

Mountain Conservation in South Africa

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Abstract—South Africa comprises approximately 10 percent mountainous terrain and isolated mountains, based on the criterion of 450 m (1,476 feet) local relief. Distinctive hilly terrain and distinctive coastal and river relief make up approximately 13 percent of the land surface. The highest mountains are located in the Drakensberg with peaks reaching 3,400 m (11,155 feet) and local relief up to 2,100 m (6,890 feet). The extensive Cape Fold Mountain Range (totaling about 21,000 km², or 8,108 miles²) also have several peaks with local relief close to 2,000 m (6,562 feet). Many other less extensive mountain ranges exist throughout South Africa.

Developments and poor management practices in mountain areas are increasing on private and government land, and mountain wilderness is shrinking. The objective of this paper is to: provide an overview of major mountain ranges, their conservation status, and the type of communities that live in close proximity to these mountains; highlight key threats to mountain wilderness; and discuss and analyze policies, legislation, and other “social contracts” that deal with mountain management in South Africa, focusing on how key issues such as overexploitation, overburning, lack of finance, law enforcement, lack of knowledge, bad environmental attitudes, water pollution, inappropriate private and infrastructural developments, and poorly planned access routes are being addressed.

A hypothetical case study, where suitable socioecological zoning is used in the planning and development of a private mountain reserve, is discussed. The rationale for using socioecological zoning is to encourage the conservation of mountain wilderness by only developing in areas where potentially negative effects on wilderness qualities can be minimized, and to restrict nonwilderness-dependent activities in identified wilderness areas. Socioecological zoning requires that a predetermined range of social needs and uses, applicable to the characteristics of the mountain environment in the country, is scientifically matched to the appropriate ecological and physical characteristics of the mountain area.

Introduction

Based on the criterion that a mountain constitutes an area elevated at least 450 m (1,476 feet) from the local relief (the height difference measured from the lowest point within the area being considered), South Africa comprises approxi-

mately 10 percent mountainous terrain and isolated mountains. Distinctive hilly terrain and distinctive coastal and river relief make up approximately 13 percent of the land surface.

Mountains in South Africa either form part of the Great Escarpment or are free standing. The Great Escarpment extends from the mountainous regions of the Northern Province, southward to the Drakensberg, past Lesotho and the Eastern Cape into the Southern Cape. It then continues north of the Cape Fold Mountains to Sutherland in the Karoo, before turning northward toward Springbok in the Northern Cape (DEAT 1997).

The highest mountains in South Africa are located in the Drakensberg with peaks reaching 3,400 m (11,155 feet) with local relief up to 2,100 m. The extensive Cape Fold sandstone mountain ranges (totaling about 21,000 km², or 8,108 miles²) also have several peaks with local relief close to 2,000 m (6,562 feet). Many other less extensive mountain ranges exist throughout South Africa (Blignaut 2000a).

Mountain Wilderness

Some mountainous areas are still wild and unspoiled as a result of harsh living conditions for humans, rough topography, and remoteness. In these pristine wilderness areas, there are few signs of human modification. Indigenous fauna and flora are very dominant. These places provide a range of opportunities to visitors for solitude and to interact with nature on nature's terms.

The wilderness qualities in mountains vary depending on geomorphology, climate, surrounding land use, and fauna and flora, for example:

- The Cape Fold Mountains form part of the extremely biodiverse Cape Floral Kingdom ecosystem and offer many undisturbed mountain peaks and kloofs. Visiting these wilderness areas can be strenuous. Leopard and signs of free-ranging wildlife are present in some areas, but the wilderness character of these mountains is linked to solitude; striking scenic beauty with steep ascents and rough terrain; sandstone cliffs; pure mountain water; and multicolored, unsurpassed endemism among flora.
- The KwaZulu-Natal Drakensberg harbors one of the world's greatest rock art collections. There are an estimated 600 sites with more than 35,000 individual rock art images. It contains high-altitude and unique Southern African alpine-tundra vegetation and associated endemic paleoinvertebrates. It offers outstanding views and a range of peaks to climb. Wildlife can be encountered at varying altitudes.
- The Lebombo Mountains are less than 800 m (2,625 feet) high, but are probably the richest wildlife moun-

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tain habitat south of the Zambezi Escarpment, mostly by virtue of their length down the Kruger National Park and the wilderness of Mozambique on the eastern side. Elephant, lion, leopard, buffalo, rhino, and another 40 to 50 large mammals, mainly antelope, as well as enormously rich birdlife inhabit parts of it.

