

Wilderness Research in South Africa

Defining Priorities at the Intersection of Qualities, Threats, Values and Stakeholders

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Introduction

While South Africa is a leader in wilderness conservation on the African continent (Muir 2002), the term wilderness is often used inconsistently by the public, the media, and even by some conservation organizations. To many people, wilderness means almost any natural outdoor recreation area in public or private ownership. In South Africa there is no formal, agreed-upon definition of wilderness, and the only legal protection of wilderness is in State (national) Forests. The National Forest Act no. 84 of 1998 (part 2, section 8) gives the minister power to declare protected wilderness areas. Permissible land use in wilderness, however, is not stipulated, leaving it open to interpretation by reserve managers.

This article identifies, from recent literature on wilderness in South Africa, some potential defining qualities of wilderness, threats to those qualities, and the values of wilderness to different stakeholder groups. The ultimate purpose is to arrive at some collective agreement on the important components of the definition of wilderness in South Africa and establish priorities for science to support actions to identify and protect these places.

Forming a Partnership to Identify Wilderness Qualities and Research Priorities

Awareness about wilderness in South Africa was significantly strengthened at the 7th World Wilderness Congress (WWC) in Port Elizabeth in November 2001. South Africans that attended the 7th WWC came from many sectors, including the Minister of Environmental Affairs and Tourism, public sector managers, academic scientists, nongovernmental organizations



Article co-authors pictured left to right: Alan Watson, Maretha Shroyer, and Andrew Muir in Plettenberg Bay, South Africa.

(NGOs), traditional healers, and owners of private areas protected for wilderness character. Various scientists, academics, conservationist agencies, and NGO representatives presented papers and posters. A special session that focused on South Africa, within the Symposium on Science and Stewardship to Protect and Sustain Wilderness Values, revealed the need to establish a science program to inform wilderness training programs and academic education, and to explain wilderness benefits to the larger population.

A partnership project, funded by the Wilderness Foundation of South Africa, WILD Foundation (USA), the Sierra Foundation, and the International Programs Office of the USDA

Forest Service was launched in March 2002. The purpose of this project was to identify gaps in knowledge and the relative importance of these gaps in order to guide wilderness-related research activities for the next 5 to 10 years.

Defining Wilderness Qualities, Threats, Values, and Stakeholders

There were two methods used to arrive at a list of wilderness qualities, threats, values, and stakeholders for South Africa to use in providing the foundation for an effort to prioritize research needs. From papers submitted for publication in the *Proceedings of the WWC Symposium on Science and Stewardship to Protect and Sustain Wilderness Values* (Watson and Sproull in press) and insight gained from interviews with key individuals in the wilderness community, a unique set of 18 wilderness qualities (see Table 1) and 15 threatening forces to wilderness (see Table 2) were identified as central to wilderness in South Africa.

While some insight into the values that would accrue from protection of these 18 wilderness qualities were gained from the papers submitted to the proceedings, the authors were mostly informed by the interviews with a variety of wilderness interests in South Africa. The interviews were aimed at articulating the range of potential values and identifying the stakeholder groups that could lose or gain from wilderness protection. Values (see Table 3), in this context, are the set of 18 meanings or outcomes (Watson 2000) derived from protection of the set of wilderness qualities (see Table 1) from the set of threats described previously (see Table 2). Stakeholders (see Table 4) represent 18 identified interests with unique relationships to wild places (Watson and Borrie 2002), from casual to intense,

local to distant. Rather than assuming a set of values extends across all segments of society, this approach is aimed at describing unique relationships for identifiable stakeholder segments based upon unique sets of outcomes received.

Obtaining Input on Priority Information Needs

The set of wilderness qualities and threats were placed into a matrix, with

each quality representing a row of the matrix and each threat a column. Values and stakeholders were similarly placed into a matrix. Representatives of the wilderness community in South Africa were asked to evaluate the intersection of each row and column in two ways: (1) the first entry from a respondent indicated the level of knowledge he/she believes exists about the relationship between the threatening force and

Table 1—Wilderness Qualities in South Africa

Uncorrupted by humans —Places for sacred rituals and experiencing unspoiled environments that are out-of-bounds for ordinary daily human activities
Unmodified/undeveloped —Areas without roads, fences, windmills, buildings, communication masts, power lines, or other facilities evident to visitors
Wilderness-type experiences —Opportunities to enjoy nature in small groups or alone (e.g., solitude, harmony with nature, challenge)
Indigenous wildlife populations —Populations in natural predator/prey balance
Indigenous plant populations —Plant populations, without exotic or invasive species and without influence of human disturbance
Pristine water catchment —Water catchments with the ability to provide optimum flow of high-quality water
Low-density human presence —Low density of residents, managers, and visitors within the area
Extensive area —Wilderness is perceived to be large enough for individual isolation and natural functioning of ecosystems
Harsh conditions —Traveling in wilderness can lead to challenges and risks related to weather, landforms and hazards
Sacred pools, rivers, and landscapes —Many water bodies, forests, or mountains are considered sacred and protection is desirable for rituals
Wildlife in natural habitat —Wilderness is home to wildlife in their natural, unmodified habitats
Clean water —Free of pathogens, carries no foreign objects, and is free of turbidity
No motor vehicles, air traffic, or motorized watercraft —Wilderness has no motor vehicles, air traffic, or motorized watercraft, except in circumstances where absolutely necessary as a minimum management tool
Natural sound —Sounds that emanate from within the wilderness, principally the sounds of nature
Representative of critical, intact ecosystems —Areas represent important ecosystems to protect and are relatively intact
Natural disturbance regimes intact —Fires, mud slides, and floods occur within natural levels of variability
Low levels of technology —Visitors or residents possess items of very low levels of technology, and facilities or equipment for comfort and mechanical advantage are not appropriate
Scenically attractive —The landscape is an appealing representative of natural forces

