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Protection of an archaeological site: A case study of Chiremba balancing rocks, Epworth, Harare, Zimbabwe

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Abbreviations: PRA, Participatory rural appraisal; WAC4, fourth world archaeological congress; CBD, convention on biological diversity; NMMZ, National Museums and Monuments of Zimbabwe.

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Chiremba balancing rocks, Epworth, Harare, Zimbabwe was declared a national monument in 1994 on the basis of its unique physical rock formations, magnificent scenery and archaeological and scientific richness, comprising a rich corpus of biodiversity and rock paintings. Both direct and indirect human impacts leading to different levels of degradation or even destruction of this archaeological site have been witnessed in the past 100 years. These involved destruction of vegetation, breaking up the rocks and deliberate damage of the rock paintings. This study presents some of the important arguments for conserving the site and its natural resources. An account of the vegetation of Chiremba Balancing Rocks is presented. A botanical inventory of Chiremba Balancing Rocks is an initial step in documenting the natural resources of this national monument. Findings of this study are based on archaeological and vegetation surveys carried out in 1996 and 2007. Conservation and preservation of Chiremba Balancing Rocks is proposed based on archaeological and floristic evidence.

Key words: Archaeology, botanical inventory, conservation, miombo woodland, rock paintings, Zimbabwe.

INTRODUCTION

Chiremba Balancing Rocks is situated adjacent to Epworth community, 15 km to the south-east of the city of Harare, Zimbabwe. It is approximately 26 ha in extent. The National Museums and Monuments of Zimbabwe took over the management of the site from Epworth Local Board in October 1994. Chiremba Balancing Rocks was declared a “national monument” in 1994 in terms of the National Museums and Monuments of Zimbabwe (NMMZ) Act, chapter 25/11 of 1972. This act provides the legal framework for the conservation, protection and presentation of both movable and immovable cultural and natural heritage in Zimbabwe. The act protects all heritage (ancient monuments, relics, historical buildings, ancient workings, areas of land which is of historical, archaeological), palaeontological, or other scientific values or interests, land that has distinctive geological formation, natural features such as waterfalls, caves, avenue of trees, etc. Prior to this, Chiremba Balancing Rocks was neither a national monument nor a scenic area. Public access to the area is now restricted since its fencing in 2003.

An interdisciplinary archaeological site management plan for Chiremba Balancing Rocks has been proposed aimed at delivering a coherent set of archaeological and environmental results that contribute to the history of the site. The focus is on the cultural significance of Chiremba Balancing Rocks and the natural significance of the flora. Vegetation through its species composition as well as structure provides an excellent integration of environmental factors in that it reflects the climatic, physiographic, edaphic and biotic features pertaining to the land where it grows (Timberlake et al., 1993). From this, it can be seen that an understanding of the vegetation of an area, its composition, structure and distribution is fundamental in assessing biodiversity. Over the past century, a couple of vegetation surveys and
maps (Henkel, 1931; Wild, 1955; Boughey, 1961; Wild and Barbosa, 1968) have been produced that encompass Chiremba Balancing Rocks, but these were at different scales and with different objectives. The vegetation of Chiremba Balancing Rocks has been described by Wild and Barbosa (1968) as undifferentiated miombo woodland. It was presented at a scale of 1: 2 500 000. The scale is too coarse to be of much value in differentiating vegetation units within Chiremba Balancing Rocks. For this, scales around 1: 250 000 or finer are required. A knowledge and understanding of the vegetation of Chiremba Balancing Rocks is fundamental to the conservation and utilization of its natural resources. Heywood (1995) emphasized that “saving biodiversity means taking steps to protect genes, species, habitats and ecosystems”. The decade of the 1990s saw a tremendous rise in social awareness of the environmental and conservation issues leading to the Earth Summit, held in Rio de Janeiro in June 1992. This conference resulted in the elaboration of the Convention on Biological Diversity (CBD), which highlighted international commitment to the conservation of biological diversity, and the sustainable and equitable sharing of its benefits arising from the use of genetic resources (Glowka et al., 1994). A similar approach was adopted at the Fourth World Archaeological Congress (WAC4) held in Cape Town in 1999. A strong case was made that archaeologists should work in ways that might assist communities associated with their work (Green et al., 2003). According to Green and his co-workers, the proposed strategies included public education and action research with the intention of exploring issues relating to conservation and preservation; and the management of archaeological resources to ameliorate poverty. Collectively, these strategies form what has become known as public archaeology (Green et al., 2003). Putting programmes designed to save heritage and biodiversity into effect often entails efforts to prevent the degradation of our natural ecosystems. The vegetation inventory of Chiremba Balancing Rocks addresses the expectations of the CBD. The present study, therefore, aim to document the site through archaeological investigations; focusing on the role of the site to the local community. This investigation also attempts to paint a broad description of the vegetation, its present composition, structure, ecology and condition, its evolution, controlling factors and trends in order to provide the context in which to view conservation and resource use in Chiremba Balancing Rocks.