- The Richtersveld is a mountain desert with summer daytime temperatures regularly higher than 40 °C (104 °F), where both plants and animals have adapted to the harsh desert conditions.

Although a mountain zonation policy (fig. 1) has been proposed (Blignaut 1992), there is currently no formal policy specifically aimed at mountain conservation. Many mountainous areas are not zoned, and there are no specific management objectives or indicators to monitor compliance to set targets on State or private land. In many cases the diverse mountain wilderness landscapes are not managed.

There is currently no attempt to protect the remaining mountain wilderness by restricting access and making inducements to go elsewhere through the provision of recreational facilities in more appropriate areas. As a result, many of these wilderness areas are being targeted for ecotourism. Even with a moderate increase in the use of wilderness areas, their nature conservation status may be totally unimpaired, while the wilderness experience may be ruined.

Mountain Communities in South Africa

True mountain communities, people who have traditionally lived in mountain areas, are a rare phenomenon in South Africa. African communities are mostly located in hilly terrain with few communities actually inhabiting the mountains, unlike mountain communities in South America, Asia, and Europe.

Diversity of Mountain Communities

The culture of people living in close proximity to mountains varies from mountain to mountain, depending on agricultural potential, proximity to markets, climate, scenic value, rock formation, biodiversity, presence of wildlife, conservation status, recreational opportunities offered, socioeconomic factors, and so forth. The following loose categories attempt to describe different communities who live close to mountains or who enjoy benefits provided by mountains:

- Traditional mountain communities, which are people who live in the foothills or who live in the mountains on a permanent basis, whose ancestors also lived in mountainous terrain, and who utilize resources provided by mountains, mountain slopes, or mountain streams as

