

Geoheritage and the potential of Geotourism in the Golden Gate Highlands National Park, South Africa

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Abstract

The aim of this paper is to explore the potential of geological heritage (geoheritage) in the Golden Gate Highlands National Park, which is an important milestone towards geotourism development. Drawing on focus group discussions with the Golden Gate community members, key informant interviews, personal observations and a questionnaire administered to a random sample of one hundred visitors to the park, it was established that the Golden Gate montane community would significantly benefit from the geoheritage in the park provided urgent conservation measures are proposed and implemented. The research further established that rather than the park concentrating on the promotion of conservation and marketing of mountain biodiversity, the montane community would potentially benefit from conserving the available geo heritage in the park which is an important milestone towards geotourism development. The research concludes that there is a serious need of developing a comprehensive marketing plan of the park as well as considering different markets in view of the scientific and touristic value of the present geo heritage. Consequently, this provides an important step towards geotourism development in the Golden Gate Highlands National Park for the benefit of montane communities living in and around the park.

Keywords: Golden Gate National Park, Geotourism, Geoheritage, local economic development

Introduction

The Golden Gate Highlands National Park (GGHNP) is famous for its impressive sandstone formations (Grab *et al.*, 2011). It is an area of superlative geology, rare scenic beauty, rich biodiversity and cultural heritage. The GGHNP is nestled on the foothills of the Maluti Mountains in South Africa and was established in 1963 for the purpose of protecting a pristine area with much emphasis on conserving the sandstone formations and the montane and Afro-Alpine grassland biome (SANPARKS, 2004). The geological formations of the GGHNP, and the presence of geological heritage (geo heritage), provide good ground for geotourism development which may consequently benefit montane communities living in and around the park. The scenic landscapes of the GGHNP and their geologic and geomorphic features have great potential for geotourism development which may combine well with other important ecological and cultural landscape attributes for the benefit of the rural montane communities in Qwaqwa where the park is located.

Geoheritage dates back to the past 4.6 billion years of earth evolution and is a result of geologic processes driven by internal and external forces (Song, 2010). Geoheritage has extreme

important scientific and aesthetic value to human beings (Cowie, 1994). Thus far, geoheritage and geotourism have not been widely considered as development options or platforms for montane communities in South Africa. Although the interest in geoheritage in South Africa is considerable, there is lack of scientific research to address its conservation and marketing for geotourism development. This is despite the fact that the country has a fairly progressive and innovative environmental legislation that recognizes the natural, physical, economic and psychological importance of the environment to humans and vice versa (Knight *et al.*, 2015).

A considerable body of literature is dominated by many other forms of tourism as viable economic options for local community development (Muganda *et al.*, 2013). Geotourism is relatively new and there is limited literature that directly focuses on it (Hurtado *et al.*, 2013), particularly in rural montane communities living in and around national parks. Reasons for this include lack of institutional and public participation in geology (Reimold, 1999), lack of data on important geological or geomorphological sites (Schutte & Booyesen, 2010), conflation of geological with other ecological and cultural heritage issues (Reimold, 1999) and problems with relevant legislation and management (Scheermeyer, 2005; Cairncross, 2011). Nevertheless, the scientific community has been recently involved in the promotion of geological and geomorphological heritage (Bollati *et al.*, 2013). In addition, some other recent studies (Hudson, 2004; Kim *et al.*, 2008; Mao *et al.*, 2009; Dowling & Newsome, 2010; Farsani *et al.*, 2012; Newsome *et al.*, 2012) have expanded humanity's understanding of geotourism. In many countries, geotourism forms a special niche (Hose, 2005) of emerging tourism and is at early stages of commercial development (Farsani *et al.*, 2011). Zouros (2006) however reports that there is an unclear understanding of geotourism's management requirements, resource base, let alone antecedents. Geotourism and geoheritage is thus poorly developed and must be considered critical in current and future research themes linking together aspects of the physical and human environments (Scheermeyer, 2005). Taking into consideration the aforementioned, the aim of this paper is to explore the potential of developing geotourism using geo heritage in the park.