Table 2—Threatening Forces on Wilderness in South Africa
Pollution —Contamination of soil, water, landscape, or air by artificial or foreign devices or products (e.g., plastic bags, chemicals, fuel, exhaust fumes)
Development within protected areas —Infrastructure, roads, fences, or other modifications to natural ecosystems within areas managed as national, provincial, or private reserves
Land/water use changes on adjacent lands —Development or changes in infrastructure, roads, fences, agricultural practices, or other modifications to conditions in areas adjacent to formally protected natural ecosystems
Alien flora and fauna —Exotic plant and animal species
Pressures to produce income —Internal or external demands to make profit from wilderness resources
Off-road vehicles —Vehicles or motorcycles used by management or visitors
Facilities for comfort —Facilities providing visitor convenience versus providing resource protection
Mechanized wildlife management —Active manipulation of wildlife species by use of helicopters, vehicles and other motorized equipment
Island effect —Fragmentation of ecosystems or habitats to land units that do not provide adequate opportunities for conservation of genetic diversity and biodiversity
Land reforms and land claims —Change of land use or change in ownership of land units
Recreation use and management —Recreation visitors and management of visitor behavior and impacts
Dams —Artificially constructed structures to contain water
Agriforestry —High technology forestry practices aimed at maximizing fiber production
Privatization and commercialization —Change in ownership from public to private enterprise or giving exclusive private access to public resources for commercial purposes
Anthropogenic climate change —Climate change induced by human activities that contribute to carbon dioxide release, primarily from burning fossil fuels in industry and automobiles

the wilderness quality, or the ways that a particular stakeholder group gains or loses on a particular value associated with wilderness; and (2) the second entry from a respondent in each cell indicated how important he/she believed that information will be to obtain within the next 5 to 10 years in order to make wilderness designation or stewardship decisions. Evaluation ratings were made in each cell according to the directions provided in Table 5.

These evaluations were completed by representatives of the Wilderness Action Group of South Africa, the Mountain

Club of South Africa, the Northern Province Department of Environmental Affairs, an independent conservation consultant, South African National Parks, the Kwa-Zulu Natal Wildlife Service, and the Western Cape Nature Conservation Board. After examining the responses, it was decided to present the findings in terms of where the most severe information needs exist. This was determined by recording the rows and columns within each matrix with the greatest number of cells indicated to have “no knowledge about interaction between items in cells” and “the knowledge about interaction between items is

Table 3—Wilderness Values in South Africa
Water conservation
Spiritual fulfillment/sacred values
Healing
Pharmaceuticals
Economic/income
Quality of life
Scientific
Biodiversity protection
Protecting endangered species
Appreciative/experiential
Wildlife conservation
Traditional knowledge
Education
Personal growth
Cultural preservation
Resource harvesting
Identity (cultural icon)
Undefined or unanticipated future values

extremely crucial information with implications for immediate application” (i.e., “1C” ratings).

Results

The highest-priority information needs were indicated by four qualities with the greatest number of “1C” ratings across the range of threats: (1) wilderness-type experiences, (2) representative of critical intact ecosystems, (3) unmodified/undeveloped, and (4) sacred pools, rivers, and landscapes. The threats that were indicated to present the most severe needs for information: (1) privatization and commercialization, (2) pressures to produce income or subsistence, and (3) off-road vehicles. Below these qualities and threats, there were substantial drops in numbers of significantly important cells indicated.

Generally, the indicated cells with the highest level of importance were

Table 4—Wilderness Stakeholders in South Africa

South African youth
Visitors to privately owned wilderness
Future human populations
South Africa National Parks and provincial park visitors and trail users
Traditional healers and their communities
Adjacent landowners
Urban residents
Consumers of science
Nongovernmental organizations
Guides, lodges, transportation providers (i.e., tourism industry)
Mountaineers
Traditional authorities
Politicians
Neighboring communities
Ecosystems
Developers
Exchange students
International communities

individual cells found within the 12 cells represented by the intersection of the four qualities and three threats listed above. For example, the single cell with the greatest agreement that it was

indeed both lacking knowledge and high priority was at the intersection of “wilderness-type experiences” and “pressures to produce income or subsistence.”

