strategy options for Blouberg which will reconcile conservation priorities with social needs.

SUMMMARY OF RESEARCH METHODS UTILIZED

The following research methods were undertaken in order to accomplish the objectives outlined above:

i) social surveys and informal discussions;

ii) gathering of secondary information via interviews with public authorities and a computer-aided library search;

iii) bio-physical study of the area - fieldwork;

iv) conservation workshops utilizing the nominal group technique.

Social Survey

Until relatively recently, the proclamation of nature reserves and game parks in sub-Saharan Africa has been associated with relocation of people. This has frequently led to "unnatural park islands surrounded by ecological slums" (Taylor, 1982). As a result the tribal African, on the whole, regards `white' conservation efforts with suspicion and cynicism. Research (Infield, 1986; Martin and Taylor, 1982; Lusigi, 1981; Odendal, 1988; Moll and Moll, 1989; Owen-Smith and Jacobsen, 1989; Hanks,1990.) has clearly indicated that the conservation of African wildlife and nature reserves depends ultimately upon the integration of the local people into the management process, both in the planning and implementation phases:

"The challenge now facing wildlife conservationists is, therefore to reconcile conservation priorities with the needs and aspirations of the people -particularly those communities that are living in and around our wildlife areas" (Owen-Smith and Jacobsen, 1989, p.6).

The major threat to the conservation of Blouberg was perceived to be the increasing pressure being exerted on the natural resource base by the local people in their attempts to satisfy their basic needs. As a consequence it was apparent that an important facet of the social survey would be to attempt to determine the basic needs of the community, their aspirations and attitudes to their environment. These aspects were regarded as vital to the formulation of conservation strategy options. It would be impossible to expect any conservation strategy to succeed if there is no social upliftment for the impoverished communities inhabiting the vicinity:

"To ignore the sensibilities and needs of local communities when promoting a universal protectionist philosophy for

conservation is tantamount to turning a blind eye to the economic, social and ecological realities of Africa" (Hanks, 1990, p.38).

By establishing what the basic needs are and to what extent the local residents rely on the natural resources of the Blouberg mountain to meet these needs, was regarded as being central to the development of viable conservation strategy options.

Constraints of the Study

Shortly after commencement of the project the researcher was cautioned by Mr I Terblanche, Head of Lebowa's Department of Agriculture and Environmental Conservation (LDAEC), that the issue of conservation proposals for Blouberg was an extremely delicate one. He advised that the researcher not make reference to a proposed nature reserve when speaking to local inhabitants. The people were very antagonistic towards conservation plans for the mountain. Past initiatives were perceived to have been directed towards removing them from the mountain and establishing a fence around it.

It would have been extremely difficult to evaluate attitudes to alternative conservation strategies if the possibility of a nature reserve could not have been mentioned. This constraint made it necessary to alter the initial research procedure, placing the responsibility of assessing attitudes to conservation strategies on the LDAEC.

Preliminary fieldwork convinced the researcher that problems associated with social research in the South African context, as highlighted by Odendal (1988. p.3) *i.e.* that "respondents often misunderstood concepts as well as doubting the motives of the researchers", would apply in Blouberg. After consultations with social anthropologists,

ethnologists and a Pietersburg-based labour relations consultant, the following decisions were made with reference to the social surveys in an attempt to alleviate mistrust:

i) Either a white Sotho linguist or local residents of Blouberg should be employed as interpreters. This was based on the understanding that local people are wary of black people who are not from their area, although they would appear to be less suspicious of a white linguist (Prof B Botha and O Baragwanath, pers.comm).

ii) As a result of deep-seated antagonism of the local population towards past conservation proposals for Blouberg, it was decided to gather information in three progressive stages *viz*.

- Stage One - Familiarization.
  In compliance with local traditions there was a need to introduce oneself to the inhabitants. Thereafter photographs could be taken and unobtrusive observations of habitat and lifestyles made.

- Stage Two - Quantitative Data Gathering
  Quantitative information was to be obtained once initial courtesies had been observed.

- Stage Three - Qualitative Data Gathering
  An assessment of attitudes and perceived needs would be made once people were familiar with the researcher.

iii) In-depth informal interviews utilizing a formal questionnaire were employed when interviewing inhabitants of the plains surrounding the mountain.

iv) Informal discussions utilizing specific pre-determined questions were employed when interviewing mountain dwellers. Notes were only recorded once respondents were at ease and willing to speak openly. This approach was adopted because of the experience of the researcher with the first interviewee living on the mountain. Once official courtesies had been observed, he was asked if he had any objections to the researcher recording answers to questions. The immediate reply was, "Why? Do you want to move us off the mountain?" Thereafter that particular respondent was uncooperative and the interview had to be aborted.

Gathering of Secondary Data

Community leaders, local officials and personalities, Lebowa Government officials, academics from the University of the North, individuals who had expressed interest in Blouberg and representatives from non-government organizations (NGO's) were identified and consulted from the initial stages of project planning through to the final phases of the study. Considerable effort was made to gather information from as many different sources as possible by using the chain-referral system, *i.e.* asking interviewees to suggest other potential sources of information. Data compiled to complement the social survey included:

- Population and livestock statistics obtained from the Department of Agriculture, Bochum.

- Regional planning information from the Chief Magistrate, Bochum and Mr J Roos, Land Affairs and Tourism, Lebowakgomo.

- Details of negotiations between the Bahananwa and Lebowa Government Officials obtained from Mr J Rencken, Secretary to the Minister of Agriculture and

Environmental Conservation, Lebowa Government Service, Lebowakgomo.

- Socio-economic information from Mr G Steyn and Mr M Modjadji, Department of Strategic Planning, Lebowa Development Corporation Lebowakgomo.

In order to provide the best available socio-ecological information on the area, a wide range of academic authorities were consulted.

A computer-aided library search was initiated through the Jagger Library, University of Cape Town in order to produce a comprehensive list of theoretical and applied reference sources relevant to the study.

Bio-Physical Survey - Fieldwork

In addition to the gathering of secondary data, the researcher conducted twenty-two field excursions to Blouberg between August 1988 and December 1990. As the mountain plateaux are inaccessible by motor vehicle most of these excursions were made on foot. Empirical information on a wide range of elements comprising the bio-physical component of the area was gathered. Observations made during visits were recorded in field notebooks and visual material was compiled by use of 35mm camera and colour video-camera. Personal observations were supplemented by conversations with inhabitants, aided by local interpreters. Use was also made of aerial photographic enlargements in order to assess population settlement patterns and evidence of environmental degradation. An information document describing the study area (including results of the social survey) was circulated to potential group technique participants.

Group Techniques

The following research procedure was adopted with regard to the use of group techniques. Two workshops were convened to which experts[1] who had been identified by the researcher as being well informed about some aspect of Blouberg, were invited. The first workshop was organized to:

i) identify environmental characteristics of Blouberg worthy of conservation,
ii) identify hazards to these environmental characteristics
iii) establish means to counteract these hazards.

Two weeks after the first workshop, panelists were assembled with the aim of identifying specific conservation principles that should be included in conservation strategy options for Blouberg.

These two workshops were convened once the bulk of research had been completed so that panelists had access to the socio-ecological data produced by the researcher.The information generated at the workshops may thus largely be regarded as a synthesis of the socio-ecological research conducted in the Blouberg. They form the basis from which the conservation strategy options proposed by the researcher (in Chapter 7), were developed.

CONCLUSION

This chapter has been concerned with summarizing the research methods utilized to gather data pertinent to formulating conservation strategy options for Blouberg. Particular stress was laid upon the importance of assessing the needs and aspirations of the local communities by means of a social survey. Outmoded conservation efforts of the past which had neglected these issues, were perceived as

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[1] experts - Persons with some special expertise or interest.

unlikely to succeed. Key elements of the conservation strategy options formulated for Blouberg were perceived to be, participation by local communities in the planning and management process, and the alleviation of poverty by addressing the issue of basic needs.

The chapter concluded with a brief description of other data-gathering techniques utilized *i.e.* gathering of secondary data, a bio-physical survey and group techniques.

The following chapter presents a detailed descriptive report of the social survey conducted in the study area.

CHAPTER 4

SOCIAL SURVEY

OVERVIEW

This chapter presents a detailed descriptive report of the social survey conducted around the southern base of the mountain (plains dwellers) and on the mountain itself (mountain dwellers). A questionnaire was formulated for use amongst the plains dwellers, and interpreters were recruited from the local community. The questionnaire addressed five basic issues *viz.* social activities, farming activities, natural resource utilization, needs and perceived problems, and attitudes to the environment. Interviews were conducted in thirty-six households on the plains and eighty percent of the interviewees were women. Most males were migrant workers employed in the PWV area.

It was intended to use a similar questionnaire technique amongst the mountain dwellers, but this approach was abandoned after the first interviewee expressed suspicion about the interviewer's motives. An informal questioning technique was used, which proved to be more effective. Information was collected on social and farming activities, the nature and extent of natural resource utilization, problems and benefits associated with living on the mountain, population movement and tribal beliefs and traditions. Interviews were conducted in twenty-six households in five villages situated on the mountain plateaux. Most respondents were pensioners.

One of the most salient features arising from the survey of mountain dwellers was the trend for people to abandon their mountain settlements and move to the plains below. The main contributing factor was the convenience of being closer to

amenities such as shops, schools and clinics. Ironically, several respondents expressed concern that the incumbent chief of the Bahananwa tribe, Kgoši Maleboch, had abandoned the royal kraal (mošate) on the mountain in favour of a home at the foot of the Blouberg. An interesting factor which emerged was the anomalous position held by Kgoši Maleboch. Apart from the strong disapproval expressed over the decision to abandon the royal mošate, several respondents were critical of the Bahananwa Local Government Authority's inability to solve problems. In addition, it was noted that few of the resident headmen occupy positions in the tribal kgoro. This was perceived, by the researcher, as being of significance when future discussions of conservation strategy options are convened. It would be necessary to establish what sort of support the Kgoši and his kgoro enjoy amongst the local headmen before the negotiating process is initiated. Failing this a situation could arise where decisions made by the kgoro might not meet the approval of the headmen.

Introduction

The social survey was conducted amongst the inhabitants of the area immediately adjacent to the southern base of the mountain (plains) and the communities occupying the five villages on the upper plateaux of the mountain itself. As the data-gathering techniques employed for these two groups varied in some aspects the descriptive report which follows is divided into two sections *viz;*

i) people living around the southern base of the mountain,
ii) mountain dwellers.

PLAINS DWELLERS

Only households on the mountain side of the main Blouberg Hospital/Leipsig Mission road were contacted. There were

two reasons for this decision. Firstly, people living in close proximity to the mountain were more likely to be utilizing the natural resources of the mountain. Secondly, there was a limit to the number of people that the researcher could interview within the time available. The survey was conducted among households on the mountain-side of the road on the farms Leipsig, Buffelshoek, Beauley and Dantzig (Fig.2).

An analysis of the population and livestock statistics (Table 2) indicates that the population decreased by fifty per cent in the study area over the last four years. Interviews with principals of three local schools, however, revealed that pupil intake increases every year by at least 10 per cent. In addition, a local businessman, Mr T White-head, maintained that there has been a steady increase in population over the last ten years. When he conducted a feasibility study early in 1990, before relocating one of his shops, he estimated that there were over 300 families resident in the village of Thalahane (Fig. 2), on the farm Buffelshoek. Figures given to him at the Local Government offices quoted 400 families. At an average family size of 5,9 (Modjadji, 1988) in the study area, a population of approximately 2000 people can be assumed. This is over twice the figure of 923 for Buffelshoek in 1989, quoted by official sources in Bochum (Table 1) and poses a serious hazard to the diminishing natural resources of Blouberg, firewood in particular.

There has been a significant decrease in numbers of livestock on the farms Dantzig and The Glade whilst numbers on the farms Buffelshoek and Leipsig have increased. Overall the total number of livestock remained relatively constant between 1986 and 1989. These statistics however, should be viewed with caution as the discrepancy in the

population figures (cited above) could possibly also apply to the livestock figures

Table 2: Population & livestock statistics of farms in the study area 1986 - 1989

FARM	1986		1987		1988		1989	
	People	Stock	People	Stock	People	Stock	People	Stock
Leipsig	1152	404	1065	563	602	604	735	722
Buffelshoek	3195	88	614	490	662	549	923	657
Dantzig	1152	1197	347	1151	633	296	717	389
The Glade	366	511	364	258	521	297	386	310
TOTALS	5865	2200	2390	2462	2418	1746	2761	2078

Source: Department of Agriculture, Agricultural Extension Offices, Bochum (1990).

Table 3: Population Statistics (Family Composition) in the study area - 1988 - 1989

Farm	Families	Men	Women	Boys	Girls	Total
Leipsig	101	92	101	209	200	602
Buffelshoek	129	108	128	222	204	662
Dantzig	107	82	108	239	204	633
The Glade	92	77	96	172	176	521
TOTAL	429	359	433	842	784	2 418

Source: Department of Agriculture, Agricultural Extension Offices, Bochum (1990).

Aims

The aims of this survey were to:

i) Determine household composition, economic and agricultural activities and land use.

ii) Determine natural resources utilized, their accessibility and availability.

iii) Identify specific problems experienced and the most pressing needs expressed by the inhabitants.

iv) Elicit attitudes to a more general and wider range of issues relating to the life experience in the study area.

v) Attempt to evaluate the importance of living adjacent to the mountain and to predict future population movement and demographic trends.

The study followed a five-stage approach *viz.*
- pre-survey activities
- data collection / pilot survey
- refinement of informal interview questions
- further data collection
- data processing and reporting.

Pre-Survey Activities

Five separate meetings were conducted with the Bahananwa Local Government Authority, during which the researcher explained the purpose of the study to the Kgoši Maleboch, his councillors and, on one occasion, to a gathering of local headmen. The Kgoši initially appeared to be suspicious of the researcher's motives and although no concrete objections were voiced about the study, final approval to interview the local people was only given after

the fifth meeting, which took place nearly two months after the initial one.

Five interpreters were recruited, all of whom live within the study area.

A questionnaire was drawn up in consultation with Professor D. Hammond-Tooke, social anthropologist, University of Witwatersrand, specialist in African cultures (Appendix 1).

Data collection

After a number of pilot interviews were conducted by the researcher with the aid of the interpreters, the questionnaire was refined and improved. Thereafter the interview procedure was continued. Responses were collected manually and compiled in a format suitable for presentation in a report.

SURVEY RESULTS

As indicated the questionnaire addressed five significant issues which can conveniently be categorized as; social profile, farming activities, natural resource utilization, needs and problems, and attitudes to the environment.

Social Profile

Interviews were conducted in 36 households. The average family size in this survey was estimated at 5,9. Eighty per cent of the interviewees were women. The reason for this is that most males are migrant workers. Thirty six per cent of the household members were economically active and 79 per cent of those employed worked in the PWV area. Fifteen per cent worked within 150 kilometres of their homes, mainly as teachers, nurses and farm labourers. Eighty eight per cent of those employed returned to their homes by taxi at month end. All but four of the households interviewed comprised extended families. Commonly adult sons lived with their

children in the households of their parents. In all these cases the father usually worked away from home and the children were being looked after by wives, grandparents or relatives. Forty eight per cent of respondents were members of burial societies and 26 per cent belonged to church denominations.

All but four of the households consisted of traditional mud-plastered rondavel dwellings covered with thatch grass. The number of buildings varied from two to eight per household. Sixty five per cent of the households included at least one rectangular zinc-roofed structure, often constructed with modern cement/sand bricks and containing metal window and door frames. All households were surrounded by low hand-plastered mud walls, enclosing mud covered courtyards. Seventy six per cent of the dwellings were enclosed by barriers of dead and often spiney vegetation. Where livestock or chickens were kept, all enclosures consisted of dead wood and thorny vegetation.

Farming Activities

The most common livestock owned was chickens (73% of households) followed by goats (65%), cattle (32%),dogs (25%), donkeys (19%) and pigs (13%). Numbers of livestock owned were relatively low. The average number owned were: chickens 9; goats 9; cattle, donkeys and pigs 4 each; and dogs 1. All livestock owners said their animals grazed mainly on the slopes of the mountain and commented that they had to move them higher up the slopes in winter. The researcher observed fires being burned in several separate localities on the slopes of the mountain and was told this was done every year before the rains to secure better grazing. None of the respondents indicated they would sell livestock. Chickens were slaughtered for food whilst goats and pigs were slaughtered on special occasions such as

feasts and weddings. Donkeys were used to draw scotch carts and for ploughing.

Thirty of the 36 households indicated that they cultivated crops. Of these, 75 per cent cultivated only to a limited extent (less than 0,5 hectares) in close proximity to their dwellings. The other 25 per cent cultivated fields ranging in size from 0,5 to 5 hectares further away from their homes. All respondents with one exception indicated that these lands had been allocated to them by the local headman. The remaining respondent, who owned the largest land (approximately 5 hectares) had this allocated to her by the Lutheran Mission. Only one respondent claimed to pay rental for his land, varying from R5-00 to R20-00, three to four times per year to the local headman. The most popular crop was sorghum, cultivated by 83 percent of households. Other crops (pumpkins, water-melons and beans) were cultivated by 50 per cent of households, whilst maize was cultivated by 40 per cent of households. Three householders indicated that they hired tractors to plough and paid the owner by allowing him to cultivate a portion of the fields (usually about 10% of the field). Excess sorghum was sold to the local shop if the crop was good. A good crop averaged 10 bags per hectare and prices obtained were approximately R60-00 per bag. Most respondents (86%) maintained that they rarely grew enough for their own use and had to supplement their diets by buying from the shops. The main problems related to cultivation were cited as inconsistent and poor rains and baboons. It was noted that although the seasonal rains experienced in the 1990/91 season were good, only about 20 per cent of the arable land in the study area was cultivated. It is surmised that the reasons for this phenomenon probably correlates with those presented by Lenta, 1985 *viz.* shortage of finance with which to purchase intermediate inputs (means of ploughing, seeds, fertilizer *etc.*), the physical impossibility of obtaining the means of

ploughing the land and imbalances between the rights to arable land and availability of labour with which to cultivate the land.

No artificial fertilizer was used on any field and neither agricultural advice nor support had ever been received by any of the respondents. One respondent had sunk his own borehole and irrigated a small patch of vegetables. Most of the agricultural activities were performed by women.