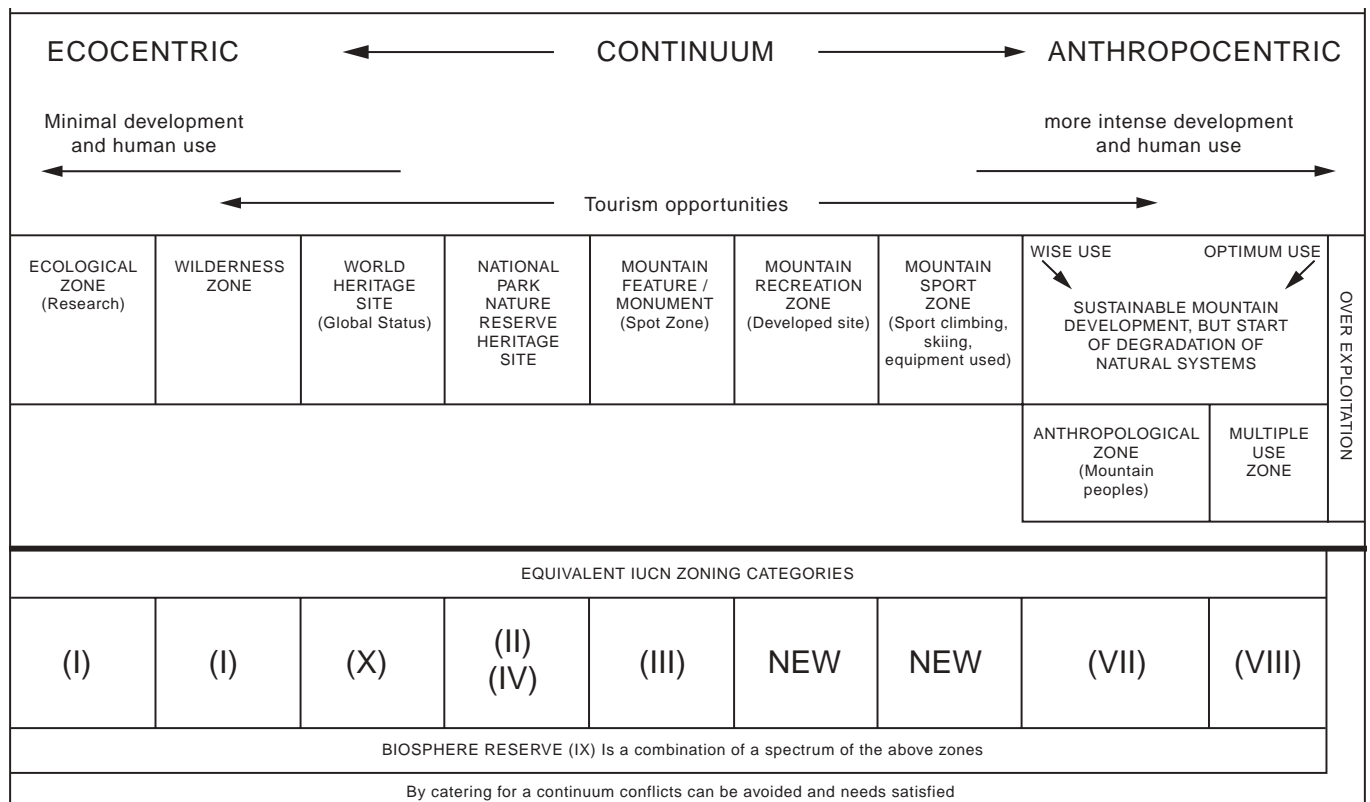


Figure 1—Socioecological zoning.

their primary livelihood. This includes livestock farming (cattle, goat, and sheep), crop farming, and dagga growing. Examples of mountain communities are: Basotho people who live on the Great Escarpment between South Africa and Lesotho; the Hananwa people of Blouberg in the Northern Province; and the people of the Richtersveld, the Namas, and the Bosluis Basters (Van den Berg 2000).

- Subsistence communities such as at Wupperthal in the Western Cape, Qudeni in Zululand, and Mnweni and Singati in the KwaZulu-Natal Drakensberg.
- Rural communities, which include commercial farmers, small-scale commercial farmers, and farm laborers. Farms can be managed by private individuals, companies, or consortiums. Examples are flower farms in the Cape Mountains, trout farms in the KwaZulu-Natal Drakensberg, and cattle farms in the Waterberg.
- Communities living within or on the boundaries of private or public mountain conservation areas, such as in the Richtersveld and Drakensberg.
- Landowners of private nature reserves and those including their land in nature conservancies such as the Cederberg, Voëlvlei, and Grootvadersbosch Conservancies in the Western Cape.
- Foresters and personnel working for mining or logging companies.
- Urban communities living within or on the boundaries of private or public mountain conservation areas, for example, in Cape Town, Ceres, and Franschhoek. Two groups can be identified: "Armchair mountain admirers," the people who are fairly passionate about mountains but who seldom climb them; and "local mountain users," the people who utilize the mountains on a regular basis for exercise, recreation, spiritual renewal, and to socialize or enjoy the scenic beauty.
- Business people running ecotourism operations who use the mountains as the attractant.
- Mountain tourists, the visitors from other areas, nationally or internationally, who travel to mountainous areas to enjoy stunning mountain landscapes or to hike.

In general, people living in mountainous areas have become ecoconscious and take a direct interest in the management of mountains as well as their resources. This has led to the formation of Mountain Forums, Friends of the Mountain group, and Hiking and Mountain Clubs.

Projects Involving Mountain Communities

Sustainable mountain development, as per Chapter 13 of Agenda 21 (developed at the 1992 World Summit on Sustainable Development, Rio de Janeiro), requires the involvement of local mountain communities to ensure that both community needs and conservation needs are met. Some local projects involving mountain communities are:

- **Mnweni Donga Erosion Reclamation Project.** This project in the KwaZulu-Natal Drakensberg is coordinated by the Mnweni Community Trust. Trained groups are now offering a commercial service to other communities along the slopes of the mountain range. This is an excellent example where the community formed a

partnership to combat environmental degradation on mountain slopes in their area.

- **Working for Water Project.** The Government's Working for Water Program, spearheaded by the Department of Water Affairs and Forestry, was launched in 1995 to gain control of the growing problem of invasive alien plants. The program currently runs over 200 projects in all nine of South Africa's Provinces. Special teams have been trained to undertake high-altitude alien vegetation clearing in mountainous terrain. Through Working For Water Projects, people living in mountainous terrain have been given opportunities to develop new skills and to work as contract laborers.
- **Zululand Trail Project (ZTP).** This South African Youth Exchange Project started in 1992. The objective of the ZTP is to explore the remote and beautiful areas of Zululand, very often scarcely populated, to identify possible routes for hiking trails and incorporating local villages as "stop-overs." Visiting local villages provides an interesting cultural experience to exchange students, and provides tangible financial benefits to the locals.

Key Threats to Mountain Wilderness

Threats to South African mountains are numerous and can be categorized under two headings: unsustainable land use practices and potentially threatening situations (Blignaut 2000b).

