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Tourism potential at Florisbad: an important archaeozoological site at Free State Province, South Africa

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Abstract

Florisbad is an important archaeozoological site, situated ~ 45 km north west of Bloemfontein, Free State Province, South Africa. This site is important for four reasons: 1) the existence of a natural hot spring, a fossil bearing spring mound, 2) the discovery of the Florisbad hominid *(Homo helmei)* by a certain Prof T Dreyer in 1932, 3) the existence of a collection of artefacts and an enormous number of faunal fossil remains representing the Florisian Land Mammal Age, with an age of ~ 400 Kyr and, lastly, 4) the excavation and identification of Middle Stone Age tools and faunal remains. The discovery of the Florisbad hominid prompted further archaeological, palaeoanthropological, geological and geomorphological research in the Florisbad area. The Florisbad spring site has a complex stratigraphy because the deposits are lithologically variable due to the fact that they are the product of an unusual depositional environment. Many hypotheses have being proposed in trying to understand the complex depositional environment at Florisbad. The overall geomorphology, suggests a shallow depression (Florisbad-Soutpan) in which both fluvial and aeolian processes have conspired to create a unique landscape which has promoted the formation and preservation of dune deposits and the unique archaeological site which is Florisbad. This article argues that Florisbad is a unique place (geographically) with a rich archeological history and has great potential for geotourism and archaeotourism. The article concludes that tourism at Florisbad can enhance the unique geomorphological character of this site and its cultural heritage.

Key words: Tourism, Florisbad, geotourism, archaeotourism, Free State Province.

Introduction

Archaeological sites and other sites of palaeoenvironmental interest are abundant in the Free State Province, South Africa (Malan, 1942; Visser, & Van Riet Lowe, 1955; Kuman & Clarke, 1986; Scott, 1989; Wadley et *al,* 1992; Marker, 1994; Ouzman & Wadley, 1997; Henderson, 2001a; Henderson, 2001b; Scholtz, 2001; Kent & Scholtz, 2003). However Florisbad, is unique and has received more attention due to its distinctiveness. Florisbad, an important archaeozoological site, is situated on the eastern boundary of the Western Free State Panfield (Holmes and Barker, 2006). It is situated 45 km north west of Bloemfontein (Figure 1). This site is important for four reasons: the discovery of the Florisbad hominid *(Homo helmei)* by Prof T Dreyer in 1932, the existence of a collection of artefacts and an enormous number of faunal fossil remains representing the Florisian Land Mammal Age, with an age of ~ 400 Kyr (Klein, 1984), the existence of a natural hot spring and, lastly, the excavation and identification of Middle Stone Age tools and faunal remains (Brink, 1987; Brink and Henderson, 2001).

Considerable research, focusing on archaeology, geomorphology and geology of this site has been conducted. The aim of this paper is to show the uniqueness of the Florisbad area as a potential site for geotourism and archaeotourism. Newsome and Dowling (2010) define geotourism as "a form of natural area tourism that specifically

focuses on landscape and geology. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geo-trails and viewpoints, guided tours, geo-activities and patronage of geosite visitor centers". Archeological tourism also referred to as archaeotourism (the two terms are used interchangeably) is tourism that focuses on visiting areas of historical and archeological significance. The main aim is to experience and learn about ancient and historical cultures (Ólafsdóttir. & Tverijonaite, 2018). The next section looks at the history of Florisbad. This section will reveal the cultural and archeological history of the site that makes it an ideal location for archaeotourism. The second part of the papers will explain why Florisbad is a unique site, in terms of its geological evolution and geographical characteristics.

