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The Later Stone Age occupation and sequence of the Mapungubwe landscape

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1. INTRODUCTION

The Mapungubwe landscape saw crucial developments in pre-colonial farmers' socio-economic organization and their interaction with local foragers (Maggs 2000). Here, increases in social complexity led to the centralisation of a farming kingdom and subsequent establishment of the first southern African urban centre (Huffman 1996, 2000). This was the culmination of a long trajectory of social evolution during the Iron Age. While ceramics associated with farming communities appeared on the landscape *c*. AD 350 (Prinsloo 1974; Hanisch 1981a), settlements only appeared around AD 900 (Huffman 1996). Four hundred years later, after the collapse of Mapungubwe, farmers abandoned the area (Huffman 2000). It would be another 150 years before ceramics reappeared and the farming economy was re-established (Huffman 2007).

A parallel cultural sequence is the Later Stone Age (LSA) record from this area (e.g. Hall & Smith 2000; Van Doornum 2005). The earliest evidence of forager* occupation is found at Balerno Main Shelter, dating to *c*. 12000 BP (Van Doornum 2008). By AD 1200, however, the forager presence on the landscape had become sporadic (Hall & Smith 2000). After the Iron Age farmers abandoned the area around AD 1300, evidence for forager activity also disappears. While some reports mention their presence on the landscape (see Elton 1872; Dornan 1975; Van der Ryst 1998; Eastwood & Eastwood 2006), archaeologically they are invisible (but see Bradfield *et al*. 2009). It is believed that the fate of the foragers was linked to that of the farmers (see Hall & Smith 2000; Van Doornum 2005), but, the nature of their interaction is poorly understood.

To date, five excavated sites provide detailed information about LSA foragers on this landscape. These are Little Muck Shelter (Hall & Smith 2000), Balerno Shelter 3 (Van Doornum 2000), Balerno Main Shelter, Balerno Shelter 2 and Tshisiku Shelter (Van Doornum 2005, 2007, 2008). The sequence of forager occupation shows major changes over the past 8000 years. In the later periods, these are closely linked to the changes occurring in the Iron Age sequence (Hall & Smith 2000; Van Doornum 2005). However, this forager sequence is based only on a handful of shelter excavations. It has been shown elsewhere that in order to understand the regional occupation sequence of an area cannot rely solely on evidence from rock shelters (Sampson 1985). Open air sites also need to be considered (Binford 1964) because the archaeological record is found scattered continuously and

* The term 'forager' is preferred here. San, Bushmen and to a lesser extent hunter-gatherer as terminology has various stereotypical and incorrect connotations attached to them, which I do not wish to grapple with for the purpose of this project.

unevenly across the landscape (Foley 1981). By ignoring open air sites, our current understanding of the forager signature on the Mapungubwe landscape remains incomplete.

It is believed that foragers were attracted to farming communities during certain periods. Those sites located near to farmer settlements display a greater degree of interaction than sites at a greater distance (see Hall & Smith 2000; Sadr & Plug 2001; Sadr 2002; Van Doornum 2005). For example, at Little Muck Shelter, which is located amongst Iron Age settlements, Hall and Smith (2000) found ostrich eggshell (OES) beads in various stages of production, a predominance of scrapers, ceramics and a large number of bone linkshafts. This suggests the site was geared towards trade in beads and hunted game animal skins. On the other hand, the record at the more distant Balerno Main Shelter shows very little evidence of production of exchange goods for trade with farmers. Here, the cultural signature is more consistent through time, which as Van Doornum (2005) explains is the result of the site's isolation from farmer settlements.

Inferences can be made about interactions based on the findings at a site. The composition of forager artefacts, such as the proportions of backed artefacts and scrapers, changes with the degree and intensity of interaction with farmers (see Deacon 1984a; Wadley 1996; Hall & Smith 2000; Sadr 2002; Van Doornum 2005). The inclusion of exotic artefacts at forager sites provides a glimpse of such interactions (e.g. Kent 1992, 2002a; Sadr 1997, 2002; Van der Ryst 1998; Van Doornum 2005). However, as Kent (2002a) cautions, outcomes of interactions are site specific: evidence from a single site does not provide a general picture of forager interactions with farmers at a regional scale. As a result, we need to consider the entire record, as it is distributed across the landscape in uneven intervals (Foley 1981; Sampson 1985).

The goal of this project is to test whether data from a few shelter excavations provides an adequate view of forager and farmer interactions on the Mapungubwe landscape. Schoeman (2006) recorded lithics in Iron Age rain-control hills. These assemblages are characterised by a lack of formal tools and the dominance of quartz. Such assemblages have not been recorded in the shelter excavations (see Van Doornum 2000, 2005), suggesting that a shelter-based reconstruction of interactions is inadequate. The project also compares the forager site distribution through time with the Iron Age occupation sequence on this landscape. Farmer settlements can rupture forager mobility patterns (Moore 1985), forcing changes in forager site distributions and movement (Kent 2002a). The way in which farmers impacted forager distribution and mobility on the Mapungubwe landscape is currently poorly understood.

It will be shown that disparities in the cultural record exist and that a regional sequence cannot be developed without considering sites outside of the shelter. Differences in the lithic assemblage have been found between open air and shelter sites. This may reflect either variable activity patterns on the landscape or represent an increased reliance on farming communities to provide foragers with their subsistence requirements. Two recent excavations support this claim and emphasise the dichotomy between open air and shelters sites. It also seems likely in the comparison of forager camps and the changing farmer settlement record that forager mobility may not have been as severely influenced by the farmers' presence as previously thought. While foragers maintained access to many areas, farmer settlement may have influenced their site distribution only in part.

Chapter two begins by illustrating the importance of spatial context in forager studies. It then reviews the broad spectrum of forager studies conducted in southern Africa. It specifically looks at the archaeological appearance of pre-contact, early contact and late contact foragers. The chapter takes into account the ideological collision of foragers and farmers and the places in which they reproduce their culture. Once this has been outlined, the excavations on the Mapungubwe landscape are addressed and their findings and conclusions presented. Finally, open air archaeology and its methods and techniques are reviewed.

Chapter three outlines the methods used in this project. It begins by presenting the research area followed by the survey method, the assessment of forager site locations, the surface analysis and the excavation analysis. Chapter four presents the analysis of the data collected during the survey, from the surface collections and at the excavations, which is followed by a chapter on the interpretation and discussion of this data. The three main themes throughout these chapters are the LSA occupation of the Mapungubwe landscape, the disparities between open air and shelter sites and the discontinuities between an open air and a rock shelter excavation.

The concluding chapter synthesises the findings and suggests recommendations for future directions in research.

2. LITERATURE REVIEW

Places are bounded areas that articulate social networks, relationships and understandings (Massey 1994). People occupy space and to that space they attach meaning and ideological and symbolic power. In this way a space becomes a place (Carter *et al.* 1993). Topographical features in the landscape are also given meaning (Bender 1993). They are symbolic resources in the creation and reproduction of power structures (Tilley 1996). This is likened to Kopytoff's (1989) conclusion that it is the structure of the people that transformed the land and not the structure of the land that transformed the people.

Interrelationships between different people add to a place's power. Religious, social, political and cultural elements are introduced by people occupying a space (Massey 1994). For example, at Little Muck Shelter on the Mapungubwe landscape a power struggle existed for the spiritual control of the land. This is seen in a complex rock art panel with contributions by forager, herder and farmer artists. Therefore, this place was contested (Hall & Smith 2000). Sharing the land does not presuppose similar understandings and attitudes towards that land (Schoeman 2006). For these reasons, when studying interactions between any two groups, it is important to understand the spatial and topographical context of the people. To accurately understand foragers during the contact period, their spatial and environmental orientation needs to be understood (Robb & Miracle 2007).

2.1. THE MAPUNGUBWE LANDSCAPE

The Mapungubwe landscape is located in north Limpopo Province, South Africa (Figure 2.1). The Limpopo River runs in between the Kaapvaal and Zimbabwe cratons, in a zone known as the Limpopo mobile belt (Huffman 2008). Previously, the Shashe River flowed into the Limpopo River, which now only occurs when the Shashe River is in flood (McCarthy & Rubridge 2005). Today, boreholes and dams keep the Limpopo and Shashe Rivers dry for much of the year (Huffman 2008).

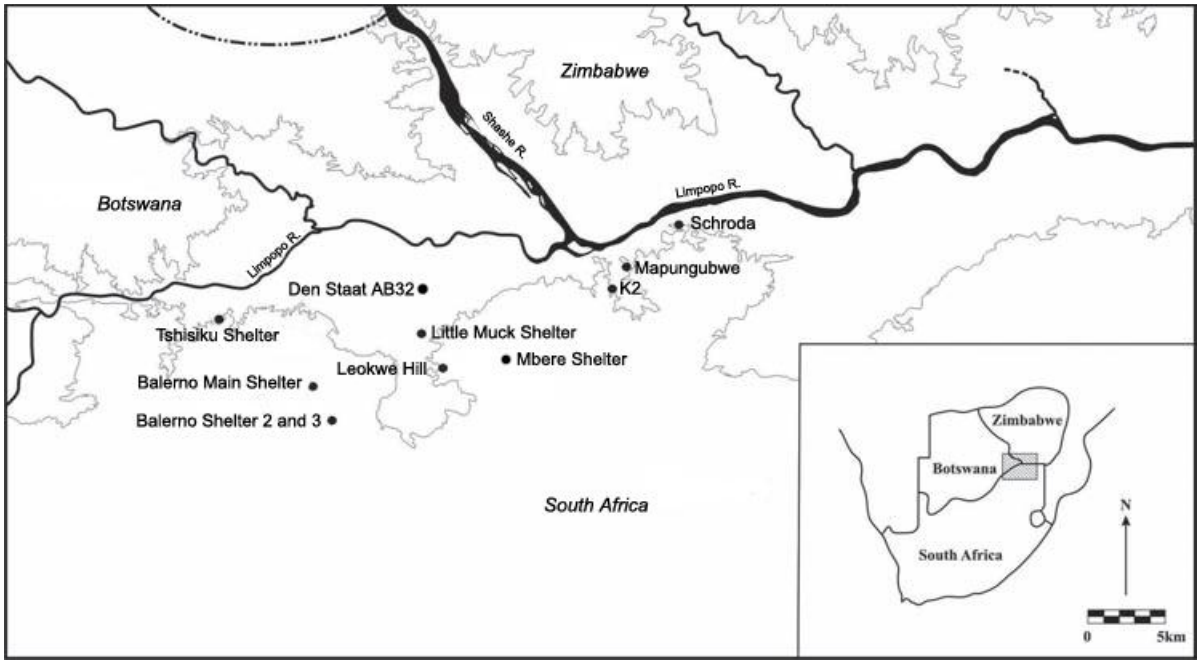


Figure 2.1: The Mapungubwe landscape in northern Limpopo Province, South Africa (adapted from Van Doornum 2008).

The South African escarpment of the Mapungubwe landscape consists of sediments from the Stormberg series of the Karoo system (Hanisch 1981b). This zone is dominated by sandstone koppies (Gerrard 1988) formed by continental erosion (Huffman 2008). The southern edge of the escarpment leads into the Kolope drainage basin, which is characterised by undulating hills and flat sandveld (Hanisch 1981b; Berry & Cadman 2007). Tributaries are common in this zone and ultimately flow into the Kolope River. There is a large mafic extrusion running east-west through the drainage basin (Huffman 2008).

In general, the area is dominated by mopane veld and scrub (*Colophospermum mopane*); a large tree with elevated branches and turpentine flavoured foliage (van Wyk & van Wyk 2007). Other locally common trees include baobabs (*Adansonia digitata*), sickle bush (*Dichrostachys cinerea*), sweet thorn (*Acacia karoo*), umbrella thorn (*Acacia tortilis*), marula (*Sclerocarya birrea*), leadwood (*Combretum imberbe*) and shepherds tree (*Boscia* sp.; Van Doornum 2005; Eastwood & Eastwood 2006). These tree species occur in the sourveld complex, which characterises the savannah biome of the area (van Wyk & van Wyk 2007). In such dry climates, sourveld plants have adapted to store energy more effectively and thus have a greater year-round value than sweetveld vegetation (Kelly 1983). Micro-environments occur in the koppies and hills where many archaeological sites have been identified (Hanisch 1981b). Riparian forest, which includes northern lala-palm (*Hyphaene petersiana*), fever tree (*Acacia xanthophlea*) and nyala tree (*Xanthoceras zambesiaca*), can be found at the Limpopo River (Eastwood & Eastwood 2006).

The Soutpansberg to the south creates a rain shadow over the drought prone Mapungubwe landscape (Smith 2005). As a result, the rainfall per annum varies between 140 mm and 600 mm (Hanisch 1981b; Smith 2005). The low humidity and relatively flat terrain may cause flooding when rainfall exceeds 20-30 mm (Smith 2005). Average summer temperatures are ±32 C° during the day and ±20 C° at night (Berry & Cadman 2007). Winter conditions are more tolerable; the average day time temperature is in the mid twenties. Nights, however, can drop to freezing (Hanisch 1981b). Due to the hot climate and lack of moisture, surface water precipitation during summer months is high.

Foragers are well equipped to cope in harsh environments such as the Mapungubwe landscape. Over the past decades, research has focussed on the constitution of southern African foragers (e.g. Marshall 1957, 1960, 1961, 1976; Lee 1965, 1968, 1969, 1979; Silberbauer & Kuper 1966; Katz 1976, 1982; Denbow & Wilmsen 1986; Guenther 1986; Wilmsen 1989; Wadley 1996; Kent 2002a & b; Sadr 2002, 2005). It has been concluded that their culture is highly complex and well suited to adapt to a changing world. Research has also made evident the many changes forager society underwent during the Holocene.

2.2. FORAGERS AND THEIR CHANGING WORLD

2.2.1. Changing views of southern African foragers

The contact period in southern Africa is complex and variable (Blundell 2004). Contact responses are expressed in several ways and at several different spatial scales in the archaeological record (Van Doornum 2005). Previously, it had been thought that foragers' response to contact remained fairly similar (Alexander 1984) regardless of the ecological and human environment (Hall 1994). But as Kent (1992) argues, each contact situation has a specific context and therefore a unique outcome. These outcomes, in turn, influence settlement, demographic and economic patterns (Hall 1990). Much debate has dealt with the interpretation of the archaeological record from the contact period (see Sadr 1997).

The LSA was first defined by Goodwin and van Riet Lowe (1929). They described two complexes; the Wilton and Smithfield. However, their work was based on surface findings and lacked chronological control. Later, Sampson (1974) established for the first time a detailed description of LSA traditions and industries. In the LSA he included the Robberg tradition (± 18000 – 12000 BP), the Oakhurst tradition (12000 – 8000 BP), which elsewhere is named the Kuruman (Thackeray 1981), Pomongwan, Lockshoek (Sampson 1974) or the Albany (Deacon 1984a), and the Wilton tradition (8000 BP into recent times). Janette Deacon (1984a) revised the LSA terminology and used

temporally-specific nomenclature. Umbrella terms make the LSA appear as a series of homeostatic plateaus (Deacon 1972) when it is in fact a diverse and complex period (Deacon 1984a).

Mitochondrial DNA studies suggest that modern foragers have an evolutionary history in southern Africa for possibly 100 ka (Deacon 1992). Therefore, the ancestors of recent hunter-gatherers are the producers of the LSA complex (Barnard 1988). Knowing this, archaeologists have used modern ethnographic research in order to help interpret the LSA record (Mitchell 2002). The greatest contribution to such work was done by the Harvard Kalahari Research Group, whose principle research was conducted during the 1950s and 1960s (Lee 1968, 1969, 1976, 1979; Lee & De Vore 1968). Prior to their work, very little was known of the history of southern African foragers (Denbow & Wilmsen 1986). The Harvard school concluded that modern foragers were independent and affluent societies (Lee 1976). It was assumed that their interaction with herding and farming people was restricted to very recent times (Solway & Lee 1990). Subsequent work showed that farmers had in fact occupied parts of the Kalahari by AD 500 (Denbow 1982; Wilmsen 1983; Denbow & Wilmsen 1983). Because of this, Wilmsen and Denbow (1990) argue that contemporary Kalahari foragers should not be viewed as pristine hunter-gatherers. They are the result of interaction, subordination and marginalisation, now fulfilling the underclass role in modern Botswana (Wilmsen 1983). Their culture has been reproduced at the interface of unequal economies and politics (Wilmsen 1989). The Kalahari debate is based on these premises. While the debate is beyond the scope of this project, it has impacted many of the archaeological interpretations regarding foragers and their interaction with farmers (e.g. Hall 1990, 1994; Denbow 1990; Klatzow 1994; Loubser & Laurens 1994; Backwell *et al.* 1996; Jolly 1996; Wadley 1996).

More recent work across southern Africa has helped shed light on the nature of forager, herder and farmer interactions and shown these to have been more complex than assumed in the Kalahari Debate. Examples of contact situations have been found in Madikwe (Hall 2000), Magaliesberg (Mason 1981; Wadley 1996), the Seacow Valley (Sampson 1985), Thamaga, Botswana (Sadr & Plug 2001; Sadr 2002), the Matopos, Zimbabwe (Walker 1994, 1995a) and on the Mapungubwe landscape (Hall & Smith 2000; Van Doornum 2000, 2005). Contact with foreign groups has also made its way into rock art, the spiritual narrative of shamans (see Campbell 1986; Jolly 1996; Mitchell 2002; Eastwood & Eastwood 2006; Barham & Mitchell 2008). Outlined below, is a review of forager societies from a pre-contact state to the pre-European contact period. Special attention is paid to the developments that occurred on the Mapungubwe landscape within the last 8000 years.