RESULTS AND DISCUSSION

Balancing Rocks

The balancing rocks in Chiremba, Epworth, Harare are made up of rock formations perfectly balanced without other support. The balancing rocks contain impressive clusters of granite boulders, piled one on top of another, in some cases giving rise to small kopje. Two sets of balancing rocks are of particular interest. The first is referred to by the local community as “Domboremari” meaning literally “the money rock” because it appears on the paper currency of Zimbabwe. The decision to use the balancing rocks on the country’s currency dates back to 1964 when the Reserve Bank’s Board of directors wanted a good specimen of granite rocks, which are prominent in the topography of the country. This proposal was implemented in 1980, when the Reserve Bank of Zimbabwe chose the balancing rocks (Domboremari) as a motif or logo for all paper currencies. The geomorphology of Chiremba Balancing Rocks has also attracted the attention of the Standard Chartered Bank of Zimbabwe.

MATERIALS AND METHODS

Archaeological investigations in Chiremba Balancing Rocks, Epworth, Harare, Zimbabwe were undertaken during field studies in 1996 and 2007. Documentation of cultural significance of rock art and the natural significance of the flora was also undertaken during this period. This study utilized Participatory Rural Appraisal (PRA) (FAO, 1989; Chambers, 1992). This participatory approach provides a valuable insight into the multiple meanings, dimensions and experiences of local people in the management of their cultural and natural resources. Use of open-ended methods, such as unstructured interviews and discussion groups allowed the emergence of issues and dimensions that are important to the community but not necessarily known to the researcher, thus allowing unanticipated themes to be explored by the interviewer (Miles and Huberman, 1994). Purposive sampling was used in the selection of participants in order to allow me to have an in-depth focus on the issues important to the study (Cohen and Manion, 1989). 32 participants (59.4% women), comprising both elderly members of the community as well as the youth took part in the interviews. Prior informed consent was obtained orally before the start of each interview. The aim and purpose of the investigation were explained to all participants. In order to understand the cultural importance of Chiremba Balancing Rocks to the community, participants were asked to indicate unique features within the site, details of the vegetation, noticeable changes that took place in the site over the years; and challenges being faced in the management of the national monument. Interviews were tape-recorded and fully transcribed afterwards. All interviews were conducted in the local Shona language. The process involved close consultation with the community in information sharing, data gathering and compilation.

An overview of the vegetation distribution was made from 1:25 000 aerial photographs taken in 1995. The photographs were zoned according to textual differences into what appeared to be relatively homogenous vegetation units. Following the initial stratification, fieldwork was undertaken in 1996 and 2007 to check each of these units through the listing of plant species at sights that were regarded as representative of each demarcated unit. The units mapped were differentiated and described primarily on the basis of their constituent species and their structure. Aerial photographs of 1964 and 1988 were also examined and compared with those of 1995 to determine any changes in vegetation structure and land use in the area over time. The extent of each vegetation type was calculated using a dot planimeter. This classification stresses those features that can be readily discerned on aerial photographs: namely the spacing of woody plants, a factor that is of considerable ecological importance (Hopkins, 1965).
Zimbabwe which has adopted the rock formation locally referred to as the “Flying Boat Formation” as a seal to represent financial and banking stability and strength. According to Vumbunu and Manyanhaire (2010), the inclusion of “Domboremari” on all Zimbabwean paper currency notes, makes this currency unique because most currencies in the world carry heads of kings, queens and presidents. Chiremba Balancing Rocks is also considered an area of interest because of the rock paintings.