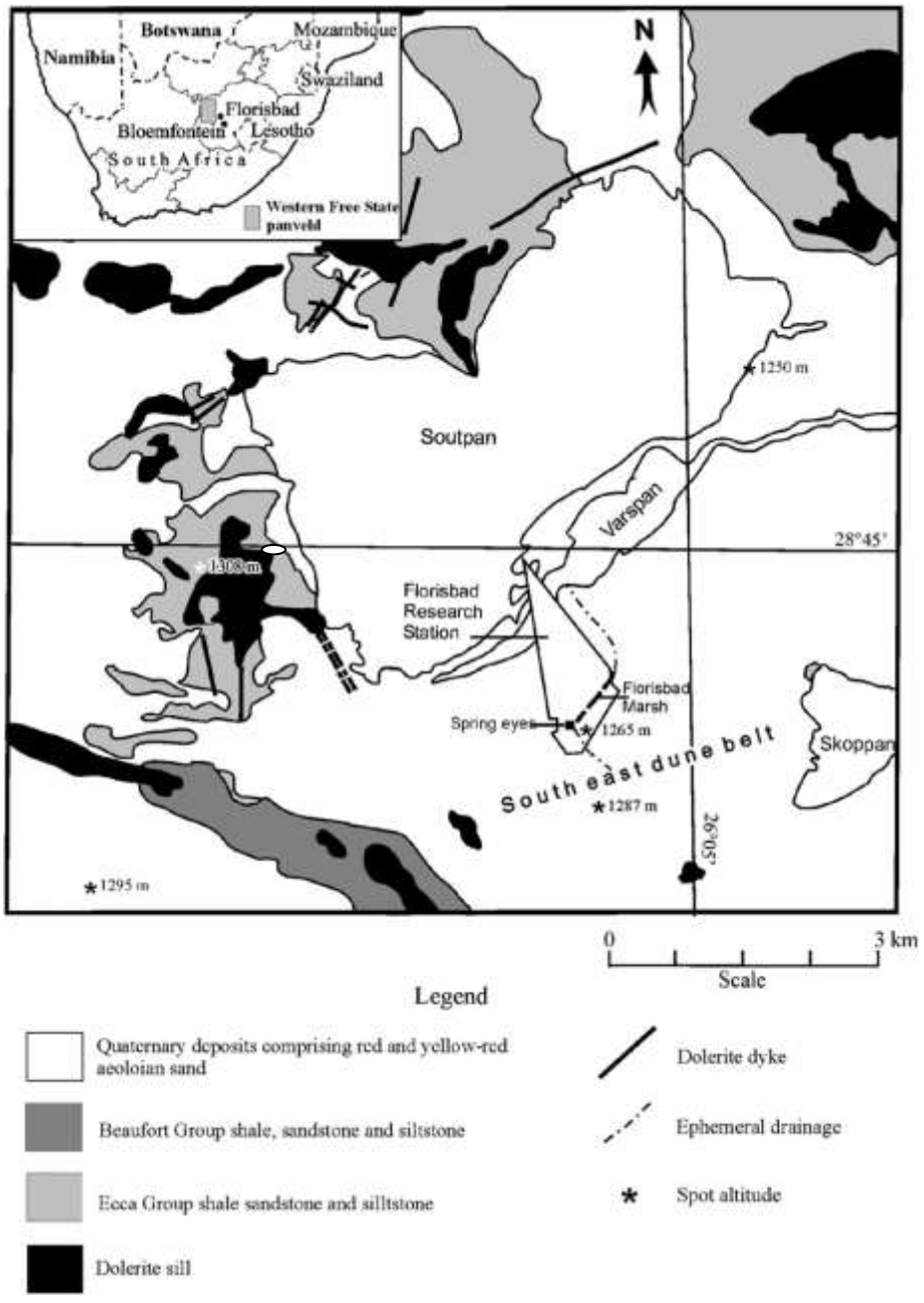

Figure 1. Location of Florisbad, Free State Province, South Africa (Rabumbulu, 2011)

Historical overview of Florisbad and archaeology

Recorded purchase of land for farming in this area go back to as early as 1860 when a trekker farmer by the name of Hendirk Venter bought a farm which included the spring now known as Florisbad (Nyame, 1995). The mineral water from the spring was believed to have 'healing powers' and this made the spring a popular site for visitors. Florisbad spring water was reported to be effective in the treatment of inter alia, sciatic, muscular and articular rheumatism.