Natural Resource Utilization

In answer to the question "Do you or any of your family gather firewood, timber, fruits, thatch grass, relishes, medicinal plants or graze livestock on the mountain?", (Appendix 1, question 2.6) the following affirmative responses were recorded:

Table 4: Natural Resource Utilization on Blouberg.

NATURAL RESOURCE	AFFIRMATIVE RESPONSES
	Percent of Household
Firewood	92%
Fruit	89%
Thatch Grass	86%
Relishes	47%
Timber	31%
Medicinal plants	19%

All households collected water from natural springs at the base of the mountain or from communal taps situated at intervals of about one kilometre apart around the foot of the mountain.

Responses to the question "Are any of these resources becoming harder to obtain?" (Appendix 1, question 2.7), were as follows:

Firewood - 78% answered Yes
Fruit - 8% answered Yes.

Asked to name the resource which would have the most serious effect on them if no longer available, 67 per cent named firewood and 22 per cent water. Most respondents cited increasing population and selling of wood as the most serious reason for their growing inaccessibility. Some concern was expressed over people coming into the area and harvesting wood for sale outside the area, especially those who collected wood in scotch carts. Although the researcher often encountered women carrying bundles of firewood, none of those questioned replied that they were gathering to sell to others. Scotch cart loads of wood were rarely encountered and when they were, on most occasions they were on the farm `The Park' to the west of the Leipsig Mission (Fig.2).

Most families said that they spent two to three hours collecting wood three times per week. The general consensus was that they found this tiresome and there was some concern that they were having to search further afield for firewood. Bearing in mind that there is no electricity available to households in the area, the population depends almost entirely on the local vegetation for fuel. No households interviewed used any fuel other than wood for warmth and cooking. Paraffin was used extensively for lighting. The researcher monitored collecting of wood with two families on separate days. The first family of 5 lived within close access to the wood source on the farm The Park (Fig.2), and two women took 3 hours to collect about 50 kilograms of wood between them. This they maintained would last the family 2 days,

before they would have to collect more. The mean daily consumption of firewood per person at this rate was calculated as 5 kilograms. The second family lived approximately three kilometres away from their present wood source on the slopes of the mountain. Two women and a young girl set off at 6am and returned with three headload bundles weighing a total of approximately 70 kilograms, 4,5 hours later. They maintain that this was repeated 3 to 4 times per week in winter. The wood was stockpiled in preparation for the cultivating season, when a combination of working in the fields and rain made wood-gathering more difficult. The daily consumption of firewood for this family of 8 was approximately 20 kilograms (about 2,5 kilograms per person per day). Three cooking fires were usually made each day, and in winter these fires were frequently kept burning for warmth. Only women and young girls were observed collecting firewood. Most of the wood examined was dry, but sticks of green wood were observed in a number of bundles, indicating a degree of illegal felling. Questioning revealed that certain people did collect wood to sell locally. The price was calculated at approximately R3 per 30 kilogram bundle.

Most respondents expressed satisfaction at the quality and availability of water. Dissatisfaction was voiced over delay in the repair of pumps which had broken down, and silting of springs in the rainy season. Most women had to collect water 2-3 times per day and some walked over 2 kilometres on each occasion. From perfunctory questioning and personal observation, the average household used between 75 and 150 litres of water per day. Collecting water is a task confined to women and young girls who usually carry it in 25 litre cans balanced on their heads or occasionally in 2x25 litre containers on wheelbarrows.

It would appear that most families stockpile firewood and thatch grass during the dry winter months. Piles of dry

firewood were evident in every household. Sizes of woodpiles were large (up to 6 cubic metres in some instances). Seventy-five per cent of the sampled households had stockpiles of thatch grass in large quantities, varying from fifty to four hundred bundles weighing approximately 0,5 kilograms each. Respondents indicated that huts were rethatched every 3 to 5 years. All those interviewed had gathered thatch from the slopes of the mountain and a small number indicated that they sold thatch grass occasionally. The average price was 30 cents per 0,5 kilogram bundle. Considering the volume of thatch grass taken from the Blouberg, the impact on the slopes is surprisingly insignificant at present.

Most of the wild fruit harvested from the mountain was collected by children in the summer months. The main varieties gathered were given as *Mimusops zeyheri*, *Syzygium gerrardii*, *Bequaertiodendron magalismontanum*, *Ehretia rigida*. Two other fruits which were popular could not be identified other than by their Sotho names monobe and ditshohlo.

Almost half of the respondents collected wild relishes from the mountain. Only 19 per cent admitted to harvesting medicinal plants, but it was suspected that this use was higher given the embarrassment of admitting to practises which Europeans might regard as foolish. This was endorsed by the interpreters.

Although 31 per cent of respondents indicated that they used poles from the mountain for building purposes (mainly roof supports in the form of *Olea africana*), it would appear that this practice is diminishing in favour of more modern rectangular structures being built and commercial timber and planks being used to support zinc roofs.

Most interviewees maintained that they seldom made the journey to settlements on the upper slopes of the mountain. When they did so it was primarily to visit relatives or to carry out ceremonial requirements.

Perceived Needs and Problems

Major perceived problems were marked in order of seriousness (refer to Appendix 1, p.142).

TABLE 5: PERCEIVED NEEDS AND PROBLEMS

TOTAL RESPONSES				
	Very satisfied	Satisfied	Dis-satisfied	Very Dis-satisfied
Employment opportunities	-	1	14	20
Sanitation	-	8	18	8
Fuel	-	6	16	8
Water	-	9	22	1
Savings	-	5	15	7
Leisure	-	1	14	8
Communication	-	7	18	6
Transport to work	-	8	15	6
Agricultural support	-	2	6	12
Health services	-	14	11	7
Education	-	14	12	4
Nutrition	-	16	10	4
Clothing	-	13	12	-
Tribal structure	-	17	6	7
Shopping facilities	-	14	9	4

Fifty seven per cent were very dissatisfied with employment opportunities and the remaining 40 per cent dissatisfied. This is supported by the fact that most of those employed work in the PWV area. There was disquietude that family members had to be employed so far away from home. A common

desire was that factories and industry should be located in the area to improve local employment opportunities.

There was general dissatisfaction about the lack of sanitation (most families go to the bush to relieve themselves), difficulty of securing firewood for fuel and the inadequacy of water supplies close by. The inability to save money, lack of leisure facilities, inadequate means of communication (telephone and postal services), absence of agricultural extension services, cost of transport to work and health services were also causes for dissatisfaction. Complaints about education included a shortage of books, overcrowding and contributions which had to be made each year to the building funds, which were regarded as excessive. Forty seven per cent of families interviewed said they were often short of food.

Half the respondents were satisfied with shopping facilities and tribal structures, although it would appear that, regarding the latter, people were afraid to speak out strongly against the inefficiency of the system. Those who were critical were vociferous in their lack of faith in the tribal authority structure. It should be noted that some of these comments came from one interviewee who was a member of the Kgosi's kgoro and two employees in the Local Government.

Attitudes

The questions in this section of the questionnaire (Appendix 1, p.142-146 were primarily open ended, in contrast to the previous section (perceived needs and problems). The researcher had hoped to elicit spontaneous responses to a wider range of issues. Most of the interviewees however, found it difficult to respond without referring back to issues already dealt with in the previous section (Appendix 1, p.142-146).

Eighty-one per cent of the respondents agreed that the mountain was important to them and the reasons given were largely practical ones *i.e.* it afforded protection from wind or war, flooding did not occur as on the plains and it was a source of wild fruit. Significantly, none of the respondents claimed that the mountain was a good source of firewood, although most admitted to collecting their wood on the slopes. Nineteen per cent of respondents had no opinion on the importance of the mountain. Six respondents indicated that the surroundings were aesthetically pleasing in contrast to the surrounding plains. Seventy five per cent of the respondents indicated they were satisfied with their lifestyles and the rest indicated dissatisfaction.

The issues that caused most worry to the inhabitants were, in order of importance; unemployment, lack of grazing for stock, too little land for cultivation, underdevelopment of the area *i.e.* poor roads, no post-offices, too few clinics, lack of sanitation and electricity, instability of youth (boycotts), loneliness (absence from relatives who were employed far away) and tribal authority inefficiency.

Factors that yielded most satisfaction in the area included; peaceful surroundings (no strife as in the townships), church, not having to pay rents and the availability of resources, e.g. firewood and wild fruit.

In answer to the question "What changes/improvements would you like to see in your area?", 64 per cent indicated employment opportunities nearby. Other suggestions which featured prominently were for improved roads, post-offices, banks, a malnutrition centre, women's clubs, tapped water in homes, leisure facilities and improved tribal authority efficiency.

The response to the question, "Would you be content to live here for the rest of your life?" was affirmative by most interviewees (75%), but the majority qualified the answer by saying, provided they could find employment. Twenty two per cent indicated they would prefer to live closer to big urban centres.

Most parents (67%) indicated that their children would prefer to live elsewhere where job opportunities were more readily available and infra-structure better developed.

In answer to the question, "What would you like your children to do after leaving school?" most parents replied that they would want to see them employed as teachers, nurses, doctors or lawyers - indicating high aspiration levels for the future.

Other comments elicited were that development was too slow in the area (particularly with regard to improving roads and water supplies). The general impression gained is that respondents felt that their area was being neglected by the Lebowa Government and that there was an urgent need for economic upliftment. Some of the older members of the community expressed disappointment that the younger generation no longer felt a need for initiation ceremonies.

Summary and Appraisal

The survey results were characterised by a high incidence of wives as respondents because most husbands were migrant workers. The study area supplied very few job opportunities and this was cause for concern in most households. The extended family was common in the vast majority of households. The trend in most households appeared to be moving towards construction of modern rectangular, zinc-roofed dwellings, which would relieve the pressure on

natural resources previously utilized, such as indigenous timber and thatching grass.

Most households cultivated on a subsistence level with sorghum and maize being the main crops. Yields were very low and agricultural extension services were non-existent. Very few households grew enough for their own use and there were misgivings over the shortage of land.

Most of the households owned chickens or goats. Livestock was grazed mainly on the slopes of the mountain. Animals were rarely sold or slaughtered, apart from chickens which appeared to be a popular food source.

A large majority of households gathered firewood, thatch grass, wild fruits and relishes from the slopes of the mountain. Firewood and thatch grass were stockpiled during the winter months when women were not busy with cultivating and harvesting or affected by rain. Relishes and wild fruit were gathered during the summer months. The average household consumed between 14 and 34 kilograms of firewood per day. Water was collected in 25 litre containers from natural springs and communal taps around the base of the mountain. The average household used between 75 and 150 litres of water per day. Water quality was good. It was the task of the women to collect firewood and water. Time spent on the former was calculated at 3 hours, 3 times per week in winter. Severe denudation of shrubs and trees occurs on the lower slopes of Blouberg, particularly adjacent to areas of dense population. Considering that most of sampled households were stockpiling large quantities of thatch grass, the impact on the slopes of the mountain appeared to be relatively insignificant.

The perceived needs and problems in order of importance were; lack of local employment opportunities, poor

sanitation, difficulty in obtaining firewood and water, inability to save money, lack of leisure and communication facilities (post-offices and telephones), difficulty and expense of transport to work, lack of agricultural support, poor health services, education, nutrition and inadequate clothing.

In the attitude survey, most respondents expressed a positive attitude to the mountain largely for practical reasons. Other factors which caused satisfaction in the area below the mountain were the lack of strife and tension, church membership and not having to pay rents. Somewhat paradoxically, the general attitude towards the availability of firewood was not one of dissatisfaction, although it was quoted as a cause of concern when respondents had been requested to identify their most significant needs and problems. A possible explanation could be that respondents, when expressing their general attitudes, were comparing their circumstances to life elsewhere (away from the mountain) where firewood was highly inaccessible by comparison and often had to be purchased.

MOUNTAIN DWELLERS

Communities inhabit five core areas on the mountain *i.e.* the southern section comprising the villages of Kgatalala, Hananwa(on the farm Buffelshoek) and Mohlakeng (on the farm The Grange) and two smaller communities occupying sites on the North-eastern plateau, Molweng (on the farm The Glade) and Boubeng (on the farm Dantzig)(Fig.2). The researcher estimated the number of households in each of the villages (Table 6).

Table 6: Number of Households in Villages on the Mountain

VILLAGE	NUMBER OF HOUSEHOLDS
Hananwa	69
Kgatalala	16
Mohlakeng	36
Boubeng	4
Molweng	6
Total	131

Ownership of all the farms, excluding The Grange, have been described previously. The Grange falls into the same category as Dantzig and Beauley *i.e.* trust farm allocated to Kgosi Maleboch in terms of Government Gazette (No 2503) of 15 August 1969.

Aims

As indicated, this survey was approached differently to that for the plains people, as previous attempts to declare part of the mountain a nature reserve and persuade the residents to evacuate their traditional homes, had left the inhabitants sensitive and suspicious. This was confirmed in the first interview conducted on the mountain and thereafter the researcher abandoned the questionnaire in favour of a more informal questioning technique.

With a view to identifying environmental hazards for Blouberg, the aims of the survey were to determine:

- a social profile
- farming activities
- nature and extent of natural resource utilization
- problems/benefits associated with living on the mountain

- population movement
- tribal beliefs and traditions.

SURVEY RESULTS

Due to the more informal and observational nature of the survey on the mountain this analysis is more descriptive and qualitative than statistical.

Social Profile

Interviews were conducted in 26 households in the villages of Kgatalala, Hananwa, Mohlakeng, Boubeng and Molweng. Eighteen of the respondents were men and eight, women. Many of the respondents were estimated at over 60 years of age, with most drawing old age pensions from the Lebowa Government (R300 every two months for men over the age of 65 and women over 60). All but six of the households interviewed consisted of family members who were migrant workers. Only three of the families were not extended families. These statistics correlate closely with information gathered on the plains dwellers. The following is a breakdown of occupation of respondents:

Table 7

Occupations of Respondents Interviewed on the Mountain

Wives or widows	-	8
Pensioners (male)	-	12
Migrant workers (male)	-	4
Headmen	-	2
Total		26

All the wives, widows and pensioners were occupied as subsistence farmers and three were engaged in making spoons, axe and hoe-handles, other implements and ornaments out of indigenous wood. Traditional medicinal plants were observed

in three households, but only one respondent admitted to collecting these for sale.

The size of households varied from two people to over thirty in one instance. It was difficult to determine the precise size of households as most respondents were confused with this question and were not able to count. Two of the householders indicated that school children stayed with relatives on the plains during the week, when they attended school, and came home over week-ends. Most of the children were young (2-11 years old) with a few older than this. All of the children interviewed said they were not happy about having to walk so far to school. From observation it would appear that most of the families are very poor as children in particular looked malnourished and clothing was threadbare.

All respondents indicated that they were content with their lifestyle, but it requires emphasis that in each case these were older family members. Some even volunteered that their children would be happier living closer to shopping facilities and schools. The average household comprised four to five traditional huts, one of which is used as a cooking room (morale). Dwellings are round, mud-plastered structures, roofed with thatch and surrounded by low mud walls and courtyards. Every household was enclosed with dense barrier `fences' consisting of indigenous shrubs and branches, the most common material being *Olea africana* branches. These barriers were much denser and better maintained than on the plains because of the presence of baboons, which are the most serious menace to crops and livestock. In many cases natural hedgerows have grown out of this dead vegetation, especially in the village of Mohlakeng. Kraals for livestock are constructed out of large, sturdy indigenous timber including real yellowwood (*Podocarpus latifolius*), sneezewood (*Ptaeroxylon obliquum*),

wild olive (*Olea africana*), wild silver oak (*Brachylaena discolor*) and red stinkwood (*Prunus africana*).

Farming Activities

All respondents indicated that they cultivated crops in the enclosures surrounding their households and in separate fields away from their homes. Size of fields, indicated to the researcher, varied from approximately one to three hectares. No fertilizer, natural nor artificial was used. In contrast to the plains people, the main crop cultivated was maize. Very little sorghum was grown because of destruction by birds. Other crops grown included pumpkin, watermelon, groundnuts and beans. Yields appeared to have been higher than on the plains as a result of the higher rainfall. Only one family admitted to selling surplus maize and the price obtained this season was R52 per bag. Most families maintained that they did not grow enough for their own consumption and had to supplement their diets by purchasing maize meal from shops on the plains. This is transported up the mountain by donkeys. Baboons were cited as the main threat to crops. Most of the households visited contained a number of peach trees, but fruit was rarely harvested in any great quantities because of worm and insect damage. A few households had orange trees, but fruit was small and sour. Fields were ploughed using donkeys as draught animals and one respondent was identified as hiring himself out to do this for other families. All the maize was ground manually, using grinding stones and stamping poles. Although most of the cultivating and harvesting was done by women, there was evidence of men assisting more regularly than on the plains.

Abandoned agricultural land, in the vicinity of all five villages, indicated that much larger areas had been cultivated in the past than were being utilized at this time. This is borne out by the evidence of aerial photographic

enlargements,particularly obvious in the vicinity of the villages of Boubeng and Molweng. The earliest photographs which could be obtained (1957), indicated that there were no families occupying the Molweng site at this time and that the high forest covered much of this area. The same photographs revealed only two kraals on the Boubeng site. The next photo series available (1972), indicated that at least ten families were occupying the Molweng site and at least six were occupying the Boubeng site. The population increase between 1957 and 1972 accounts for the large-scale forest devastation that has occurred here. Based on comparisons between enlargements of the 1957 and 1972 aerial photographs, the researcher calculated that approximately 30 per cent of the high forest was destroyed by slash and burn between these dates. The population of Boubeng appears to have remained fairly stable to date. The researcher found evidence of only one recently abandoned kraal here. The population of Molweng however, appears to have halved since 1972 (photographic evidence and personal observation).

The quantity and quality of grazing was very good adjacent to the villages with the exception of Hananwa where evidence of overgrazing was apparent. Most of the residents in these villages owned cattle, donkeys and goats and their condition was exceptionally good. Residents were reticent to give numbers of animals owned, but it would appear that herds vary from five to over thirty. Much fewer cattle were evident in the vicinity of Boubeng and Molweng than around the villages on the southern section of the mountain. Questioning revealed that the presence of leopards may be a partial answer to this. Two of the respondents, both from Molweng, said that leopards had been a problem in the past but were no longer a serious threat. One respondent claimed that he had killed or trapped four leopards in the last ten years. He maintained that there was only one remaining and that he had already lost two calves to it that season

(1990). He indicated that eight head had also been stolen recently, implying incursion from the plains below the mountain.