2.2.2. Pre-contact foragers

Forager identity is generally defined as the "hunting and gathering people of Southern Africa" (Lee 1976: 5) who did not face the complications of agriculture, urbanisation, advanced technology and class conflict (Lee 1974). This led to the view that they are impoverished people who were opportunistic, mobile, egalitarian and incapable of transforming their way of life beyond their narrow social and economic disposition (Zvelebil 1986). A number of studies on different foraging societies (Barnard 1988) and the corpus of work on the !Kung Bushmen of the Kalahari (for example Marshall 1961, 1976; Lee 1965, 1968, 1969, 1979), suggested that foragers are more complex than previously thought. Although, creating analogies, it was argued, between contemporaneous and past forager communities is problematic (see Schrire 1980; Parkington 1984; Wilmsen & Denbow 1990; Lewis-Williams 1991; Kent 1992; Stiles 1992). On the contrary, Lewis-Williams (1984) demonstrated that ethnology can be used with confidence. He showed that the southern African forager's cultural record and ideology suggests continuity over space and through time.

Features of forager society include techno-economic specialisation, social ranking and loose kinship (Zvelebil 1986). They have gendered labour roles and social equality (Guenther 2002), drought risk management (Kent 2002a), multiple hunting strategies (Bousman 1997), an extensive toolkit (Deacon 1984a) and a religion with formalised rituals (Barnard 1988). Food consumption is generally based on an immediate return basis (Guenther 2002) but they are known to store food on occasion (Zvelebil 1986). Guenther (2002: 129) summarizes Bushmen society as "(s)ocial groupings (that) are loosely organized, territorially and socially open and fluid in composition, oscillating seasonally between dispersed, small, band or sub-band units and aggregated, large band, or multiband units." These features enable foragers to adapt to the changing environment, whether climatic or human (Zvelebil 1986).

Social organisation is important. The highest social grouping in forager societies is band level (Marshall 1957, 1960). The dominant social relationship within the band is based on kinship bonds, which are controlled by gender relations (Wadley 1986, 1987). This is illustrated in the sexual division of labour found in all foraging communities in southern Africa. Women collect veld food, water and firewood, they build huts, rear their children and are in charge of distributing food. Men on the other hand hunt and prepare hides for making clothes. Within the camp there are some activities that can be done by either the husband or the wife (Barnard 1980).

All forager activities occur within a territory controlled by the elders and passed on through offspring (Cashdan 1983). Territories are spaces that are maintained by the residents who allow or

restrict access to other groups (Carpenter & MacMillan 1976). Topographical features shape territories (Wannenburgh *et al.* 1979; Cashdan 1983) and become symbolic resources and power structures (Tilley 1996). A territory's size is affected by resource density, diversity and distribution (Cashdan 1983), resource availability (Smith 1994) and long distance trade networks (Mitchell 1996). Territory access requires permission, which is usually granted. Foragers will cross into the territory of their relatives when resources are diminished. Therefore, territories and access to them increases the effectiveness of gathering and hunting (Cashdan 1983).

Within their territory foragers are highly mobile. During periods of social or environmental stress they will increase their mobility patterns (Musonda 1997). Foragers' degree of mobility and use of a wide variety of seasonally available resources (see Parkington *et al.* 1992; Musonda 1997), makes it necessary that their culture is diverse and highly adaptive (Zvelebil 1986). Their movements are measured in terms of the number of residential moves per year, which depend on the length of each occupation and the average distance covered per trip (Kelly1983). For example, G/wi Bushmen moved 11 times per year, covering 25 km per move. In total they covered 275 km in one year, spanning an area of 783 km² (Silberbauer 1972). !Kung Bushmen moved only 6 times in one year moving 23.6 km per trip. In total, 142 km was covered over an area of 260 km² (Lee 1968, 1979). G/wi occupy an area sparse in both vegetation and water, hence the larger territory size as opposed to the !Kung Bushmen.

Forager campsites shift according to resources and band member fluctuations. Group size changes variably in response to social and environmental factors (Van der Ryst 2006). Their camps are generally small and widely scattered, short lived during summer months and larger and more permanent during the dry period (Yellen 1976). Camps are setup within a small walking distance from a water source (Bleek 1928). Different bands may cluster at a waterhole (Yellen 1976), yet there is a clear spatial distinction between the different camps (Marshall 1960). Many of their dwellings are found outside the shelter and their possessions are strewn on the ground (Bollong *et al.* 1997). Sampson (1986) found that dispersal camps in the Seacow Valley are most often located in exposed positions.

Binford (1980) separates logistic small camps used for task specific journeys (special purpose sites; Wadley 1989) from residential camps occupied by the entire band (home bases; Wadley 1989). Sites can be further divided into aggregation or dispersal contexts (Wadley 1989). The dispersal phase of band life is a private phase when households separate from the broader band (Silberbauer 1981). Spouses work closely together to conserve energy. In the dispersal phase families will not partake in formalised rituals or travel large distances. In addition, they minimise subsistence and work related

activities including gift manufacture and exchange (Lee 1979; Silberbauer 1981). As a result, gender roles and social rules are relaxed (Marshall 1969; Lee 1979). The aggregation phase differs in that households congregate and partake in rituals, gift manufacture, gift exchange, socialising and marriage arrangements (Lee 1979; Tanaka 1980; Silberbauer 1981). Aggregation is the public phase of band life and central to their inter-relationships (Silberbauer 1981). It is the means through which foragers gain access to social, religious and economic sources (Wadley 1989). The heightened tension that comes with the aggregation phase is relieved through trance dances and the enforcing of social rules (Marshall 1969; Lee 1979; Silberbauer 1981; Guenther 1986). Using this model, aggregation sites can be discriminated from dispersal sites (Wadley 1989).

Balerno Main Shelter on the Mapungubwe landscape has been interpreted as an aggregation site because of the amount and variety of cultural material found in the excavations. Van Doornum (2005) recorded a shell pendant, a large amount of ostrich eggshell (OES) beads in all stages of production, a large and extensive faunal record and a high diversity of tool types. The forager signature at Balerno Main Shelter remains consistent throughout time even though a number of changes are recorded at other LSA sites. Balerno Main Shelter is the only known aggregation site on the Mapungubwe landscape.

2.2.3. Early contact: the arrival of farmers

Archaeologists construct boundaries around cultures and develop patterns that create closed conceptions of culture (Green & Perlman 1985). Yet for the last two millennia foragers have shared the landscape with foreign communities (Barham & Mitchell 2008). The boundary between cultural groups became opaque and part of the continuous social landscape (Green & Perlman 1985). Forager space became contested and consisted of multiple social networks. For the first time, places could be found within one another (Massey 1994); each group who occupies the space has their own set of materialised power and social and ideological agents' instilled in the place (Carter *et al* 1993). Frontiers such as the Mapungubwe landscape offer provocative histories for the study of social change (see Moore 1985). Examining frontiers allows a researcher to observe open social processes (Green & Perlman 1985) and the construction of identities (Donnan & Wilson 1994). Studying the periphery of societies explores the purpose of political and economic expansion into new areas and the effect this had on indigenous people (Green & Perlman 1985).

A frontier is an area of cultural boundaries (Green & Perlman 1985). It is a zone where cultural interactions occur (Bohannan & Plog 1967) because of incongruent sociological characteristics (Kopytoff 1989). This discontinuity forms the basis of studying frontiers (Gupta & Ferguson 1992).

Frontiers are expressed in two phases. The moving frontier represents the initial settlement of farmer groups into an area uninhabited by agropastoralists. At first the foreigners might take up forager strategies in order to cope with the new environment. In time they will however subdue their landscape and revert back to their traditional way of life. This is known as phase B and is archaeologically distinct from the initial settlement phase. A static frontier occurs when the farmers have settled and long term relationships are forged (see Alexander 1984; Zvelebil 1986). At this phase forager's social, political and cultural identity converges with that of the farmers (Donnan & Wilson 1994). During each stage in the frontier, cultural interactions and exchanges occur (Kopytoff 1989). It is the degree of such interactions that has been debated (see Hall & Smith 2000; Sadr 2002; Van Doornum 2005).

The first evidence of foreigners on the Mapungubwe landscape is marked by the appearance of Bambata ceramics (Hall & Smith 2000). Huffman (1994) believes that this ceramic facie originates in the Kalundu tradition, spreading from Angola to Botswana, where it appeared during the first century AD (Reid *et al*. 1998). Wadley (1996) found Bambata ware in association with LSA lithics and believed it was passed through *Hxar*o exchange. Reid *et al.* (1998) argue that foragers should be considered as the producers of the tradition. If so, the appearance of Bambata ceramics onto the Mapungubwe landscape does not necessarily represent the settlement of a foreign group of people.

Happy Rest sherds, the first confirmed farmer facie in the area, have been found on hills on the Mapungubwe landscape from AD 350 to AD 600 (Prinsloo 1974; Hanisch 1981a). At present, no Early Iron Age settlements have been located (Hall & Smith 2000). Huffman (2008a) contends that these homesteads are covered by silt. Hall and Smith (2000), however, suggest that only pioneer farming communities may have settled on the Mapungubwe landscape. If so their presence has not been recorded yet. Regardless, the majority of farmers producing Happy Rest ceramics remained further south. This resulted in the intensification of the forager occupation early in the first millennium AD (Hall & Smith 2000). From AD 600 to AD 900 a hiatus in the Iron Age occupation occurred, which corresponds to poor climatic conditions in the basin (Huffman 2000, 2002; Vogel 2000). Recent research into the area's palaeoclimate supports this conclusion (Smith 2005).

The farmers arriving in southern Africa were Eastern Bantu-speakers whose ultimate origins lay in the Niger / Cameroon border area (Huffman 2007). They differed from Western Bantu-speakers by their positive view of their ancestors, descent through the father's lineage and bride wealth (Hammond-Tooke 1974). All of this is reflected in their settlement pattern known as the central cattle pattern (CCP). Their settlement structure consisted of a central cattle kraal, surrounded by the residential zone. Alongside the kraal is the court and courtside midden. Behind each hut was

often a small livestock kraal, one or more raised grainbins, underground storage pits and a cultivated field. The settlement is divided into gender zones; men's space was the public kraal-to-hut zone while females' space was the private sacred area behind each hut (Huffman 1986, 1989). The Iron Age settlement of the Mapungubwe landscape limited forager mobility, causing a disruption in their lifestyle (see Moore 1985; Van Doornum 2005). Unlike farmers, foragers were not sedentary (see Lee 1968; Silberbauer 1972); they lacked livestock, cultivated fields and did not smelt iron and copper. The two groups lived culturally, economically and socially incomparable lives (Van Doornum 2005).

Conflicting identities thrust foragers and farmers into the construction of social boundaries (Hammond-Tooke 2000). The identity of a group is created both by its members and also by the people with whom they interact. Ethnic groups need to have an 'other' against which they can constitute themselves. Thus, ethnicity and identity are based on how groups perceive themselves as well as how they are perceived by others (Jones 2000; Kent 2002a).

Farmers viewed foragers as 'first people'. They were custodians of the land's power and possessed spiritual power in themselves (see Jolly 1986; Loubser & Laurens 1994). This power could be gathered through their rock art (Dowson 1994; Hall & Smith 2000). In the southern Tuli Block on the farm Riverslee, farmers based a creation myth around forager engravings (Van der Ryst *et al*. 2004). Walker (1997) discusses the Tswana creation site of Matsieng, where forager-engraved footprints are central to the farmer's myth. Indeed, on the Mapungubwe landscape both herding people and farming people superimposed their art over that of the foragers (Eastwood & Eastwood 2006; personal observation). This was an attempt to harness the spiritual power and control that foraging people had over the land (Hall & Smith 2000).

Regardless of the foragers' symbolic presence in the landscape (Cashdan 1986), farmers viewed them as savages and wild people (Kenny 1981) who were socially polluted and had the ability to pollute others (Hall 1994). They were considered a part of the physical and spirit world (e.g. Kenny 1981; Barnard 1983; Hall 1994). For these reasons, farmers chose to keep foragers on the margin physically and socially while incorporating them into their ritual structure (Kopytoff 1989). They were also used as seasonal labourers (Loubser & Laurens 1994), rain diviners and ritual experts (e.g. Jolly 1986; Lewis-Williams 1986; Ouzman 1995; Van der Ryst 1998). In return foragers would receive payment such as cattle, milk or grain (e.g. Jolly 1986; Loubser & Laurens 1994; Wadley 1996).

On the Mapungubwe landscape the interactions between foragers and farmers during this period is sporadic and slight (Van Doornum 2005). However, as farmers began to occupy the area more intensely, the degree and outcome of their interaction with foragers changed.

2.2.4. Late contact: the Middle Iron Age

From AD 900 the Iron Age occupation of the Mapungubwe landscape intensified. A semi-cool and dry climate made farming difficult (Huffman 1996). However, trading became central to the farmers' ideology. Most of their settlements are on the edge of the escarpment from where they hunted elephants in the rich fertile floodplain, using their ivory to obtain glass beads and cloth from the east coast trade network (Huffman 2000). At Zhizo, an economic centre dating to *c*. AD 900 to *c*. AD 1000, an abundance of Indonesian glass beads were found that indicate a rise in local wealth (Hanisch 1980; Huffman 1986, 2000; Hall & Smith 2000). Increases in wealth attracted K2 ceramic-producing farmers into the area (Eloff & Meyer 1981; Smith 2005). This facie is part of the Leopard's Kopje ceramic tradition and is dated to AD 1000 to AD 1200 (Huffman 1986, 2007; Calabrese 2000). The arrival of these new farmers had major consequences for both foragers and farmers living on the Mapungubwe landscape. Foragers lost their 'first people' status to the Zhizo ceramic-producing farmers (Hall & Smith 2000), who in turn became subordinates to the dominant farming community (Huffman 2007). While the ensuing relationship between Zhizo and K2 ceramic-producing farmers is debated (see Calabrese 2000, 2005), after contact a contingent of farmers left the landscape and settled in eastern Botswana. Here they established their own cultural facie, archaeologically recognised as Toutswe (Denbow 1982, 1984; Hall 1987; Reid & Segobye 2000). Those who remained on the Mapungubwe landscape appropriated elements of K2 ceramics into their own, forming the Leokwe facie (Calabrese 2000; Huffman 2000).

At the turn of the first millennium AD, when K2 ceramics first appeared on the landscape, wetter conditions prevailed. The area became more tolerable for farming communities (Huffman 2008) and could support a larger population. As wealth increased, so too did cultural complexity. The amount of ivory objects (Voight 1983) and glass beads (Wood 2000) found at the K2 capital (Huffman 1996, 2000) suggest the new farmers controlled the trade network. The capital also was the most important political centre on the landscape (Huffman 1996); all the major legal battles would be settled at the K2 court (Huffman 2000). As a result, the court midden became so large that it engulfed the kraal. Consequently, the kraal was relocated, emphasising the new political orientation of the capital (Huffman 1996, 2007).

At approximately AD 1220, the capital shifted 500 m to the Mapungubwe hill (Huffman 2000). By now class distinction had been established and the chief physically separated himself from his people by moving onto the hilltop (Hanisch 1981a). He also took control of the distribution of trade goods and rain-control rituals. His exclusive link to the spirit world deemed him a sacred leader as he was capable of communicating with the ancestors (Schoeman 2006). In this manner he acquired power and wealth enabling him to expand his kingdom. The settlement pattern at the capital took on a new structure, reflecting a change in the farmer ideology (Huffman 1996, 2000). No livestock was kept or crops grown at the chief's homestead. Instead, his people were required to maintain a tribute stock for his consumption (Huffman 2000).

Sociologically, cosmologically and structurally, Mapungubwe represented an altogether new ideology. However, around *c*. AD 1290 the capital was abandoned. It was previously thought that this may have been due to poor climatic conditions (Tyson & Lindsay 1992; Huffman 1996). Recent data has, however, shown that relatively wet conditions persisted in the valley during the collapse of Mapungubwe (Smith 2005). It is now suggested that the abandonment of Mapungubwe may be linked to the rise of Great Zimbabwe or a catastrophic event (Huffman 1996, 2000; Vogel 2000).

The abandonment of the capital led to the general desertion of the area by both farmers and foragers. An occupation hiatus persisted until the appearance of Icon pottery AD 1450 followed by Khami and Venda ceramics (Huffman 2000). At this time, the forager occupation on the landscape is archaeologically absent (Van Doornum 2005). Venda informants have told researchers that in their history, no such people existed; there is no word for Bushmen in the Venda language (Loubser & Dowson 1983). But Eastwood & Eastwood's (2006) informants said Bushmen lived north of the Limpopo River into recent times but were seldom seen. Few historical reports mention their existence in the area (see Dornan 1975; Van der Ryst 1998). Frederick Elton (1872: 20-21), for example, encountered foragers on the Limpopo River banks. He described them as "a wretched specimen of humanity" who "inhabit small huts hidden away in the bush, and live by their bows and arrows, or upon edible roots, occasionally planting small fields of holcus, and fill the social position of the Masaras and Bakalihari of other regions". He concludes that "(s)tarvation continually stares them in the face, and their life is one constant battle for existence."