Chiremba Balancing Rocks is one of the registered archaeological sites in Zimbabwe with the Late Stone Age rock paintings. This is some form of San rock art image that occurs in Zimbabwe in its thousands (Garlake, 1990; Mguni, 2002, 2004). About 2000 years ago, Bantu speaking agriculturalist societies spread southwards (Fothergill, 1953). These groups brought with them knowledge of agriculture, pottery, iron production and settled village life and thereby changed the cultural landscape of southern Africa. Their lifestyle is depicted in their rock paintings. The rock paintings in Chiremba Balancing Rocks have images of humans, animals, therianthropic as well as geometric figures. Anthropomorphic associations include people, ethereal human-like figures and therianthropes (part animal/part human figures). Many of these contexts and confluences have not hitherto been properly investigated, yet together they hold the key to our understanding of forming subject-matter and its significance (Mguni, 2002, 2004). Giraffes are most common, followed by kudu, although kudu dominate across all Zimbabwean rock art (Walker, 1996).

According to Pedregal and Diekmann (2004), archaeological sites are physical witnesses of the past. Reconstructing and understanding that past is one key to our life and identity (Pedregal and Diekmann, 2004). Chiremba Balancing Rocks remains partially preserved with the monumental structures destroyed in some cases. Some of these physical degradations are due to natural decay through climate and pollution. Rock paintings are extremely fragile when in contact with air, wind and rain. There is evidence of uncontrolled bush fires which damaged and disfigure the rocks and rock paintings; and also destroy the natural vegetation. The natural habitats of some indigenous trees and shrubs have also been subjected to disturbances, for example, there has been destruction of dwalas and clusters of balancing rocks within the site which support plant species like Ficus natalensis, Electra sessilifolia, etc. According to the participants, some of the rocks have been broken down for use as building material and for other purposes. Human activities result in mechanical damage; and these include wear and tear through abrasion provoked by the rubbing on rock paintings. According to participants, some people have collected the rock paintings as ‘souvenirs’ from the site. It may consist of a small stone collected from the site or a small stone fragment.

Extreme forms of degradations that have been witnessed in Chiremba Balancing Rocks involve deliberate damage of the rock paintings. Political, religious and philosophical connotations have been inscribed on some of the rocks with rock paintings. The majority of these degradations are irreversible and can hardly be repaired. Similarly, Vumbunu and Manyanhaire (2011) documented vandalism of rock paintings at Domboshawa Caves (a national monument), 35 kilometres northeast of Harare.

Description of vegetation types

The reconnaissance of Chiremba Balancing Rocks shows that it supports several indigenous plant species of the miombo woodland. The dominant species are mainly Julbernardia globiflora (mnondo), Albizia antunesiana, Lannea discolor, Erythrina abyssinica, Pterocarpus angolensis, Parinari curatellifolia and Dichrostachys cinerea. The vegetation of Chiremba Balancing Rocks is described and mapped into four homogenous types (Figure 1) based on floristic composition. The recognition of each separate community was based on the fact that a particular community had easily identifiable characteristics. This usually took the form of dominant and conspicuous plant species, for example miombo shrubland with J. globiflora as the dominant species.

**Miombo shrubland**

A stretch of miombo shrubland covering an area of approximately 10.5 ha is dominated by J. globiflora. The larger portion of this vegetation type occurs in the middle of the site. This shrubland is an intermediate between true woodland and a bushland. It is dominated by stunted and relatively young miombo trees, mostly no more than 5 metres high, which belong to typical woodland species. There is evidence of some disturbances like fire but destruction was not complete and a few rootstocks of small and large trees were observed. Other common trees associated with it were A. antunesiana, L. discolor and Combretum molle. Common shrubs included Pavetta schumanniana, Rhus longipes, Vangueria infausta and Vangueriopsis lanciflora. Some areas were bare whilst others supported poor grass communities which included Hyparrhenia cymbaria, Ergrostris gymniflora, Ergrostris viscosa and Melinis repens. Notable exotic species which occurred in this vegetation type included Opuntia ficus-indica, Solanum seaforthianum and Lantana camara. These were widely scattered but showing local dominance. Recorded on rocks and shallow soils on the slopes and crests of rocky outcrops were Clerodendrum ternatum, Lompoala corifolia, F. natalensis, ferns (Cheilanthes involuta var. obscura, Cheilanthes viridis var. glauca, Pellaea calomelanos var. calomelanos and Arthropteris orientalis), Asparagus aspergillus, Asparagus
Figure 1. Vegetation types of Chiremba balancing rocks, Epworth, Harare, Zimbabwe.