A herd of approximately thirty sheep was present in the vicinity of Mohlakeng, some of which are owned by a householder resident at Hananwa. Residents interviewed at Hananwa also admitted to sending cattle to graze at Mohlakeng. Questioned about this, the Mohlakeng residents were happy with this arrangement, but expressed grave dissatisfaction about livestock incursions from other areas lower down the mountain *i.e.* in the Bosehla Valley to the east and from the villages to the north. Asked what they were doing about the problem respondents replied that they had built barrier fences at access points, but this had not solved the problem. Although they were perturbed about the problem, some respondents expressed sympathy for the outsiders as grazing was poor further down the mountain. Residents of Hananwa grazed their livestock further away from the village than was the case in the other four villages primarily because of the larger population occupying the area and the ruggedness of the terrain. As in the case of the plains people, livestock was rarely slaughtered, traditionally being regarded as a source of wealth. Most households kept chickens, and dogs were kept largely as a deterrent for baboons.

Natural Resource Utilization

Firewood was abundant and readily available close to most homes. Wood-gathering is thus far less time-consuming than on the plains and stockpiles not as large. Firewood was the only source of fuel for all households interviewed and consumption in winter was estimated at approximately twenty to twenty five kilograms per day per average household. No other source of fuel was used in any of the households interviewed. Firewood was most abundant around the villages

of Mohlakeng, Boubeng and Molweng. A few respondents said they sold firewood to people in the valley. They also maintained that people from the plains occasionally came to collect wood on the mountain.

Thatch grass was abundant in large quantities and most homes had large stockpiles of this, which they maintained was for their own use. One in three householders had bundles of freshly cut timber used for hut poles. Most of these were identified as *Olea africana* which respondents said they sold at approximately R3 per pole. The three respondents engaged in woodcarving (spoons, axe and hoe-handles and mielie-stampers) utilized the following species: *Olea africana*; *Brachylaena discolor*; *Podocarpus latifolius*, and *Baquaertiodendron magaliesmontanum*.

All respondents indicated that they gathered wild fruits, in summer, which grow in abundance on the mountain. The varieties correspond with those named by the plains people.

Four of the respondents admitted to collecting traditional herbs and medicinal plants which, they maintained, were abundant on the mountain. One respondent said he sold these to herbalists in Pietersburg and on the Witwatersrand. Only one of the products, *Walburgia salutaris* (Pepper-bark[1]) was recognized by the researcher. The respondent maintained that he was able to sell a 10cm square piece of bark for R5. All the respondents said herbalists from outside the area often came to the mountain to gather products.

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[1] Pepper-bark Tree - Once widespread in Natal and Kwazulu, but presently on the verge of extinction because it is highly prized among Africans for its medicinal properties. A few mature specimens may be found on Blouberg. The bark is bitter and peppery and used to treat sinusitis and the common cold. Ground together with the roots it is believed to be a reliable treatment for malaria.

The researcher encountered several areas where burning had been carried out. The vegetation in all the areas consisted of mountain fynbos growing largely in seepage areas. On enquiry it was established that burning was carried out to improve the quality of sedge grasses which were used for making hand brooms and ornamental bangles.

A large clearing was located deep within the forest on the north-western side of Molweng at the base of a sheer quartzitic rock face. The ground had recently been cleared and although maize had been cultivated, it was suspected that dagga may have been grown here. In October (1990) another large patch, of approximately one hectare, had been cleared adjoining it, and a hut built. Two families appeared to be present, both from the village of Bogrecht at the base of Blouberg on the north-west. Large trees were being stumped by burning them at the base. Several small dagga patches were located in clearings within the high forest in the vicinity of Molweng.

Abundant water of good quality was evident in all of the villages with the exception of Hananwa. The water supply at the latter was a source of concern to the residents and it was maintained by five of the respondents (all from Hananwa) that the reason for this lay in the Kgoši Maleboch's decision to desert his royal kraal (mošate) in favour of a home at the foot of the mountain. They maintained that the `rain gods' were displeased with the Kgoši's action and were withholding the rains until he returned to his traditional residence on the mountain.

Problems and Benefits of Living on the Mountain

All the families interviewed provided positive responses about living on the mountain and an atmosphere of relaxed calm was evident in all households. It requires emphasis, though that many of the interviewees were males over the age

of sixty and pensioners. When questioned, the younger women, usually the wives of absent migrant workers,were reticent to engage in conversation and thus it was difficult to gauge their attitudes. Children were more forthcoming, particularly when they followed the researcher away from the kraals. Their general responses were dissatisfaction at the distance to amenities such as shops and schools. None of the children indicated that they would want to live on the top of the mountain once they had left school.

The main advantages of living on the mountain were identified as being;

- close proximity to good water, firewood and grazing,
- peaceful lifestyle marked by an absence of tension and strife,
- adequate ground for cultivation of crops.

The main problems associated with living on the mountain were given as;

- inconvenience of living so far away from shops and clinics,
- loneliness (with family members having to go to work at distant locations],
- destruction of crops by baboons.

Most respondents did not regard the fact that some children had to spend up to three hours per day journeying to and from school, as a disadvantage. The children, themselves, however expressed dissatisfaction with the situation.

Attitudes and Population Movement

Although most respondents enjoyed living on the mountain, it was evident that the younger generation are in the process of moving down to the plains in increasing numbers. The

most rapid population shift is occurring on the farm, The Grange (from the village of Mohlakeng), where 13 abandoned households were observed. Most of these appear to have been vacated within the last five years. One interpreter, who is a resident of Mohlakeng, maintained that there would not be a single family left in the vicinity by 1995. Of the ten families interviewed in Mohlakeng, six indicated that they were preparing to move down the mountain. This population movement is generally being instigated by the younger family members and is obviously a source of concern for older family members, most of whom do not want to move.

Asked what they would miss most if they moved the majority indicated good water, firewood, grazing for livestock and good rains. The main reason given for moving was stated as being the inconvenience of travelling up and down the mountain and the inaccessibility of shops. When asked if a road up the mountain would improve matters there was no consensus among the respondents. Some maintained it would spoil the tranquility of the mountain as many people would want to move up there to live, putting pressure on the resources *i.e.* grazing, cultivated land, firewood and water. Others maintained it would be a good thing as their families would stay together. Most of those in the latter category expressed a wish for a shop on the mountain.

Population migration from the village of Hananwa, on the farm Buffelshoek, appears to be much slower. Fewer abandoned kraals were evident and only two of the eight families interviewed indicated that they were planning to move off the mountain. This appears anomalous as the environment is not as aesthetically pleasing as at Mohlakeng and natural resources (water, firewood, grazing and arable land) not as abundant. A partial explanation may be that this is the core village and royal kraal of the Hananwa, and the residents may be of longer standing and more traditional

than elsewhere. Most of the respondents interviewed in Hananwa were adamant that the recent poor rains which had caused the decline in water abundance could be directly attributed to the Kgosi's decision to abandon the royal kraal. They maintained that if he could be persuaded to move back the situation would improve again.

The people living in the village of Kgatalala appeared to be more settled than those in the other villages. Of the four families interviewed, none expressed a wish to move, although one said it would depend on her children whether she moved in the future. This village is confined to approximately half of its original extent, the south western plateau having been abandoned over the last ten to twenty years as evidenced by re-generation of pioneer species (mainly *Dodonaea augistifolia*). The remaining population are more fortunate than their counterparts elsewhere on the mountain in that they are much closer to the shopping, educational and health facilities on the plains below. This could be the main factor accounting for their stability.

Questioning revealed that three families had vacated the villages of Boubeng and Molweng in the past two years. Comments by the residents indicated that this trend would continue.

All respondents indicated that they were subject to the tribal authority of Kgoši Maleboch, although two of the families interviewed were resident on the farm The Glade, allocated to Kgoši Kibi. These two respondents maintained that all the families resident on this section of The Glade (village of Molweng), owed allegiance to Kgoši Maleboch and had no ties to Kgoši Kibi. This is of particular importance for future planning as it is evident that Kgoši Maleboch's influence is prevalent in all the villages on the mountain.

Tribal Belief and Traditions

Most of the respondents still maintain tribal ritual and ceremony. All those questioned maintained that they regularly attended the tribal gathering (treatment of the seed [2]) at the royal kraal (mošate) every year before ploughing in order to participate in the ritual ceremonies presided over by the Kgoši Maleboch and his dingaka (diviners). Fewer attended the ceremony of "First Fruits" [3] at harvest time when an offering of crops produced is given to the Kgoši. All respondents respected the authority of the Kgoši, although some of the more forthcoming maintained that he was too often under the influence of alcohol and is unable to make sensible decisions. The researcher was informed that the Kgosi was too drunk to make the journey up the mountain in order to preside over this particular ritual ceremony recently. It was maintained that he had to be carried manually up to the mošate (T. Whitehead, pers. comm.). Some respondents ventured to suggest that he should be forcibly moved back to the mošate on the mountain where he could `clear his head' and rid himself of the influences of people at the Tribal Office who did not respect his authority. His uncle, Philip Leboho, who still resides on the mountain in the village of Hananwa, is highly respected by most respondents and is regarded by many as the real `power behind the throne'.

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[2] treatment of the seed - Before seed is sown, some seed is included in a vessel (usually a calabash) containing a concoction of medicine (prepared by the dingaka - medicine men). The tribal chief shakes the contents and issues each member of the gathering a portion. This is taken back and mixed with the rest of the seed to ensure good growth.

[3] First Fruits - The new crop is only used once this ceremony has been observed. It is regarded as an offering to the ancestral spirits. The tribal chief plays a central role in this ritual and must be offered fruits of the harvest before the members of the tribe may partake. Some of the crop is also left for the ancestral spirits.

Most respondents expressed satisfaction with the tribal structure through which the Kgoši, assisted by his headmen, arbitrate disputes and confront problems. It was noted however, that few of the headmen are included in the Kgoši's kgoro. This will be a significant factor in future negotiations for the development and selection of conservation strategy options. It would need to be established whether the Kgoši and his kgoro have the authority to make binding decisions without the approval of the headmen.

Although Christianity and the Zion Church appear to be winning many converts amongst the people living on the plains, the people resident on the mountain, particularly the older generation, appear to be more resistant to these influences. Traditional beliefs appear to be more entrenched although most of the respondents were reticent to speak about these issues. The presence of mokgalabje (old man)[4], a bulbous plant (*Crinum bulbispermum*), in two of the households visited, indicated that ancestor worship is still practised, perhaps on a much larger scale than is generally evident. Both respondents were reluctant to talk about the significance of the mokgalabje but did reveal that they possessed it because it was customary as a mark of respect to the ancestors. Both respondents indicated that they poured water on the plant and prayed to them when they needed healing or required wisdom and guidance. One respondent, living on the plains said that she was required to visit the mountain when her husband died, in order to put his spirit to rest. Beer was brewed and taken to a special place near a very large rock and a ceremony lasting the whole day took place.

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[4] Mokgalabje - A bulbous plant (Crinum bulbispermum, Boophane disticha or Scadoxis puniceus) which is cultivated usually in the courtyard of a kraal and regarded as representing the family's ancestral spirits.

The researcher was warned not to wander through a certain grove of trees, between the villages of Mohlakeng and Hananwa, as it was said to be inhabited by ancestral spirits. Questioning was not able to elicit the precise location of this grove of trees.

On questioning an interpreter about the causes of a fire which burned a large area of the mountain in September 1990, the researcher was informed that it was ignited to appease the rain gods. Further questioning revealed that this method was commonly used in the area in the belief that the smoke would `call' the rain clouds[5].

Very few of the respondents interviewed professed any knowledge of tribal history, and the Maleboch War in particular. Only one admitted to having heard of the so-called `sacred cave' where the tribe sheltered during this war (Sonntag, 1983).

Summary and Appraisal

Three of the respondents interviewed were suffering from unhealthy coughs, which they claimed were persistent. Little confidence was expressed in the health care offered by the local clinics. Most of the men encountered on the mountain were underweight and the majority of children had the appearance of being malnourished. This latter observation was reinforced by interviews with principals of three local schools, who maintained that the children who were resident on the mountain often fainted during school. They claimed that the main causes of this were a lack of food and exhaustion as a result of having to traverse the mountain twice per day in order to attend school.

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[5] call the rain clouds - Most of the Bantu groups of Southern Africa utilized fire as one of the ceremonial rituals to induce rain. It is believed that smoke must be used (usually from green vegetation) which will attract the clouds and cause rain.

Most respondents interviewed were older people and the majority of households included family members who were migrant workers. Four out of five households comprised extended families. All households practised subsistence farming, the main crop cultivated being maize. Size of households was difficult to determine because respondents were not able to understand the concept of numbers. All households consisted of traditional mud-covered structures with thatch roofs enclosed by thick barrier fences comprising thorny vegetation. It was estimated that there were 131 families occupying the five villages of Kgatalala, Hananwa, Mohlakeng, Boubeng and Molweng. Crop yields on the mountain were gauged to be better than those on the plain, mainly as a result of the higher rainfall. Most householders owned livestock, mainly cattle, donkeys and goats. Concern existed about `foreign' cattle coming to graze in the village of Mohlakeng and, barrier fences erected to keep them out, proved unsatisfactory. The quantity and quality of grazing was good, particularly at Mohlakeng and the condition of the livestock was excellent. Most households kept chickens, and sheep were observed in the vicinity of Mohlakeng and Molweng.

Firewood was abundant in close proximity to all villages on the mountain and consumption was calculated at approximately twenty to twenty five kilograms per household per day. Thatch grass was abundant and water supplies were readily available and of good quality. All families collected wild fruit in summer, and burning was carried out in fynbos areas to improve the quality of sedge grass used for brooms and ornamental bracelets. There was evidence of exploitation of indigenous timber, primarily *Olea africana* and *Podocarpus latifolius*, for hut poles, axe and hoe-handles and other implements.

The main advantages of living on the mountain were cited as being close to water, adequate arable land and peaceful lifestyles.

The main problems encountered by the inhabitants were the inconvenience of traversing the mountain, loneliness and crop destruction by baboons.

There is a fairly rapid movement of people off the mountain, especially from the village of Mohlakeng where thirteen abandoned households were observed and six of the ten families interviewed said they were preparing to leave.

Adherence to traditional customs and rituals was still fairly strong with most householders maintaining allegiance to the ruling Kgoši. There was general concern however, over his decision to vacate his mountain residence. Most respondents were reticent to speak about traditional religion and belief, but from observation and casual comments this still appeared to be firmly entrenched amongst the older generation. Few respondents were able to comment on tribal history.

CONCLUSION

This chapter has focussed on the social survey conducted in sixty-two households on, and adjacent to, the Blouberg mountains. Particular attention was paid to attempting to assess the basic needs of the communities, their lifestyle and aspirations and their attitudes to their environment. These factors have been identified by contemporary researchers as being of vital significance in developing a more holistic conservation ethic which must be linked to social and economic upliftment of local communities (Hanks,1990). The data presented in this chapter may be regarded as central to the formulation of conservation strategy options for Blouberg. By establishing the needs,

aspirations and attitudes to the environment of the communities, strategies can be formulated which will ensure the sustainable use of the natural resources of the mountain. In addition, the conservation of the natural habitat will be assured once strategies have been developed to provide alternative sources to meet the basic needs of the communities.

Data gathered during the social survey were also instrumental in identifying some of the hazards posed by the people to Blouberg's natural resource base. Awareness of these hazards enabled panelists (who took part in two workshops described in Chapter 6) to formulate conservation principles which would effectively combat these threats.

It was noted that a critical factor which had to be taken into account, in the future debate to decide on conservation strategies for Blouberg, was to identify the parties empowered to make decisions for the community.

The next chapter details the results of the bio-physical survey carried out on the mountain and adjacent plains. Particular emphasis is placed upon locating and describing areas where vegetal stress and environmental degradation has occurred. These areas are identified in Figure 4.

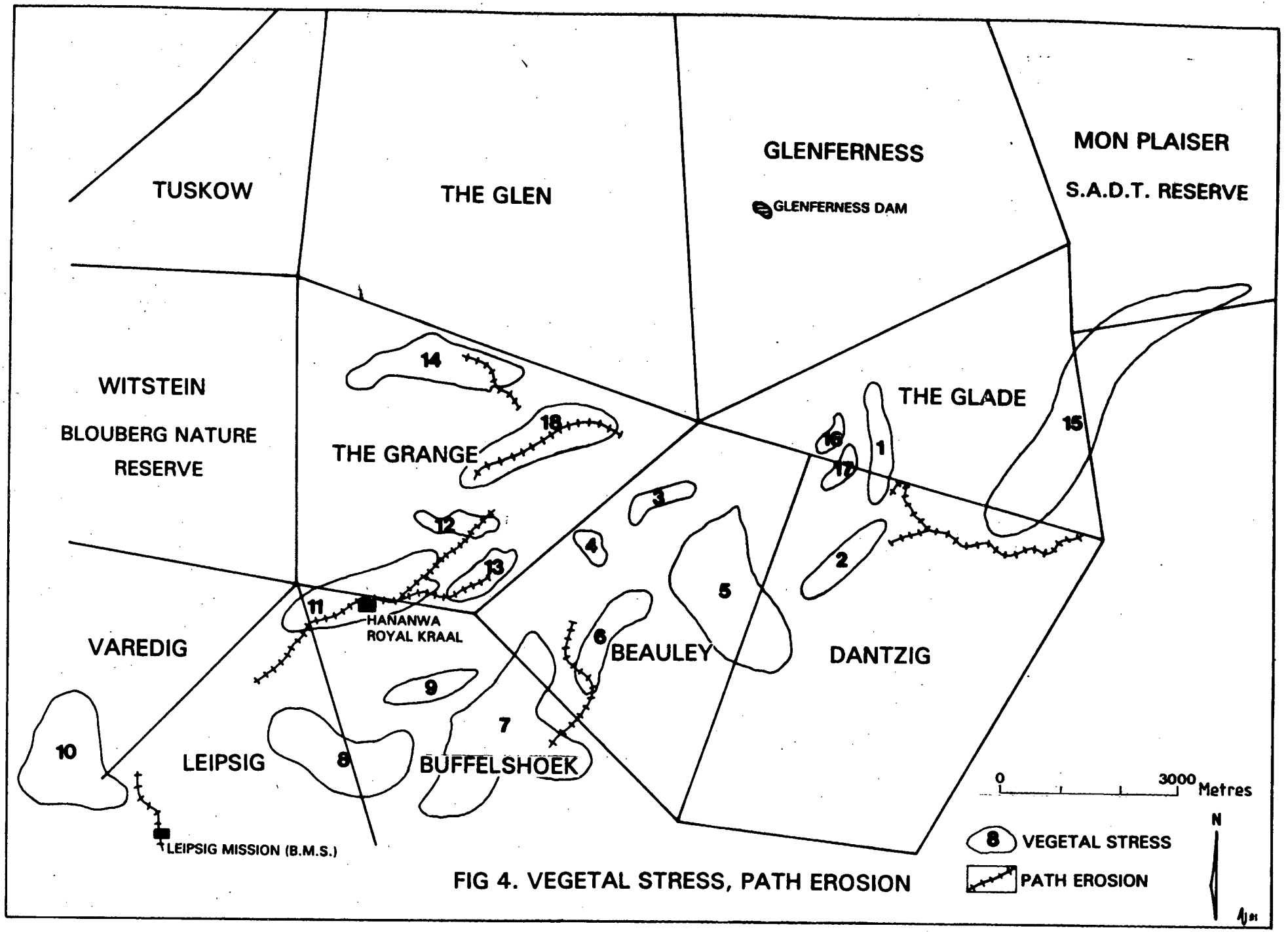

FIG 4. VEGETAL STRESS, PATH EROSION

CHAPTER 5

BIO-PHYSICAL SURVEY

OVERVIEW

The central focus of the current chapter was to locate and make an analysis of areas where over-exploitation of the biotic resources was occurring on the mountain. This was carried out for two reasons. In the first instance it was necessary as a source of primary information for the development of conservation strategy options because no such data were previously available. Secondly it highlighted areas where hazards to the natural resource base existed. Access to this type of information enabled panelists, who participated in the two workshops (described in the next chapter), to make more informed decisions with regard to the hazards to the conservation of Blouberg; to find means of countering these hazards; to undertake formulation of conservation principles which should be incorporated in conservation strategy options for the area.