The Florisbad spring had been included in papers and articles on medical springs of South Africa (Kent, 1948 and 1981), but there have never been scientific studies carried out on the possible medicinal properties of the Florisbad spring water (Douglas, 2009). In 1912 a small house was built over the spring eye for protection and privacy of the people who wanted to bath in the spring water. In the same year an earthquake occurred about 125km south west of Florisbad with its epicenter near Koffiefontein (Douglas, 2009). This earthquake resulted in a new spring eye erupting in the excavation due to the build-up of gases, throwing up many fossils and artifact (Grobler & Loock, 1988; Douglas, 2009).

The materials were later described as proof of the unequivocal association of extinct mammals with humans (Broom, 1913). "The excavations have also located and uncovered a rich Middle Stone Age horizon, dating to around 121 000 ± 6 000 years ago." (Brink, 1987: 163). Sporadic excavations where subsequently conducted for two decades, until the discovery of part of a human cranium, on the 25th of July 1932, in the spring eye by Professor T.F. Dreyer. In 1952 another series of excavations were started (Figure 2). Material from those excavations underlines the importance of Florisbad, since the material that was found was described as part of the Florisian Land Mammal Age established at greater than 130, 000 to about 10, 000 B.P. (Klein, 1984).

Figure 2. The Florisbad research station. Arrow indicates the main pit, where most of the excavations were undertaken (Rabumbulu, 2011).

Until 1980 Florisbad was run as a mineral water spa. The spa was closed to the public when the property became a research station, and the buildings now house the offices, laboratories, and collections of the Florisbad Quaternary Research Department. The site is now a declared National Monument, and it has a small educational centre. Scientists at the Florisbad Quaternary Research Station have carried out further excavations. From these excavations it was possible to establish the stratigraphy of the spring mound and the depositional circumstances of the skull fragment and related fossils. “In a dating project with members of the Quaternary Dating Research Centre, Australian National University, Canberra, both the sequence and the skull fragment have been dated by the ESR (electron spin resonance) and OSL (optical luminescence) methods, the skull fragment to 259 000 ± 35 000 years old”. (Nyame, 1995: 54).

The recent studies at Florisbad can be considered in three phases. The first phase, which took place after the 1980s, was aimed at gaining a better understanding of the nature and stratigraphy of the site.

The second phase focused mainly on exploring the extent of the archaeological deposits by means of a series of test pits.

The final stage, which began in the early 1990s and extends to the present, has mainly involved dating projects, as well as geological, geomorphological and hydrological investigations (Nyame, 1995, Rabumbulu & Holmes, 2012). The following sections are devoted to the literature that focuses on the geographical characteristics and landscape of Florisbad.

Methods

A realistic literature review was carried out to find more information about the geography and archaeology of Florisbad area. A realistic literature review is a new theory driven and systematic type of literature review (Becker and Oxman, 2008; Whitlock et al., 2008). The first step included a search of all literature that focuses on Florisbad and areas around it. Since the primary aim of this paper is to show that Florisbad is a unique (geographically) archaeozoological site, the literature search strategy was “priori” criteria and purposive. Literature that focuses on geology, geography, culture and archaeology were selected. Although majority of the literature that were selected is from academic journals, the study also included other sources such as conference proceedings, book chapters, short communication and reports. These studies were then categorised into two main themes, 1) historical overview of Florisbad and archaeology and 2) geographical context of Florisbad. To determine the tourism possibility and value, four factors/values were assessed. The study looked at scenic (aesthetic), scientific, cultural (historical) economic and social values. Similar studies (Quaranta, 1993; Pralong and Reynard, 2005), have successfully used these values to determine tourism potential of important geomorphological sites. When these values are used together sustainable tourism in unique geologically interesting sites can be achieved.