Unsustainable Land Use Practices

Unsustainable land use practices could include:

- Burning and overburning of indigenous mountain vegetation. Indigenous vegetation is adapted to the incidence of lightning and rock falls. These start the mountain fires that are necessary for the germination of some plant species. However, deliberate and frequent manmade fires have devastating and severe effects on mountain vegetation, particularly at high altitudes and on dry slopes where regeneration is slow. Mature vegetation in South African mountains is currently rare.
- Cultivation, even on moderately steep mountain slopes, leads to erosion, particularly during fallow periods and heavy rainfall. The loss of vegetation cover has multiple consequences: landslides, siltation of dams, drying up of perennial streams, flash floods downstream, and loss of biotic diversity and genetic resources, including insect and other faunal populations essential for pollination of fruit and seed sources.
- Plantations and invasive alien vegetation. Plantations of imported invasive tree species located in mountain catchments cause a massive loss of runoff and perenniality. The water yield from a mountain catchment covered by invasive vegetation, such as hakea, pine, and wattle, is reduced by 50 percent compared to a catchment covered by indigenous fynbos (Burgers 1993).

- Grazing in fragile mountain areas and overgrazing. Bad farming practices by owners of mountain land, and demographic pressures in mountain communities coupled with unsustainable cultural practices that do not match current realities, result in overstocking. This leads to loss of natural vegetation cover, with its serious consequences. It also increases pollution from animals and humans within the catchment areas, resulting in ill health, greater filtration costs, and negative effects on tourism and recreation.
- Badly located and inappropriate infrastructure has an accumulative adverse effect on mountain ecology and landscapes, leading to loss of natural vegetation cover and to pollution. For example: illegal impoundments made by farmers diminish water supply to main dams and degrade riverine ecology; illegal tourism developments, such as roads for offroad vehicles and mountain cottages, cause erosion and pollution; masts and other communication devices on mountain summits adversely impact landscapes and ruin wilderness.

Potentially Threatening Situations

Potentially threatening situations include:

- Easy access. South African mountains are not high in global terms, nor indeed extensive. Many of the mountain ranges are narrow. In the Cape Fold Mountains, there is an average width of only 7 km (4.3 miles). Similar to the Drakensberg, this permits reasonably easy access for exploitation to core wilderness areas.
- Many largely unspoiled public mountain reserves are being developed for ecotourism to provide funds for management and other government agendas. This occurrence has at its source the general weakness in the economy and the indifference of many politicians to long-term conservation and most certainly to wilderness. Even protected areas are being opened up for limited exploitation by adjacent communities and to provide new livelihood opportunities. While in much of the developed world conservation of protected areas is becoming more strict, the reverse is occurring in Africa. This augers badly for wilderness, which once destroyed can seldom be restored.
- Economics is at the root of many land exploitation problems. Some private landowners are now looking at exploiting their mountain land to gain short-term benefits for economic survival. The withdrawal of farming subsidies, low agricultural prices, steep increases in fuel costs, and higher labor expenses all contribute to this.
- Politics. Some commercial farmers are apprehensive about their future in South Africa. This perception has been exacerbated by local farm murders and the Zimbabwe land grabs and land claims. Insecurity of title usually leads to exploitation of land in the short term, which could have a noticeable impact on mountains.
- Lack of respect for the natural environment is often at the root of exploitation of mountain land. This attitude has its source in lack of knowledge and education, coupled with indifference and greed for personal gain. If we were healthy morally, we would not consider the

mountains as “waste land” to be exploited and ruined for personal and public gain.

- Climate change. If carbon dioxide levels double by the year 2050, some of the Cape fynbos biome will disappear, as it will be unable to adapt to climate/atmospheric changes. However, much of the species-rich montane fynbos is likely to adapt because of the climatic diversity found in mountain environments. Mountain areas in South Africa are therefore likely to be significantly important repositories of biotic diversity in the future.

Policies, Legislation, and Other “Social Contracts” That Deal With Mountain Management in South Africa

Social contracts regarding mountain conservation involve a range of government, private, and communal stakeholders. The instruments for mountain conservation range from formal explicit contracts, such as national legislation, to undocumented implicit private initiatives. There are also various public-private partnerships that contribute to mountain conservation. These social contracts mainly relate to land use, infrastructure developments, commercial opportunities, and access.