The chapter begins by identifying and describing localities where vegetal stress and path erosion have occurred. Of particular concern is past destruction of the indigenous Afro-montane forest on the north-eastern section of the mountain, by locals using slash and burn methods to clear fields for cultivation. Threats to the remnants of the forest appear not to be as serious as in the past, when a larger population occupied the plateau. There are however, fears that slash and burn, which is utilized to clear small patches within the forest for dagga cultivation, could lead to uncontrolled fires spreading into the forest.

The chapter concludes by referring to two issues of serious concern. The first is the damage which is occurring in the upper reaches of mountain streams. As

these areas are often the last remaining sources of water towards the end of the dry season, most livestock on the mountain are driven there. Trampling and overgrazing in these sensitive seepage areas causes compaction of soil and erosion. The resultant loss of water retention capacity of the soil is perceived to have increasingly serious consequences for the thousands of people living around the base of the mountain who rely on the mountain as a water catchment area. The second issue concerns uncontrolled grazing occurring on the slopes of the mountain, which is destroying ground cover and causing serious erosion mainly on over-utilized paths. The increase in numbers of livestock in the study area over the last four years is likely to exacerbate this threat in the future.

Introduction

Field trips were undertaken in order to gather first-hand information on the biotic component of the study area. The researcher contacted individuals knowledgeable in particular aspects (natural and social), of the Blouberg to accompany him on the majority of these excursions. They included botanists, anthropologists, geographers, geologists, Environment Affairs and Forestry officials, interpreters and others familiar with the mountain. Observations made during these visits were recorded in field notebooks. A 35mm camera and video camera were utilized to record visual material. The information below and accompanying maps were produced as a result of these field trips.

Vegetal Stress and Path Erosion

For the sake of clarity the descriptions of vegetal stress which follow are numbered with reference to the numbering on the map (Fig.4). Descriptions of vegetation types accords with the classification used by Scholes, 1985.

Sections 1, 16 and 17:

From botanical and conservation viewpoints the degradation which has occurred and is still occurring here is of concern. The reason for this is that the area in question comprises one of the largest, contiguous indigenous Afro-montane high forests in the Transvaal (approximately 400 hectares). It is situated on a plateau in the north-eastern section of the mountain between the 1 400 and 1 700 metre contours on the farms Dantzig and the Glade (Figs. 2 and 4). Because of its inaccessibility this forest has never been commercially exploited. As a result it contains many fine specimens of *Podocarpus falcatus* (Outeniqua yellowwood), *Podocarpus latifolius* (real yellowwood), *Prunus africana* (red stinkwood) and *Celtis africana* (white stinkwood). Foresters, botanists and ecologists agree that the forest is in very good condition (Scholes, Maas, von dem Bussche and Venter). However, damage has occurred to the forest on a large scale in the past, the destruction that has occurred here having been described previously (chapter 4). Charred remains of yellowwood (*Podocarpus falcatus* and *P. latifolius*), sneezewood (*Ptaeroxylon obliquum*), red stinkwood (*Prunus africana*) and other large species are still evident. Much of the cleared area is no longer cultivated and recent colonisation by *Lippia javanica, Acacia ataxacantha, Rhus chirindensis* and *Brachylaena discolour* amongst others, may be evidence of pioneer stages in the regeneration of the montane forest (Fig.4, section 1). The 1972 aerial photographs reveal approximately 16 households on this north-eastern section at that time. At present there are approximately 10 households comprising approximately 70 people occupying this plateau.

Cultivation of maize occurs on a small scale and small herds of cattle, donkeys and sheep are evident. It is known that dagga is grown in isolated and sheltered clearings in the high forest. The researcher discovered

several patches of mature plants in this locality (Fig.4, section 17) during late 1990. Helicopter raids by police result in large quantities of dagga being destroyed every year. Abandoned clearings are infested with impenetrable growth of *Pterolobium stellatum*.

A large patch of ground has recently been cleared and burned (Fig. 4, section 16) and a settler family is in the process of enlarging this area and putting it under maize. The slash and burn technique utilized is extremely hazardous particularly in the dry winter months. In addition, large trees are destroyed by fires which burn, often unsupervised, over several days. Under these circumstances it is surprising that fires have not spread further into the high forest. A recent fire (September 1990) has destroyed a large patch of mountain fynbos known to have contained several endemic species (S Venter, pers comm).

Apart from damage caused by the dagga cultivation and clearing for cultivation, there appears to have been little disturbance to this patch of high forest over the last ten years. The researcher came across areas where young *Podocarpus latifolius* and *Olea africana* poles had been cut, debarked and stacked. It may be assumed that these were to be mainly used as support poles in the construction of huts. However, nowhere was this exploitation of timber widespread and little damage to the forest is evident. It was noted though, that there are few specimens of medium-sized *P. latifolius* growing on the mountain. Most of those which occur are either young saplings or much older trees indicating that the medium-sized specimens have been overexploited in the past.

At least one individual is collecting medicinal plants on a commercial basis. It is difficult to tell whether this exploitation is having a detrimental effect on the

ecology of the high forest and further research needs to be carried out to assess this. Past exploitation of *Walburgia salutaris* (pepper-bark tree) appears to have left few mature trees. Many other species which are exploited for their medicinal properties occur here. The following have been identified by A. Cunningham (Wildlife Society workshop, April 1990) and S.Venter:

Albuca pachychlamys, Zizyphus mucronata, Strophamus speciosis, Olea africana, Curtisia dentata, Ptaeroxylon obliquum, Walburgia salutaris, Pittosporum viridifolium, Catha edulis, Euclea divinorum, Pleurostylia capensis, Ilex mitis, Tarchonanthus camphoratus, Scutia myrtina, Euclea natalensis, Baquaertiodendrom magaliesmontanum, Euclea undulata, Syzyqium gerrardi and *Rauvolfia caffra*.

Sections 2 and 15:

Fires in late 1990 swept through these two areas of wooded grassland. It was reported that one of these fires was deliberately ignited in order to appease the rain gods. Ironically, it was extinguished by rain three days after it began. It is believed that many of these fires on the slopes of the mountain are burned to stimulate better grazing just before the start of the rainy season. This is a dangerous practice as there is no control over where burning occurs.

Sections 3 and 4:

Olea africana have been felled on a fairly extensive scale, probably by local people seeking timber for hut construction and for axe and hoe handles. *Pterolobium stellatum* infestation is occurring in these clearings.

Section 5:

A large area of *Mimusops* woodland and *Zanthoxylum* scrub forest is being destroyed by firewood exploitation and overgrazing in this area in and around the Bosehla river valley. *Euphorbia cooperii* infestation occurs as a

result. This is not surprising as one of the most heavily populated communities in the Blouberg lies adjacent to this area.

Sections 6 and 9:
Clearing of *Syzgium* and *Zanthoxylum* scrub forest by the residents of the village of Kgatalala on an upper plateau has largely destroyed these forests. Abandoned cultivated fields are being colonized by pioneer species especially *Dodonaea augistifolia*.

Section 7:
Exploitation for firewood by residents living in the heavily populated area around the tribal office (Bahananwa Tribal Authority) has largely denuded this *Mimusops* woodland.

Section 8:
Syzgium forest and *Andropogon* grassland suffered damage from a fire in August 1990.

Section 10:
Heavy grazing and browsing by cattle and goats is denuding large areas of *Vitex* shrubland and grassland on the southern slopes of the mountain around the Leipsig Mission. This area is easily accessible by road, and destruction of trees for firewood is quite severe. The researcher often observed scotch carts, bearing large loads of firewood, in this vicinity.

Section 11:
The heavily populated village of Hananwa, with large herds of livestock and areas of cultivation, has destroyed fairly extensive areas of *Olea africana* thicket. Most *Olea africana* are multi-stemmed indicating severe stress. Soil erosion and infestation of *Dodonaea augistifolia* occurs in water courses and on abandoned fields.

Sections 12 and 13:

Deliberate burning of *Schlerophyllous* thicket and compaction of soil by livestock has caused destruction of vegetation and fairly severe soil erosion particularly in sensitive water courses and seepage areas.

Section 14:

Vitex shrubland has been heavily impacted mainly by goats and cattle. Ground cover has been denuded over a fairly large area.

Hatched lines on Fig.4 indicate areas where severe path erosion has occurred. This is apparent mainly where the terrain is steep and/or where use is regular by local inhabitants and livestock.

Environmental Degradation in Water Catchment Areas (See Fig.4[1])

Of grave concern is the damage being caused to sensitive water catchment areas on the upper slopes of the mountain. Apart from the deliberate burning of *Schlerophyllus* thicket, which occurs in the upper reaches of streams, particularly on the farm The Grange (12, 13, 18) trampling by livestock searching for water has led to compaction and soil erosion (11, 14). As these areas are often the last remaining sources of water on the mountain towards the end of the dry winter season, compaction of soil and erosion are widespread. The consequences for the thousands of people living around the base of the mountain are obvious. Loss of the water retention capacity of the soil and siltation impair water quality and quantity at an increasing rate.

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[1] Numbers in brackets refer to the numbers on the map Fig.4.

Uncontrolled Grazing

Apart from the summit of Ga-Monnaasenamoriri, the researcher encountered livestock (mainly cattle and donkeys) grazing over a wide area of the Blouberg. On no occasion was human supervision evident. The fact that all the farms on the mountain are communally owned by the tribe gives rise to a lack of concern for the quality of the natural resource base. This assumption is supported by research conducted in the self-governing states:

> "Given free communal grazing, the private incentive is to expand one's cattle irrespective of the effects on the quality of the land or on the cattle owned by others" (Lenta, 1985, p. 16).

Communal ownership of land and the propensity for migrant workers to invest their money in cattle must be regarded as a serious hazard to Blouberg's natural environment. Lenta goes on to point out that this behaviour is common as there are no other investment opportunities available in the homelands:

> "As long as the beast stays alive, its values will inflate as the value of money decreases. In this way, it provides some sense of security" (*ibid.* p.16).

Lack of supervision of livestock appears to have been exacerbated by the fact that most young boys (who traditionally look after the family herds and flocks) are now occupied with school. This is borne out by the strife and dissension which apparently occurs over the Christmas season when livestock is traditionally slaughtered for festivities and family reunions (T Whitehead, pers comm). The herds have been unsupervised for so long that confusion occurs over who owns what. Stock numbers are difficult to assess and even people interviewed appeared unsure of precisely how much stock

they owned. Almost all individuals interviewed in the social survey admitted that their livestock grazed on the slopes of the mountain. This does not augur well for the conservation of ground cover on the slopes of Blouberg. Water run-off will increase with a resultant loss of soil and all the serious ramifications thereof.

Summary and Appraisal

The island of relatively pristine natural vegetation on the slopes, plateaux and summits of Blouberg is surrounded by an area characterized by overpopulation, poverty, overgrazing and environmental degradation. In an effort to obtain diminishing resources such as firewood and grazing, encroachment is occurring further up the slopes of the mountain. Apart from the depletion of resources, the fire hazard is a major problem. On the higher plateaux, slash-and-burn methods in the past, to clear ground for cultivation, has made serious inroads into the Afro-montane forest. Compaction of soil and erosion in watercourses, seepage areas and on paths is evident. The eastern and southern sections around the base of the mountain are the most densely populated and therefore bear the brunt of human and domestic livestock impact.

CONCLUSION

This chapter has drawn attention to areas of vegetal stress and environmental degradation on the slopes and upper reaches of the Blouberg. The main reasons for identifying these over-exploited areas was to provide primary data for use in highlighting hazards to the natural resource base. The data was regarded as of vital importance in the process by which panelists could formulate conservation principles which could be incorporated into conservation strategy options for Blouberg. Ultimately the ideas generated by the panelists, at two workshops convened by the researcher,

were instrumental in the development of the conservation strategy options presented in chapter 7 of this document.

The next chapter details the results of two workshops which were organized in order to identify the environmental characteristics worthy of conservation. Hazards to these were also identified and a range of conservation principles to mitigate these hazards was developed.

CHAPTER 6

RESULTS OF CONSERVATION WORKSHOPS

OVERVIEW

This chapter presents the findings of two workshops convened for the purpose of producing a range of conservation principles which could form the basis of conservation strategy options for Blouberg. Panelists (listed in Appendix 2), who had been identified as having an interest in, and knowledge of the mountain range, were assembled for the first workshop, held at the University of the North. The four tasks undertaken by the panel were to;

i) list the principal environmental characteristics of Blouberg worthy of conservation,

ii) identify perceived threats to these characteristics,

iii) suggest possible responses to alleviate these perceived threats and,

iv) propose issues that should be considered when formulating conservation strategy options.

Based on the findings of the first workshop, panelists at the second workshop were given the task of identifying a range of conservation principles that might be incorporated into conservation strategy options. The conservation principles proposed by the panelists (in addition to the results obtained from the social and bio-physical surveys), were to form the basis for the conservation strategy options formulated by the researcher (outlined in chapter 7).

PROCEEDINGS OF WORKSHOP ONE

Environmental Characteristics Worthy of Conservation

The first task of the panel was to compile a list of environmental characteristics which were identified as being worthy of conservation. The nominal group technique[1] was used to identify these characteristics, after which the panel applied a rating procedure to develop conservation priorities. After two iterations of rating the characteristics (on a 7-point scale), the average group ratings were used to rank the characteristics in order of importance. The following is a list of the environmental characteristics most in need of conservation identified by the panel, labelled alphabetically in rank order from most to least important:

A. High Forest
B. Absence of Development (Pristine character)
C. Unspoiled Indigenous Forest
D. Controlled Fire Regime Potential
E. Water Catchment Area (East)
F. Scenic Beauty
G. Conservation Education Potential
H. Mountain Fynbos
I. Unique Plants (Mist Belt)
J. Water Catchment
K. Scrub Forest (High Species and Endemics)
L. Controlled Agricultural Practices (Mountain)
M. Vulture Colony

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[1] nominal group technique - A process in which panelists (assembled at a common venue) generate ideas or evaluate proposals without interacting. Ideas are recorded on a piece of paper which is handed to the convenor who displays them on a master list viewed by all participants. Each individual participant then lists the ideas in order of importance. These lists are then handed to the convenor who displays them without revealing their sources. At this stage participants rank order the ideas (on their own) and submit them to the convenor who draws up a final group ranking (Stauth, 1983).

N. Traditional Lifestyles
O Archaeological Remains
P. Camping and Climbing Potential
Q. High Plateau Grasslands
R. Soil Quality
S. Grass for Brooms
T. Medicinal plants
U. Housing Timber
V. Endemic Fauna
W. Historical Significance
X. Controlled Grazing Potential
Y. Firewood Source
Z. Bird life
ZZ. Tourism Potential (Low Key)

Threats to the Environmental Characteristics

The second task of the panel was to identify the major threats to the environmental characteristics which had been proposed as being significant for conservation purposes. The following (Table 8) is a list of thirteen threats identified. After each perceived threat there appears a series of letters in tabular form. These letters refer to the letters opposite the environmental characteristics listed above. The purpose of this was to indicate which characteristics would be affected by which particular threats.

Possible Responses to Perceived Threats

The panel's third task was to suggest possible responses to alleviate the perceived threats mentioned above. For each response identified, suggestions were elicited for specific actions which could be undertaken in support of the proposed

TABLE 8

THREATS TO CONSERVATION		ENVIRONMENTAL CHARACTERISTICS AFFECTED																									
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	ZZ
1	Slash & Burn	■		■	■		■	■		■	■	■							■		■	■	■			■	■	■
2	Grazing	■		■		■	■	■		■	■	■						■	■		■		■				■	■
3	Cutting Timber	■		■			■	■		■	■	■							■		■	■	■			■	■	■
4	Fire				■	■	■	■	■	■	■	■		■				■	■	■	■	■	■		■	■	■	■
5	Grass Gathering					■		■		■	■							■	■				■				■	■
6	Excessive Collecting						■	■		■		■		■		■		■	■	■	■	■	■			■	■	■
7	Trampling						■	■			■	■						■	■				■				■	■
8	Pollution							■						■									■				■	■
9	Infra-Structural Development		■				■	■			■				■	■			■			■	■	■		■	■	■
10	Population & Development		■				■	■			■		■		■				■		■	■	■		■	■	■	■
11	Uncontrolled Tourism						■	■			■				■		■						■	■			■	■
12	Inappropriate Education	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
13	Prospecting & Mining	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

response. Following is a summary of the panel's proposed responses and accompanying actions:

SLASH AND BURN

i) People need to be educated as to the adverse environmental consequences of this practice.
ii) People should be encouraged to use slash for mulch instead of burning.
iii) People should be compensated to leave the area.
iv) People should be shown areas more suitable for slash and burn practices.