The four values indicated to be in most severe need of information across the range of stakeholders were (1) education, (2) biodiversity protection, (3) economic/income, and (4) water conservation. Respondents consistently indicated three stakeholder groups as central to the most important information needs: (1) traditional healers and their communities, (2) politicians, and (3) future human populations.

The individual cells with the greatest information needs tended to be among those 12 cells representing the intersection of these four values and three stakeholder groups. For instance, the four cells with very high numbers of “1C” evaluations were within the “traditional healers and their communities” column at the “education,” “biodiversity protection,” and “economic/income” rows. One exception was the very highest importance cell, which was within the “traditional healers and their communities” column, but in the row labeled “protecting endangered species.”

Table 5—Instructions for Evaluating Wilderness Information Gaps in Survey about South African Wilderness

Entry 1:
1 = no knowledge about interaction between items in cells;
2 = limited knowledge about interaction between items in cells;
3 = good understanding about interaction between items in cells.
Entry 2:
A = the knowledge about interaction between items is not very important to develop;
B = the knowledge about interaction between items is relatively important and worthy of effort to obtain;
C = the knowledge about interaction between items is extremely crucial information with implications for immediate application.
N/A (not applicable) = the relationship between items in the cell is not relevant in the context of decisions to protect wilderness character.

Discussion

While these results have brought some level of focus to the discussion of appropriate wilderness qualities to use to describe wilderness in the South African context, these qualities have not yet been defined at the level needed to map them. An application priority is to represent these attributes on maps of specific places, or across the whole of South Africa in a way that allows examination of the distribution of wild places and to follow trends in wilderness character of the national landscape. Carver, Evans, and Fritz (2002) have demonstrated the usefulness of such a mapping process in the United Kingdom, including obtaining human input into how these attributes are valued.

The Mountain Club of South Africa and cooperating partners have proposed to measure the qualities listed here so they can map wilderness conditions of the proposed Olifants River-Cederberg-Tankwa Karoo Mega-Reserve in the Cape Floristic region of South Africa. To do that wilderness condition mapping, they will need to operationalize each conceptual quality. For instance, the quality indigenous plant populations might be represented by at least two indicators of the relationship between that quality and the list of potential threats: (1) presence and distribution of alien flora, and (2) island effects and inbreeding due to existing boundaries issues. Similarly, the threats to wilderness-type experiences could be assessed by measuring the cumulative amount of off-road vehicle tracks per square kilometer, probability of encountering commercial activities each day, and the number of encounters with recreation groups each day.

A proposed socioeconomic profile has now become an assessment of the relationships (set of values) between these wilderness qualities and stakeholders (e.g., local communities, private

landowners, visitors, the tourism industry, and mountaineers). A mixture of quantitative and qualitative methods will be employed to understand these relationships in such a way that Geographic Information System overlays can be developed that will map the meanings of all places, with particular interest in depicting the relationship between wilderness qualities and these values.

Greater exploration into the significance of these wilderness qualities, threats, values, and stakeholder groups for the future of wilderness conservation is vital to understanding and pursuing these research priorities. For example, the need to understand the range of wilderness-type experiences and how they are influenced by pressures to produce income or subsistence, off-road vehicles, privatization, and commercialization points to several important issues in resource management in South Africa. With a challenging economy, there is great interest and incentive to benefit from ecotourism promotion and public-private partnerships via concession agreements. Commercialization of wilderness opportunities and pressures to develop off-road opportunities to meet tourist demands could directly impact many wilderness qualities, and indirectly impact many of the unique values derived from these places. Similarly, there is great interest in protecting or restoring relationships between the variety of indigenous groups and natural and spiritual aspects of the landscape. However, these user pressures will have unknown effects on the experiences of other users, spiritual values associated with sacred places, and protection of critical, intact ecosystems. Better information is needed in order to implement societal programs and still retain wilderness qualities of some places and the many meanings associated with them.

The expressed need to understand how wilderness affects the values derived

by traditional healers and their communities shows a commitment to this part of the local, rural population. Particularly, the educational, biodiversity protection, and endangered species protection values of these wild places to this segment of the population need to be clarified. Those in the wilderness community have also expressed need for greater understanding of how wilderness protection relates to politics and politicians, suggesting the educational challenge associated with moving beyond the emotional aspects of protection to a logical explanation of the collective benefits to the populace in supporting legal protection efforts. The challenge associated with defining the values of wilderness protection to future generations looms large on the South African horizon. The contribution of wilderness protection to water conservation and biodiversity protection for future generations could be the dominant outcome of current efforts to understand, restore, and protect wilderness qualities in South Africa. ∞

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Understanding the threats to wilderness-type experiences is a high-priority science issue. Roodeberg Peak in the Hex River Mountains, Western Cape, South Africa. Photo by Maretha Shroyer.



Protecting wilderness qualities may assure biodiversity and water conservation values for future generations. Knysna Forest, Western Cape, South Africa. Photo by Maretha Shroyer.

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