Elton (1872) makes an interesting observation. On his travels he met foragers who occasionally planted *Holcus*. Of this genus, only Velvet Grass (*H. lanatus*) occurs in the nearby area but not further north than the Soutpansberg (Gibbs Russell *et al.* 1991). However, Velvet Grass is often confused with Red Vlei Grass (*Ischaemum fasciculatum*), which occurs in wet areas and is found on the Mapungubwe landscape (Van Oudtshoorn 1992). Nevertheless, agriculture is not inherent to

forager society suggesting it was in part obtained through interaction with farmers. This is not unlike other areas where foragers were drawn to farmers for the opportunities they offered (Lee 2002). Little Muck Shelter was occupied for access to Leokwe Hill, a Middle Iron Age centre (Hall & Smith 2000). In /xai /xai, Botswana, Tswana farmers would join foragers during their annual feast (Lee 1976). In other examples, foragers deserted the landscape for areas unfavoured by herding or farming communities (see Hall 1986; Loubser & Laurens 1994; Sampson 1985) where they were able to maintain their social and cultural autonomy (Brooks 2002).

The poor representation of LSA artefacts on the Mapungubwe landscape post-AD 1300 might be due to foragers assimilating with farmers (Van Doornum 2005). This has occurred in other contact situations (e.g. Zvelebil 1986; Wadley 1996). Foragers may have fulfilled marginalised roles in farmer society, taking on the archaeological appearance of agropastoralists (Barham & Mitchell 2008). As their access to land decreased, foragers needed to secure other viable resources to survive (Dowson 1994). However, interaction does not always result in assimilation (Kent 2002a; Sadr 2005); foragers are resilient towards cultural change (Stiles 2001). Guenther (2002) recorded foraging communities who were able to maintain political and cultural autonomy after four generations of working for farmers. In Thamaga, Botswana, five excavations revealed few changes in the forager record for quite some time, even though foragers and farmers occupied the same space (Sadr 2002). In East Asia foragers have lived in contact with farmers for centuries and did not assimilate (Solway & Lee 1986) while in equatorial Africa, Pygmy communities move seasonally to and from farmer settlements (see Turnbull 1965; Harako 1976; Walker & Hewlett 1990). Similarly, in the Eastern Cape of South Africa seasonal interaction occurred but in the Western Cape foragers avoided herders and farmers altogether (Parkington *et al.* 1986).

The most noticeable change in the archaeological record is in the forager artefact assemblages (see Wadley 1996; Van der Ryst 1998; Hall & Smith 2000; Van Doornum 2005). Generally, the frequency of tool types changed, with scrapers increasing in numbers relative to backed microliths (Deacon 1984a). This is generally taken to reflect an increase in skin processing possibly for exchange (Deacon 1984a). Such trade occurred between foragers and farmers in many places including the Mapungubwe landscape (Hall & Smith 2000; Van Doornum 2005), Broederstoom (Mason 1981), Magaliesberg (Wadley 1996) and south eastern Botswana (Sadr 2002). Finding trade items at forager sites, as well as domesticates in the faunal record (Sadr & Plug 2001), distinguish LSA assemblages as dating sometime during the contact period (Mazel 1989, 1993, 2001; Sadr 1997).

Over time foragers became more reliant on farmers. For example, in the Waterberg, foragers began settling in Iron Age villages and assimilating with farmers (Van der Ryst 1998). In Madikwe, Hall

(2000) found lithic debris buried in two Late Iron Age settlements. He believes these are cases where foragers have become accepted into the farming economy but are allocated a certain space in the settlement. Technological breakdown, subsistence stress, reduced mobility and group fragmentations were part of the dissemination of the forager world view and lifestyle (Hall 1994). Yet at this important Neolithic transition (see Sadr 2003), foragers maintained certain traditional values. Their resilience towards being completely absorbed by Iron Age communities has been recorded throughout southern Africa (see Mason 1981; Wadley 1996; Hall 1994, 2000; Walker 1994; Voigt *et al.* 1995; Parkington *et al.* 1986; Van der Ryst 1998; Guenther 2002; Kent 2002a & b; Sadr & Plug 2001; Guenther 2002; Sadr 2002, 2005). Foragers were able to consciously manipulate their identity to suit farmer beliefs and ideologies while maintaining their own set of values (Sugawara 2002). On the Mapungubwe landscape, foragers persisted with their hunter-gathering way of life long into the contact period before disappearing altogether (Barham & Mitchell 2008; Van Doornum 2005; Eastwood & Eastwood 2006).

2.3. THE FORAGER CULTURAL RECORD OF THE MAPUNGUBWE LANDSCAPE

Van Doornum (2005) distinguished five forager phases on the Mapungubwe landscape. These are based on evidence from five excavations; they are Little Muck Shelter (LMS; Hall & Smith 2000), Balerno Shelter 3 (B3; Van Doornum 2000), Balerno Main Shelter (BMS), Balerno Shelter 2 (B2) and Tshisiku Shelter (TS; Van Doornum 2005, 2007, 2008). Van Doornum (2005) identified an early and late pre-contact phase, an early contact phase, a Zhizo contact phase and a Leopard's Kopje contact phase. Below is a summary of the different phases at each site.

2.3.1. Early pre-contact: 6000 BC to 1220 BC

The earliest dates for forager occupation on the Mapungubwe landscape are 11040 ± 90 BP and 7350 ± 80 BP. These are from the basal level at BMS – no lithic analysis from this period has been published. There is a hiatus at BMS from this early period to after 2400 BP (Van Doornum 2005, 2008). This corresponds with a recorded hiatus in the Matopos, Zimbabwe, between 8500 and 6000 BP (Walker 1995a); however, BMS is not occupied until much later.

The occupation of TS is continuous and begins 6750 ± 60 BP. The only change is the intensity of the site's occupation. The greatest variety in lithic categories dates between 4390 ± 70 BP and 2960 ± 60 BP. Scrapers dominate the assemblage while segments and backed bladelets are less frequent and adzes are uncommon. Crypto-crystalline artefacts are most common but quartz, quartzite, dolerite

and agate, are well represented as opposed to during later phases. Most formal tools are made on crypto-crystalline materials (CCS) with less than half from agate, followed by quartz, dolerite and quartzite (Van Doornum 2005, 2007).

The early pre-contact period is poorly represented in excavations on the Mapungubwe landscape. Few assemblages date to this period (Van Doornum 2005). Walker's (1995a & b) findings in the Matopos correspond to those on the Mapungubwe landscape; an abundance of sites during this period should not be expected. In fact, in eastern Botswana and southern Zimbabwe no recorded LSA sites predate 2000 BP (Walker 1995b). In contrast, TS was occupied throughout this period. It may be a case of foragers spending extended periods of time at the shelter (Van Doornum 2005, 2007).

Little is known of the foragers on the Mapungubwe landscape at this time as only two shelters have been excavated. However, some comments can be made at this point. The BMS sequence has a considerable hiatus during the same time when the forager presence in Zimbabwe is poorly represented. The continuous occupation of TS, on the other hand, suggests that foragers, even if only a small population, continued occupying the region. The reason for an increase in artefacts at the shelter has only been speculated (Van Doornum 2005, 2007, 2008).

2.3.2. Late pre-contact: 1220 BC to AD 100

Forager occupation on the landscape becomes more visible during the late pre-contact period (Van Doornum 2005). In the Matopos, Walker (1995a) has recorded a similar change in forager occupation intensity. He believes that larger shelters were used as aggregation sites and smaller shelters were used as satellite sites, and occupied on a permanent, temporary or seasonal basis. On this premise Van Doornum (2005) views B2 and B3 as dispersal sites. This, she believes, explains the ephemeral lithic assemblage at these sites. This pattern has also been found at LMS. At BMS and TS there is a more extensive cultural assemblage.

Formal tool frequencies vary between the sites. At TS formal tools are common at the beginning of the late pre-contact period but by the end of the period frequencies have diminished. Scrapers nevertheless remain dominant throughout the late pre-contact period and segments and backed bladelet frequencies are low. CCS are the most dominant material and still increase further while quartz and dolerite frequencies increase slightly. Formal tools during this period are mostly made on CCS, some on agate and none on quartzite (Van Doornum 2005).

The archaeological record at BMS remains consistent during the late pre-contact period. By the end of the period BMS has a higher frequency of tools as opposed to TS, which declines over time. CCS remains dominant but there is a greater emphasis on all other materials. Regarding formal tools, CCS followed by agate is the most common material types, with few quartz, dolerite and quartzite tools (Van Doornum 2005).

Both B3 and LMS have a high frequency of formal tools. In both instances scrapers are the dominant tool type with few segments, backed bladelets and other tools. At B3 CCS dominate half the assemblage, followed by quartz and agate and then dolerite and quartzite, which have similar frequencies (Van Doornum 2000). LMS is different in that quartz dominates the assemblage marginally relative to CCS. Frequencies of agate, dolerite and quartzite are alike (Hall & Smith 2000). At both sites formal tools made from CCS are the most frequent, followed by agate, quartz and quartzite. B2 and B3 have similar signatures during this period, although at B2 formal tools are intermittent (Van Doornum 2005).

During this phase many small shelters began being occupied, possibly indicating an increase in population size or landscape utilisation. At the same time, the artefact frequency at TS lessens while at BMS artefact densities increase (Van Doornum 2005). Van Doornum (2005) suggests this may be because larger sites, like BMS, are being used as central places while B2 and B3 were occupied on a temporary or seasonal basis.

2.3.3. Early contact: AD 100 to AD 900

During the early contact period herders and farmers moved into the Soutpansberg area. A corresponding increase in forager occupation intensity has been recorded on the Mapungubwe landscape (Hall & Smith 2000). For example, at B2 and LMS there is a steep increase in artefact densities. Raw material frequencies remain similar; only a small drop in CCS and a rise in agate are recorded at LMS. Tool diversity increases at B2 along with a steep rise in the number of scrapers (sevenfold). At LMS, scrapers increase threefold. Formal tools at both sites are predominantly made on CCS (Van Doornum 2005).

B3 shows a general drop in formal tools but a steep increase in scrapers relative to backed lithics (Van Doornum 2000). There is also an increase in bead production during this time, which is also recorded at B2 and LMS (Van Doornum 2005; Hall & Smith 2000); previously these sites had little evidence of bead manufacture. CCS frequencies increase at B3, dolerite only marginally while the other material types decrease. There are no quartz tools while CCS and quartzite tools increase (Van Doornum 2000).

There is a slight increase of artefacts at TS as opposed to the overall decreasing trend at the site. CCS frequencies drop, quartzite remains similar and all other materials increase. Tool diversity increases slightly while scrapers increase considerably. CCS and agate formal tools increase but other materials are less utilised (Van Doornum 2005).

At BMS, no major changes occurred. The faunal record expands, suggesting an increase in population size. All tools increase with an increase in scrapers being the most substantial. CCS frequencies increase in both the formal tool and artefact categories, with a corresponding drop in the frequency of agate. Quartz, dolerite and quartzite do not change considerably from the late pre-contact period (Van Doornum 2005).

Although farmers and herders had migrated into southern Africa during the beginning of the first millennium AD, there is no evidence of their settlements on the Mapungubwe landscape. This does not exclude the possibility that such people passed through the landscape, resulting in limited interaction or that the foreigners were trading into the area from as far south as the Soutpansberg. Evidence of this is seen in the appearance of ceramics in forager sites. At all shelters an increase in artefact numbers was recorded. It is likely these changes are due to an increase in the forager population of the region. Farmers occupying the Soutpansberg caused foragers to occupy land less favoured by agriculturalists, thus pushing them onto the Mapungubwe landscape. At this time ritual, social and gift exchange increased as evidenced by an increase in OES beads, lithic artefact and the faunal record (Van Doornum 2005).

2.3.4. Zhizo contact: AD 900 to AD 1010

From AD 900 farmers began settling on the Mapungubwe landscape in larger numbers (Huffman 2000). The infrequent amount of farmer items at forager sites suggests contact was limited. Only at LMS was a decent sample of farmer artefacts recovered. Here, lithic densities continue increasing from the early contact period and continue into Zhizo times. The site changes from being a camp, to a workshop with a corresponding increase in bone tools, colouring material and beads (Hall & Smith 2000; Van Doornum 2005). There is a slight increase in tools; however, the only significant change is the increase in scrapers. CCS still dominates the assemblage but decreases slightly and agate increases. The same trend is noticed in the formal tools. Other raw materials do not change significantly.

Decreases in artefact frequencies are experienced at B2 and B3 (Van Doornum 2000, 2005). At B3 tool diversity is still very low and although scrapers still dominate, their numbers drop off substantially. CCS decrease to half the assemblage and quartz increases. Tools are still mostly made

on CCS but its frequency decreases, quartz and quartzite tools increase minimally but are still less common than agate tools (Van Doornum 2005).

Slight changes are noted at BMS. CCS decrease and all other materials increase. Formal tools made on CCS remain constant, agate and quartzite increase and quartz and dolerite decreases. Scrapers and adzes decrease slightly and segments and backed bladelets increase marginally (Van Doornum 2005).

The artefact frequency at TS continues diminishing; artefacts and formal tools decrease. Raw material frequencies do not change much from the previous period and formal tools made on CCS decrease with agate tools increasing (Van Doornum 2005).

The settlement of the area by farmers decreased space on the landscape. As a result of this, foragers would have interacted with farmers more so than before. This is seen in the increase in foreign artefacts in forager sites. Those located near to farmer settlements possessed a greater degree of such artefacts. Another result from interaction is the decrease of artefact numbers at all sites excluding BMS. It may be that during the dispersal phase foragers were either spending more time at larger site like BMS or at smaller sites near to farmer settlements. Alternatively, foragers may have elected to spend more time elsewhere to avoid farmers, only to return during the aggregation phase (Van Doornum 2005).

2.3.5. Leopard's Kopje contact: AD 1010 – AD 1300

Only at BMS do artefact densities remain constant; at all other sites there is a significant decrease. Van Doornum (2000) suggests this might be because foragers were living in closer proximity to farmers and using BMS as a seasonal aggregation site. The lack of change at BMS might equally be due to its isolation in relation to farmer settlements.

At B2 and B3 scrapers and few other formal tools are present. At B2 artefacts from CCS increase, agate increases slightly and the other materials decrease (Van Doornum 2005). Little change in artefact raw material is recorded at B3.Formal tools are dominated by CCS at both sites followed by agate. At B3 dolerite appears for the first time. No quartz and quartzite tools are recorded during this period (Van Doornum 2000).

At LMS there is a considerable drop in forager activity. Scrapers drop steeply and only one segment is recorded. CCS increase and agate decreases slightly from the previous period. CCS formal tools increase slightly, agate is reduced by half, quartz doubles in frequency and dolerite and quartzite frequencies are low (Hall & Smith 2000).

Forager artefact numbers at all the sites decreased considerably during this period. BMS is the only site where foragers continued relatively undisturbed. Its importance as an aggregation site may be the reason for its continued use. During the dispersal phase foragers may have come to work or rely on farmers for certain things. By AD 1300 no foragers occupied the excavated shelters on the landscape and few reports indicate their presence in the region (Van Doornum 2005).

2.3.6. A summary of the forager record

At first the Mapungubwe landscape is sparsely occupied by foragers. Their presence is only recorded at two shelters, BMS, where a considerable hiatus occurs between *c*. 11000 BP and 2400 BP, and TS. During the late contact period, there is an increase in shelter utilisation. Whether this is the result of an increase in population size or mobility cannot be determined. The beginning of the first millennium AD is characterised by the arrival of foreign people into southern Africa. While their settlement is not recorded on the Mapungubwe landscape, there is an increase in forager activity. This is likely to be linked to farmer communities settling further south in the Soutpansberg area. Trade items, whether coming in from afar or from foreigners passing through the area, begin appearing at forager sites. At the same time, there is an increase in the frequency of lithic artefacts. The Zhizo contact period is characterised by a decrease in the number of artefacts at all sites excluding BMS. There is, nevertheless, a general increase in the scraper numbers in comparison to backed lithics. During the succeeding Leopard's Kopje contact period the forager record diminishes. By AD 1300, when Mapungubwe is abandoned, there is no known archaeological evidence of foragers occupying the landscape.

Contemporaneous levels between the sites show little homogeneity. There are different frequencies of raw materials, formal tools and formal tool's raw material within the same period across the sites. Nevertheless, there is a general pattern in each chronological phase (as summarised in the above sections but see Van Doornum 2005 for more detail). The changes between the phases are not necessarily environmentally stimulated (Bousman 1993) as tools are used in accordance with activities (Deacon & Deacon 1999). For example, in the Southern Plains of America, Creel (1991) recorded changes in the Late Prehistoric bison hunter's toolkit when bison hide trade increased. Therefore, it has been argued that interactions with farmers caused the forager cultural record to change as there is a change in forager activities (Hall & Smith 2000; Van Doornum 2005). The degree of change depends on the distance between farmer and forager settlements and the size of the forager settlement (Van Doornum 2005). This suggests that the forager signature on the Mapungubwe landscape is dependent on a set of variables, which generate a specific result, be it continuity as at BMS or an increase in artefact density such as at LMS. It has

been clearly illustrated (see Hall & Smith 2000; Van Doornum 2000, 2005) that the forager record varies across temporal boundaries on the Mapungubwe landscape.