Geotourism

Geotourism is based on geology and landscape that concentrates on conservation, community benefits, sustainability, appreciation and valuing of geoheritage. The prefix 'geo' has recently proliferated as a result of increasing appreciation of the intricate relationship between geology and landscape, and due to an increase in demand for geotourism (Brocx & Semeniuk, 2007). Whilst the geology and geomorphology of the GGHNP substantially influence some human activities in the park and surrounding areas (Holmes & Barker, 2006), the potential of developing geotourism for local montane community development has not been sufficiently explored.

Groenewald (1986) provides a detailed description of the geology of the GGHNP which has stratigraphic layers of the Karoo sequence belonging to the Molteno, Elliot, Clarens and Drakensburg formations and the Beaufort Group. These formations occurred during the Jurassic period and the late Triassic Epoch (approximately 150 to 230 million years ago) (Groenewald, 1986). Of particular interest are the Clarens and Elliot formations. The Elliot formations contain fossil bones and notable paleontological finds, including the oldest known dinosaur eggs and fossilized embryonic skeletons of the prosauropod *Massospondylus carinatus* (Reisz *et al.*, 2005). The Clarens sandstone formation is the canvass of a collection of San paintings (Mol & Viles, 2010). The San paintings and the fossil bones in the GGHNP are usually of particular interest to paleontologists, anthropologists, historians, archaeologists and researchers from

many other fields of study. Here, we explore the potential of this magnificent geoheritage as a platform for geotourism development and stimulant for local economic development.

Geotourism is special interest tourism (Hall & Weiler, 1992) which provides opportunities for local economic development. Other researchers argue that geotourism promotes rural development, generate employment and new economic activities, particularly in rural areas in need of new or additional income source (Zouros & Martini, 2003; El Wartiti *et al.*, 2009). The latest good example of geotourism being used as a gateway to social sustainability and rural development is in Qesh rural area, Iran (Farsani *et al.*, 2012). Because of the numerous significant geoheritage resources of rarity in the GGHNP, it is one such park in the world with potential to become a geotourism hotspot. It is our hope that this paper will stimulate further inquiry and assist in developing geotourism in the GGHNP for local economic development of Qwaqwa rural area where the park is located. Qwaqwa is characterized by socioeconomic imbalances which contrast with the strong potential of the geoheritage in the GGHNP. In light of the aforementioned, this paper examines the potential of developing geotourism in the GGHNP which is an important milestone in the promotion of local economic development of QwaQwa rural area.

Materials and methodology

Study site

The GGHNP is situated in the Free State province of South Africa, on the northeastern border with Lesotho. The park falls within the Rooiberg Mountain Range and is on the foothills of the Maluti Mountains (Wessels & Wessels, 1991) which are part of the Drakensberg range. It is situated in Qwaqwa rural area, which is well known for lacking development in general (VanNiekerk, 2000) and is one of the most socioeconomically deprived areas in the Free State Province of South Africa. Administratively, QwaQwa falls under the jurisdiction of Maluti-a-Phofung local municipality (Mwalukomo, 2008). Although the GGHNP is located in QwaQwa rural area, the montane community of QwaQwa is an officially declared Presidential Poverty Nodal Point because of high unemployment and population growth and unimaginable levels of poverty.

The original inhabitants of Qwaqwa are the San people who lived in the area for approximately 8000 years (Irwin *et al.*, 1980). The GGHNP is home to many geoheritage sites whose access is not controlled. In addition, the exact number of these sites is not known. Nevertheless, this research focused on three sites, namely the Dinosaur foot prints site (Figure 1), Sandstone formations (Figure 2) and the San painting site (Figure 3). The selection of these three sites was based on how their touristic and scientific value would benefit geotourism development. Fernandez *et al.* (2014) reports on key aspects of scientific criteria such as geological history, stratigraphy, petrology, paleontology, tectonics and geomorphology among others whilst touristic criteria encompass accessibility for visitors and the possible reasons for visiting among major issues.