Ownership of Mountains

Mountains, hilly country, coastal buttresses, or cliffs in South Africa can be owned or managed by: the State (national, provincial, regional, or municipal authorities); private individuals; communities; Nongovernment Organizations (NGOs), or partnerships between the above-mentioned parties. The area of mountain catchments on State land amounts to 1.7 million hectares (6,564 miles²), about 15 percent of the total area of major catchments. Eighty-five percent of mountain catchments, about 9.7 million hectares (37,542 miles²), is privately owned (Rabie and others 1992). Of the privately owned areas, 5.5 percent are proclaimed mountain catchment areas, while 79.5 percent are undeclared catchments (Rabie and others 1992). The result is that many mountainous areas with high wilderness qualities are not proclaimed as such. It is thus essential that public-private partnerships be promoted to conserve South Africa's mountain heritage.

Legislation Relating to Mountains

The only legal definition in South Africa related to “mountain” is that of “mountain catchment area” in terms of the Mountain Catchment Areas Act (MCAA) (Act 63 of 1970). Such an area is simply described as an area defined and declared by the Minister of Environmental Affairs by notice in the Gazette to be a mountain catchment area. This definition fails to describe the characteristics of such an area, although a good idea of what represents a mountain catchment is obtained from the interdepartmental Ross Report (1961), which culminated in the MCAA.

Legislation that pertains to mountain areas are (Price 2000):

- **The MCAA** applies to State-owned mountains and a percentage of privately owned important mountain catchment land. Its overall purpose is the production of clear, pure water. The biotic diversity of these proclaimed mountain areas has been reasonably well conserved as unsilted, unpolluted water through the retention of a reasonably mature vegetation cover.
- **National Forests Act (Act 84 of 1998)**. This Act makes provision for the protection of indigenous forest, as well as for the support of community forestry (<http://www.gov.za/yearbook/water.htm>). It provides for the designation of wilderness areas on State forest land.
- **National Veld and Forest Fire Act (Act 101 of 1998)**. In terms of this Act, Fire Protection Associations (FPAs) need to be established. While it is compulsory to establish FPAs on all State lands, FPAs on private lands are voluntary. The purpose of the Act is to prevent and combat veld, forest, and mountain fires throughout the Republic.
- **National Water Act (Act 36 of 1998)**. This Act provides for the protection of water resources (the definition includes streams) and the use of water, including its abstraction from streams and other sources, and regulates activities that result in the reduction of streamflow. In some regions, steering committees have been established to compile catchment reports that provide input into the development of integrated Catchment Management Plans. Integrated Catchment Management is a focus of the new Water Act.
- **National Environmental Management Act (NEMA) (Act 107 of 1998)**. This Act is broadly aimed at the decisionmaking processes and coordination of governmental functions relating to the environment. Of general interest is the Act's adherence to principles of Integrated Environmental Management and Environmental Management Plans.
- **Environment Conservation Act (Act 73 of 1989)**. This Act provides, among other things, for the declaration of Protected Natural Environments, the control of pollution, the control of environmentally harmful activities, and the creation of regulations to govern procedures to be followed in environmental impact assessments.
- **The Conservation of Agricultural Resources Act (CARA) (Act 43 of 1983)**. The new regulations under CARA add substantial legal capacity to the quest to control invasive alien plants, especially in mountain catchments.

Government Initiatives Toward Mountain Conservation

Government initiatives regarding mountain conservation include:

- **Wilderness Areas**. Since 1971, 11 wilderness areas have been designated in terms of the Forest Act. All but one (Ntendeka W.A.) protect high altitude ecosystems

in the principal mountain systems of the country (Bainbridge 2001).