2.4. OPEN AIR ARCHAEOLOGY

Regional studies are the most appropriate way of studying cultural change (Binford 1964). Whereas traditionally excavations are conducted and the data collected is considered as being representative of that period in time, a landscape approach considers a host of sites and their relationship to the excavated record (Foley 1981). Usually excavations are done in shelters (Sampson 1985) leaving open air sites out of the sample. Developing representative sequences around shelter sites neglects the archaeological record on the landscape (Cherry 1983; Dunnell & Dancey 1983). Incorporating open air studies into archaeological research helps in developing a more inclusive archaeological record. However, studying surface finds have their problems too, which include ground vegetation cover (Foley 1981; Gallant 1986), the integrity of surface artefacts as opposed to covered artefacts (Hope-Simpson 1983, 1984) and the accuracy and consistency of survey results with different sampling procedures (Plog 1976; Plog *et al.* 1978; Schiffer & Wells 1978; Judge 1981). Nevertheless, it is also good to remember that all artefacts once lay on the surface and were exposed to the same set of problems (Sadr 2009).

On the Mapungubwe landscape shelter sites are not common (Mitchell 2002), while many sites are in an open context (Korsman & Plug 1994). Even areas with few sites can be rich in low density scatters across the landscape (Foley 1981). Stone Age archaeology pays almost exclusive attention to shelters, caves and coastal middens (Arthur 2008). On the Mapungubwe landscape this is no different. The forager signature has been established through a series of shelter excavations (see Hall & Smith 2000; Van Doornum 2000, 2005). The data collected has shown that foragers had limited interactions with farmers (Van Doornum 2005) and in due time disappeared altogether (Barham & Mitchell 2008). Alas, the signature of foragers outside of shelters has been neglected. Thus the way in which they used their landscape and how these sites correspond to the excavated shelters has not been established.

Indeed, open air archaeology is an important feature of the discipline (Vanmontfort 2008), as Foley (1981) concludes, data occurs continuously throughout the landscape, yet not uniformly. Therefore, one cannot expect localised shelter excavations to solve regional problems (Sampson 1985). For this to be done, a landscape approach is needed. Essentially, landscape archaeology aims to document the spatial distribution of sites across a landscape (Bahn 2004) and make inferences about their chronological placement and inter-relationships (Foley 1981).

2.4.1. Survey method and surface collection

Archaeological survey is becoming as important as excavations (Alcock & Cherry 2004). These approaches are designed for addressing different problems (Sullivan *et al.* 2007). Surveys are not used for the exclusive function of identifying excavatable sites. They are used for obtaining information about the nature and distribution of a vast range of surface archaeological phenomena (Tainter 1998). But as a philosopher of science said, observation "is all interest-directed and context-dependant" (Hanson 1967: 96); the major setback with archaeological surveying is the observable variables of archaeological artefacts (Sullivan *et al.* 2007). This can be overcome by employing the correct method and research design (Banning 2002).

A survey zone is selected using a number of variables. Sampson (1985) selected an area that would be larger than any Bushmen territory. The goal of his work was to test Yellen and Harpending's (1972) hypothesis that Bushmen territories are invisible in the archaeological record. Cashdan's (1983) work showed that territory boundaries are governed by topographical features. The density of archaeological sites varies in different environmental regions (Mellars & Reinhardt 1978; Foley 1981). This led Sampson (1985) to use watersheds to delineate his survey zone in the Seacow Valley. As a result, a survey zone should include a range of environmental zones and cover various topographical features.

Different surveying techniques generate different results. Selecting the right method is therefore of paramount importance. Various approaches can be chosen, including aerial photographic analysis, remote sensing (images relayed from satellites), geographic information systems and magnetic surveying. Techniques include vegetation analysis, geochemical analysis, thermal prospection and ground penetrating radar (Renfrew & Bahn 2004). Ground level surveying, or walking the survey zone, is the only effective way of identifying surface artefacts (Foley 1981). Walking can be done with various aids, such as probes or magnetic gradient meters (see Renfrew & Bahn 2004). However, surface artefacts in most contexts are visible and little equipment is required.

Four key methods are used. The simple random method involves randomly selecting squares in the survey zone, which will be surveyed. The size of each square is determined by the researcher and only a percentage of the research zone is surveyed. The stratified random method is based on the same principle. For this method the survey zone is divided into natural zones. Within each zone a random sample of squares is selected for surveying. The number of squares chosen is determined by the percentage of area the natural zone covers in the survey zone. Alternatively, a systematic survey can be used. It is a stylised 'checker board' approach. There is a clear pattern throughout the

survey zone of which squares will be analysed. Lastly, the stratified unaligned systematic approach is a combination of all three approaches. The survey zone is divided into sub-sections and within each subsection an equal amount of squares is randomly selected to be surveyed. This generates an equal distribution of squares unlike the random or stratified random methods, which might have an unintended bias in particular zones (Renfrew & Bahn 2004).

Isaac and Harris (1975) found that surveying a small research area is most effective. Their research design consisted of a 14 km baseline from which transects would extend. They found that large scale units did not work as effectively as a small survey zone, and adjusted their survey design to include 100 x 200 m squares. In the Seacow Valley, Sampson (1985, 1986) and his team surveyed an area of 5000 km². The goal of the survey was to identify surface scatters and make inferences about forager / herder interactions. They traversed the landscape in a random fashion surveying the whole survey zone.

The same survey methods can be applied to collecting artefacts at identified sites. By setting up a grid over the site, collection squares can be determined using a systematic, simple random, stratified random or unaligned systematic method. The smallest observable unit in such a study is the activity area (see Flannery 1976a). Here, each feature, artefact and site is the physical manifestation of shared ideas, values and beliefs (Flannery 1976a & b). Using these sites a regional pattern can be constructed (Binford 1964) and contrasted with the excavated sequence (Foley 1981).

Surface scatters are thought of as out of context (Lewarch & O'Brien 1981) and third rate (Sampson 1985) in comparison to artefacts in a sealed context. However, buried artefacts occupied the surface soon after they were discarded (Foley 1981). On the surface, artefacts are susceptible to natural forces and animal and human activity (Renfrew & Bahn 2004). One human activity of concern is superimposition of sites; sites on the surface appear as one site but may represent multiple occupations (Foley 1981). In order to overcome this, Foley (1981) proposed the use of multiple sites as this will reduce the impact of intra-site discrepancies, such as those generated by palimpsest and/or an incomplete artefact record. However, Thomas (1975) and Bettinger (1977) argue that having temporally variable artefacts on the landscape is important because it allows for relative dating. Their research conducted in 500 x 500 m quadrants aimed to record the density and distribution of surface artefacts. They argued that their data illustrated changing trends over time.

2.4.2. Chronological control of open air sites

Various techniques have been used for dating open air sites. Rocks can be used in different ways to date a site. If the rate of weathering can be quantified rock weathering rinds can be used (Frauenfelder *et al.* 2005; Knuepfer 1994; McCarroll 1994). In arid areas rocks develop a coating of varnish that can be dated (Dorn 1994; Garvie *et al.* 2008; Zerboni 2008). In favourable contexts cosmogenic nuclide dating can produce dates on rocks (Ivy-Ochs et al 2009; Kurz & Brook 1994). Surface scatters can also be dated using lichenometric and dendrochronological dating (Benedict 2009; Matthews 1994; Heikken 1994). Dunnel and Feathers (1994) contest, however, that thermoluminescence dating is the best for open air scatters because often the dated and target events are the same. Sampson *et al.* (1997) and Sampson (2008) used this technique with success in South Africa. However, the most effective dating technique for southern Africa's Holocene is carbon dating (Sadr 2009). Marine shell dating has been used in the Western Cape (e.g. Sadr 2009) and OES dating at open air sites (e.g. Kandel & Conrad 2005), which would be applicable on the Mapungubwe landscape. OES dating is problematic because of the complex correction factors (Sadr 2009). This is caused by a 2.2% deficit of carbon created by the dilution of carbon with the female's bodily fluid (Vogel *et al.* 2001; Van Doornum 2007). As a result dates appear older (Vogel *et al.* 2001). Sadly, datable OES samples are not at all common and more than one sample is needed to ensure obtaining the event date and strengthen the association between the artefacts and datable material (Sadr 2009).

Using seriation control and typological cross referencing chronological links can be made (Gelfand 1971; Sadr *et al.* 1992). Van Doornum (2005) identified various phases in the LSA record of the Mapungubwe landscape. Each phase is distinguishable from the other and is characterised by a series of chronological markers in terms of the lithic, ceramic and bead sequence. Using these features, open air assemblages can be linked to her data and chronological brackets can be obtained (see Gelfand 1971). Huffman (2007) has developed a compendium illustrating different ceramic styles with their chronological cross-reference. Based on his work, and the well dated Iron Age sequence in southern Africa and in particular on the Mapungubwe landscape, diagnostic ceramics can be placed into a bracket date. A chronological order has also been constructed for glass beads (Wood 2000). Based on morphological features beads can be placed into a temporal context. The same can be done to chronologically order lithic assemblages.

2.4.3. Geographic information systems (GIS)

GIS can be used to analyse archaeological data in terms of spatial location, site morphology, spatial association and interaction between sites, chronological relationships and non-spatial attributes such as cultural affiliation and feature types (Conolly & Lake 2006). Spatial and space-time relationships between sites and anthropogenic phenomena can be contrasted using a GIS program (Couclelis 1999). GIS uses information linking locations on or near the Earth's surface to properties of that location. Essentially, the program stores three basic types of information: point, line and polygon. These are then coded and labelled with information that can be used for statistical and spatial analysis (Renfrew & Bahn 2004). GIS is a blanket term for tools defined for processing, analysis, modelling and storage of information (Goodchild 2009).

2.5. SUMMARY

This chapter has looked briefly at archaeological research done on foragers across southern Africa. It has highlighted key aspects of forager society such as settlement patterns, mobility, belief systems and the cultural record, which will be drawn upon when interpreting the data collected in the field. The five excavations have been presented above with the chronological changes occurring at each shelter. Finally, open air archaeology and the methods and techniques used to answer questions in this discipline have been presented. The following chapters deal with the three main aspects of this project individually: the distribution of forager sites on the Mapungubwe landscape, the cultural record as analysed at a number of open air sites and the analysis of two previously excavated LSA occupation sites.

3. METHOD

3.1. RESEARCH DESIGN

A survey area of approximately 160 km² was selected with the objective to record as many LSA sites as possible. Koppies were surveyed because of site clusters found around them and few sites found in the sandveld. Of the 153 identified lithic scatters, 26 sites were analysed. At most of these sites, a grid was set up and a random stratified method was used to collect artefacts from 20% - 40% of the 1x1 m squares. Two previously excavated sites, outside the survey zone, with LSA assemblages were also analysed. For the lithic analyses Van Doornum's (2005) typology, which is based on Walker's (1994, 1995a & b) and Deacon's (1984b) typologies, was used (Appendix A). This was done for comparative purposes. The surface and excavated data was compared to the data collected at Little Muck Shelter, Balerno Main Shelter, Balerno Shelter 2, Balerno Shelter 3 and Tshisiku Shelter. Using the lithic inventory at each site, links were made with the excavated sequence and sites were placed into the early pre-contact, late pre-contact, early contact, Zhizo and Leopard's Kopje contact phases identified by Van Doornum (2005). The surface finds at the dated sites were also compared to the sequence in the same way as the open air sites. Once the sites had date brackets they were compared to the changing Iron Age sequence on the Mapungubwe landscape.

3.2. RESEARCH AREA

The survey zone was outlined based on the known locations of excavated and identified LSA sites. Excavated sites include Little Muck Shelter, Balerno Main Shelter, Balerno Shelter 2, Balerno Shelter 3, Tshisiku Shelter, Mbere Shelter and Hackthorne AD 168 (Appendix B.1). Surveyed sites include those identified by Tom Huffman (Appendix B.2) and Ed Eastwood (Appendix B.3) during their surveys. Farms in the survey zone are the private farm of Hackthorne, and Little Muck, Mapungubwe National Park and the northern section of the De Beers Venetia Limpopo Nature Reserve (Stindal, Hartebeestfontein, Faure, Edmondsburg, Blyklip, Anglican, Hilda and Halcyon). The survey zone is approximately 167.84 km² (Figure 3.1).

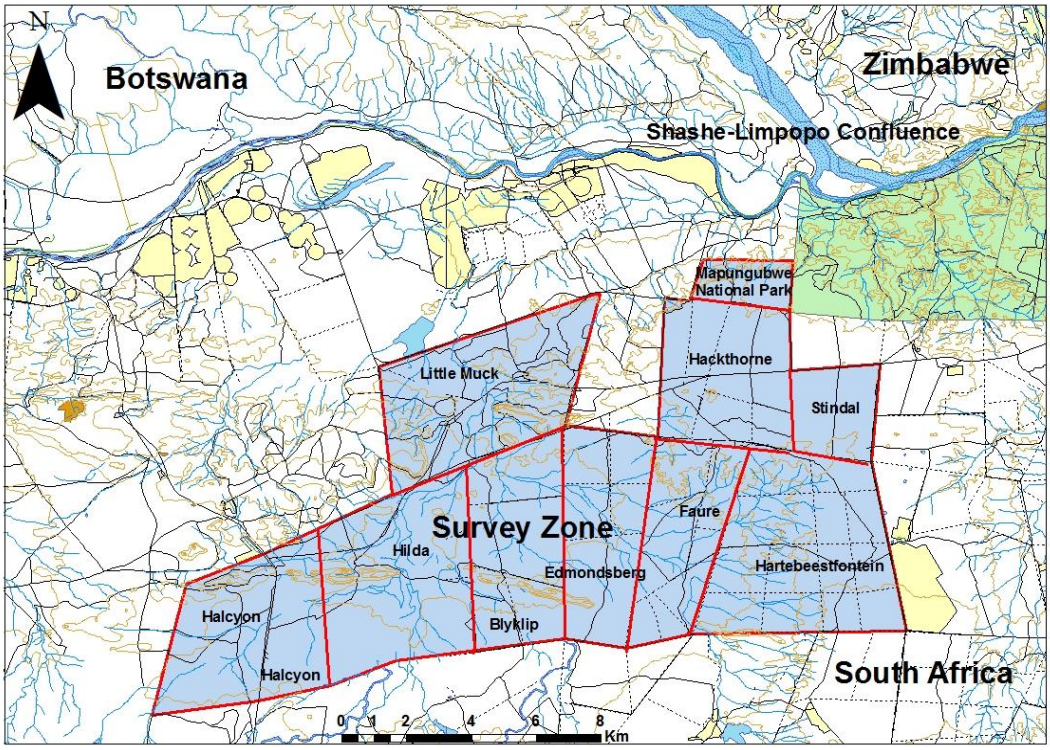


Figure 3.1: The survey zone.

The survey zone overlaps with a range of environmental regions. The area is characterised by a bushveld biome dominated by mopane veld (see van Wyk & van Wyk 2007). The two major rivers, the Kolope and Setonki, converge between two dominant sandstone hills, which is part of the only hill range in the Kolope drainage basin. The Kolope River flows northerly to meet up with the Limpopo River. The drainage basin terminates in a sandstone koppie belt. Here, there are numerous koppie clusters, extending to the Limpopo River's floodplain. On the eastern edge of the survey zone is a plateau punctuated by koppies. Thus, the three main environmental zones are; the plateau, the sandstone koppie belt and the Kolope drainage basin (Figure 3.2).

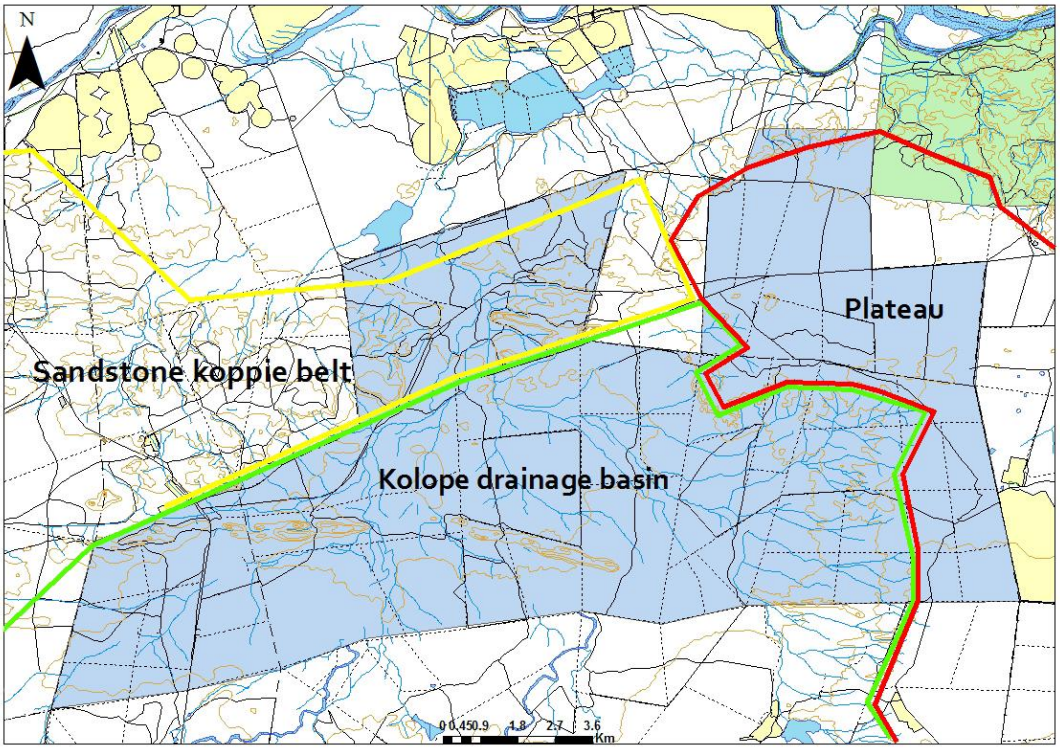


Figure 3.2: Environmental zones in the survey zone.