Data Collection

Photographic data about each site (see Figures 1, 2 and 3) were captured using a Samsung (st 66) digital camera. Key informant interviews were held with senior officials from the South African National Parks, Department of Environmental Affairs and Tourism, Maloti a-Phofung local municipality, GGHNP management, South African National Heritage Council, Free State provincial tourism authorities, park rangers and the local traditional leadership. The interview discussions were mainly focussed on how:

- (1) best to conserve and develop the three geoheritage sites for social and economic upliftment of the GGHNP, local montane communities and the South African nation at large.
- (2) the sites could be marketed as a tourism product that is beneficial to local montane communities and the South African society at large.

It was imperative to talk to the local montane traditional leadership to get community views given that local community understanding plays a pivotal role in creating a sustainable tourism industry beneficial to both parks and montane people (Scheyvens, 1999; Sharpley, 2000). In addition, a questionnaire including both pre-coded and open-ended questions was administered to 100 visitors randomly met in the park over a period of three months. The respondents were mainly asked about:

1. Their impressions on the GGHNP geological landscape, reasons for visiting the park as well as frequency of the visits.
2. What they liked and hated most about the park.
3. How they came to know about the GGHNP.
4. Suggestions for making their visit much more memorable.

Geoheritage sites in the GGHNP

Site 1: Dinosaur foot prints site



Figure 1. Dinosaur footprints on a riverbed in the Golden Gate Highlands National Park

Remarkably visible dinosaur footprints (Reisz *et al.*, 2005) are evident on a riverbed in the southern part of the GGHNP. The site is not fenced or protected. There is no controlled access to wild animals in the park and as well visitors. Animals in the park, as well as human beings are trampling on the foot prints. Furthermore, there is evidence of rock weathering on the riverbed, affecting the visibility of the foot prints. Consequently, the dinosaur foot prints may soon disappear if conservation measures are not urgently proposed and implemented.