GRAZING

i) People should be educated about better grazing techniques.
ii) Grazing should be controlled.
iii) People should be persuaded to abandon sensitive areas.
iv) Zoning should be used to designate land use.
v) Stock numbers should be controlled or reduced.

CUTTING TIMBER

i) Small woodlots should be established in a number of key areas.
ii) Fast-growing plants should be developed for multi-purpose timber.
iii) If invasive species were recommended, they should be located in woodlots at the bottom of the mountain.
iv) Authorities could provide ways of subsidizing importation of wood.
v) The people should be encouraged to use alternative fuels e.g. coal and efficient wood stoves.
vi) Traditional restraints could be restored to reduce collection of wood.

FIRE

i) Improved law enforcement should be instituted to prevent uncontrolled burning.

ii) People should be educated as to the importance of controlling fires.

iii) Firebreaks should be cut.

GRASS GATHERING

i) People should be educated as to how to gather grass in a less destructive way.

ii) People should be educated to use alternative materials, mainly in place of fuelwood and thatch.

EXCESSIVE COLLECTING OF NATURAL RESOURCES

i) Law enforcement procedures could be initiated utilizing traditional structures.

ii) The people should be educated as to the harmful effects of over-collection.

iii) People should be encouraged to exploit alternative sources.

TRAMPLING

i) People should be educated as to the harmful consequences of trampling.

ii) Access to sensitive areas should be controlled by making alternative sources of water and grazing available.

iii) Grazing should be zoned.

POLLUTION (caused by use of cattle dip on the mountain)

i) Law enforcement should be improved by more effective extension services.

ii) The people should be educated as to the harmful secondary effects of poison.

iii) Access to poisonous substances should be controlled.

iv) Traditional practices should be adopted by educating the locals.

INFRA-STRUCTURE

i) Infra-structural development on the mountain should be prohibited *i.e.* no roads, shops, telephone lines, *etc.*

ii) There should be environmental assessments of infra structural developments proposed.

iii) A zoning plan for recreational facilities should be initiated.

iv) People should be compensated for foregoing a road up the mountain.

v) The locals should be educated as to the benefits of the present situation without modern development.

POPULATION AND DEVELOPMENT PRESSURE

i) Offer rewards for smaller families.

ii) Prevent uncontrolled settling by declaring conservation areas.

iii) Educate the people about family planning practices.

UNCONTROLLED TOURISM

i) Develop a tourism plan.

ii) Regulate access through a permit system.

iii) Concentrate tourism infra-structure in certain areas.

iv) Adopt advertising methods to direct tourism to specific areas e.g. pamphlets and maps.

v) Enforce more stringent measures to control tourist movements.

INAPPROPRIATE EDUCATION[2]

i) Develop appropriate educational programmes with agricultural and conservation emphasis.

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[2] Inappropriate education - Curricula which tend to place emphasis on academic subjects which do not prepare pupils for technical or agriculturally oriented careers.

ii) Incorporate local history and geography into the syllabus.
iii) Establish an agricultural/conservation centre and museum.
iv) Increase the number of extension officers trained in mountain environments.
v) Solicit funds from non-government organisations to develop the proposals suggested above.

PROSPECTING AND MINING

i) Prohibit prospecting and mining on the mountain.
ii) Encourage mining companies to promote conservation education programmes to enhance their image.

Proposed issues for consideration in formulating conservation strategy options

The following are suggestions advanced by the panel identifying the principal issues that should be considered in the development of conservation strategy options for Blouberg.

EDUCATION

i) An educational programme should be directed toward informing the local population about the importance of conservation of vegetation, wild animals and other natural resources. Appropriate farm practices should be utilized emphasizing the value of traditional ways and of historical resources.

ii) The educational programme could utilize extension officers who would explain to the local people such things as, where to graze their cattle, how to grow their own medicinal plants and how to grow crops in an environmentally sensitive way. People should be shown how to avoid erosion and pollution, how they could benefit from conservation and new agricultural

practices, and how the management plan would generate revenue bringing about development that the people want and need.

iii) It would be desirable to establish environmental education centres and open-air museums to persuade the people that the entire management plan is in their interests because it is directed at conserving the mountain and their lifestyles.

INVOLVEMENT OF THE LOCAL PEOPLE

i) It is of vital importance to win the trust and co-operation of the chiefs and other community leaders.

ii) The local people should be involved in decisions concerning the management of the mountain. This could be done by appointing local representatives to a management body.

iii) The people should be encouraged to retain traditions and lifestyles and to limit the influence of disruptive modern values and practices.

iv) The youth should be allowed the opportunity to participate in conservation and management projects such as building stone-wall fences to control access to sensitive areas, assisting in the management of recreational sites, patrolling the mountain, *etc.*

v) The interest and support of both black and white politicians should be canvassed.

RELOCATION OF PEOPLE

It may be possible to induce people through compensation to vacate sensitive areas.

ZONING

Any conservation strategy should utilize a system of zoning for different uses, e.g., areas to be totally protected, areas where agriculture is permitted, grazing areas, housing

areas and areas for recreation and tourism. The zoning programme should be based on an assessment of sensitive resources, threatened species and critical habitats, but would be designed to meet the needs of the local people. The first stage of developing a zoning management plan would be to undertake a bio-physical inventory of resources. The Geographic Information Systems (GIS) Computer programme could be an ideal tool for data storage.

ENVIRONMENTAL CHARACTERISTICS

The principal environmental characteristics identified by the panelists and which should be provided for in the proposed conservation strategy options were, the high forest (particularly the eastern area), water catchment areas, fynbos vegetation, grasslands and cultural and historical resources.

PROCEEDINGS OF WORKSHOP TWO

At the second workshop, held in Pietersburg,the panelists were given the task of identifying a range of conservation principles that could be integrated into conservation strategy options for Blouberg. In addition they were asked to support each principle with practical suggestions as to their implementation. This was done in order to give the researcher greater clarity on the meaning and intent of the proposed conservation principles so as to enhance the process of formulating conservation strategy options.

The sixteen conservation principles identified by the panel and the practical suggestions proposed for their implementation have been included in Appendix 3.

CONCLUSION

This chapter has detailed the proposals generated by panelists at two workshops arranged by the researcher. The information suggested by the panelists has been transcribed

without comment by the researcher. It should be noted that the identification and rank ordering of environmental characteristics of Blouberg worthy of conservation, indicate the importance which the panelists attach to the aesthetic appeal of the upper plateaux (particularly the north-eastern area). In contrast the social survey indicated that the local inhabitants tended to stress the material benefits which the mountain afforded them. This dichotomy of interests is not unusual and has received widespread attention and publicity in conservation circles recently, particularly in the last decade. This should alert the decision-makers, responsible for reviewing conservation strategy options for Blouberg, to the tenet that conservation efforts should be combined with efforts to meet the immediate needs of local communities. The panelists themselves, laid great stress on the importance of community involvement, both in the planning of conservation options and the ongoing management function. The two other noteworthy themes which emerged from the panelists' proposed conservation principles (to be incorporated in conservation strategy options) were education and zoning. There was strong consensus that the hazards to the conservation of Blouberg could largely be combatted if a scientifically prepared land use zoning pattern were utilized and if government and NGO's involved themselves in a broad spectrum of conservation education activities.

The next chapter presents a range of conservation strategy options proposed by the researcher resulting from the information generated by the three-phase research procedure outlined in Chapters 4, 5 and 6.

CHAPTER 7

CONSERVATION STRATEGY OPTIONS

OVERVIEW

This chapter presents a range of conservation strategy options for Blouberg proposed by the researcher. At the outset it is stressed that conservation should be seen as providing benefits to man, while ensuring that man's utilization of these benefits allows for the sustainability of the resource base. It is emphasised that the social survey revealed that the local communities rely on the natural resources of the mountains to maintain a basic standard of living. In this regard it is recommended that any future conservation strategy should encompass three core concepts (from the Brundtland Report, 1987) *viz.* sustainable development, socio-economic upliftment and inclusion of local communities in decision-making regarding conservation and development of their areas.

The reliance of the local inhabitants on the natural resources of the mountain morally and pragmatically precludes two management tools traditionally employed by western conservation planners *i.e.* fencing and relocation of people.

Six other conservation strategy options are discussed *viz.* 'No-Action', 'Limited Control', 'Biosphere Reserve', 'Tribal Resource Area', 'High Cost Tourism' and 'Basic Needs First'. The advantages and disadvantages of each are presented. Illustrative material (Fig.5) is presented with reference to the Biosphere Reserve Strategy.

INTRODUCTION

The aim of the research project was to prepare a framework for a conservation strategy for Blouberg which would ensure the conservation of the natural resources and simultaneously enhance the quality of life of the people in the region. This is in keeping with the approach adopted by the International Union for the Conservation of Nature and Natural Resources (I.U.C.N.) as published in the World Conservation Strategy (1980), which defines conservation as:

> "the management of human use of the biosphere so that it may yield greatest sustained benefit to present generations while maintaining its potential to meet the needs of future generations".

The South African conservation strategy compiled by the Wildlife Society and published in 1980 (Fuggle,1983), is also based on the principle that conservation must provide benefits for man.

The word 'strategy' has been defined as: 'Skilful management in attaining an end. The word refers to method of conducting operations by the aid of a stratagem' (Hamlyn, 1964). The conservation strategy options which follow have been formulated by the researcher to conform with thisü definition and should be seen in context as broad and flexible guidelines to be used as points of departure in a negotiating process involving the local people.

The social survey carried out amongst the local inhabitants of Blouberg, and the two workshops convened by the researcher, highlight an important difference with regard to the perceptions of the natural environment by rural Africans and urban Europeans. The rural African perceives his environment (Blouberg) largely in terms of its utility or enhancement of his lifestyle *i.e.* what it means to him in

terms of water, wood, fruit, thatch-grass, timber and so on. The urban white, on the other hand, perceives Blouberg largely in terms of aesthetic appeal. These differences in perceptions of natural environments are well documented (Infield, 1986; Wiley, 1986; Webb and Smyth, 1984; Mokgoko, 1986; and Odendal, 1988). Odendal summarizes the problem succinctly:

> "Most people in the First World regard conservation as being the preservation and protection of 'the big and furries', whereas most people in the Third World perceive their natural environment as the medium through which their mundane existence needs must be sustained" (Odendal, 1988,p.8).

The social survey of the Blouberg communities revealed that the problems in poorer countries are present here *i.e.* poverty, unemployment, population growth, malnutrition, teenage pregnancies, illiteracy, lack of infra-structural development and resource depletion. These problems are typical in 'Third World' environments all over the globe and broad policies to counteract them have recently been outlined in the Brundtland Report (1987). It is recommended that any future conservation strategy for Blouberg should incorporate three of the core concepts highlighted in the Report *viz*.

i) Sustainable development - development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

ii) Socio-economic upliftment of the local populace.

iii) Empowering local communities to have a voice in the decisions about resource use, conservation practices and development in their area.

The conservation strategies outlined below are presented in the light of the perceived critical threats to the Blouberg and the integration of the needs and wants of the local people. It is evident that the large population around the base of Blouberg and those living on the slopes rely heavily on the mountain for natural resources critical to maintain a basic standard of living. As a result, any conservation measures adopted to arrest degradation of the resources of the mountain must take cognisance of the three concepts outlined above if they are to survive in the long term.

Given that the traditional Western conception of nature reserves is a concept foreign to African cultures, and recognising that the people of Blouberg are living under seriously deprived socio-economic conditions greatly reliant upon the natural resources of the mountain for their survival, two conservation options, for moral and practical reasons must be precluded. They are;

i) fencing the area and declaring it a nature reserve and,

ii) relocating people from the slopes of the mountain.

Fencing and law enforcement incur prohibitive costs while, as mentioned previously, attempts to relocate people in the past have met with determined opposition. Moreover, in the present political climate in South Africa, relocation would not be a viable option given its historical connotations and the moral outrage it engenders. Recent research into conservation measures in 'Third World' environments confirms that such proscriptive measures are outmoded and non-functional in the long term (Clarke, 1983; Infield, 1986; Wiley, 1986; Webb and Smyth,1984; Mokgoko, 1986; Odendal, 1988; Mcneely and Pitt, 1987; Brownrigg, 1987; Moll and Moll, 1989; Hanks, 1990).

NO-ACTION STRATEGY

This term implies that the *status quo* would be maintained and that no action is required to conserve the natural resources of the area. Logically it is necessary to determine whether a conservation strategy for Blouberg is necessary at all. In the words of Nowicki,

> "...there is an argument to be advanced for least compromising land-use planning, holding as many options open for the future as possible, by choosing land-use options which impose the least constraints on other possible uses. To do nothing may mean that everything still remains possible" (Nowicki in McNeely, 1987, p.275).

It is appropriate here to reemphasise the twenty-seven environmental characteristics worthy of conservation, as identified by the panel at the first Blouberg Workshop, and the threats to these (beginning of Chapter 6). It should be stressed from the outset that these environmental characteristics are largely confined to particular sections of the mountain *i.e.* mainly above the 1 400 metre contour. The fact that there is a gradual migration of people from the mountain to settle on the lowland below in order to be closer to facilities such as schools, clinics and shops, gives strong credence to the argument that the majority of the threats identified by the panel are largely irrelevant on the aesthetically appealing and environmentally sensitive upper slopes, should this trend continue. Add to this the nationwide trend of urbanization, hastened by changes in the political arena and a cogent argument could be advanced that threats to the conservation on the upper plateaux of Blouberg could be waning rather than increasing.

Exogenous threats posed by prospecting and mining on the one hand and tourism on the other, could be monitored and even alleviated to a large extent by restraints being imposed by the Lebowa Department of Agriculture and Environmental Conservation (LDAEC).

Summary and Appraisal

A strategy of non-interference has two important advantages for the budgetary constrained and understaffed LDAEC. Firstly, it requires no increased staffing or financial outlay. Secondly,it will allow for time to monitor the situation effectively before employing a particular strategy which may be inappropriate in the light of the rapid social and political changes occurring in South Africa at present.

LIMITED CONTROL STRATEGY

This strategy implies that only limited controls would be imposed in the management of Blouberg. This option could be pursued under the following circumstances:

i) That only a limited number of controllable threats to the natural environment existed, depopulation notwithstanding.
ii) That the financial situation of the LDAEC proved to be a limiting factor.

Conservation Threats

Under such a strategy threats to the conservation of Blouberg would have to be recognised and ranked in order of severity. In the opinion of the researcher the threats requiring priority consideration are:

i) uncontrolled fires,
ii) overgrazing,
iii) cutting timber,

iv) livestock trampling (especially in sensitive seepage areas),
v) uncontrolled tourism, and
vi) prospecting and mining.

These threats could be alleviated in the following way:

i & ii) Uncontrolled fires and over-grazing.

These threats could be addressed jointly as fires are mainly started towards the end of winter in order to stimulate vigorous grass growth for grazing. The LDAEC could control this practice by a combined policy of education and incentives to destock.

iii) Cutting timber

Timber is used for two main purposes *i.e.* for building (mainly hut poles) and as fuelwood. In the case of the former, the researcher has noted a definite trend away from traditional circular, mud-covered structures with thatch roofs, towards more modern rectangular, cement/brick structures with corrugated iron roofs. A spot count of dwellings at the base of the mountain in the more remote north-eastern area revealed that one in two households included at least one more modern structure as described above. A similar count on the farms Dantzig, Beauley and Buffelshoek revealed that two out of three households included similar structures. It is suggested that the continuation of this trend should cause a decrease in the demand for timber and thatch grass from the mountain by the majority of people living around the base of the mountain. The gradual migration of people from the upper slopes of the mountain to the plains should also result in a corresponding decrease in the exploitation of timber and thatch grass for construction and roofing purposes.

With respect to fuelwood the LDAEC could implement such measures as:

a) Transporting firewood from neighbouring white farms and the Blouberg and SADT Nature Reserves.

b) Establishing a coal depot.

c) Subsidizing the purchase of fuel-efficient wood and coal stoves.

d) Implementing some of the measures adopted by organisations such as the Kwazulu Bureau of Natural Resources, for instance establishing woodlots of fast growing timber and utilizing natural energy sources such as solar and wind- driven generators.

e) Reinforcing traditional restraints, combined with educational efforts, on use of 'green' timber.

iv) Trampling in sensitive seepage areas.

The LDAEC would need to bring these locations to the attention of the people, whose livestock is causing the damage, and counteract the threat by, education and application of measures observed by the tribe in the past such as traditional restraints utilized by digoši and headmen. It should be noted that previous attempts by the LDAEC to impose limited fencing was met with determined resistance by the Tribal Authority. It is recommended that consultations with the local communnity, as to what measures should be adopted, would offer the most viable solutions.

v) Uncontrolled tourism

A count, by the researcher, of tourists visiting the upper slopes on the north-eastern section of Blouberg over a seven month period from June 1 to December 31, 1990 revealed that, on average, between five and ten people visited the area every week-end, mainly for mountain climbing and wilderness hiking purposes. These people come from as far afield as the

These people come from as far afield as the Witwatersrand. Although the problems associated with uncontrolled wilderness-type tourism such as littering, path erosion and uncontrolled fires, are not readily evident on Blouberg, it is conceivable that the publicity accorded the mountain by the media, in particular the recent botanical collecting excursion, will cause an increase in tourist pressure. As interest is mainly centred on the north-eastern section where access is limited to one or two points, it would be selectively easy to control numbers by the implementation of a permit system administered by the LDAEC.

vi) Prospecting and mining.

A recent application by the Messina Diamond Mining Company for prospecting rights to the Blouberg region highlights this threat. A statement by the Lebowa Government that the area is under consideration as a potential nature reserve and refusal to grant prospecting permits, could forestall this threat for a number of years. This situation would need close monitoring and steps should be taken to prevent the transfer of mineral rights pertaining to the area.

Summary and Appraisal

In the light of the above factors, there is a strong argument in favour of a strategy of limited control, particularly as it would mean a minimal outlay of finances for the LDAEC, which is already working on a tight monetary budget. Additionally it would allow time for a well prepared action plan to be developed. A disadvantage may be that environmental destruction could occur as a result of unexpected exploitation or abuse.