3.3. SURVEY METHOD

A preliminary survey was conducted on Hackthorne in order to assess the visibility of LSA sites. No sites were found in the sandveld zone. Unfortunately, the sand and vegetation conceals the artefacts, making them difficult to see on the surface. However, at the koppies an abundance of archaeological sites were recorded. As a result, only these areas were surveyed.

At each koppie a random survey method was conducted. This method was favoured because other methods lead to surveying the koppie slopes where there would be no artefacts. Using a random method, on the other hand, allows the researcher to spend more time and pay more attention to areas that foragers would occupy, such as shelters, at the koppie's base or on top of the koppie, minimising time spent at each koppie and maximising the possibility of identifying sites. The goal of the survey was to identify all the LSA occupation and activity sites at the koppies. These were then used as indicators of forager use of the landscape. A Garmin GPS was used to record the location of all the artefact scatters found at the koppies. In addition, the lithic scatter size, landscape topography, vegetation cover, vegetation type, animal and human disturbances and the presence of cultural material was noted (Appendix B.4). These have been termed the operating variables. Each site was graded using this data: grade A sites are clearly LSA with large lithic scatters and

which might posses other cultural material such as beads and ceramics, grade B sites may have been LSA sites but no strong evidence was found and grade C sites are ephemeral with only a few lithics present.

3.4. FORAGER OCCUPATION

All LSA sites identified during the survey, including Ed Eastwood's rock art sites and Tom Huffman's Iron Age sites were plotted on a map. Using ArcMap, it is possible to determine local site densities in the different environmental zones and the settlement distribution across the survey zone can be observed. In addition, the spatial relationship between farmer and forager sites can be observed; although, it cannot be determined at this point whether they are contemporaneous.

By comparing the frequencies of the operating variables between sites, forager site selection at the koppies can be assessed. Furthermore, the whereabouts of sites can be related to the environment. More specifically, site densities are tested against terrain ruggedness and non-perennial water courses, which might act as critical variables. Animal populations are spread throughout the area and vegetation pockets breaking from the dominant mopane veld are found in rocky outcrops and on hills. The research area is within 15 km from the Limpopo River and only when farmers occupied the area was forager access to the water source restricted. By comparing the operating variables, a better idea of forager site selection can be established.

3.5. SURFACE ANALYSIS

Many of the identified sites fell into the grade C category. Only 49 sites of the 153 sites identified were thought to be LSA (grade A). These formed the major portion of the analysis; 10 grade A sites were randomly selected and a further 10 chosen to be analysed. An additional 6 grade B sites were also randomly selected for analysis (Appendix B.5). No maps or illustrations were produced for each site as the focus of the project is not to present detailed spatial analysis but rather a detailed lithic analysis.

Two methods were used for collecting surface artefacts for analysis at the sites. Primarily, a stratified unaligned method was employed at most sites. In doing so, a fair representation of the site was analysed, avoiding neglecting areas of the grid or other biases, such as selecting squares which appear to be of greater value. The method involves constructing a grid over an area with the highest lithic density. The grid is made up of subsections (e.g. A, B & C etc.) and each is divided into 1x1 m squares (e.g. A/1-6 etc.). 20-40 % of the total number of squares in each subsection was randomly selected to be analysed. This ensured an even distribution of squares as opposed to

localised bias within the grid. More attention was paid to sites perceived to have a single occupation or datable material in the form of OES beads. Every artefact in the selected squares was collected and analysed in the field and left in the square from which it was recovered (no sweeping and sieving was undertaken; Appendix B.6).

However, many sites had a large, low density distribution of artefacts around a dense artefact scatter, which the grid did not cover. Since the squares in the grid were selected randomly for analysis, grids over a low density scatter may result in a number of analysed squares possessing no artefacts. As a result of neglecting such scatters, a mass of information could potentially be ignored. To offset this, a timed analysis was employed. This involved collecting artefacts for ten minutes around the grid layout. At sites where the lithic assemblage was scattered over a large area, no grid was setup and a twenty minute walk was conducted.

Each method has its advantages. A grid layout allows for a more detailed analysis of a small concentration of artefacts and a timed collection covers the whole site. However, a timed analysis generates a subjective assemblage, which statistically is unsound. Because of this, the two methods need to be treated as different data sets. It also seems that one misses more lithics as timed collections were done while walking upright over the site. As a result of the inconsistencies between the two collection methods, the data from the grid collection was used. Nevertheless, the two methods work well together; the grid collection allows for a detailed examination of the cultural makeup of the site, with the timed collection complimenting this data with a more comprehensive collection of diagnostic artefacts.

All lithic artefacts were analysed using Van Doornum's (2005) typology. It is based on Walker's (1994, 1995a & b) and Deacon's (1984b) typological schemes. This was done for comparative purposes. Lithics were divided into their raw material and then into their stone tool categories. This analysis was then condensed to include only the chronological variables: raw material, formal tools and the formal tool's raw material, which varies between the different cultural periods and is thus chronologically distinct. The surface finds at each of the dated sites were treated in the same manner. Huffman (2007) was used to analyse the ceramics and Marilee Wood (pers. comm.) analysed the beads.

3.6. MBERE SHELTER

Mbere Shelter (-22.2581; 29.29128) was excavated by members of Dr. Kathy Kuman's international field school in 2003 (Appendix B.7). Morris Sutton was the primary excavator. The aim of the excavation was to find a Middle Stone Age (MSA) assemblage for Sutton's PhD (Kuman *et al.* 2005).

Artefacts were exposed in the shelter from horses wallowing in the sand. In the first field season, squares P8 and Q8 were excavated to depths of 70 cm and 50 cm below the surface respectively. These squares were chosen because they were situated in the depression caused by the wallowing horses. During the second field season square P7 was opened to increase the sample size as only LSA lithics had thus far been found. P7 was excavated until 55 cm below the surface where the excavations ceased because no MSA artefacts had been recovered. Spits of 5 cm were maintained throughout the excavation (Sutton 2004). For this project, only P8 and Q8 were analysed; artefact bags from P7 and organic material from Q8 and the upper levels of P8 are missing from the collection.

3.7. DEN STAAT AB 32

Situated along a ridge of koppies (-22.2272; 29.25492), AB 32 is a Khami level 3 settlement on the surface (Huffman pers. comm.). The site was excavated in 2009 as part of Justin Du Piesanie's PhD. Six trenches were excavated in various locations of the settlement including a midden, three kraals and two suspected homesteads. The excavations revealed a series of superimposed Iron Age occupations. Zhizo or Leokwe ceramics, Leopard's Kopje ceramics and Khami ceramics were all recovered from the site. In addition, from trench four, a 2x2 m excavation, a comprehensive lithic assemblage was excavated (Appendix B.7). Trench four's maximum depth was over 1 m and lithics were collected in all the levels. Spits of 10 cm were maintained; however, level 3 is a 20 cm spit, and a 4 mm sieve mesh was used.

3.8. DATA ANALYSIS AND COMPARISON WITH THE DATED SEQUENCE

Due to the lack of dates at the open air sites', Mbere Shelter and Den Staat AB 32, the lithic assemblage was compared to the dated sequence. Chronological variables were identified using Van Doornum's (2005) results. In each contact phase she identified a set of distinctive characteristics that change over time. These are raw material, formal tools and formal tools raw material frequencies. Excavated assemblages dated to the same period were combined and a range for the changes in raw material frequency was developed at each site using a 2.5% deviation. Due to a lack of data regarding formal tools and their raw material, a range was developed using the minimum and maximum figures across all the sites during a particular time period. The data from the open air scatters, Mbere Shelter and Den Staat AB 32 was then compared to each different period of occupation or use of the excavated sites'. At each undated excavation spits were considered in isolation. The more closely an assemblage compares with the data range of an assemblage from a dated period, the stronger their association. Assemblages can correspond in

three ways: the combination of all the raw material frequencies (crypto-crystalline, agate, quartz, quartzite and dolerite), the relationship between the formal tools (scrapers, backed bladelets, segments and adzes) and the formal tool's raw material frequencies.

Formal tools and the formal tool's raw material was also used to conceptually relate sites to dated assemblages. Based on Van Doornum's (2005) conclusions, assemblages are characterised by a high diversity of tools, dominated by scrapers, few or no tools or no dominant tools. In addition, formal tools raw material frequency was either only crypto-crystalline, mostly crypto-crystalline, a mixture of raw materials or lack crypto-crystalline tools. These variables and their relationships varied chronologically. The undated sample assemblages were placed into raw material clusters (crypto-crystalline dominated, quartz dominated or multi-component assemblages) and then into the conceptual table. In this way similar assemblages are associated with one another.

Ceramics were also used to obtain time frames. Ceramics cannot be used in isolation (see Sadr 2009); however, they can be used in conjunction with the lithic assemblage. If both the lithic and ceramic periods overlap, the sites association with the respective time period is strengthened.

Presented below is the analysis. It is subdivided into subsections. The first deals with the Holocene occupation of sites on the Mapungubwe landscape and looks at variables that may have impacted site selection. The second subsection looks more specifically at the cultural constitution of a number surface scatters discussed in the previous segment. It then looks at the critical and chronological variables that compare to the dated sequence. The final subsection presents the analysis of Mbere Shelter and Den Staat AB 32 and compares these findings to those from dated excavations.

4. ANALYSIS

4.1. THE HOLOCENE OCCUPATION OF THE MAPUNGUBWE LANDSCAPE

4.1.1. Survey Results

In the survey area of 167.84 km², 153 lithic scatters were identified (Appendix C.1). These were found throughout the survey zone in all the environmental zones (Figure 4.1). Sites were placed into vegetation zones based on O'Connor's (2009) analysis of Venetia. The zones that sites were found in are sandstone hill's north slope, south slope and plateau, mopane woodland, fine sandveld, rocky outcrop and common open woodland (Figure 4.2). No regular pattern, however, was found with regards to vegetation type and site location.

Sites are distributed unevenly across the landscape (Figure 4.3). The highest density of sites is on the plateau (n=71; 1.74/km²), yet in the sandstone koppie belt the density of sites is only slightly less (n=29; 1.64/km²). The lowest density of sites is in the Kolope drainage basin (n=49; 0.49/km²; Table 4.1). The hills at the basin's edge are poorly populated and the koppie ridge in the basin has a low density of LSA sites. This area has fewer koppies than elsewhere, but there is nevertheless a lower frequency of sites found at the koppies. The only exception is Hilda Koppie (see Figure 3.1) on the western edge of the survey zone.

The study sites are distributed throughout the survey zone. Stindal Koppie, in the eastern sector of the survey zone on the plateau, is the only exception. It is here where a higher number of sites were analysed. These were done as tests earlier on in the analysis (n=4; Figure 4.4). In total, 26 sites were analysed. One site is MSA (no. 144) but all others, including the four tests sites, showed typical LSA attributes.

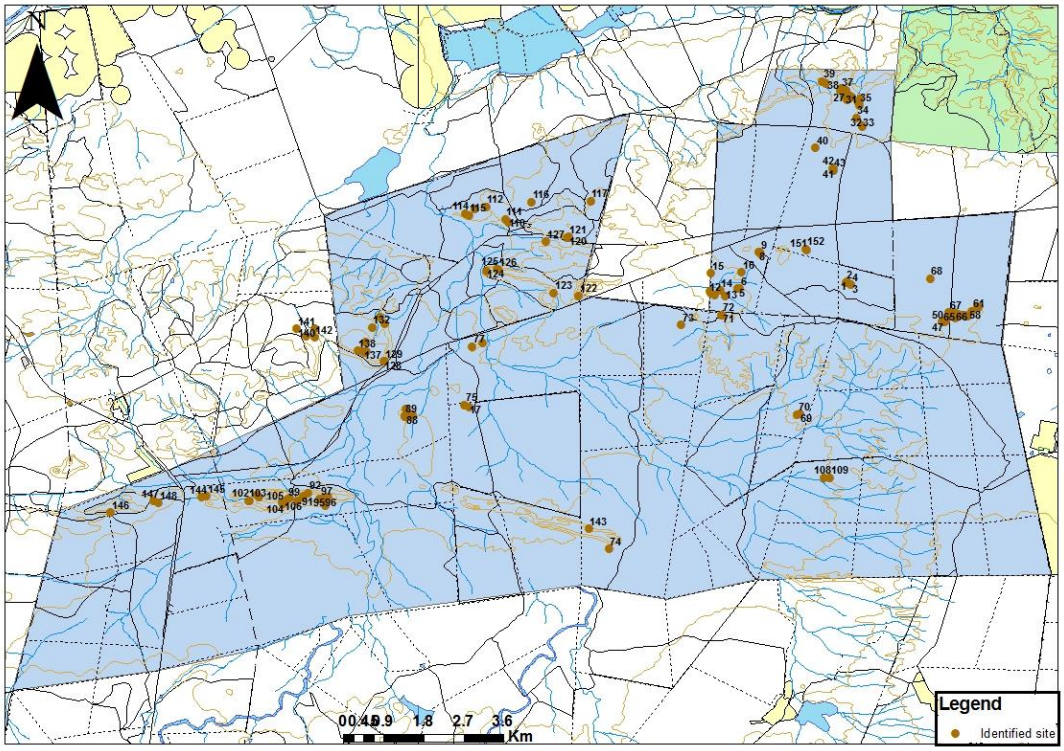


Figure 4.1: Identified lithic scatters in the survey zone.

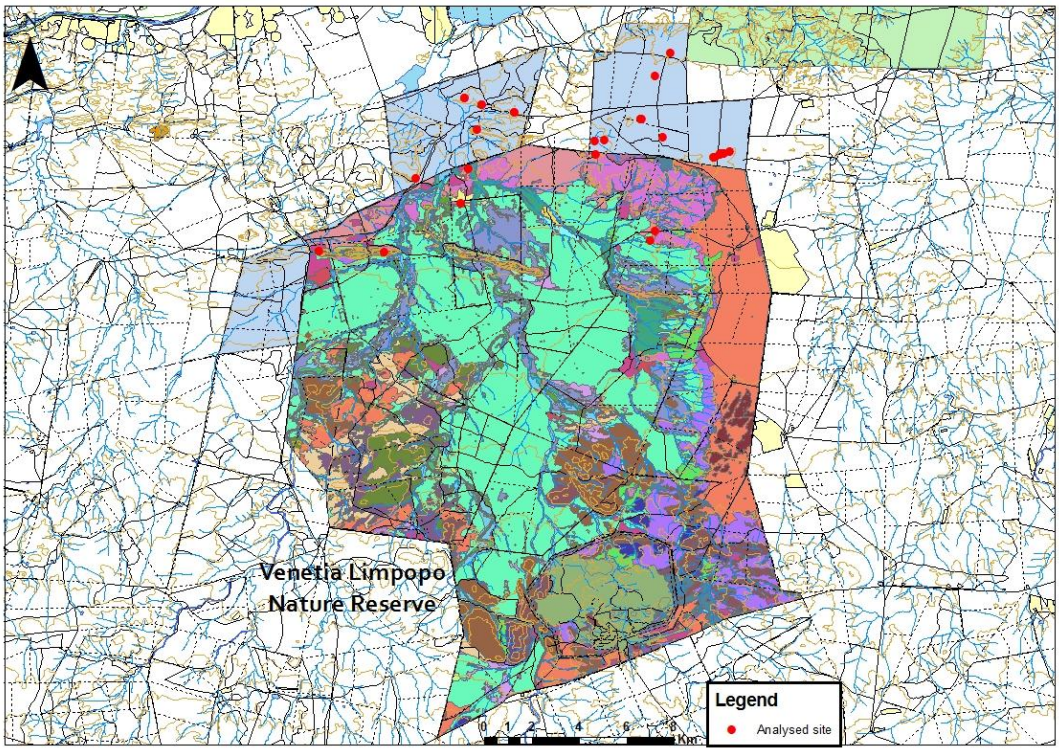


Figure 4.2: Analysed sites and the vegetation map of De Beers Venetia Limpopo Nature Reserve (pink = sandstone hills; orange = south slope or plateau; beige = fine sandveld; purple = rocky areas; light green = mopane woodland; apple green = north slope; dark green = open woodland).