Site 2: Sandstone formations in the GGHNP

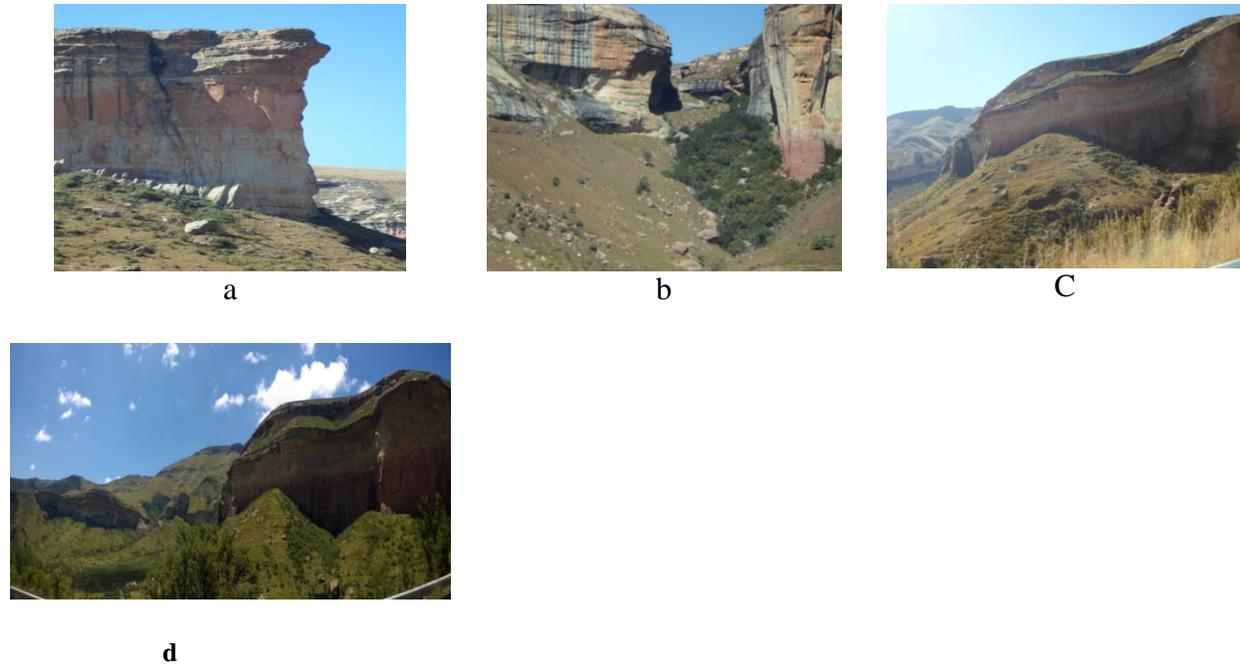


Figure 2. Selected impressive sandstone formations in the GGHNP with geotourism potential (a-d)

Figure 2 shows some impressive sandstone formation landscapes in the GGHNP. These currently lack a vibrant marketing strategy in attracting tourists which could in turn generate revenue for the park and the surrounding montane community. In addition, the landscapes are remarkable geological localities, where some elements of geological diversity are present as well as unique values of scientific and touristic significance. The sandstone formations are of aesthetic importance due to the picturesque panoramic views (Vdovets *et al.*, 2009), in particular Figure 2(d).

Site 3: Selected San Paintings in the GGHNP



Figure 3. Vandalized San paintings as well as some graffiti on them (a & b)

This rock art dating from Neolithic times until as recently as 150 years ago is under threat from human interference and from weathering processes (Mol & Viles, 2010). The site is also not

protected, and like many other geoheritage sites in the GGHNPP, conservation measures are a matter of urgency.

Results and Discussion

Key informant interviews and personal observations revealed an urgent need to propose and implement conservation measures on all the three geoheritage sites in the park. Furthermore, key informants from the GGHNP and the Free State provincial tourism authority concurred that protecting the geological sites is the first necessary step towards devising strategies to develop them as geotourism destinations which could potentially benefit local montane communities. The existing subordinate protection of geoheritage in the GGHNP which involves protection of geoheritage sites as a component of the whole park must be done away with. Song (2010) suggests an independent form of protection of geoheritage sites which encompasses special geo heritage protection areas or geoparks. From international experience, the creation of geoparks is the best way for geoheritage site protection (Knight *et al.*, 2015). In light of this, the GGHNP must thrive to develop special mechanisms for specifically managing geoheritage. Across the world, one critical milestone in the conservation of geoheritage was the creation of the European Geopark Network in June 2000 (Carcavilla *et al.*, 2009), which is a voluntary association of areas with the same working method to promote and care for their local geoheritage (Zouros & Martini, 2003). Likewise, a South African Geopark Network can be borne using ideas from the European Geopark Network. All the key informants categorically stated that the GGHNP warrants the creation of a national geopark. Key informants, local traditional leadership and 75% of the visitors that were randomly interviewed concurred that geoheritage has significant scientific and aesthetic significance. Because of this, it is necessary to strengthen the protection of the geological heritage (Song, 2010).

Ninety percent of the interviewed visitors had come to view wildlife but surprisingly ended up interested in the spectacular view of the sandstone formations of the GGHNP which they did not know about. This suggests that visitors to the park are not well informed that in addition to viewing wildlife, there is actually more that is offered by the geological and geomorphological landforms of the park. This is a clear indication of inadequate marketing strategies for the geoheritage sites in the park. Lansigu *et al* (2010) reports that though not an easy task, communication on geological processes and objects could popularize the meaning and value of geoheritage and increase public awareness. This plays a vital role in generating interest among potential visitors. Geoheritage communication may potentially serve as one of the biggest motives for visiting the park. However, 86% of the respondents (visitors) lamented the inaccessibility of the geoheritage sites. Without a four-wheel drive car, some sites, particularly the San painting site are quite difficult to access. This suggests an urgent need to improve accessibility of the sites, possibly by paving or constructing proper roads to the geoheritage sites.