BIOSPHERE RESERVE STRATEGY

The concept of biosphere reserves originated from UNESCO's 'Man and the Biosphere Programme' (MAB) which was initiated at the Conference on the Rational Use and Conservation of the Resources of the Biosphere in 1968. The most important recommendation of the conference was a proposal "to make specific efforts to preserve representative examples of significant ecosystems, original habitats of domesticated plants and animals, and remnant populations of rare and endangered species" (Batisse, 1986, p.1). Three functions of biosphere reserves were proposed *viz.*:

i) Conservation of genetic resources and ecosystems and the maintenance of biological diversity (conservation role).
ii) The development of an international network of field research and monitoring structures which would include training and information exchange (logistic role).
iii) Entrenchment of environmental protection and land resource development as governing principles for research and education activities (development role).

A task force under the auspices of UNEP and UNESCO composed a set of objectives and requirements for biosphere reserves. The objectives gave explicit expression to the multiple functions (conservation, logistic and development roles) described above. The proposed requirements of biosphere reserves were that they were to consist of a zoning pattern including a 'core area', a delineated 'inner buffer zone' and a delineated 'outer buffer zone' or 'transitional area'.

By 1981, 208 biosphere reserves had been established in 58 countries. In 1983 an International Biosphere Reserve Congress, held in Minsk, USSR, established general guidelines for the future, which led to the formulation of

an 'Action Plan for Biosphere Reserves'. One of the important recommendations of the Action Plan was to establish a Scientific Advisory Panel for Biosphere Reserves. This panel formulated certain firm guidelines to ensure that biosphere reserves meet all the necessary requirements. The main recommendations are that any biosphere reserve must fulfil three fundamental roles *i.e.* conservation, logistical and development. In particular:

i) It must have one or several protected core areas to ensure its vital conservation role.
ii) It must participate in the international network and thus have a 'logistical role', supporting research work of international significance and participating in exchanges of information.
iii) It must fulfil as far as possible the 'development role' through research, education and local participation.

The emphasis on the three 'roles' will vary from one biosphere reserve to another, but the combination of the roles is central to the functioning of the unit.

The biosphere reserve concept as outlined above has relevance for a conservation strategy for Blouberg. The three roles (conservation, logistical and development) may be conveniently applied to the area in the following manner (Fig.5).

Core Area (Protected Natural Area)

This area comprises two sections of land (1a and 1b) linked by a corridor (1c), (Fig.5). The first section, 1a, approximately 2 000 hectares in extent, includes the largest contiguous area of Afro-montane high forest remaining in the Transvaal and in the independent and self-governing states to the north. Comprising approximately 400 hectares, this

forest contains more than 200 towering specimens of *Podocarpus falcatus* (Outeniqua yellowwood). The area above the forest, between the 1 600 and 1 700 metre contours, largely consists of schlerophyllous thicket including mountain 'fynbos' vegetation, aesthetically appealing quartzitic rock features and crystal clear mountain streams and rock pools. Rock pools on the upper peaks shelter a unique underwater fern found nowhere else in the world (Die Noord-Transvaaler, 21/12/90). This section of the core area has conservation value for species preservation (especially floral), hiking, climbing and wilderness trails. Much of the second section, 1b, falls within SADT land and also comprises aesthetically pleasing natural areas. The vegetation is mainly wooded grassland and scrub forest, which is ideally suited to wilderness trails and camping. Once the farm, the Glade, is transferred to LDAEC it will form a convenient corridor (1c) between these two sections (1a and 1b) of land. The size of the core area could be extended to over 5 000 hectares, taking into account all three sections.

The core area conforms precisely with the characteristics of a biosphere reserve core area as described by the Scientific Advisory Panel for Biosphere Reserves, (Batisse, 1986) in that it:

a) is a natural or minimally disturbed ecosystem,
b) is large enough to be effective as an *in situ* conservation unit,
c) has value as a bench mark for measurement of long-term changes in the ecosystem it represents,
d) excludes the presence of significant human settlement,
e) lends itself ideally to an important activity that should take place in the core area of biosphere reserves *i.e.* environmental observations and monitoring.

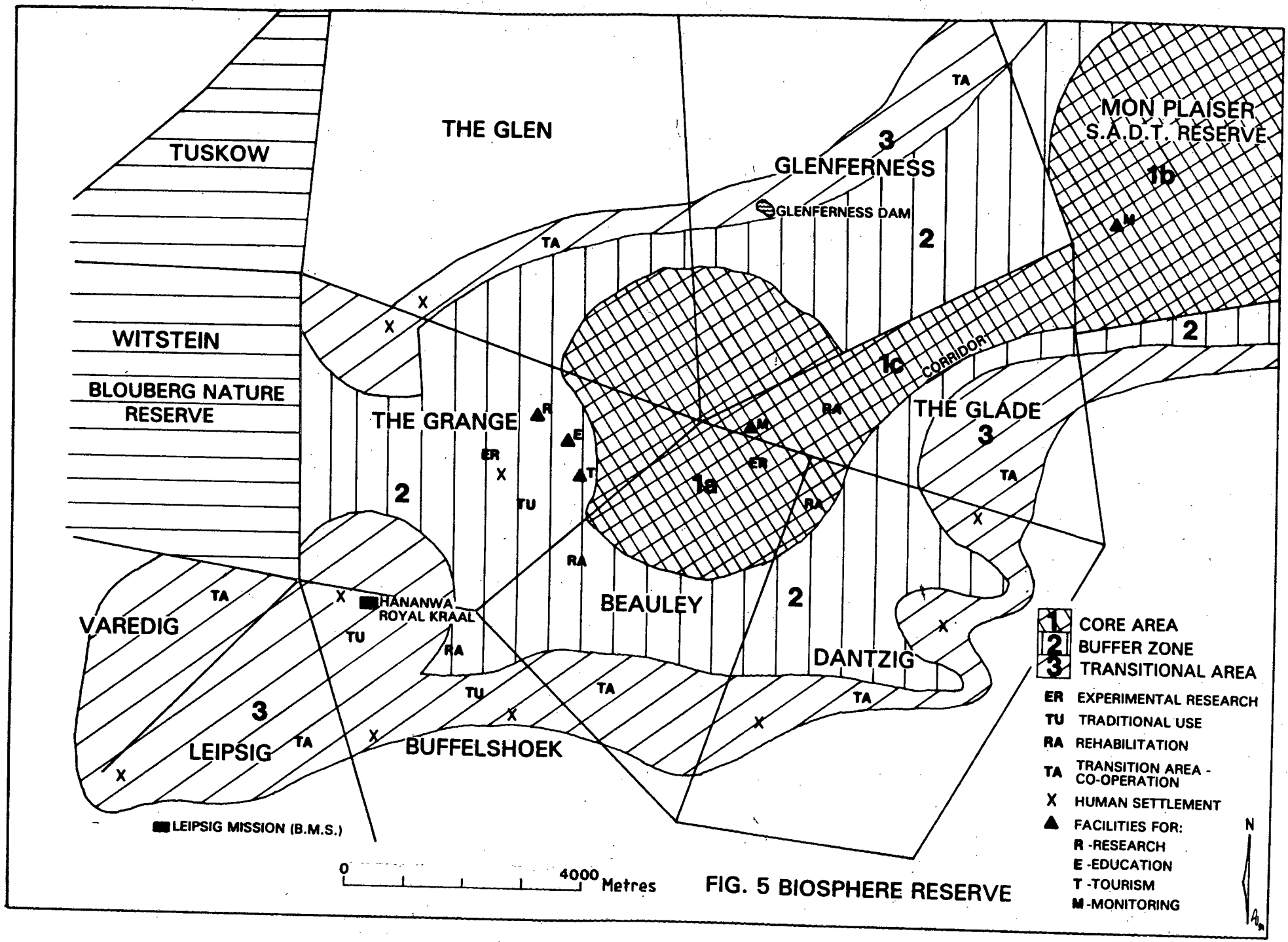

FIG. 5 BIOSPHERE RESERVE

Buffer Zone (Limited Development Area)

This area, corresponding largely to land between the 1 150 and 1 500 metre contours (Fig.5), consists of mountain fynbos, wooded grassland, scrub forest and isolated patches of high forest. It is culturally significant as the home (Mohlakeng village) of a small remnant (about 30 households) of the Bahananwa tribe who employ traditional agricultural practices. Good drinking water is available from springs which have never dried up, even in drought years (pers.comm). The area is scenically appealing and suitable for wilderness trails and camping. Abandoned homes in the village of Mohlakeng, on the farm The Grange, could be cheaply refurbished and utilized as facilities for research, environmental education and tourism.

This zone conforms to the requirements of buffer zones, as stipulated by the Scientific Advisory Panel for Biosphere Reserves (Batisse, 1988, p 6-7). The activities compatible with the protection of buffer zones alluded to earlier (research, environmental education and training and tourism and recreation) could be effectively implemented in the following ways:

Research

Traditional lifestyles could be studied, including aspects such as culture, tribal lore, agricultural practices. Utilization of natural resources e.g. herbal remedies, fruit, relishes, and use of wood for different purposes, could be monitored. A weather station to monitor local weather and climatic patterns could be established. Studies could be initiated on the influence of factors such as soil and climate on vegetation distribution, and indigenous plant nurseries and woodlots could be established.

Environmental Education and Training

The Blouberg Workshop panelists identified the lack of appropriate education as a serious threat to the conservation of Blouberg. An anthropological park[1] and environmental education centre could be cheaply located in Mohlakeng (by refurbishing abandoned settlements), and programmes conveniently developed around the activities of the people living there. Overnight hiking and camping excursions (by both students and tourists) could effectively be launched from here into the core area.

Tourism and Recreation

Wilderness-orientated tourist activities would be ideally catered for, with the Buffer Zone being used as a base for overnight accommodation. A network of paths exists (established over the years by locals and livestock), both in the buffer zone and core areas, providing natural hiking trails. Extension of the Buffer Zone to the boundary of the Blouberg Nature Reserve, in the west, would create an effective bridge to the SADT Reserve via the Core Area (Fig.5). Most of the sensitive seepage areas on the mountain fall within this zone and would be protected by controlling human and livestock access in the manner described previously.

Conservation Threats

The threats, perceived by the researcher, applying in the Buffer Zone include:

i) Slash and burn

ii) Overgrazing

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[1] anthropological park - A multiple use reserve where indigenous people remain and maintain their traditional lifestyles. Conservationists and indigenous peoples work together in formulating strategies which will allow for ecologically sound and sustainable land use practices. The Kalahari Reserves of Botswana (bushmen) is one example in Southern Africa.

iii) Cutting timber
iv) Fire
v) Grass gathering
vi) Excessive collecting of natural resources (wood, medicinal plants, grass)
vii) Trampling by livestock especially in sensitive seepage areas
viii) Pollution caused by uncontrolled use of cattle dip
ix) Infra-structural development
x) Population and development pressure
xi) Uncontrolled tourism
xii) Inappropriate education of the local population
xiii) Prospecting and mining

These threats could be addressed by the development and implementation of a management policy which would lay down specific guidelines for the people inhabiting the area, students involved in environmental education, and tourists. This policy should be drawn up in conjunction with the local inhabitants who would be included on a management committee constituted to uphold the policy. Locals could also be employed to act as conservation officers, tourist guides and in various capacities in the running of the anthropological park and environmental education centre, maintenance of indigenous plant nurseries and woodlots.

Outer Buffer Zone/ Transitional Area

The natural resource base in this area, delineated approximately between the 1 000 and 1 150 metre contours (Fig.5), is subject to over-exploitation both by humans and livestock. The area consists of the heavily populated southern settlements at the base of the Blouberg. In addition, the area in the vicinity of the village of Hananwa, although situated on an upper plateau of the mountain (above the 1 500 metre contour), has also been included in this zone. The reason for its inclusion here is

that the environmental destruction which has occurred in this locality makes it conform more closely with those conditions found on the southern lowlands. In terms of the activities suggested by the Scientific Advisory Panel for Biosphere Reserves (mentioned previously) this zone is suited to serve largely the development role function of a biosphere reserve namely, that the planning and implementation of management options are established by extensive consultation between the local inhabitants and interested parties including government and non-government organizations:

> "....efforts are made to develop co-operative activities between researchers, managers and the local population, with a view to ensure appropriate physical planning and sustainable resource development....while maintaining the greatest possible harmony with the purposes of the biosphere reserve. This broad and open multiple-use area constitutes an 'area of co-operation' of the biosphere reserve where one of the main goals, the association of environment and development is actively pursued. The management of the transition area is usually the responsibility of a variety of authorities and therefore requires appropriate co-ordination arrangements" (Batisse 1986, p.7).

The co-operation and co-ordination required between the various authorities in order to administer the transition area could act as a catalyst to mobilize and re-vitalize the Bahananwa Tribal Authority. In view of past mistakes and current suspicion in the minds of the locals, it is the opinion of the researcher that a neutral liaison officer, fluent in the Northern Sotho language, be contracted to act as an intermediary between the negotiating parties.

Conservation Threats

All the thirteen threats outlined above, are present in the Transitional Area and are more acute than in the Core Area and Inner Buffer Zone because of the heavy population and livestock pressure. To enlist the support of the locals it is vital that they are involved in the initial overall planning of the biosphere reserve and ongoing management function,and able to see how the biosphere reserve will bring benefits to them.

Specific proposals for action in the Transitional Area include the following:

i) Development of areas suitable for experimental manipulation. Activities would include planting fast growing trees for use as fuel, combating soil erosion, harnessing wind and solar energy for power and suchlike. The main concern would be to assess and demonstrate activities suitable for sustainable development (experimental research).

ii) Preservation of harmonious landscapes resulting from traditional patterns of land use (traditional use areas).

iii) Restoration of modified or degraded ecosystems to more natural conditions (re-habilitation areas).

Summary and Appraisal

The Biosphere Reserve Strategy addresses the three important core concepts, stated at the beginning of this chapter namely, sustainable development, socio-economic upliftment of the local inhabitants and empowering local communities to have a voice in the planning and management process. In addition the following objectives are achieved:

i) Conservation objectives, *i.e.* protection of sensitive mountain catchment areas, ecological processes, unique

flora, traditional cultures and aesthetically pleasing features.

ii) Threats to the environmental characteristics of the area are addressed in a multifunctional way.

iii) International interest, funding and expertise will act as a catalyst to stimulate much needed development in the area.

iv) The plan may be developed in a way that local people can identify with, *i.e.* small, 'bite-sized' action in an easily identifiable area initially.

v) It provides room for flexible management options.

The most obvious disadvantage of this strategy is that it may take time to implement and in the interim irreversible environmental damage may occur.

Initial steps in the implementation of this strategy should be the appointment of a neutral individual, fluent in Sotho language, custom and tradition, to act as negotiator between the LDAEC, local government, indigenous people and other organizations who would be involved. Secondly, the LDAEC should make contact with the South African Nature Foundation in order to outline strategy proposals, seek funding and establish links with international organizations such as UNESCO and UNEP.

These steps would be the first advocated in the light of the unique environmental and cultural features of Blouberg and the past impasse in negotiations between the LDAEC, NGO's and the Bahananwa people.

TRIBAL NATURAL RESOURCE AREA STRATEGY

Proposals to develop protected areas such as game parks and nature reserves in tribal areas implies that land must be taken away from the tribe. It is natural that local communities will be disaffected by such proposals and will

often resist them strongly. This has occurred in the Blouberg (as previously described) and a legacy of mistrust and suspicion is prevalent amongst the local inhabitants. Under these conditions the development of a Tribal Natural Resource Area would appear to be a viable strategy option.

This concept involves allowing local inhabitants access to designated game reserves and nature areas in order to harvest natural resources such as firewood, thatch grass and medicinal plants, on a controlled basis. It has been recognized and successfully applied in South Africa by conservation bodies such as the Natal Parks Board, Kwazulu Bureau of Natural Resources, Kangwane Parks Corporation, Bophutatswana Parks Board and the National Parks Board.

Protracted negotiations between the LDAEC and the Bahananwa Tribal Authority has already led to an agreement in principle that the Blouberg should be declared a Natural Resource Area. Although this has not been formally accepted (in terms of statutory/legal documents being signed by relevant parties), it is an indication that the Tribal Authority may not regard this proposal as a threat to their livelihood.

Conservation Threats

The researcher has indicated that the major threats to the conservation of the area arise from the large and growing population living around the base of the mountain. These people and their livestock are encroaching further up the slopes of the mountain in their endeavours to gain access to the diminishing natural resources necessary for their survival. As previously stated, to fence the area is financially prohibitive and morally unacceptable. Even if this were done it is unlikely that it would prevent people from illegally gaining access to the area to fulfil their basic human needs. The fact remains that in order to be a

rural development projects in 'Third World' environments have largely been ascribed to the imposition of technologies based on foreign knowledge and skills (Timberlake, 1985). It is now widely recognized that rural development projects which are most likely to succeed are those which place emphasis on local skills and knowledge:

> "These ideals of local direction and reliance on local knowledge and resources seem at first glance a poor foundation on which to base technical improvements. How can peasant agriculture improve if improvements must be based on peasant knowledge? In fact, projects based on, and building from local knowledge are the only way technical changes can come about" (Timberlake, 1985, p.218).

A third issue fundamental to the success of the Tribal Resource Area option is one which was consistently emphasized by panelists during the two workshops (described previously), *viz.* The inappropriate nature of the current academic curricula and the absence of any form of extension service was regarded as a serious obstacle to the development of positive conservation attitudes and values. Non-Government Organizations (NGO's) can be accommodated in conservation education projects (identified in Chapter 6). It should be noted that this educational process must not only be a 'top-down' process, but must include ideas from 'below' *viz.* the traditional knowledge and practices alluded to above. In order to gain access to this store of traditional knowledge there is a need for investigative social anthropological research to be conducted in this field.

Summary and Appraisal

The development of a Tribal Natural Resource Area may be regarded as a viable conservation strategy option for Blouberg in that one of the major obstacles to the development of acceptable conservation proposals *viz.* the resistance of the local people, may be lessened by the fact that the Bahananwa Tribal Authority has accepted this particular option in principle. The major issues which would need to be addressed to ensure the success of this conservation strategy are:

i) That viable alternative sources of fuelwood and grazing should be provided in order to alleviate the overexploitation occurring on the slopes of the mountain.
ii) The local inhabitants must be included in the planning and management process.
iii) Cognisance must be taken of traditional practices, cultural values and local knowledge and skills when formulating conservation and development plans.
iv) Conservation education programmes need to be initiated which would also include local knowledge and local expertise.