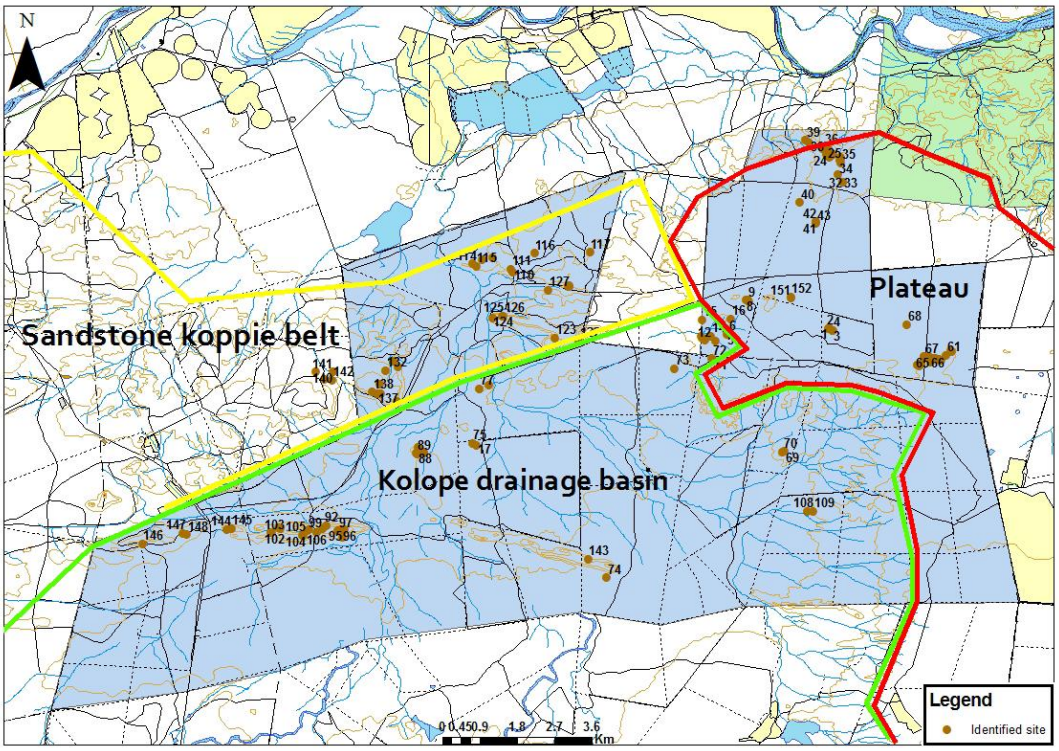


Figure 4.3: Surface lithic scatter distribution in the environmental zones.

Table 4.1: Site distribution.

	Plateau	Kolope DB	Sandstone KB
Total area (km²):	40.78	99.89	17.63
All sites			
Total sites:	71	49	29
Sites/km²	1.74	0.49	1.64
LSA sites			
Total sites:	14	7	5
Sites/km²	0.34	0.07	0.28

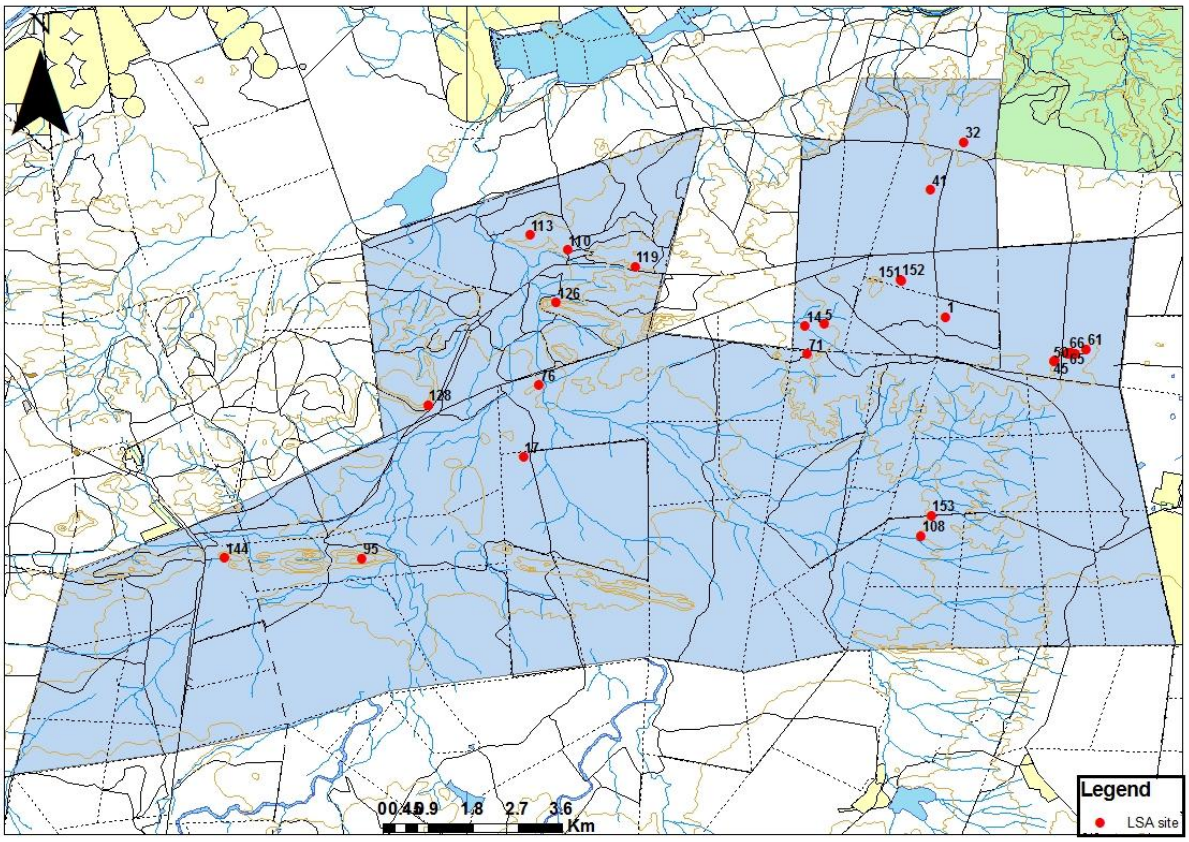


Figure 4.4: Distribution of analysed sites (Stindal Koppie sites are the cluster on the eastern edge of the survey zone).

4.1.2. Critical Variables and Site Selection

The reasons underlying foragers' site selection are not obvious. Lithic scatters are mostly found on the top of koppies (n=56; 35.9%). This is followed by sites in shelters (n=26; 16.67%) and sites around koppie bases and at rocky outcrops (each n=19; 22.18; Figure 4.5). At confirmed LSA sites, koppie tops are the most common location used by foragers (n=9; 34.62%), followed by shelters and sites around koppie bases (each n=5; 19.23%) and sites located on rocky outcrops (n=4; 15.38%; Figure 4.6).

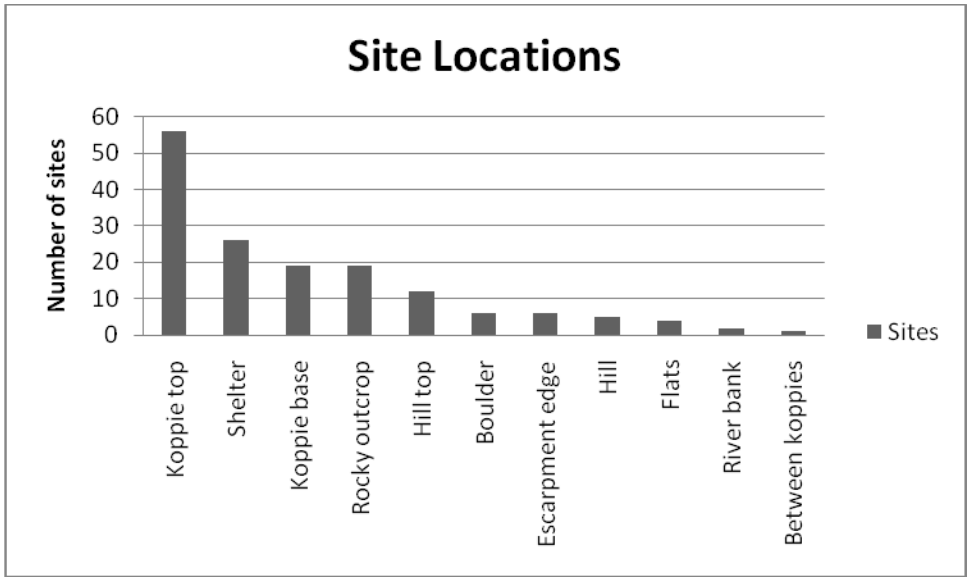


Figure 4.5: Distribution of lithic scatter locations.

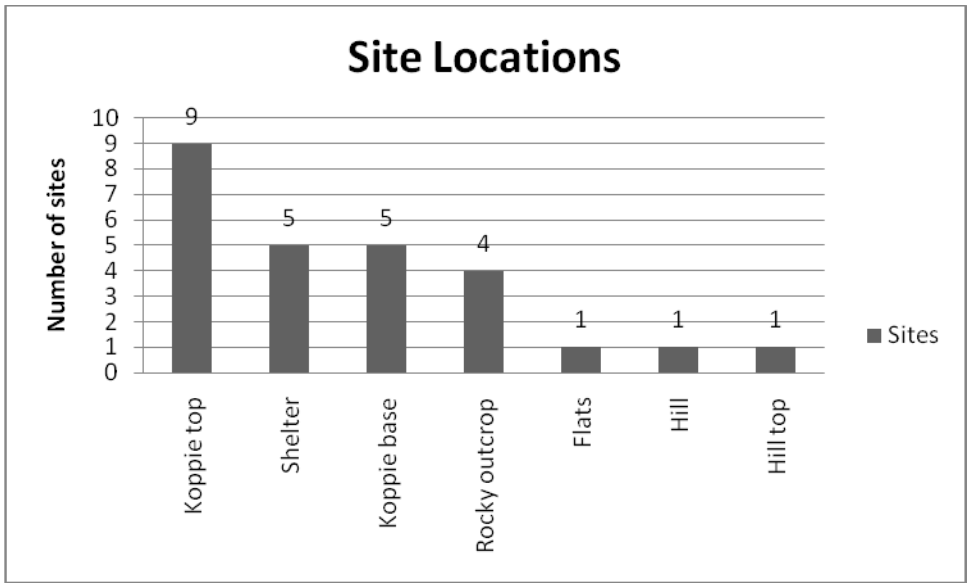
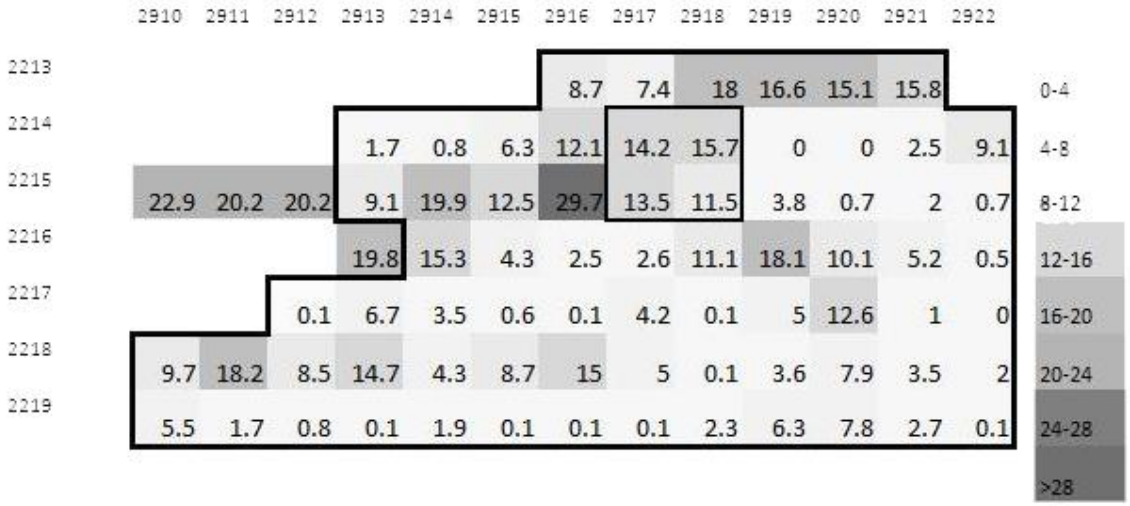


Figure 4.6: Distribution of LSA site locations.

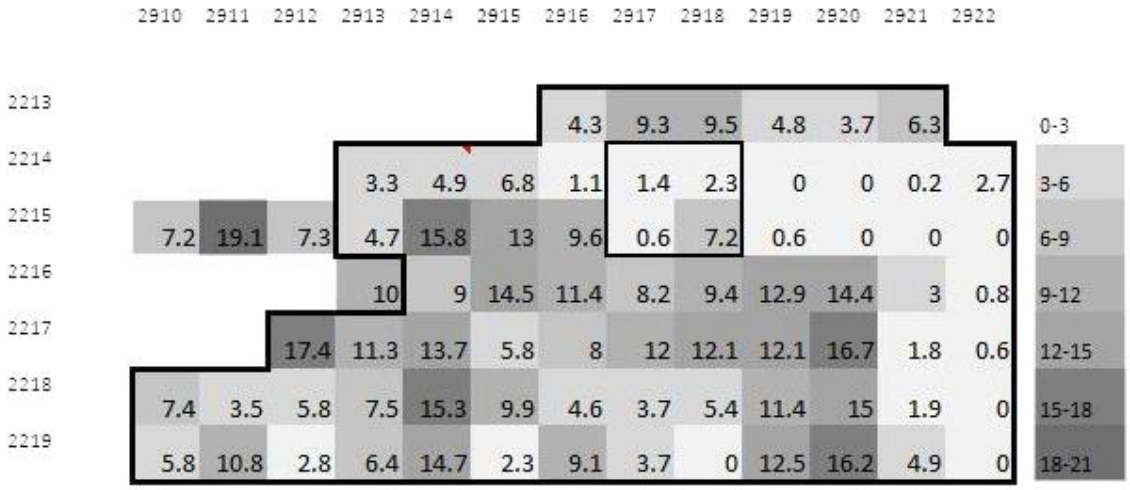
Terrain ruggedness and access to non-perennial water sources seem not to be related to site selection. The two variables have an inverse relationship with one another (Figure 4.7). Even though only the koppies were surveyed, there seems to be no pattern between site occupation and terrain ruggedness or access to perennial water (Figure 4.8).

Terrain Ruggedness



Average:	6.69		
Max:	29.70	Max including excavation zones:	29.70
Min:	0	Min including excavation zones:	0

Non-perenneal water courses



Average:	6.78		
Max:	17.4	Max including excavation zones:	19.1
Min:	0	Min including excavation zones:	0

Figure 4.7: Terrain ruggedness and non-perennial water sources (each square is 1x1 km and figures are in km: contours for terrain ruggedness and stream lengths in non-perennial water courses).

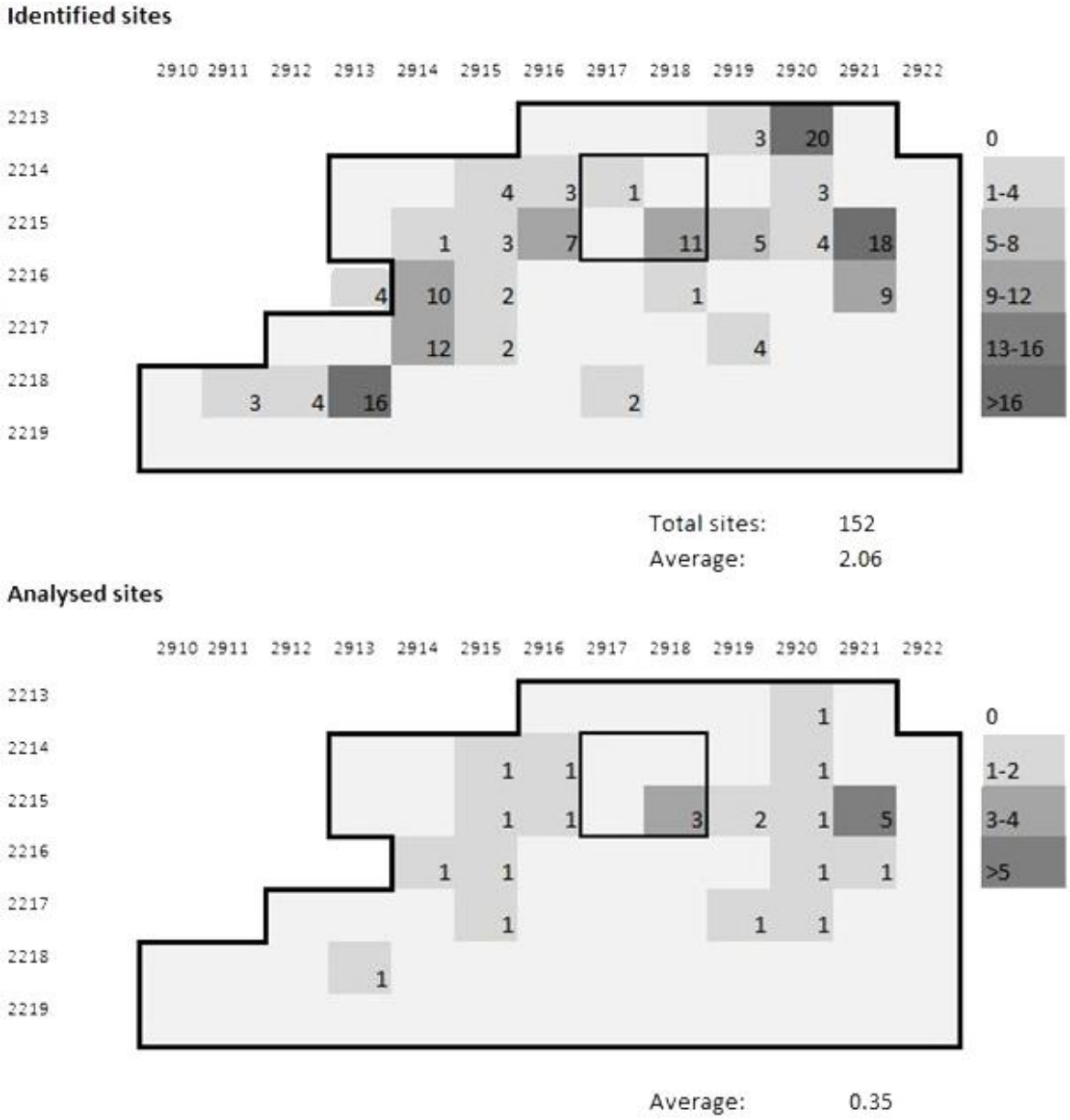


Figure 4.8: Site distribution (each square is 1x1 km).