- **National Parks**. National Parks are proclaimed in terms of the National Parks Act (Act 57 of 1976). South African National Parks (SANParks) manages four National Parks where mountains are the key attraction: Cape Peninsula, Golden Gate, Tsitsikamma, and Richtersveld. Other National Parks with mountainous terrain are the Kruger, Karoo, Addo Elephant, Marakele, and Mountain Zebra. Private, communal, or NGO land can be incorporated into national parks on a contractual basis.
- **Provincial Nature Reserves**. Some Provincial nature reserves are proclaimed in accordance with empowering provincial legislation by which the Provinces manage State land. Many of these reserves contain mountains, hilly country, coastal buttresses, or cliffs. A breakdown of Provincial reserves per province is as follows: Eastern Cape (47), Free State (17), Gauteng (6), KwaZulu-Natal (87), Mpumalanga (14), Northern Cape (6), Northern Province (52), North West (14), and Western Cape (51). Some of the mountainous nature reserves do not have resident managers.
- **Indigenous Forests**. A National Forestry Action Program (NFAP) for South Africa was developed in 1997. Indigenous high forest covers only about 300,000 hectares (1,158 miles²) or 0.25 percent of the country's surface, mainly on the eastern and southern slopes of mountain ranges from the Cape Peninsula in the Western Cape to the Soutpansberg in the Northern Province. Forty-three percent of indigenous high forests are managed by the Department of Forestry according to certain multiuse objectives.
- **Protected Natural Environments**. There are three Protected Natural Environments in mountainous areas: the Cape Peninsula Protected Natural Environment (CPPNE) portions that are included in the CPNP, the Magaliesberg Protected Natural Environment (MPNE), and the Lourens River Protected Natural Environment.
- **World Heritage Sites**. On November 29, 2000, the uKhahlamba-Drakensberg Park was inscribed as a "mixed" natural and cultural World Heritage Site, in terms of the Convention on the Protection of the World's Cultural and Natural Heritage. An application for World Heritage Status for eight representative constellation sites is currently being prepared for the Cape Floral Kingdom and the Cape Fold mountains.
- **Transfrontier Conservation Areas**. A Memorandum of Understanding was signed between South Africa and Lesotho in June 2001 for the establishment of the Maloti-Drakensberg Transfrontier Conservation Area (TFCA). The uKhahlamba-Drakensberg Park World Heritage Site is located within the Maluti-Drakensberg TFCA. On August 17, 2001, a Memorandum of Understanding was signed between South Africa and Namibia to put in place an environmental collaboration program through the establishment of the Ai-Ais/Richtersveld Transfrontier Conservation Park.
- **Mega Reserves**. The Cape Action Plan for the Environment (CAPE) project recommended that three mega-conservation areas (400,000 to 600,000 ha, or 1,544 to

2,317 miles²) be established in the Cederberg, Little Karo, and Baviaanskloof areas (WWF-South Africa 2000). This important initiative will contribute respectively to an integrated approach to mountain conservation in the Western and Eastern Cape Provinces.

Public-Private Partnerships

Public-private partnership initiatives regarding mountain conservation include:

- **Biosphere Reserves.** Three biosphere reserves have been registered with the United Nations Educational, Scientific and Cultural Organization (UNESCO), and there are nine initiatives underway. Declared Biosphere Reserves in mountainous terrain are Kogelberg (established in 1998) and Waterberg (established in 2000). Biosphere Reserves in mountainous areas currently in the planning phase are: Soutpansberg/Limpopo; Kruger to Canyons, Drakensberg Special Case Area (included is Pholela Biosphere Reserve), Thukela (Weenen), Cederberg, Boland, and Royal Zulu.
- **Conservancies.** A conservancy is an association of private landowners or tenants who voluntarily set aside and consolidate the natural resources of their properties for the purpose of conservation and sustainable utilization. Through cooperation between the farming community and conservation authorities, this concept has grown into a national conservation movement (Cape Nature Conservation 1997).

Private Initiatives

Private initiatives regarding mountain conservation include:

- **Natural Heritage Sites.** South African Natural Heritage Sites are designated where certain criteria are met and where landowners commit themselves to the conservation management of the site. The number of natural heritage sites in mountainous areas is not available.
- **Private Game Farms.** Presently there are more than 9,000 game farms, from unregistered farms to those officially recognized by nature conservation departments as "exempted game farms" that allow the capture, selling, and hunting of game. Many game farms are located in mountainous areas.
- **Private Reserves.** There are approximately 160 private reserves in South Africa. Figures per vegetation type are not available (SA State of Environment Report 2000).
- **SA Natural Heritage Program.** Private landowners can apply to the Department of Environmental Affairs and Tourism to have properties awarded Natural Heritage Program status.

Access to Mountain Areas, Rock Faces, and Coastal Cliffs

Access to mountains in South Africa is dependent on the ownership of the area, resulting in no legal right for access to climb or mountaineer—therefore, "no right to ramble."

Only a limited extent of mountain land meeting the criteria for wilderness exists, and a fair percentage is privately owned.