HIGH-COST TOURISM STRATEGY

Nature conservation has close associations with open-air recreation and tourism. The aesthetically appealing environment on the upper plateaux, particularly the north-eastern section, would receive high ratings in terms of the 'terrain inventory criteria' set out by the Outdoor Recreation Resources Review Commission (ORRRC) of the United States, and adapted for use in South Africa (Fuggle, 1983). The indigenous forest, fynbos vegetation, attractive quartzitic rock features and unpolluted streams and rock pools (described previously) in this locality lend themselves particularly to wilderness-oriented tourism. The

problem as far as conservation of Blouberg is concerned is that the income yield from this sort of venture is unlikely to be substantial. It needs to be stressed that the conservation of Blouberg, in the foreseeable future, will depend on the extent to which the basic needs of the local inhabitants are met, social upliftment guaranteed and alternative sources of fuelwood and grazing assured. In view of the monetary cost involved to make provision for this development, a feasible conservation strategy option may be the provision of a small, luxury tourist facility to generate substantial funds. These funds would be used to underwrite integrated rural development projects which should be undertaken to alleviate the basic needs of the local inhabitants.

Accepting the principle that the pressure on the natural resources of an area will be alleviated by economic upliftment of the people inhabiting the area, it would be necessary to generate enough capital to ensure this occurs in Blouberg in order to minimize the over-exploitation which is evident.

The rapid population growth and rates of urbanization and industrialization apparent in South Africa leads one to expect that there will be an increasing demand for what has been termed eco-tourism[3]. A more crowded and polluted environment exacerbated by the increasing pressures of modern society is likely to make isolated wilderness environments more attractive in the future. Executives, caught up in this type of urbanized, polluted environment coupled with the pressures and strains that go with top-level management, often seek solace in isolated natural

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[3] eco-tourism - An environmentally sensitive form of tourism which by design attempts to establish tourist threshold numbers and/or to control tourist behaviour in order to ensure conservation of natural eco-systems or cultural attractions.

environments. The increase in demand for this form of recreation is already readily apparent in South Africa. Blouberg's geographic isolation, although possibly a disadvantage insofar as mainstream tourist development is concerned, may be perceived as a distinct attraction for the type of tourism described above.

The development of a high-cost tourist facility raises a number of issues. In the first instance this strategy option is certain to cause consternation in so-called traditional conservation circles. The type of person who identifies with this group often considers any development proposals as a threat to conservation and is uneasy with the concept that conservation must provide benefits for man. It must be recognized that the traditional conservationist or preservationist lobby still commands a high media profile in South Africa. It is therefore imperative that the type of conservation-strategy option described above, would need to be carefully managed. A well considered motivation for such a proposal would need to be formulated, laying great stress on the fact that a massive influx of monetary funding would be required in order to provide for the social upliftment of the local inhabitants. It would need to be emphasized that conservation cannot exist in a vacuum, and is dependent upon providing for the basic needs of the community in order to ensure that irreversible resource destruction does not occur. This may require a large-scale publicity exercise to inform and educate the public as to the long-term benefits of such a strategy.

A second important issue is the geographic location of the tourist facility. A number of factors would need to be considered namely; aesthetic appeal, environmental impact on the natural surroundings and accessibility. The type of development the researcher has in mind is a small cluster of

six to eight luxury, rustic cabins carefully appointed so as not to intrude upon the landscape.

Thirdly, the issue of land rights is one that would be central to the type of property ownership scheme proposed. It is suggested that the LDAEC might adopt one of the following schemes;

i) outright purchase of the proposed property from the tribe,
ii) the tribe remains the legal owner of the land but the LDAEC retains ownership of all fixed assets developed there,
iii) the LDAEC gain ownership of the land by swapping it with another piece of land,
iv) the LDAEC is granted 99 year leasehold rights.

A fourth issue concerns the development that would occur on the land in question. To a certain extent this is tied to the issue of property ownership discussed above. Nonetheless certain factors need to be considered. For instance it would need to be established who the developer was going to be; the LDAEC and the tribe or private enterprise. In addition, factors pertaining to ownership/title to the development such as Time Share or Debenture schemes would need to be considered.

A fifth issue to be dealt with concerns transport arrangements. The development of a road is not considered acceptable (for the reasons stated previously) and this would pose the problem of access to the mountain plateaux. Research would need to be conducted into the viability of alternatives, such as helicopter airlifts from Pietersburg for example.

Finally, the issue relating to the finances generated by this tourism option would require priority consideration. It is envisaged that the capital required to set up a trust fund, which would generate sufficient funding in the form of interest to provide viable and sustainable rural development projects, would need to be in the order of several million rands. The administration of these funds together with the planning, development and maintenance of projects would require sophisticated management and monitoring.

Summary and Appraisal

The high-cost tourism strategy option should only be considered if the required funding for rural development projects that provide for the social and economic upliftment of the local inhabitants was not forthcoming from other sources. It is a strategy that has the advantage of providing substantial finances, but contains dangers that could jeopardise its success namely; myriad problems associated with property transfers, ownership and rights; the difficulty of coordinating divergent interests inherent in the negotiating parties (tribal authorities, LDAEC and private enterprise) and the perceived opposition to a 'high-profile-type' development in a pristine environment.

BASIC NEEDS FIRST STRATEGY

The basic needs concept is an approach to economic development which places emphasis on the plight of the very poor. Theories of economic development in the 1950s and early 1960s assumed that if economic growth was stimulated, poverty would be eliminated. During the late 1960s and early 1970s, when it became obvious that this was not occurring, attention was shifted to redistribution with growth and the creation of employment via innovative rural development projects. Evidence indicates that neither of these approaches have had much impact on eliminating poverty (du P le Roux, 1985). In fact, although economic growth has

been rapid in some countries and average per capita incomes have increased significantly, there has been little or no 'trickle-down' to lower income groups. The basic needs approach arose as a response to this problem and has gained in popularity in recent years. Economists differ in their interpretation of how the basic needs approach should be applied, but in the context of this paper the researcher refers to Tollman's (1984) definition as being relevant;

> "....an economic programme which has as its aim the provision of a particular bundle of goods - basic needs (BN) goods - to the population lacking these; and as its intended outcome the eradication of absolute poverty, as measured by quantifiable indices such as life expectancy" (Tollman in Moller, 1985, pp. 67-68).

Most researchers would include the following items in the 'bundle of goods' referred to above; adequate food, sanitation, shelter, clothing and fuel (for cooking, light and heating), access to health and education facilities. Others, including the International Labour Organization, would incorporate non-material needs such as employment, safety, job security, political participation, leisure needs and so on. Some would also maintain that the right to decide for oneself what constitutes basic needs is a basic need in itself (Moller,1985).

The aim of the basic needs approach is to eliminate poverty and to promote development, particularly in areas where pressures (mainly as a result of overpopulation) are placing stress on natural resources and resulting in resource destruction. The emphasis is to seek to fulfil the basic needs of the people within a relatively short period of time so as to alleviate the stress being placed upon the natural resource base. The achievement of tangible short-term goals

would lead to the development of long-term sustainable strategies.

The basic needs approach to solving developmental problems arose as a result of the failure of past strategies to address adequately the problems of poverty, and resource destruction. In addition it has gained wide acceptance because it is perceived to be compatible with other contemporary concepts of development such as economic growth with equity, growth which addresses the alleviation of poverty and growth as associated with the redistribution of resources (Moller, 1985).

The social survey conducted by the researcher in the Blouberg attempted, amongst other things, to assess to what extent the basic needs of the local inhabitants were being met. Pages 3 and 4 of the questionnaire (Appendix 1) were drawn up with reference to the nationwide study undertaken by the University of Natal's Centre for Applied Social Sciences in conjunction with the Human Sciences Research Council (HSRC) in 1983 (Moller, 1985).

The results of this aspect of the social survey in Blouberg correlate closely with the results of the nationwide study, and may be succinctly summarized in Moller's words in the conclusion of the University of Natal/HSRC study *i.e.*

> "The core basic needs of substantial proportions of rural ... blacks are not adequately met". (Moller, 1985, p.76)

In her conclusion and assessment Moller makes a strong plea for the implementation of a basic needs strategy in the peri-urban and rural areas of South Africa.

The question that needs to be asked is, "How effective would the basic needs approach be in counteracting the perceived critical threats to the conservation of Blouberg?"

Attention should be drawn to the three core concepts identified by the researcher (in the introduction to this chapter) which should be incorporated into any future conservation strategy for Blouberg *viz.* sustainable development, socio-economic upliftment and inclusion of the local communities in the decision-making process both in the planning and ongoing management stages. At the outset it was also stated that the aim of the research project was to;

> "...prepare a framework for a conservation strategy for Blouberg which will ensure the conservation of the natural resources and simultaneously enhance the quality of life of the people in the region." (Chapters 1 and 7)

It was pointed out that this aim conforms with both the World and South African Conservation Strategies. Therefore, in the light of the stated aim of the research and the core concepts recommended as cornerstones of any conservation strategy for Blouberg, the basic needs strategy is perceived to be particularly relevant.

Conservation Threats

As far as the critical threats to the conservation of Blouberg are concerned, the researcher has identified (previously in this chapter) six imminent threats *viz.* uncontrolled fires, overgrazing, cutting of timber, livestock trampling (especially in sensitive seepage areas), uncontrolled tourism and prospecting and mining. It should be noted that, these threats may be divided into two categories. The first four threats comprise the first category which could be referred to as endogenous threats,

already present. The last two are exogenous threats which are not present as yet, but anticipated.

With regard to the first category it is noteworthy that all four of the threats identified have bearing on the actions of people, directly or indirectly, attempting to meet basic needs. Burning is carried out to stimulate grass for livestock grazing (livestock being regarded mainly as a source of wealth and security); burning is deliberately used as a tool to stimulate vigorous growth of sedge grasses which are utilized to make ornamental armbands and hand brooms, providing incomes for impoverished families. Overgrazing may be attributed to the need for security (traditionally provided for in cattle numbers) coupled with the unsatisfactory land tenure system which provides free communal grazing. Cutting of timber provides a cheap source of wood for construction and energy (green timber is increasingly found in fuelwood bundles as stocks of dry wood are depleted). Trampling by livestock, which causes soil erosion may be linked to the points discussed under overgrazing referred to above.

All the actions described above should be seen as symptoms of a more pervasive problem. Any conservation strategy which attempts to solve these problems without addressing the underlying causes is likely to fail in the long term. It is necessary therefore initially to expose the underlying causes of these actions and endeavour to find solutions to these by addressing the causes and not the symptoms.

With reference to the second category of threats *i.e.* exogenous threats anticipated, it can be argued cogently that they are unlikely to be alleviated by a basic needs strategy. It should be noted however, that because of the nature of these threats and the fact that they have already been anticipated, measures effectively to combat them can be

timeously implemented. In the first instances tourism policies, such as placing restraints on numbers, should be fairly easy to effect (largely because of the few points of access to the mountain as previously stated). Prospecting and mining are issues that require negotiations between the relevant parties, no matter which conservation strategy is adopted. In addition the adoption of a basic needs strategy need not automatically foreclose future options relating to the adoption of more formal conservation measures such as those proposed previously in this chapter *i.e.* the declaration of tribal resource areas or biosphere reserves.

In answer to the question (posed above) relating to the effectiveness of a basic needs strategy in combatting the critical threats to the conservation of Blouberg, it is apparent that this particular strategy falls within the scope of the aims of the research project, and meets the requirements of the three core concepts identified by the researcher for incorporation into conservation strategy options proposed. In addition it has been suggested (by the researcher) that the first category of threats (endogenous) described above are caused by actions of people attempting to meet their basic needs. An attempt will now be made to examine, briefly, the causes of these actions themselves and propose how they might be alleviated by means of the basic needs approach.

That conditions of abject poverty and overcrowding exist in the self-governing states of South Africa, particularly in the more remote rural areas, is beyond doubt. The attempts by the local inhabitants of Blouberg to meet their basic needs is symptomatic of the problems existing in the broader South African context. The causes of these conditions are well documented (Simkins, 1984; Wilson, 1985; Lenta, 1985; Moller and Schlemmer, 1983), and have been identified as:

i) The land tenure system.
ii) Ineffective political structures (both at national and local levels).
iii) Inaccessible and inadequate water supplies.
iv) Unemployment.
v) Unsatisfactory agricultural practices.
vi) Poor infrastructural development.
vii) Inappropriate and poor education system.
viii) Inaccessibility of energy supplies.
ix) Restrictive political measures applied by the South African Government in the past.
x) Inadequate health care and facilities.

It is not within the scope of this research to attempt an analysis of the causes of poverty and overcrowding in the self-governing states (as stated above) for they clearly fall within the realm of policy decisions that must be taken at the national level. It is appropriate however, to emphasise that each of the ten factors referred to above may be identified as being pertinent to the hazards posed to the conservation of Blouberg. In general terms the basic needs approach would recognize that the excessive pressure being placed on the natural resources of Blouberg are directly attributable to these factors. In principle the basic needs strategy, proposed by the researcher, would require that the conservation of Blouberg ultimately depends initially upon the ability of planners to address these factors. Should this be achieved, the reliance of the local inhabitants on the natural resource base would be minimized. The hazards to the conservation of Blouberg would consequently be reduced and strategy options such as those proposed previously in this chapter could then be investigated.

Three constraints to implementing a basic needs strategy for Blouberg should be noted. The first is that the cornerstone of the basic needs approach is participation by the local

inhabitants at grass-roots level (Moller, 1985). Involvement of the local population was highlighted by the researcher and identified by the workshop panelists as being of crucial importance to the formulation of conservation strategy options for Blouberg. The perceived ineffectiveness of the Bahananwa Local Government (Tribal) Authority and the ambivalent power base of the current Kgoši and his kgoro opens a door for participation on a broader level. Nonetheless the average interviewee's perceived apathy and powerlessness to improve his/her condition (revealed by the social survey), implicitly indicates the unwillingness of people to become involved in the planning of strategies. Inherent mistrust of 'whites' and government officials will only serve to exacerbate this problem.

Secondly, at the institutional level, the ability to raise the necessary funds in order to facilitate a basic needs approach may be problematical for a number of reasons. In the words of Dr S S Brand, Chief Executive of the Development Bank of South Africa:

> "From the point of view of identifying basic needs and formulating policies and carrying out programmes designed to meet such needs, the South African Government may be seen as a little far removed from the grass-roots level; the representativeness and legitimacy of national states governments are controversial and ..... their capacity limited; much the same can be said of tribal authorities; and the voluntary sector is underdeveloped and its status *vis-a-vis* the formal authority structure is ambiguous" (Brand, 1985).

A third major constraint is perceived to be the difficulty of 'marketing' the basic needs approach because it is a

relatively new concept. As a result there are few examples which may be referred to as successful models.

Summary and Appraisal

The 'Basic Needs First' approach (as outlined above) is noteworthy as a viable conservation strategy option for Blouberg for a number of reasons. The results of the social survey make it apparent that the most critical threats to the conservation of the natural environment are the demands being made on the natural resource base by an increasing population of impoverished people attempting to satisfy their basic (material) needs. It is therefore logical to address the issue of providing alternatives in the first instance, in order to relieve this pressure. This approach conforms with the overall aim of this research project in that it 'will ensure the conservation of the natural resources and simultaneously enhance the quality of life of the people.' In addition the three core concepts perceived (by the researcher) as fundamental to any future conservation strategy for Blouberg *viz.* 'sustainable development, socio-economic upliftment and inclusion of local communities in the decision-making process,' adhere to the basic needs philosophy.

TABLE 9

CONSERVATION STRATEGY OPTIONS POSITIVE AND NEGATIVE IMPLICATIONS	
POSITIVE IMPLICATIONS	**NEGATIVE IMPLICATION**
1. No Action Strategy	
- No increased staffing - No financial outlay - Time to monitor the situation before employing strategies	- Serious environmental destruction possible due to unexpected exploitation
2. Limited Control Strategy	
- Minimal financial outlay - Time to monitor the situation before employing strategies - Most serious threats addressed	- Environmental destruction possible due to unexpected exploitation
3. Biosphere Reserve Strategy	
- Sustainable development - Socio-economic upliftment of locals - Locals included in decision-making process - All threats combatted - Vital conservation objectives realized -International interest, expertise and funding possible - Plan developed in easily identifiable areas - Room for flexible management options - Employment opportunities likely	- Possible high financial costs - Delays in implementation may result in irreversible environmental damage
4. Tribal Natural Resource Area Strategy	
- Possible co-operation of locals - Local knowledge, traditional practices, cultural values and skills harnessed	- Over exploitation of resources possible - Viable alternative grazing and fuelwood sources necessary

5. High Cost Tourism Strategy	
- Substantial funds available to provide for social upliftment of locals - Pressure on resources alleviated	- Outcry by traditional conservationists - Danger of spoiling pristine natural environment - Legal ramifications of ownership could cause problems - Transport problems - Difficulty of co-ordinating divergent interests
6. Basic Needs-First Strategy	
- Sustainable development - Including locals in the decision-making process - Most serious hazards to Blouberg combatted - Socio-economic upliftment of locals	- Raising of funds problematic - Local participation at grass-roots level is difficult - Few examples of successful models exist

CONCLUSION

This chapter has been concerned with describing six possible conservation strategy options for Blouberg. It was stressed that conservation should be considered according to the benefits it provides for man. Three core concepts which should be incorporated into any future conservation strategy were identified as; sustainable development, socio-economic upliftment and local community participation in the planning and decision-making process. Six strategy options were discussed with particular emphasis on the researcher's perceptions of their relevance to the Blouberg situation.

It should be noted that the conservation strategy options presented in this chapter were developed as a direct result of the three-phase research procedure described in Chapters 4, 5 and 6 *i*.e. the social survey, biophysical survey and workshop programme. The results of the first two phases provided firsthand, current data which enabled panelists (phase three) to make relevant and informed suggestions. The information produced by the panelists, in turn, generated a broad spectrum of ideas which the researcher was able to utilize in the formulation of conservation strategy options.