Broadly speaking, the natural vegetation of Chiremba Balancing Rocks should be miombo woodland (Henkel, 1931; Wild, 1955; Boughey, 1961; Wild and Barbosa, 1968). They observed *J. globiflora* (Mnondo) which were about 12 metres in height. Much of this tall *J. globiflora* has now disappeared because of the chopping down of Mnondo for firewood, construction wood and also due to cultivation. Most of the Chiremba Balancing Rocks is now heavily degraded, with less than 5% of the area having natural vegetation. Old inhabitants of the area confirmed that the current miombo shrubland was once miombo woodland. All the other three vegetation types contain woody species of the potential climax vegetation, even though they show various degrees of disturbance (for example, reduced stature and cover of woody plants and coppice growth). However, it is likely that some of the *J. globiflora* have been reduced in stature because of poor soils (Ellis, 1950).

Open woodland

This section is approximately 5.5 ha; it is characterized by scattered trees, which are 6-12 m high, dominated by *D. cinerea, Acacia sieberiana* and *E. abyssinica*. This open woodland is a result of disturbances, most likely due to human influence. Structures of demolished homesteads in form of bricks, cement floors, house foundations, pieces of roofing sheets and cultivation ridges were found. However, this may explain a small portion of the open woodland. The other could have been caused by local people indiscriminately cutting down trees for firewood, hut construction materials and sometimes traditional medicine. The major grass species forming a relatively low sward were *Hyperthelia dissoluta, H. filipendula, Sporobolus pyramidalis, E. gummiflua, E. viscosa* and *Cynodon dactylon*. Shrubs recorded in the section included *D. lycioides* ssp. *sericea, Euclea crispa, Gymnosporia buxifolia, Gymnosporia senegalensis* and *Senna singueana*. Within the open woodland and near rocky outcrops were localized sections of aloes (*Aloe africana, Asparagus laricinus, Asparagus Schroederi, Poulzoza mixta, Diospyros lycioides* sp. *sericea, Kalanchoe lanceolata* and *Clematis simensis*).
excelsa var. excelsa). Common herbaceous plants included Rhynchosis resinosa and Indigofera setiflora. This vegetation type grades into the surrounding miombo shrubland. These results are consistent with observations made by Strang (1974) that “the vegetation immediately following abandonment is relatively open, with much grass, more so in areas cleared mechanically, cultivated intensively, or both”.

**Wooded grassland**

A small patch of a wooded grassland community covering an area of approximately 7.5 ha is found on the eastern part of the study area, being the boundary of the site with the local Epworth community. It is characterized by *H. filipendula, Aristida aequilumis* and *Schizachyrium jeffreysii*. Small woody plants were found within the grassland. Most of these are geophytic and adapted to periodic fires which sometimes burn through the wooded grassland. Worth of mention are *C. platypetalum* and *L. edulis*. A small patch of young Eucalyptus trees was found, and sprouting within the grassland. This is the section which is mostly occupied by weeds and alien plants. Common weeds found in the wooded grassland were *Acylpha crenata, Tagetes minuta, Bidens pilosa, Acanthospermum hispidum* and *Amaranthus hybridus*. Many of these species are mostly at the edge of the site near human settlements. There have been considerable disturbances as evidenced by the dominance of *Tithonia rotundifolia* and *B. pilosa* in some places. A small patch within the grassland is occupied by mostly exotic plants. These are widely scattered and notable species included *Mangifera indica, Agave americana, Agave sisalana, T. rotundifolia, B. pilosa, Jacaranda mimosifolia, Melia azedarach, Psidium guajava, Ricinus communis, Prunus cerasoides, Casimiroa edulis, Toona ciliata, Tithonia diversifolia* and *Lantana camara*. The presence of some of these species is an indication that the area has been used for human settlement, where intensive or semi-intensive cultivation has been practiced in the past, for example, mostly in the non-rocky places. Most of the grasses are annuals suggesting fires have occurred frequently in the past. Menaut (1983) reports cases where annual fires have led to a shift from predominantly perennial to annual grasses.

**Remnants of Eucalyptus plantation**

The total area occupied by *Eucalyptus* sp. is approximately 2.5 ha. The largest portion of cultivated *Eucalyptus* sp. is on the western part of the site, along the Epworth – Harare road and stretches up to the main gate. Another portion is within the wooded grassland. The introduction of Eucalyptus trees has allowed the development of a semi – natural herbaceous vegetation as the ground layer. The important vegetative constituents in these areas are grasses, geophytes and herbaceous vegetation. Notable species included: *Eragrostis* sp., *Chloris virgata, Setaria pumila, Indigofera rhynochocarpa, Indigofera colutea, Sphenostylis erecta, Stylosanthes fruticosa* and *Crotalaria ochroleuca*. The rehabilitation of Eucalyptus plantation is proving to be difficult as there is an unusually dense stand of young Eucalyptus trees vigorously coppicing and sprouting from the tree stumps. Eucalyptus could pose localized threats to the indigenous vegetation and it seems its potential threats to the native vegetation were not considered at the time of its introduction.