4.2. HOLOCENE OPEN AIR SITE ANALYSIS

Of the 49 identified grade A sites, ten were randomly selected and ten were chosen to be part of the study group (see Table 4.2 for justifications). Another six grade B sites were randomly chosen and included in the analysis. Based on the lithic assemblages at each site, 25 of the 26 sites were determined to be of LSA origin. The single MSA site (no. 144) was not analysed further once its origin had been established (Figure 4.9).

Table 4.2: Sites selected intentionally for analysis.

Site	Reason
1	Lithic scatter below rock art signifying a female ritual area (Eastwood & Eastwood 2006)
5	A high frequency of formal tools was recorded when the site was identified
76	Tools found in an Iron Age site
95	Located on top of Hilda Koppie at a rain-control ritual site
108	This was the only decent scatter in the area
113	Located approximately 100 m from Little Muck Shelter
126	Lithic scatter on top of Leokwe Hill and alongside a massive natural cistern
128	This shelter is in close proximity to Leokwe Hill, like Little Muck Shelter, and has an excavatable deposit
152	Thought to link with 151 and is a large shelter with ceramics and rock art
153	Tools were eroding out of a road's rut walls and were well exposed



Figure 4.9: Artefacts from the MSA site (no. 144).

The study sites are distributed throughout the research area (Figure 4.4). The highest proportion of sites is on the plateau where, including the test sites at Stindal Koppie, 14 sites were analysed (0.34/km²). In the Kolope drainage basin 7 sites were analysed (0.07/km²) and 5 in the sandstone koppie belt (0.28/km²; see Table 4.1). Some of the analysed sites were intentionally selected (Table 4.2). Therefore, these figures should not be considered as actual representations of Holocene site densities in the respective environmental zones. In addition to the 25 LSA sites, 23 more are thought to be LSA in origin but were not analysed (Appendix C.1).

4.2.1. Lithic Artefacts from the Grid Analysis

4.2.1.1. Raw material

Sites are placed into clusters based on raw material frequencies (Table 4.3). Data collected during the timed analysis is not included because it did not take into account every artefact in a predetermined space like the grid analysis. Therefore, raw material frequencies are biased. Twenty one sites are included in the grid analysis (26 sites were analysed plus an additional 4 sites as tests and 1 MSA site, yet these (n=5) are not presented here) as well as the surface findings at the five excavated sites. Sites are dominated by either CCS (n=14; 53.85%), by quartz (n=9; 34.62%) or by both materials (n=3; 11.54%). Agate frequencies are consistently low but are highest when CCS dominate, followed by sites where quartz dominates. Dolerite is common when CCS dominate and when crypto-crystalline and quartz are similar. Where quartz dominates, dolerite frequencies are at their lowest. Quartzite remains consistent throughout the clusters and is usually more common than agate and dolerite. Agate, dolerite and quartzite frequencies vary within the clusters. Only at Tshisiku Shelter is dolerite nearly as common as the dominant CCS. At all open air sites, agate, dolerite and quartzite have lower frequencies than crypto-crystalline and quartz. Overall, quartz has the highest frequency (47.33%), followed by crypto-crystalline (42.7%), quartzite (5.45%), dolerite (2.63%) and agate (1.88%). All these materials can be found in the deposited gravels along the Kolope, Shashe and Limpopo Rivers as well as at a number of pebble beds in the sandveld zone and rock outcrops in the koppies (see Van Doornum 2000).

4.2.1.1. Formal tools

A variety of formal tools were recorded throughout the sites (Appendix C.2 & Appendix D.1, D.3-5) yet their frequencies varied. Identified tools includes scrapers, segments, backed bladelets, adzes, awls, planes, retouched flakes and miscellaneously retouched and backed tools. Scrapers, backed bladelets, segments and adzes are diagnostic because of their appearance and relationships during certain LSA phases identified by Van Doornum (2005). Of them scrapers are the most common (n=44; 50%). Other tools (including all categories other than chronological variables) are common (n=29; 33%), followed by adzes and segments (each n=6; 6.82%) and backed bladelets (n=3; 3.41%). Interestingly, sites that are dominated by quartz material have fewer formal tools (average = 0.71%). CCS dominated assemblages have more than double this amount (average = 2.11%) but at sites where both materials are equally represented formal tool frequencies are at their highest (average = 2.2%); this may, however, not be accurate as only a small sample of such sites were identified (Table 4.4).

Table 4.3: Site clusters based on raw material (%).

CCS dominated sites						
Sites (14)	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Excluding C-C
1	51.11	0	40.00	4.44	4.44	48.89
5	48.47	1.05	38.58	1.22	10.67	51.53
14	84.85	0	7.79	2.16	5.19	15.15
32	59.80	0	30.60	7.31	2.28	40.19
50	55.56	0	40.00	2.22	2.22	44.44
56	54.69	1.95	42.19	0.78	0.39	45.31
76	55.26	0	42.11	0	2.63	44.74
151	56.86	2.35	30.20	3.14	7.45	43.14
152	54.61	2.13	27.66	4.02	11.58	45.39
Bal 2	53.63	6.85	20.97	9.27	9.27	46.37
Bal 3	49.07	9.94	26.40	5.59	9.01	50.93
BMS	51.02	15.31	19.39	11.22	3.06	48.98
LM	100	0	0	0	0	0
TS	35.71	16.07	8.93	33.93	5.36	64.29
	57.90	3.98	26.77	6.09	5.26	42.10

Quartz dominated sites						
Sites (9)	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Excluding C-C
17	13.99	0.58	78.43	3.50	3.50	86.01
45	43.75	0	56.25	0	0	56.25
55	36.52	0.43	56.09	0.43	6.52	63.48
65	32.71	1.12	59.29	0.56	6.32	67.29
66	31.52	0.94	62.67	0.73	4.14	68.48
110	24.94	9.67	62.60	0.25	2.54	75.06
113	14.29	3.03	74.46	2.16	6.06	85.71
119	27.37	6.39	54.48	0.77	11.00	72.63
126	26.82	1.75	60.78	1.00	9.65	73.18
	27.99	2.66	62.78	1.05	5.53	72.01

Multi-component sites						
Sites (3)	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Excluding C-C
61	43.18	1.62	42.86	7.47	4.87	56.82
71	41.10	2.97	44.07	5.93	5.93	58.90
108	39.29	3.57	42.86	7.14	7.14	60.71
	41.19	2.72	43.26	6.85	5.98	58.81

Table 4.4: Diagnostic formal tools (deep grey = CCS dominated; light grey = quartz dominated; clear = both raw materials' equal).

Site	Scrapers	Scraper %	Backed bladelets	Backed bladelet %	Segments	Segment %	Adzes	Adzes %	Other tools	Other tool %	**Total formal tools**	**Total lithic artefacts**	**Formal tool %**
1	0	0	0	0	0	0	0	0	0	0	0	45	0
5	8	61.5	0	0	1	7.69	1	7.69	3	23.1	13	1143	1.14
14	1	100	0	0	0	0	0	0	0	0	1	231	0.43
17	2	66.7	0	0	0	0	0	0	1	33.3	3	343	0.87
32	7	77.8	0	0	0	0	0	0	2	22.2	9	219	4.11
45	0	0	0	0	0	0	0	0	1	100	1	80	1.25
50	0	0	0	0	0	0	0	0	0	0	0	45	0
55	1	50	0	0	0	0	0	0	1	50	2	230	0.87
56	2	22.2	0	0	2	22.2	4	44.4	1	11.1	9	256	3.52
61	5	55.6	1	11.1	0	0	0	0	3	33.3	9	345	2.61
65	1	25	0	0	0	0	0	0	3	75	4	538	0.74
66	2	33.3	0	0	2	33.3	0	0	2	33.3	6	1377	0.44
71	0	0	0	0	0	0	0	0	1	100	1	236	0.42
76	1	50	0	0	0	0	0	0	1	50	2	38	5.26
108	1	50	1	50	0	0	0	0	0	0	2	56	3.57
110	1	50	1	50	0	0	0	0	0	0	2	393	0.51
113	0	0	0	0	0	0	0	0	1	100	1	231	0.43
119	1	33.3	0	0	0	0	0	0	2	66.7	3	391	0.77
126	0	0	0	0	0	0	1	25	3	75	4	798	0.5
151	2	40	0	0	0	0	0	0	3	60	5	255	1.96
152	9	81.8	0	0	1	9.09	0	0	1	9.09	11	423	2.6
Total:	44	50	3	3.41	6	6.82	6	6.82	29	33	88	7673	1.15

4.2.1.2. Formal tool's raw material

The majority of formal tools across all surface assemblages are made from CCS (71.8%), followed by agate (11.8%), quartz (2.88%), dolerite (1.28%) and quartzite (0.65%; Table 4.5). Crypto-crystalline tools consistently dominate the assemblages regardless of the total crypto-crystalline frequency (Table 4.6).

Table 4.5: Diagnostic formal tools raw material (in percentage).

Formal tool's raw material					
Site	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite
1	0	0	0	0	0
5	92.3	0	0	0	7.69
14	100	0	0	0	0
17	100	0	0	0	0
32	100	0	0	0	0
45	100	0	0	0	0
50	0	0	0	0	0
55	50	50	0	0	0
56	77.8	22.2	0	0	0
61	88.9	11.1	0	0	0
65	75	0	25	0	0
66	83.3	0	16.7	0	0
71	100	0	0	0	0
76	100	0	0	0	0
108	50	50	0	0	0
110	0	100	0	0	0
113	100	0	0	0	0
119	33.3	0	33.3	33.3	0
126	100	0	0	0	0
151	80	20	0	0	0
152	81.8	9.09	0	0	9.09
Bal 2	100	0	0	0	0
Bal 3	100	0	0	0	0
BMS	55.6	44.4	0	0	0
LM	100	0	0	0	0
TS	0	0	0	0	0
	71.8	11.8	2.88	1.28	0.65

Table 4.6: All raw material versus formal tool's raw material (in percentage).

Site	All raw material						Formal tool's raw material				
	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite		Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite
LM	100	0.00	0.00	0.00	0.00		100	0	0	0	0
14	84.85	0.00	7.79	2.16	5.19	C-C	100	0	0	0	0
32	59.80	0.00	30.60	7.31	2.28	raw material	100	0	0	0	0
151	56.86	2.35	30.20	3.14	7.45	descending	80	20	0	0	0
50	55.56	0.00	40.00	2.22	2.22	order	0	0	0	0	0
76	55.26	0.00	42.11	0.00	2.63		100	0	0	0	0
56	54.69	1.95	42.19	0.78	0.39		77.78	22.22	0	0	0
152	54.61	2.13	27.66	4.02	11.58		81.82	9.091	0	0	9.091
Bal 2	53.63	6.85	20.97	9.27	9.27		100	0	0	0	0
1	51.11	0.00	40.00	4.44	4.44		0	0	0	0	0
BMS	51.02	15.31	19.39	11.22	3.06		55.56	44.44	0	0	0
Bal 3	49.07	9.94	26.40	5.59	9.01		100	0	0	0	0
5	48.47	1.05	38.58	1.22	10.67		92.31	0	0	0	7.692
45	43.75	0.00	56.25	0.00	0.00		100	0	0	0	0
61	43.18	1.62	42.86	7.47	4.87	C-C	88.89	11.11	0	0	0
71	41.10	2.97	44.07	5.93	5.93	tools	100	0	0	0	0
108	39.29	3.57	42.86	7.14	7.14	consistently	50	50	0	0	0
55	36.52	0.43	56.09	0.43	6.52	dominate	50	50	0	0	0
TS	35.71	16.07	8.93	33.93	5.36		0	0	0	0	0
65	32.71	1.12	59.29	0.56	6.32		75	0	25	0	0
66	31.52	0.94	62.67	0.73	4.14		83.33	0	16.67	0	0
119	27.37	6.39	54.48	0.77	11.00		33.3	0	33.3	33.3	0
126	26.82	1.75	60.78	1.00	9.65		100	0	0	0	0
110	24.94	9.67	62.60	0.25	2.54		0	100	0	0	0
113	14.29	3.03	74.46	2.16	6.06		100	0	0	0	0
17	13.99	0.58	78.43	3.50	3.50		100	0	0	0	0

4.2.2. Lithic Artefacts from the Timed Analysis

The results from the timed analysis have been taken into account separately. A grid and a timed analysis was conducted at sites 76, 110, 113, 119 and 152 (the results from the grid analysis for these sites are presented above; the results for the times analysis are presented here) and only a timed analysis was done at sites 41, 95, 128 and 153. Quartz dominated most assemblages (n=6; 66.6%), crypto-crystalline was dominant in a couple of assemblages (n=2; 22.2%) and both dominated at

one site (11.1%). Formal tools are uncommon. Most are, however, scrapers (n=6; 50%), followed by other tools (n=4; 33.3%) and backed bladelets and adzes (both n=1; 8.33%). Formal tools are predominantly made on CCS (38%). At one site, formal tools are only made on agate (site 110; n=1) and in two cases formal tools are made equally on (a) crypto-crystalline and dolerite (site 113; no. of tools=2) and (b) crypto-crystalline and agate (site 119; no. of tools=2). The sample size is, however, small and may not be representative (Appendix C.3).

Some trends can be pointed out at this point. Formal tools are most commonly made using CCS, irrespective of the dominant raw material. Scrapers are the most common tool type and at sites with a high number of scrapers, few other tools are present. Some sites possess a fairly representative sample of all tool categories while other lack formal tools altogether. There is a clear distinction between sites dominated by CCS and quartz, and few sites are represented equally by both materials. This pattern will be discussed later in this chapter.

4.2.3. Non-lithic Artefacts

4.2.3.1. Beads

OES beads were found at sites 32 and 128 and a bone bead from site 152 (refer to Figure 4.4 for site locations). At site 128 two beads were found. Single glass beads were found at sites 32 and 110. Two glass beads were found at sites 95 (early 1800s European bead traded for by the Venda) and 119 (one European trade bead and one Khami bead; beads were identified by Marilee Wood; Appendix D.2). No other beads were found at any of the sites (Table 4.7). OES and *Achatina* fragments were recorded at a number of sites, although, their relationship to the lithic assemblage was not determined.

Table 4.7: Bead provenance.

Site	OES bead	Bone bead	Glass bead
32	1		1
95			2
110			1
119			2
128	2		
152		1	
Total:	3	1	6

4.2.3.2. Ceramics

Earthenware ceramics were found at sites 1, 17, 32, 41, 61, 76, 95, 108, 110, 113, 119, 128 and 152 (refer to Figure 4.1 for site locations; Table 4.8). The vast majority of these are undecorated farmer ceramics but there are also undecorated rims (n=11), decorated sherds (n=9), decorated rim tops (n=2) and decorated rims (n=1). Decorated pieces were identified at site 152 where two ceramic traditions are present, Bambata and Zhizo or Leokwe; at site 32 Leokwe comb-stamped ceramics were found and at sites 108, 113 and 119 Leopard's Kopje ceramics (Appendix D.4 & D.5). Ceramics at 95 were identified by Tom Huffman and include Zhizo, Leokwe, K2, Mapungubwe and Letaba ceramics (pers. comm.).

Interestingly, site 113 possess very few formal tools, is dominated by quartz and contains a large amount of ceramics. It is also located to within 300 m from Little Muck Shelter and less than 1.5 km from Leokwe Hill, a major Iron Age centre. Similarly, site 110 is of interest. Here, walling was located, a glass bead was found during surveying (although not again during analysis), ceramics are present, the assemblage is dominated by quartz and it has few formal tools. It is also less than 1 km from Little Muck Shelter and a little over a kilometre from Leokwe Hill. Compared to sites 5 and 152, where there are a large amount of formal tools, some ceramics (in the case of site 152) but an assemblage dominated by CCS, the differences are striking.

Table 4.8: Earthenware provenance (includes sites from the timed analysis).