- **Access on Private Land.** Private landowners may give permission to climb mountains in their ownership or they may refuse. Mountain and hiking clubs undertake extensive measures, including the purchase of mountains and rights of way, to obtain access. Some landowners now require payment, at least for road maintenance across farms and parking.
- **Access on State Land.** In mountain ranges located in national or provincial parks, access is granted according to permit conditions, and in a few areas there is no access for mountaineering. In proclaimed wilderness areas, access is also per permit and is restricted to prevent overcrowding and a degradation of the wilderness experience.
- **Access to Communal Land.** Some mountainous areas fall within communal tribal ownership, and permission to climb must be obtained from the tribal authorities concerned. Payment for access to such areas is now becoming common.
- **Access to Coastal Cliffs.** Land below the high water mark belongs to the State in terms of the Sea Shore Act (Act 21 of 1935) and is accessible to everyone. However, coastal cliffs above the high water mark could be in private ownership. Rocky coastlines may thus become inaccessible without obtaining permission.
- **Access in Conservation Areas.** In certain areas, access for mountaineering has been lost or restricted due to the establishment of national parks or private nature reserves. In particular, an emphasis on conservation of the "Big Five" (lion, elephant, leopard, rhino, and buffalo), resulting in the creation of additional national parks (for example, Marakele National Park), has in some cases meant that climbers and hikers can now only access such areas under guard, if at all. Trails in some national parks have been closed due to the introduction of buffalo (for example, Mountain Zebra National Park). In other areas (for example, Baviaanskloof), mountaineering is popular, even though buffalo have been released.

User Fees and Financing

Provincial and national authorities have nearly always charged a fee. An exception is the Cape Peninsula National Park, which has partial free access. With the cut in conservation budgets in South Africa, fees are increasing, in some instances dramatically. Although some private landowners still allow free access, many are now charging fees to mountaineer and hike on their property.

Financial resources to cover the objectives of sustainable mountain development are obtained from each national, provincial, or municipal authorities' budget. In certain instances, financial assistance is provided by donor organizations, such as the Global Environment Facility or Peace Parks Foundation. On occasion, conservation-worthy mountainous land is purchased by NGOs such as the World Wildlife Fund (WWF) for approved projects and The Mountain Club of South Africa for mountaineering.

Legal Liability

The situation regarding the legal liabilities of landowners for mountain accidents on their land varies. Some national and provincial authorities and some private landowners require indemnity forms to be completed; in other instances, there are no agreements. There is no legislation ruling on this, and there has not been a court case in South Africa to test this aspect. Rescue services are provided by provincial emergency services and on a volunteer basis by members of the Mountain Club of South Africa. On land managed by KwaZulu-Natal Wildlife, including some areas in the KwaZulu-Natal Drakensberg, a rescue services levy forms part of entrance fees.

Case Study: Riviersonderend Private Mountain Farm

Background: Mr Smith bought a share in a beautiful farm in the mountains as a weekend getaway. He is a keen botanist and mountaineer and wanted to conserve the mountain land in an appropriate, scientific way, while making some money through ecotourism. He spoke to the consortium of landowners, which he was part of, and they decided to appoint a consultant to advise them on a mountain management strategy that combines ecotourism with conservation.

Consultant's Strategy: The first step was to undertake a field trip to identify core wilderness areas that need to be protected; to get an idea of wilderness qualities; to identify features of outstanding scenic beauty; to gather information on topography, fauna and flora; and to identify ecotourism opportunities. The second step was to consult the Department of Water Affairs and Forestry regarding the catchment management plan of the area. The third step was to zone the area to inform future land use. The fourth step was to set objectives and targets for the management of each zone, with measurable indicators. Thereafter, a mountain management and monitoring plan was developed. Four zones were identified:

1. Pristine mountain wilderness. The purest form of wilderness with no signs of modern modification (no roads, fences, dams, windmills, powerlines, fire breaks, solar panels, and so forth), only natural sound, no motorized access. Recreational activities: backpacking, kloofing, rockclimbing, swimming.

2. Remote mountain wilderness. As above but signs of modern modification visible in the distance. Recreational activities: backpacking, kloofing, rockclimbing, swimming.

3. Modified wilderness. Areas with easy access that retain naturalness. The road to the farmhouse and the footpath to the tented camp were included in this zone.

4. Developed area. The farmhouse and laborers' cottages were included in this category.

Process: A meeting was held with the landowners to discuss the mountain management and monitoring plan, aimed at combining mountain conservation with low-impact ecotourism.