**Vegetation changes over time**

Detailed floristic documentation is lacking and it is therefore, impossible to know the original vegetation of Chiremba Balancing Rocks. Wild and Barbosa (1968) described the vegetation of areas around the city of Harare as undifferentiated miombo woodland. The term “miombo” is generally taken to refer to a single storey, open canopy deciduous woodland, usually attaining a height of 12-15 m and dominated by trees of the genera *Brachystegia* and *Julbernardia* (Wild and Barbosa, 1968; Lawton, 1982; Frost, 1996). From these written accounts it appears that a large portion of the area was once covered by tall miombo trees, but Chiremba Balancing Rocks had been subjected to a repeated cutting down of these trees. And it has been subjected to fires over the centuries and currently it has unusually dense stands of *J. globiflora*, a consequence of vigorous root-suckering and coppicing after felling. Systematic comparison of aerial photographs taken at different dates has shown that massive destruction of miombo woodland has taken place in Chiremba Balancing Rocks. Most of this destruction can be attributed to rising costs of fuelwood and paraffin which are the basic energy sources of the majority of the low-income Epworth households. As a result of this, there has been a growing incentive to fell trees in and around Chiremba Balancing Rocks. The destruction of woodland coupled with indiscriminate clearance of the land for cultivation and building materials made regeneration of woody plant cover on such degraded lands to be an extremely difficult and protracted process. Where extensive denudation has taken place, there is the problem of land degradation inhibiting regeneration of the climax vegetation (Whitlow, 1980). This situation resulted in the development of the current miombo shrubland.

The results of this investigation serve to outline the main problems with regard to woodland destruction and should be of assistance in directing further research efforts. There is also a pattern of selective exploitation of tree and shrub species favoured for different purposes.

For example, *J. globiflora* (Mnondo) provides good
firewood. Therefore, it would tend to be selectively removed from its natural habitat. Eucalyptus and other exotics have been introduced in Chiremba Balancing Rocks in the last 100 years (Maroyi, 2006). These include: *O. ficus-indica, M. indica, A. americana, A. sisalana, M. azedarach, R. communis, P. cerasoides, C. edulis, T. diversifolia, T. rotundifolia, Sesbania punicea, S. seaforthianum, J. mimosifolia, T. ciliata, P. guajava and L. camara.* All exotic plant species encountered in Chiremba Balancing Rocks could pose localized threats to indigenous vegetation.

**Preservation of an archaeological site**

The National Museums and Monuments of Zimbabwe took over the management of Chiremba Balancing Rocks following serious deterioration of the environment around the area. According to the participants, the fence surrounding the area had been stolen. Local people destroyed the environment by grazing their cattle and cultivating crops in the monument area, cutting down trees for firewood, lighting up uncontrolled bush fires and breaking some of the rocks and using them as building materials. Chiremba Balancing Rocks is located in Harare’s largest recognized informal settlement (Butcher, 1986; Vumbunu and Manyanhaire, 2010), socially risky environment surrounded by poor people (Vumbunu and Manyanhaire, 2010), who are difficult to control. Participants emphasized the need to stop the depreciation and destruction of indigenous trees, granite rocks and rock paintings. This is a difficult task, but the key to all these problems is education. These results correlate strongly with the findings of Vumbunu and Manyanhaire (2010), who emphasized the need for management of the heritage sites to incorporate local people’s ideas and to give them a central role in decision – making. The community should be educated on the concept of biodiversity and ecosystem of Chiremba Balancing Rocks.

There is need to highlight the importance of the site, not only to the local people but to the world as a whole. The local people need to feel that they are getting some benefit from the site. There is need to stress the fact that the site has unique scientific features of outstanding natural beauty, which can be destroyed easily and any alteration would significantly reduce the areas' amenity value. The management of Chiremba Balancing Rocks should be aimed at preventing the untimely and often irreversible loss of a large proportion of the available indigenous plants.