Geographical context of Florisbad

Climate

The climate of southern Africa is strongly influenced by the latitudinal position of the subcontinent in relation to the pressure and wind system of the globe. It is therefore important that a general view of the climate of southern Africa is given before looking specifically into Florisbad. The controls upon climate and climatic variability have been

summarized by a number of researchers (Tyson, 1986; Preston Whyte & Tyson, 1988; Mason & Jury, 1997; Mason *et al*, 1999).

In brief the current climate of southern Africa is characterized by low levels of rainfall during winter months and high level of rainfall around January. Dry conditions are experienced in winter due to the presence of a dominant anticyclone pressure system over the sub-continent (Endfield & Nash, 2002). The Free State experiences warm temperatures in summer (average summer temperature 23º C), when most of the rain falls (between 600 mm and 750 mm in the east to less than 300 mm in the west), but it experiences very low temperature in winter (average winter temperature: 7.7º) , with heavy frost over most of the province (Douglas, 2006).

Snow is often recorded on the eastern mountains and, occasionally, over the rest of the region. These cold conditions are brought about by cold fronts coming from the Atlantic Ocean which, in passing the southern tip of Africa may extend into the Highveld, bringing cold, dense air into the interior. The 500 mm isohyet passes just to the east of Florisbad. Florisbad receives an annual rainfall of 450-500 mm. However, the annual rainfall of Florisbad is extremely variable with, for example, a maximum of 944 mm in 1988 and a minimum of 271 mm in 1965

Geology

The landscape of South Africa was extensively impacted by the breakup of Gondwanaland. Since the Free State is situated in the geographic centre of the sub-continent, its geomorphology and geology has been particularly influenced by the breakup (Moon & Dardis, 1988; Holmes & Barker, 2006; Johnson *et al*, 2006). Unless otherwise stated, the following brief description is based on Moon and Dardis (1988) and Holmes and Barker (2006). The geological evolution of southern Africa can be divided into five phases. The last phase is essential to the geomorphology and geology of the Free State, because many elements of its landscape evolved as a direct consequence of the geomorphic activity that took place during this phase.

The first stage of the geological evolution of the sub-continent, the Archean phase (up to 2600 Ma) saw the development of the granitic base of the subcontinent as manifested in the structural Kaapvaal, Limpopo and Zimbabwe provinces. The Supra-crustal development forms the second phase that occurred until 1200 Ma. It was characterised by burial of the granitic crust by sediments of the Pongola, Witwatersrand, Transvaal and Griqualand West Supergroups, and the formation of the Bushveld Igneous Complex. The tectonic activity of the Proterozoic Orogeny up to 500 Ma comprised the third phase. The crystalline and cover rocks in the south and south west of the subcontinent were disturbed; intrusion of granitoid mantle material and crustal rifting occurred during this phase. Formation of the Proto-South Atlantic with the accumulation of geosynclinal deposits and subsequent convergence of crustal plates to close the rift were the result.

The fourth stage, which extended up to 150 Ma, was the Gondwana Era. The most significant element of the Gondwana Era is the deposition of the rocks of the Cape Supergroup, the movement of Gondwana across the southern polar region (continental glaciations) and the formation of the tillites of the Dwyka Formation. The activities that took place during the Gondwana Era, within the later part of this phase (and into the Post Gondwana Era) have profoundly influenced the geology of the Free State. The Karoo Basin was infilled by sediments and capped by the lavas of the Drakensberg Formation.

Geomorphology

The final phase (Post Gondwana Era) led to the extensive intrusions of dolerite which, due to the enormous forces involved, also were associated with to the breakup of Gondwanaland. This has significantly influenced the landscape of the Free State. A number of researchers have shown an interest in trying to explain the formation of the Florisbad spring and fossil site (Van Zinderen Bakker, 1989; Marshall & Harmse, 1992; Grobler *et al.*, 1998). Douglas (2006) and Douglas *et al.,* (2010) proposed an alternative hypothesis for the formation of the Florisbad spring and fossil site, where he believed the development of the western Free State Panfield was a key factor in the formation of the Florisbad site.