CHAPTER 8

RECOMMENDATIONS

The aim of this research was to produce a range of conservation strategy options for Blouberg. The ultimate goals are to ensure the conservation of the natural resource base and simultaneously enhance the quality of life of the people in the region. The six conservation strategy options described in the previous chapter should be regarded as the first stage towards the attainment of these goals. As stated in the introductory chapter, the second stage would necessitate that these strategy options be considered by a relevant, responsible executive authority *viz.* the Lebowa Department of Agricultural and Environmental Conservation (LDAEC) or other such body, in the event of a changed political dispensation in Lebowa. In view of the difficulties encountered previously (by the LDAEC) in negotiations with the Kgoši Maleboch and Bahananwa Local Government Authority regarding a proposed nature reserve on Blouberg, coupled with the Kgoši's perceived anomalous situation concerning his support amongst his headmen, the researcher recommends that a comprehensive procedure such as Integrated Environmental Management (IEM) be initiated at this stage. It is not within the scope of this research to discuss the ramifications of IEM save to say that the LDAEC or other relevant executive authority investigate initiating this process. This is recommended in order to produce a conservation strategy which should achieve the two objectives, perceived by the researcher, as vital to the long term (sustainable) conservation of Blouberg *viz.*

i) ensuring economic upliftment for the local people;
ii) involving the local people in the shaping and implementation of conservation strategies.

Political uncertainty, suspicion on the part of the locals, the perceived 'power vacuum' in the Bahananwa Local Government, rapid demographic changes and failed conservation initiatives in the past, are factors which make a strong case for a comprehensive procedure such as IEM to be adopted.

It should be emphasized that IEM is not a strategy in and of itself but a procedure for evaluating and guiding the development process. The concept of IEM is succintly described in a publication entitled 'Integrated Environmental Management in South Africa', published by the Council for the Environment in April 1989. The researcher would draw the attention of the reader to the Executive Summary therein (p.2) with particular reference to paragraphs two and three:

> "The environmental implications of all proposed actions which could have significant adverse environmental effects should be subjected to continuous and systematic scrutiny from the early planning phase to the final operation or decommissioning phase. This should take place whether these actions are private or public sector endeavours, and whether they are proposedü projects, programmes or policies.
>
> There are four stages in the development process: the proposal generation stage, in which possible actions are identified that meet some specific purpose and need; the assessment stage, in which these possible actions are investigated and evaluated; the decision stage, in which the preferred action is chosen; and

> the implementation stage, in which the chosen action is put into effect" (Council for the Environment, 1989, p.2).

However, it is important to recognise that IEM is not a wholly mechanistic procedure that can be applied as a general formula in any and all situations, but rather it is a creative enterprise that is utterly context specific. Thus identification of a particular action or 'new situation' (in this case adoption of a particular conservation strategy) is an essential prerequisite to the initiation of any IEM exercise. Put differently, in the present context, it is necessary at the outset for a particular strategy to be decided upon and the precise nature of its various components identified. This becomes the action or new circumstance the environmental impact of which is to be analysed and for which subsequent mitigatory management procedures would be proposed. Tossing a rock into an undisturbed pool is an appropriate analogy here. Given the specific dimensions of the pool and the nature of its surrounds, the size, velocity and trajectory of the rock would constitute the innovation or 'new circumstance'. The size, strength and extent of the ripples generated by the rock upon specific components of the pool environment would become the environmental impact. Once the positive and negative effects upon affected entities has been ascertained, proposals can be made for containment or amelioration of the impact, or for some remedial action.

APPENDIX 1

BLOUBERG RESEARCH PROJECT

Structured Informal Interview

Interviewer: . . . . . Date: . . . .

1. Social Profile

1.1 Name: . . . . . Tribal allegiance . . .

1.2 Household Composition:

Number of: Men . . . . .; Women . . . . .; Children . .

1.3 Economically Active Members:

Sex	Age	Occupation	Place of Work

1.4 Number of children at school: . . . . . .

1.5 How long have you been living here? . . . . . .years.

1.6 Where did you live before? . . . . . .

1.7 Farming Activities:

1.7.1 Pastoral

Animal Type	Number	Where do they graze? Mountain/Plain

1.7.2 Agricultural Crops grown

Area(Ha)	Close or far from your house

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1.8 Was the land given to you by the Kgoši/Induna? Yes / No

1.9 If your answer to 1.8 was No, how did you acquire the land?

_____

_____

1.10 Are you a member of any community organization? Yes / No

If answer is Yes, please state names of organizations:

_____

_____

1.11 How long does it take you to fetch firewood?
0-1hour 1-2hours 2-3hours 3-4hours 4-5hours 5-6hours

1.12 How many times a week do you fetch firewood? . . . . .

1.13 Where do you collect firewood? Mountain slopes / Plains

1.14 How long does it take you to fetch water? . . . . . .

1.15 How many times a week do you fetch water? . . . . . .

1.16 How do you feel about collecting firewood and water?

_____

_____

_____

2. Natural Resource Utilization

2.1 When did you or a member of your family last visit the mountain?

. . . . . .

2.2 Why did you/they go there? . . . . . .

. . . . . .

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2.3 How often do you/they go there? . . . . . .

. . . . . .

2.4 Do you/they go there for any other reasons? . . . . . .

. . . . . .

. . . . . .

2.5 Where do you/they usually go to do this? . . . . . .

. . . . . .

2.6 Do you or any of your family members gather firewood . . . .

timber . . . . fruit . . . . thatch-grass . . . . goats . .

donkeys . . . . on the mountain.

2.7 Are any of these resources becoming harder to obtain? YES / NO
If you answered YES, say WHY

. . . . . .

2.8 Name the resources which will have serious effects on you if no longer available . . . . . .

. . . . . .

2.9 If some of these resources are becoming scarce, what will you do?

. . . . . .

3. Perceived Needs and Problems

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Nutrition				
Clothing				
Water				
Sanitation				
Fuel				
Health				
Education				
Savings				

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Transport to Work ----------

Communication----------

Employment ----------

Shop facilities ----------

Agricultural Support ----------

Leisure ----------

Tribal Structure----------

Other ----------

Comments: ----------

4. Attitudes

4.1 Is the mountain important/unimportant to you?

WHY: . . . . . .

. . . . . .

4.2 Taking all things together, how satisfied are you with your life as a whole in these days:

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

4.3 What things worry you the most?

. . . . . .
. . . . . .

4.4 What things about life in your area are you happiest about?

. . . . . .

. . . . . .

4.5 What changes/improvements would you like to see in your area?

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

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4.6 Would you be content to live here for the rest of your life?

YES / NO WHY? . . . . . .
. . . . . .

4.7 What would you like your children to do when they leave school?

. . . . . .

. . . . . .

. . . . . .

4.8 Other Comments/Opinions

. . . . . .

. . . . . .

APPENDIX 2

BLOUBERG WORKSHOP ONE: 26/11/90

Convenors:
Dr R Stauth, Environmental Consultant, Cape Town.
Mr C Ferguson, Researcher, University of Cape Town.

List of panelists:
Professor L Changuion, Dept of History, University of the North.
Miss C Machine, Environment Affairs & Forestry, Louis Trichardt.
Mr I Terblanche, Asst. Director, Agricultural & Environmental Conservation, Lebowa.
Mr C Thompson, Haenertsburg farmer and naturalist.
Mr H W Thompson, Geologist and farmer.
Mr S Venter, Curator, Botany Herbarium, University of the North.

BLOUBERG WORKSHOP TWO: 10/12/90

Convenor: Mr C Ferguson, Researcher, University of Cape Town

List of panelists:
Professor L Changuion, Dept of History, University of the North
Mrs A de Klerk, Dept of Development Aid, Pietersburg.
Miss C Machine, Environment Affairs & Forestry, Louis Trichardt.
Mr C Thompson, Haenertsburg farmer and naturalist.
Mr H W Thompson, Geologist and farmer.
Miss A van Wyk, Lebowa Dept of Agric. & Environmental Conservation.

Mr S Venter, Curator, Botany Herbarium, University of the North.

APPENDIX 3:

Suggested conservation principles to be incorporated into conservation strategy options for Blouberg:

1. Local residents should be involved in all decision-making.
2. People should be compensated to move from sensitive areas.
3. Extension services in Bochum should be used to disseminate practical ideas for farming and conservation.
4. Conservation education centres need to be established in the immediate vicinity of Blouberg.
5. Large organizations should be canvassed for funds.
6. The mountain should be zoned into areas of conservation importance.
7. Local people should be trained as extension officers, forest guards and trail guides.
8. Woodlots should be established.
9. All families on the northeastern plateau area should be allowed to remain provided they adhere to certain conditions.
10. A rehabilitation programme should be introduced in affected areas.
11. The royal village and sacred places should be declared restricted areas unless Kgosi Maleboch decrees otherwise.
12. No access road should be constructed on the mountain.
13. Tourism development involving infra-structural development and large concentrations of people should be restricted to the surrounding areas and low-key tourism to the mountain itself.
14. Grazing and natural resource utilization must be controlled.

15. A committee should be appointed to investigate the area and a procedure such as Integrated Environmental Management (IEM) should be utilized.
16. Reports containing practical suggestions should be discussed with the locals, and venues where discussions with locals can take place should be identified.

The panel's suggestions for the practical implementation of each conservation principle were:

LOCAL RESIDENTS' INVOLVEMENT IN DECISION-MAKING.

i) People utilizing the resources of the mountain should be identified.
ii) A working group with representatives from the local community and the Lebowa Government should be established.
iii) Community Development Committees e.g. similar to those set up by the Department of Development Aid (DDA), should be contacted and liaison initiated.
iv) Non-Government Organisations (NGOs) should be canvassed for funds for staff to be employed as trail guides, conservation and extension officers.

COMPENSATION FOR PEOPLE TO MOVE AWAY FROM SENSITIVE AREAS.

i) More research should be carried out to identify environmentally sensitive areas.
ii) Land below the mountain should be identified and made available to relocated people
iii) Chiefs and headmen should be consulted in all planning measures.
iv) Improved law enforcement measures should be implemented to curb dagga cultivation.

IMPROVED LIAISON WITH EXTENSION SERVICES IN BOCHUM.

i) Agricultural authorities in Lebowa should be made more aware of Blouberg conservation needs.

ii) NGO's need to be persuaded to provide training and staffing e.g. Eco-Link, Lebowa Environmental Awareness Programme (LEAP),Wildlife Society, *etc.*

iii) Organizations experienced in these matters should be contacted for advice, e.g Kwazulu Bureau of Natural Resources, Institute of Natural Resources, Eco-Link, WITS Rural Development Programme, *etc.*

CONSERVATION EDUCATION CENTRES ESTABLISHED IN IMMEDIATE VICINITY OF BLOUBERG

i) Buildings in S A Development Trust Nature Reserve could be renovated and used for education of people on north and west side of Blouberg.

ii) Conservation education centre should be established on south of the mountain, e g. in lower Bosehla river valley.

iii) Outdoor centre/anthropological park should be developed on the mountain utilizing abandoned huts, e.g. on the Grange.

iv) Locals should be employed as residents of the living museum and as conservation officers.

LARGE ORGANIZATIONS TO BE CANVASSED FOR FUNDS/EXPERTISE

i) A Blouberg Trust Fund needs to be established and organizations such as South African Nature Foundation, S A Trust Fund (Jan Steyn), Anglo-American Chairman's Fund, Mobil Educational Trust and Regional Services Council approached for funds.

ii) LEAP, Eco-Link, Wildlife Society should be contacted to provide programme support and expertise.

iii) Public Relations Department, University of the North and DDA should be approached to provide exposure for fundraising.

ZONING OF THE MOUNTAIN INTO AREAS OF CONSERVATION IMPORTANCE

i) Geographic Information Systems (GIS) computer programme of the University of the North should be utilized to delineate zones.

ii) Inter-disciplinary research teams from universities (using FRD funding) could provide scientific data.

iii) Honours students should be encouraged to carry out projects on different aspects of the mountain.

LOCAL PEOPLE TRAINED AS EXTENSION OFFICERS, FOREST GUARDS & TRAIL GUIDES.

i) DDA (Pietersburg) should be approached to incorporate locals into current training programmes.

ii) Training programmes need to be instituted in schools e.g. pupils study to become honorary rangers and conservation clubs set up. Wildlife Society could be effective in this area.

iii) Women should be the focus of training programmes as they are main collectors of natural resources, *i.e.* firewood, water, thatching grass, fruits, medicinal plants, grass for brooms and building timber.

iv) Traditional practices of farming should be emphasized.

v) Opinion from locals themselves should be canvassed as to traditional customs and traditions practised

WOODLOTS TO BE ESTABLISHED

i) These need to be on the surrounding lowlands within easy access of most people.

ii) Fast-growing indigenous varieties should be grown.

iii) Experienced personnel, eg. Mark Gandar (Kwazulu), Extension Forester, Louis Trichardt, should be contacted for information.

iv) Agro-forestry methods should be employed.

v) Woodlots and agro-forestry should be located on unused agricultural land.

vi) Agricultural extension officers should be trained.

vii) Non-government organizations, *i.e.* Sappi, Mondi, H L H, Institute of Natural Resources (University of Natal), Kwazulu Bureau of Natural Resources (Mike Ward) should be contacted to provide funds and expertise.

FAMILIES ON NORTH-EASTERN PLATEAU ALLOWED TO STAY UNDER CERTAIN CONDITIONS

i) The exact number of households should be determined and family numbers assessed.

ii) There must be controls on the activities of people living on the plateau.

iii) Indigenous plant nursery should be established and locals employed in their running and maintenance. Tony Cunningham (Institute of Natural Resources), should be contacted for information.

iv) Locals should be used as conservation officials, guides, rangers, labour to maintain trails and control noxious weeds, *etc.*

REHABILITATION PROGRAMME FOR IMPACTED AREAS

i) Livestock should be controlled by offering alternative grazing below the mountain.

ii) Involve Lebowa Agricultural and Environmental Conservation and DDA to educate locals on effective grazing methods.

iii) Indigenous nurseries should be established on abandoned fields.

iv) Cattle experimental farm should be established below the mountain.

v) Catchment areas should be protected from trampling by livestock.

ROYAL VILLAGE DECLARED A RESTRICTED AREA

i) Consultation should take place with Kgosi Maleboch, his kgoro and headmen to establish boundaries of the restricted area.

ii) This site should possibly be declared a national monument.

iii) Other sacred areas should be identified and access restricted.

NO ACCESS ROAD TO BE CONSTRUCTED ON THE MOUNTAIN

This clause should be entrenched in the management plan so as to prevent influx of locals, livestock and uncontrolled tourism which will destroy the pristine nature of the area.

TOURISM PLANNING

i) High key tourism should be restricted to the surrounding plains.

ii) Low-key tourism should be practised on the mountain e.g. hiking trails.

iii) Abandoned huts on mountain may be utilized by hikers.

iv) No other permanent buildings must be allowed on the mountain.

v) Permits must be issued for hikers.

vi) Information/conservation centre should be located at the base of the mountain - parking for cars.

vii) Circular routes for hiking trails or use of donkey carts to bring hikers back to the starting point should be introduced.

viii) National Hiking Way should be contacted to aid in planning of trails.

ix) Locals should be employed as guides.
x) Lebowa Department of Tourism and Land Planning should be consulted and involved.

GRAZING AND NATURAL RESOURCE UTILIZATION TO BE CONTROLLED.

i) Monitoring/research should be undertaken to determine areas to be utilized (Geographic Information Systems, aerial photography and videography).
ii) Suitable strategies should be initiated once this information is available.

COMMITTEE APPOINTED TO INVESTIGATE THE AREA

i) Process of Integrated Environmental Management (I.E.M.) should be initiated.
ii) NGO's should be contacted in order to outline specific plans e.g. LEAP, Eco-link and Wildlife Society .
iii) Locals should be incorporated at outset of planning.
iv) GIS (University of North) computer programme should be utilized to identify boundaries, trails, sensitive areas *etc.*
v) Research students from universities should be encouraged to study aspects of Blouberg e.g botany, history, entomology, archaeology *etc.*

DISCUSSIONS WITH LOCALS

In keeping with the requirements of I.E.M., the local inhabitants must be involved from planning through to implementation of conservation management options. Venues should be identified in the locality (within easy access of local residents).

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PERSONAL COMMUNICATIONS

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11. Kgosi L. Kibi, Blouberg, Lebowa.
12. C. Lane, Conservation Education, Kangwane Parks Board. Nelspruit.
13. P. Lombard, Ethnologist, Office of the Chief Minister, Lebowakgomo.
14. P. Maas, Department of Environment Affairs and Forestry, Louis Trichardt.
15. Miss C. Machine, Department of Environment Affairs and Forestry, Louis Trichardt.
16. Kgosi C. Maleboch, Blouberg, Lebowa.
17. V. Mangena, Chief Magistrate, Bochum, Lebowa.
18. Mrs S. Masalena, Principal, Raseasala Primary School, Blouberg
19. M. Modjadj, Department of Strategic Planning, Lebowa Development Corporation Lebowakgomo.

20. W. Moremi, Student, Maleboho High School, Blouberg.
21. Prof. S.R. Motshologane, Department of Sociology, University of the North, Turfloop.
22. Prof A. Odendal, Department of Psychology, University of Pretoria.
23. P. Ramaphakelo, Principal, Primary School, Blouberg.
24. J. Rencken, Secretary to the Minister of Agriculture and Environmental Conservation, Lebowa.
25. J. Roos, Department of Strategic Planning, Lebowa.
26. P. Schoeman, Geography lecturer, University of the North, Turfloop.
27. Dr R. Scholes, Ecologist, University of the Witwatersrand.
28. J.R. Seabela, Department of Sociology, University of the North, Turfloop.
29. W. Seapela, Herbalist, Blouberg.
30. Soutpansberg Environmental Sub-committee, Louis Trichardt.
31. G. Steyn, Department of Strategic Planning, Lebowa Development Corporation, Lebowakgomo.
32. Dr R. Taylor, Environmental Researcher, International Union for Conservation of Nature and Natural Resources, Harare, Zimbabwe.
33. I. Terblanche, Department of Agricultural & Environmental Conservation, Lebowa.
34. C. Thompson, Naturalist, Haenertsburg.
35. H. Thompson, Geologist, Haenertsburg.
36. J. van Schalkwyk, Anthropologist, Pretoria Museum.
37. S. Venter, Curator, Botany Herbarium, University of the North.
38. G. von dem Bussche, Assistant Director, Department of Environment Affairs, Pretoria.
39. R.C. Whitehead, Shopowner and Businessman, Blouberg.
40. T. Whitehead, Shopowner and Businessman, Blouberg.