Outcome:

- The landowners supported the idea of protecting the wilderness qualities of the mountain reserve. They agreed that infrastructure should be limited to the existing footprint, which included an old farmhouse and two laborers' cottages. No new roads were to be constructed, thus limiting vehicular access to the existing farmhouse. Where present, old boundary fences were to be removed to improve the wilderness qualities.
- They decided to erect two tented camps and a "long-drop" to accommodate overnight visitors. Visitors would have to walk to these camps. Local people were employed to manage the tented camps. This included cooking, cleaning, and "portage" from the farmhouse to the tented camps. Visitor opportunities included day walks, kloofing, rockclimbing, bird viewing, and botanizing.
- All supported the removal of alien vegetation in a phased approach, taking cognizance of the importance of followup clearing. Local contractors were to be used.
- A meeting was organized with neighboring farmers to join a Fire Protection Association.
- A decision was made to reintroduce wildlife to the area. In this regard, a meeting was set up with the nature conservation authority.
- A monitoring program was implemented to establish whether management objectives were met.

Assumptions: The above-mentioned scenario assumes that:

1. A socioecological, national mountain zoning policy is not in place. If such a policy was operating, mountain ranges would already have been socioecologically zoned by a panel of experts in cooperation with all landowners concerned. Thereafter, a Mountain Management Board comprising landowners, affected parties, and authorities would have ensured that the landowners' application met the criteria of the existing zoning plans. (This is the policy advocated by Blignaut, via oral and written submissions to the Council for the Environment and other institutions, since 1987. The principle aim being to preserve remaining mountain wilderness.)

2. The landowner(s) cooperates with the concept of wilderness. This is usually not the case, as the landowners' principle objective is to make money. Thus, 4-wheel-drive tracks through the mountains and chalets deep into the mountains, with concomitant access and communication infrastructure, are likely pressures. Because there is no national mountain policy and because what legislation there is, is poorly enforced, massive wilderness degradation may take place. When landowners view their land for benefits, wilderness is nearly always the first casualty.

Conclusions

Although South Africa does not have a formal wilderness management or mountain management policy, various partnerships are being implemented toward achieving sustainable development in mountains. In some instances, developments in mountainous areas are not sustainable,

as short-term financial gains are perceived as more important than long-term sustainability.

The government is responsible for conserving mountains in national parks, provincial and municipal reserves, and wilderness and indigenous forest areas on State land, while a range of mechanisms, for example Biosphere Reserves, Natural Heritage Sites, and Conservancies are available for mountain conservation on private land. In addition, private, communal, or NGO land can be incorporated into national parks on a contractual basis.

There is a need to include mountain communities in decisionmaking regarding mountain management and to ensure that these people derive benefits from ecotourism. More projects aimed at environmental education and the creation of jobs for mountain communities need to be initiated.

As a way forward, the only remedy to save remaining mountain wilderness is to undertake socioecological zoning of South Africa's mountain ranges, preferably as part of a national mountain management policy, in order to identify and protect these wilderness areas for posterity. The existence of unambiguous zoning plans covering South Africa's important mountain ranges would pre-empt development pressures and inappropriate compromises with the resultant loss of wilderness.

References

- Bainbridge, B. 2001. Mountain wilderness in South Africa. *International Journal of Wilderness*. 7(2): 30–34.
- Blignaut, P. 1992. Towards a zoning policy for the conservation and sustainable utilization of the mountain environments of South Africa: working document. Cape Town, South Africa: University of Cape Town. Thesis. 586 p.
- Blignaut, P. 2000a. Status of mountain management in South Africa. ISSN 1029-3760. *Mountain Forum*. 3(2): September. 2 p.
- Blignaut, P. 2000b. A national policy and strategy for more effective management of mountains in South Africa. Unpublished paper presented at: African Mountain Association conference; 2000 October 16–20; Maseru, Lesotho. On file at: SAMEC Office, P.O. Box 334, Parow, 7499, RSA. 15 p.
- Department of Environmental Affairs and Tourism (DEAT). 1997. *Environmental potential atlas for South Africa*. Pretoria, South Africa: J. L. van Schaik Publishers.
- Price, T. 2000. Environmental legislation of relevance to the MCSA as a landowner. Environment Subcommittee: MCSA (Cape Town Section).
- Rabie, M. A.; Blignaut, P. E.; Fatti, L. P. 1992. Mountains. In: *Environmental management in South Africa*. Cape Town: Juta & Co, Ltd.
- Ross Report. 1961. Report of the interdepartmental committee on the conservation of mountain catchments in South Africa. Pretoria, South Africa: Department of Agricultural Technical Services.
- SA State of Environment Report. 2000. (2002, August 10, last update) [Online]. Available: <http://www.ngo.grida.no/soesa/nsoer/issues/land/state.htm>.
- Van den Berg, Heinrich. 2000. Rock garden of the sun. *South African National Parks*. Timbilla. 3(1): 30–40.