Douglas (2006) and Douglas *et al.,* (2010) hypothesized that the spring aquifer and springs originated prior to the development of the Panfield during the time of the tectonic disturbances, although it was assumed that the spring pan would have probably developed during this period, Douglas (2006) suggested that the spring pan would have been covered by the migrating sand dunes, referred to as the south-east dune belt, resulting in the fossil pan being buried under the sand dunes. As time progressed the dune belt migrated in a south-easterly direction, and allowed the spring to become active on the surface.

Although Douglas (2006) and Douglas *et al.,* (2010)'s alternative hypothesis for the formation of the Florisbad spring and fossil site seriously questions previous theories (Brink, 1987; Butzer, 1984, 1988; Grobler & Loock, 1988; Grobler *et al.,* 1988; Van Zinderen Bakker, 1989; Joubert & Visser, 1991), the theory does not sufficiently address the complexity of the stratigraphy surrounding the site. This hypothesis is based on an assumption that a sand dune, which was formed on the southern shore of Soutpan, migrated towards the Florisbad spring site, and then covered the spring pan.

The Soutpan pan, the Florisbad sand dune and the pan fringing lunette dunes are the most important geomorphological features within the vicinity of Florisbad. Rabumbulu, and Holmes (2012) indicated that the Florisbad spring site has a complex stratigraphy because the deposits are lithologically variable, probably due to the fact that these deposits are the product of an unusual depositional environment. Thus, The unique morphology of the depression in which Soutpan is situated, coupled with local structural control exercised by dolerite intrusions, and the presence of the Florisbad Spring have contributed to the presence of sand-silt accumulations in the form of lunettes which flank the depression, as well as the Florisbad Dune.

Tourism possibility and value

Optimization is a process were unique geographical and historical sites acquire value based on their scenic (aesthetic), scientific, cultural (historical) economic and social factors. This value is generally based on human perception of the uniqueness of the geological, geographical, cultural and historical uniqueness of the site (Quaranta, 1993; Pralong and Reynard, 2005). In this study four values/factors were used to decide on the tourism potential of Florisbad. The four values which are mentioned in the methodology section are not measured in this study. These values are simply discussed in this study. It is the view of the author that a more rigorous follow up study is needed to develop a scale of scoring and measuring mearing these values in the context of Florisbad area. After the values have been measured proportionately and validated sustainable tourism will be achievable in Florisbad.

When it come to the aesthetic (scenic) value of any site, the most important aspect is the accessibility of the site to tourists. But more importantly is whether the tourists are going to see the beautiful natural features. Florisbad is in an ideal location, located in the middle of South Africa (Rabumbulu, 2011). It is an excellent location for both international and local tourists. The site is also easily accessible by road and it is only few kilometres away from the city (Bloemfontein). Although the site is at a lower elevation which, may be considered a disadvantage by some, in reality the flat landscape allows for complete dryland experience.

Scientifically, Florisbad is a very important site. Most of the scientific studies which focuses on this area has being discussed in more detail in the previous sections. What makes this site interesting is how it effortlessly links the paleovegetation to human evolution. Then the human evolution accurately links up paleogeographical interest with cultural values. Cultural values include historical customs, archaeological and religious relevance. At Florisbad the original farmhouse (architecture) that was built in the early 1900s is still intact. (Douglas, 2009; Rabumbulu 2011). It is also home to variety of fossils that are between 100 000 and 400 000 years old. Economically the site is easily accessible. Apart from risk of occasional tornados, this area is free from natural disasters.

Conclusion

This study has elaborated on the rich history of Florisbad, specifically focusing on the culture, archaeological findings and the unique geomorphic and geological context of the area immediately surrounding the Florisbad spring site. This paper concludes that Florisbad is a unique place (geographically) with a rich cultural and archeological history and has great potential for geotourism and archaeotourism. Tourism at Florisbad can enhance the unique geomorphological character of this site and its cultural heritage.

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