Chiremba Balancing Rocks constitutes a huge natural laboratory for a variety of scientific disciplines. Active research is required to document the diverse ecosystems of the area. This unique resource represents a great opportunity and challenge to education systems, including all levels from the primary schools to the universities. Conservation of biodiversity (for example, the biodiversity of living organisms and processes) is now a topical issue in Zimbabwe and worldwide (Timberlake et al., 1993). Some of the plant species growing in the area are primary sources of energy in the form of firewood and also crucial sources of essential subsistence goods such as medicines, wild fruits, garden ornamentals, construction material, tool handles, various kitchen utensils, fibres, dyes and oils. These plant resources, however, have relevance far beyond the local and regional needs. According to the World Health Organisation (WHO), as many as 80% of the world’s people depend on traditional medicine for their primary health care (WHO, IUCN and WWF, 1993). Several preferred wild fruit trees (Campbell, 1987; Gomez, 1988) have been observed in Chiremba Balancing Rocks and these include the following: *P. curatellifolia, Flacourtia indicifolia, V. infausta, Vitex payos and Strychnos spinosa.*

Chiremba Balancing Rocks is important not only for its picturesque places but also for its educational, aesthetic and historical values. There is need to conserve the rich resources of the site and managing them on a sustainable basis (Glownka et al., 1994). There is need to manage the area so as to maintain its ecological integrity and thus maximize its potential economic benefits. Chiremba Balancing Rocks is an area of significant value in its natural state – showing or displaying and supporting important natural resources and relics.

**Tourism and cultural aspects**

At all times people have felt a need for aesthetics, and often recreation is sought in undisturbed natural ecosystems. So far, Chiremba Balancing Rocks has not had the infrastructure to offer even a modest tourist trade, but the potentials are definitely there as long as its natural ecosystem is reclaimed and maintained. The inherent natural beauty in the balancing rocks has resulted in some tourists and members of the public visiting the place for picnics and enjoyment of the scenery and the serene environment. Tourism has a potential of receiving a further boost if the site is properly managed. Tourism can bring numerous socio – economic benefits to the country as a whole, stimulating local economies, generating foreign exchange, stimulating improvements to local transportation infrastructure and creating recreational facilities. On the other hand, the traditional cultural values of the area must be fully acknowledged. Details concerning the cultural group that inhabited the area and its history need to be documented. The rock paintings in Chiremba Balancing Rocks constitute a legacy which should be protected and if possible benefit future generations. The paintings in Chiremba Balancing Rocks, though not spectacular, could contribute to the advancement of knowledge in rock art studies and might be of interest especially to college
students and school children. For them to be quite useful to students, the rock painting should be reassessed in order to come up with a prescription which could arrest further decay. Many of the rock paintings in the site need urgent attention if they are going to survive into the next century. Ways should be sought on how best the remaining paintings can be preserved. Monuments which are part of heritage tourism form an integral sector of tourism destinations and if properly managed, they can generate substantial revenue (Lickorish et al., 1991; Vumbunu and Manyanhaire, 2010).

Conclusion

Apart from the earliest available aerial photography (1964), there are few data sources whereby change in plant cover within Chiremba Balancing Rocks can be assessed. To ascertain vegetation changes, it is necessary to study the records of a series of observers. Such records mainly consist of old documents and maps. None such records exist for Chiremba Balancing Rocks, apart from aerial photographs. The unusually dense stands of J. globiflora are a consequence of vigorous root-sucking and coppicing after felling of mature trees. The described miombo shrubland, open woodland and wooded grassland are secondary. The abundance of lianes and tangles in miombo shrubland and open woodland is additional evidence of the secondary nature of the vegetation of Chiremba Balancing Rocks. The vegetation of Chiremba Balancing Rocks has good chances of developing from the present miombo shrubland, open woodland and wooded grassland to miombo woodland if the present protection is maintained. There is no doubt that giant miombo trees once existed in Chiremba Balancing Rocks, but because the area is sensitive to disturbances a permanent damage was inevitable. Such a sensitive ecosystem may require long recovery periods, for example, decades or even centuries to recover from a disruption. Now that the area is fenced, then the threat on natural vegetation will be reduced significantly. However, it would be a mistake to consider that once an area is properly protected, then all threats have been removed. It is widely accepted that the best way to conserve species is through protecting their habitats while simultaneously controlling exploitation.

The study revealed not only the possible dynamics of the vegetation units but also the need to raise conservation awareness of an important archaeological site in Zimbabwe. While degradation is irreversible and physical in nature; protection and restoration of Chiremba Balancing Rocks should involve the participation of the local community. Future management plans should encourage the local people to conserve the site based on the long-term benefits to be derived from archaeological and scientific richness of the site. A more participatory approach is therefore recommended; where local community should play a major role in the management of their cultural and natural resources.

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