Conservation of Geoheritage

Discussions with key informants revealed that whilst long term conservation measures are needed, at least some urgent measures must be implemented. It was agreed that all the three geoheritage sites must be fenced and access to visitors and people living in and around the park be controlled. There is a considerable number of people who were historically living in the park before its proclamation as the current GGHNP. Key informants agreed on the need to speed up the process of relocating them because their livestock is using most caves with San paintings for shelter and as kraals, consequently leading to rock painting deterioration.

On the dinosaur footprint site, the course of water flow on the riverbed must be diverted to avoid massive rock weathering which results when water dries up. Ex-situ conservation measures are also proposed by the researchers to conserve the dinosaur foot prints. This involves scanning the footprints using a special scanner housed at the University of the Witwatersrand in the Gauteng province of South Africa and storing the images in electronic format or in print form. However, efforts to bring the special scanner from the Gauteng province to the GGHNP are currently being hampered by some bureaucratic channels within the park management system. The GGHNP management acknowledged the need of urgent conservation measures but said their efforts were being derailed by lack of financial resources. This is however a common problem worldwide and the park management must engage government and relevant policy makers so that financial commitment to develop the park as a geotourism hotspot can be made at the highest level.

Marketing of Geoheritage Sites

All the key informants agreed that there are no sound marketing strategies for geoheritage in the park. A comprehensive marketing plan of the geoheritage sites is necessary and different markets must be considered in view of the scientific and touristic value of the present geoheritage. Because of the current technological advancement, the geosites can be marketed using simple online platforms or other social media. Short movies, video clips or geological post cards can be used to market the geology of the GGHNP. This is a cheap and effective way of destination marketing and advertising, with an international appeal. Venter (2011) concurs that technology plays a vital role in reaching the market and drawing attention, particularly to young people. Locally, distribution of flyers, daily newspapers and radio programmes could be used to market the geosites.

The GGHNP management cited that the presentation of geoheritage is not usually accessible by the potential clients and at times not understood by the general public. Lansigu *et al.* (2010) presents specially adapted graphic and animated media as a means to popularise geoheritage for the development of geotourism. Lansigu *et al.* (2010) argues that there must be a clear presentation of geoheritage and a distinction between a purely academic approach and an overly simplistic photographic representation. This allows potential visitors to enter into the exciting world of geotourism which could significantly benefit local communities. Community awareness campaigns and outreach programmes to cater for the usually disadvantaged montane communities are also necessary. Although these communities may not be financially sound to visit the geoheritage sites, the geoheritage exist within their geographic jurisdiction and community involvement undoubtedly plays a pivotal role in the success of geotourism development and conservation efforts. Boissevain (1996) has observed that if local communities are not in support of tourism initiatives such as the development of geotourism in the GGHNP, they can devise a range of strategies to prevent tourists from visiting their area. Among the strategies cited by Boissevain (1996) is grumbling, obstruction, gossip, organized protests and aggression. Nevertheless, the QwaQwa traditional local leaders look forward to some community members engaging in income generating activities that might be created once geotourism in the park is in full swing.

One traditional leader mentioned craft selling and this concurs with Kepe (2003) who reports that in the absence of a wage income, craft material plays a vital role in sustaining people's livelihoods.

Conclusion

The three geoheritage sites must be urgently conserved and marketed as they provide good ground for geotourism development. The san paintings give a clue to the lifestyle of the earlier inhabitants of the Golden gate area and the impressive sandstone formations give spectacular panoramic views which are vital in generating the biggest motive for visiting the GGHNP. For the GGHNP geotourism to have significant impact on local livelihoods there must be a strategic plan to serve as a guideline for marketers and developers. Geological heritage in the GGHNP possess sufficient scientific and aesthetic value for geotourism development and thus have the potential to stimulate local and regional economic growth. The development of geotourism in the GGHNP must attract an increasing focus among tourism policy makers both at local and national levels of government as this could be a potential driver for local economic development.

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