	Sherd description				
Site	Undecorated	Decoration	Undecorated rim	Decorated rim	Rim top & neck deco
1	1				
17	6				
32	5				
41	1				
61	5				
76	4	1	1		
95		1	2	1	
108	14	1	2		
110	13	1	1		
113	70	3	1		
119	13	1			
128	17		3		
152	3	1	1		2
Total:	152	9	11	1	2

4.2.3.3. Copper

Copper bangles and pieces were found at sites 95, 113 and 119. At each site farmer occupations occurred (e.g. Appendix D.4).

4.2.3.4. Other artefacts

Other artefacts found at sites include upper and lower grinding stones, cupules, walling and *mankala* boards. These artefacts were not present before farmers arrived on the landscape; however, after their arrival, foragers may have included these artefacts into their material culture. Sites with examples of this material culture are: 5, 24, 26, 32, 41, 76, 95, 110, 113, 114, 119, 120, 123, 124 and 128 (Table 4.9).

Table 4.9: Other artefacts at forager sites.

Site	Upper grindstone	Lower grindstone	*Mankala* board	Cupule	Walling	Sharpening grooves
5			X			
24						X
26						X
32		X	X			
41		X	X			X
76	X	X				
95	X	X		X	X	
110					X	
113			X			
114		X	X	X		X
119					X	
120					X	
123				X		
124	X	X		X		
128		X				
Total:	3	7	5	4	4	4

4.2.4. Comparison of Open Air Assemblages and the Dated Sequence

4.2.4.1. The geographical setting of open air site clusters

Open air clusters can be formulated based on lithic assemblage similarities between sites. Using the chronological variables – raw material, formal tools and formal tools raw material – sites can be grouped to create clusters, demonstrating their relationship. The initial separation is in terms of raw material (Table 4.10). CCS (n=14) and quartz dominate (n=9) most assemblages. Some assemblages have a high frequency of both material types (n=3). Quartz dominated sites occur alongside CCS dominated sites and all are found in each broad environmental zone (the sandstone koppie belt, the plateau and the Kolope drainage basin; Figure 4.10). However, the highest proportion of quartz dominated sites occurs where the Kolope River exits the drainage basin into the sandstone koppie belt. The majority of farming settlements are located here (Figure 4.11).

Table 4.10: Raw material site clusters.

Crypto-crystalline dominated

1	5	14	32
50	56	76	151
152	B2	B3	BMS
LM	TS		

Quartz dominated

17	45	55	65
66	110	113	119
126			

Multi-component sites

61	71	108	

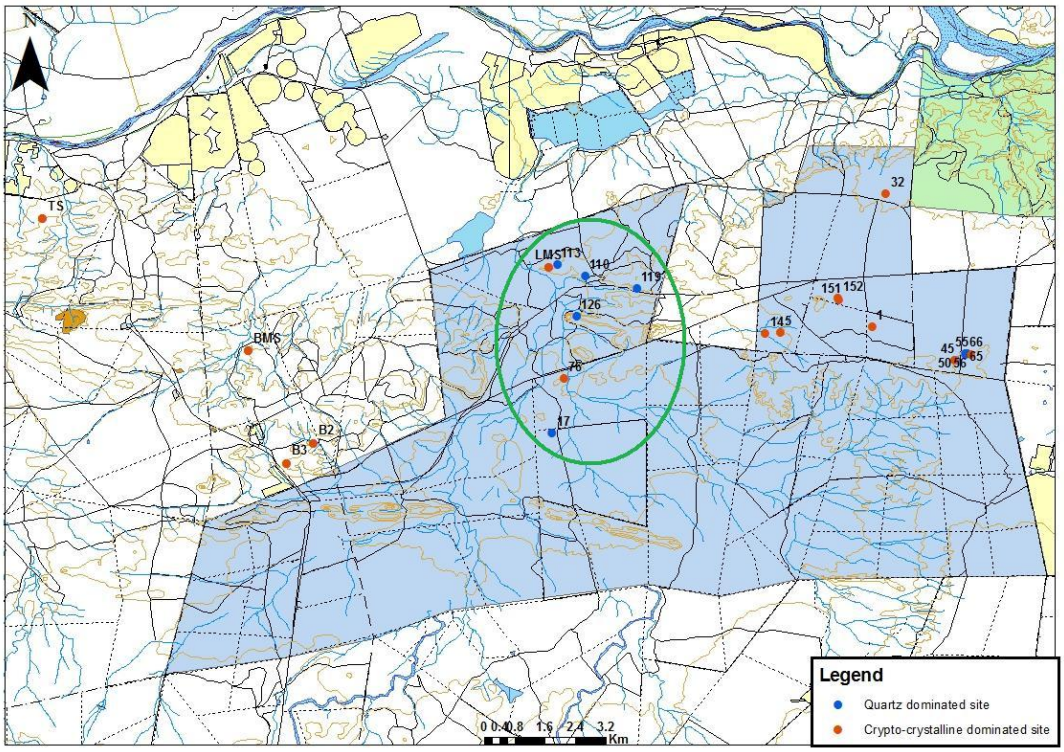


Figure 4.10: CCS and quartz dominated sites.

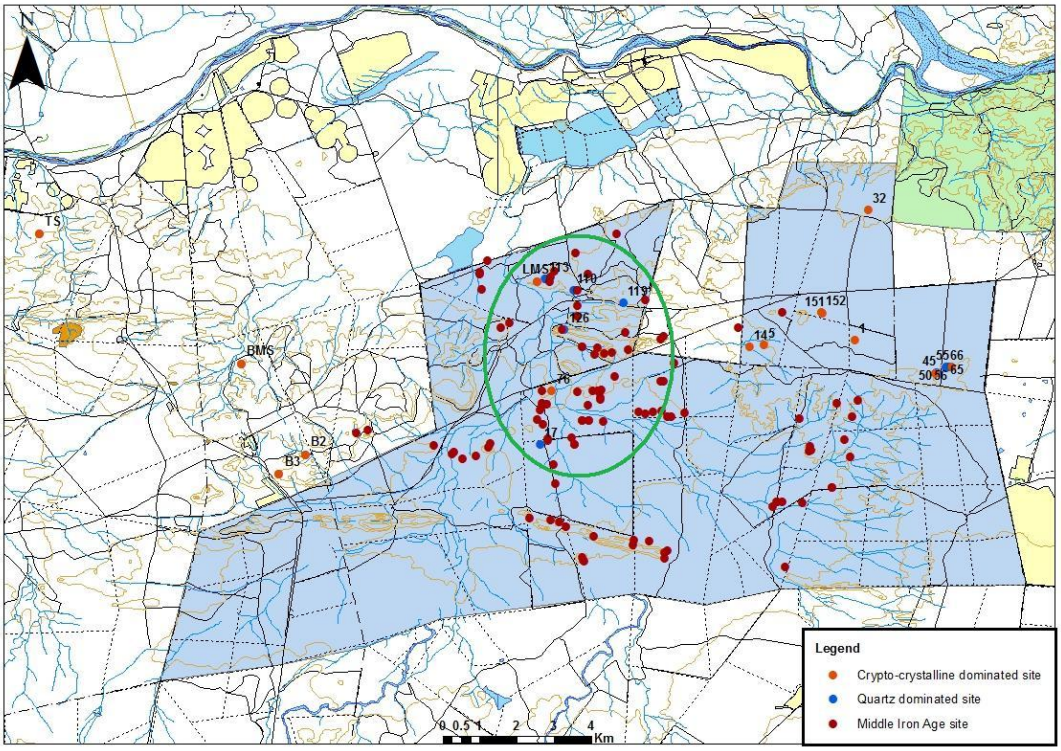


Figure 4.11: CCS and quartz dominated sites and farmer settlements.

Two categories were used to describe the location of CCS and quartz dominated sites: location and cover. Location more specifically refers to the sites actual position on the landscape, whether this is on a koppie's top or in a shelter. The cover type more specifically describes the site's cover. In some cases the sites are in a shelter or in the open but in other instances they were found alongside a collapsed boulder or a steep incline offering some cover. The goal of this comparison is to assess whether there is a difference in site locations between CCS and quartz dominated sites. CCS dominated sites are most commonly found in shelters (n=8; 57.14%) but also at koppies, rock outcrops and open sites (each n=2; 14.29%). Shelters are the most common cover type utilised (n=8; 57.14%), then open sites (n=5; 35.71%) and lastly sites located at an overhang (n=1; 7.14%). Quartz dominated sites are found in different locations to those of the CCS dominated sites. The most striking difference is that no quartz dominated site was found inside of a shelter. The majority of these sites are located on koppie tops (n=6; 66.67%), followed by rock outcrops (n=2; 22.22%) and at koppies (n=1; 11.11%). Of these, 8 sites are in the open (88.89%) and 1 site is located at an overhang (11.11%; in this case it was at a large boulder; Table 4.11).

Table 4.11: Location and cover of CCS and quartz dominated sites.

Site	Location	Cover	Location no.	%	Cover no.	%
CCS dominated sites:						
1	Koppie	Overhang	Koppie (2)	14.29	Open (5)	35.71
5	Rock outcrop	Open	Rock outcrop (2)	14.29	Overhang (1)	7.14
14	Open	Open	Open (2)	14.29	Shelter (8)	57.14
32	Shelter	Shelter	Shelter (8)	57.14		
50	Rock outcrop	Open				
56	Open	Open				
76	Koppie	Open				
151	Shelter	Shelter				
152	Shelter	Shelter				
B2	Shelter	Shelter				
B3	Shelter	Shelter				
BMS	Shelter	Shelter				
LM	Shelter	Shelter				
TS	Shelter	Shelter				
Quartz dominated sites:						
17	Koppie top	Open	Koppie (1)	11.11	Open (8)	88.89
45	Rock outcrop	Open	Koppie top (6)	66.67	Overhang (1)	11.11
55	Koppie top	Open	Rock outcrop (2)	22.22		
65	Koppie	Open				
66	Koppie top	Open				
110	Koppie top	Open				
113	Rock outcrop	Overhang				
119	Koppie top	Open				
126	Koppie top	Open				

4.2.4.2. Site clusters: raw material, formal tools and formal tool's raw material

Van Doornum (2005) was able to discriminate specific assemblage characteristics from different time periods. She found that certain features in the forager lithic record or temporally specific. Here, the surface assemblages are grouped based on the temporally specific markers that Van Doornum (2005) argued for.

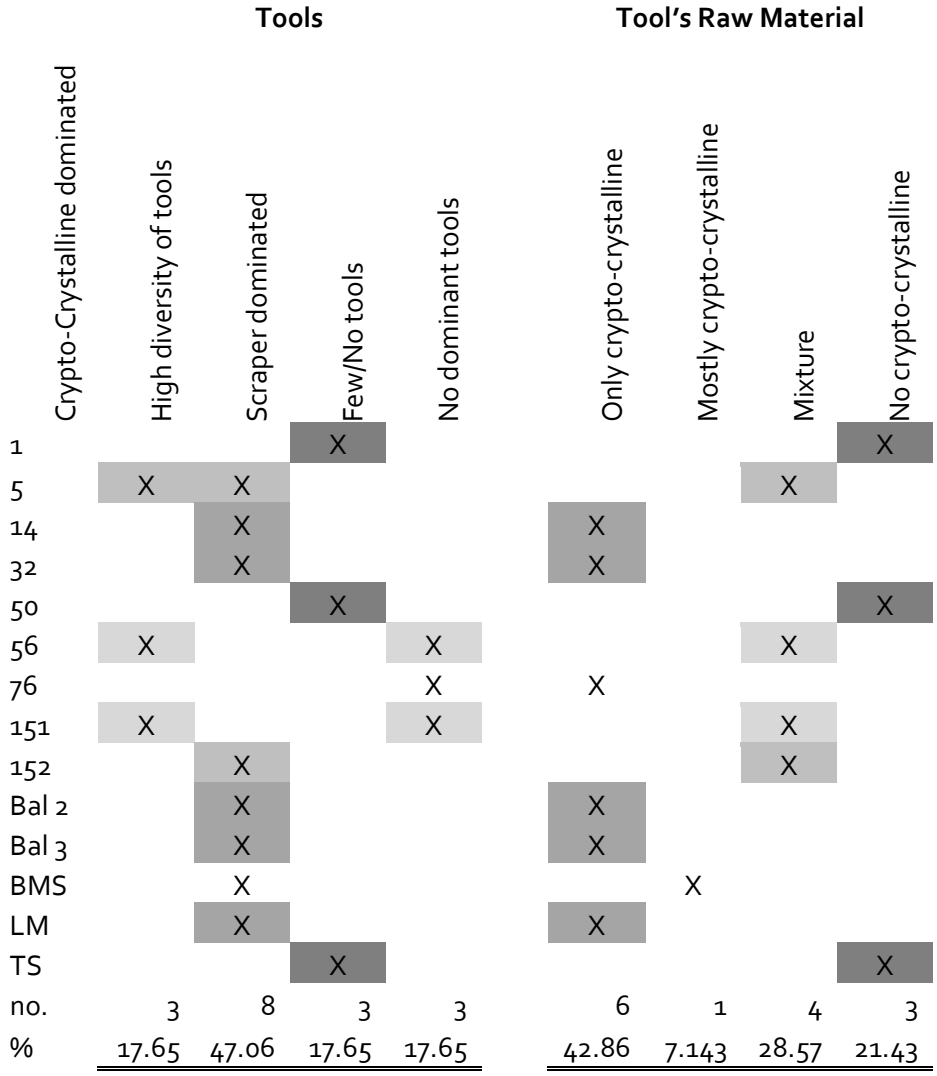
CCS dominated assemblages are predominantly rich in scrapers (n=8; 47.08%). There is an equal amount of sites with high tool diversity, few or no tools and with no dominant tools (each n=3; 17.65%). Overlaps between the variables are not common. Most noticeably there is a strong correlation between CCS and scraper dominant assemblages where all the formal tools are crypto-crystalline (n=5). For example, sites 14, 32, Balerno Shelter 2 and 3 and Little Muck Shelter. In addition, these sites correspond well with assemblages from the Leopard's Kopje period, with the

exception of site 32; a multi-component site (discussed further below but see Table 4.13). Other correlations are between scraper dominated assemblages with either a mixture of raw materials (n=2) and mostly crypto-crystalline formal tools (n=1). Where there is a high diversity of tools but no dominant tool type there is a mixture of raw materials (n=2; Table 4.12a).

Most quartz dominated assemblages have no dominant tool type (n=5; 38.46%). Sites with a high diversity in tools (n=4; 30.77%) are also common followed by sites with few or no tools (n=3; 23.08%). Sites with only crypto-crystalline tools (n=4; 44.44%) and mostly crypto-crystalline tools (n=3; 33.33%) are common. Quartz dominated assemblage clusters are characterised by few or no tools that (if tools present, as in all cases presented) are all from CCS (n=2) and sites with no dominant tool type that are mostly from CCS (n=2). One example of a quartz dominated assemblage is the same as a crypto-crystalline example; a high diversity of tools with no dominant tool type and a mixture of raw materials. These site types correspond well with those located in close proximity to farmer settlements such as site 110 and 113 discussed earlier (Table 4.12b).

No patterns are noted with regard to multi-component sites as the sample size is too small. One site resembles quartz dominated sites with few formal tools made from CCS. Another is alike the quartz dominated sites that have no dominant tools which are mostly made on CCS (Table 4.12c).

Table 4.12a: CCS dominated sites (the grey boxes shows patterns repeated at different sites).



	Tools				Tool's Raw Material			
	Crypto-Crystalline dominated	High diversity of tools	Scraper dominated	Few/No tools	No dominant tools	Only crypto-crystalline	Mostly crypto-crystalline	Mixture	No crypto-crystalline
1				X					X
5		X	X					X	
14			X			X			
32			X			X			
50				X					X
56		X			X			X	
76					X	X			
151		X			X			X	
152			X					X	
Bal 2			X			X			
Bal 3			X			X			
BMS			X				X		
LM			X			X			
TS				X					X
no.		3	8	3	3	6	1	4	3
%		17.65	47.06	17.65	17.65	42.86	7.143	28.57	21.43

Table 4.12b: Quartz dominated sites (the grey boxes shows patterns repeated at different sites).

	Tools				Tool's Raw Material			
Quartz dominated	High diversity of tools	Scraper dominated	Few/No tools	No dominant tools	Only crypto-crystalline	Mostly crypto-crystalline	Mixture	No crypto-crystalline
17	X	X			X			
45			X		X			
55				X		X		
65	X			X		X		
66	X			X			X	
110				X				X
113			X		X			
119	X			X		X		
126			X		X			
no.	4	1	3	5	4	3	1	1
%	30.77	7.692	23.08	38.46	44.44	33.33	11.11	11.11

Table 4.12c: CCS dominated sites (the grey boxes shows patterns repeated at different sites).

	Tools				Tool's Raw Material			
Combined dominance	High diversity of tools	Scraper dominated	Few/No tools	No dominant tools	Only crypto-crystalline	Mostly crypto-crystalline	Mixture	No crypto-crystalline
61	X	X					X	
71			X		X			
108				X		X		
no.	1	1	1	1	1	1	1	0
%	25	25	25	25	33.33	33.33	33.33	0

4.2.5. Undated assemblages and the dated sequence

Five phases have been established on the Mapungubwe landscape. The earliest is the early pre-contact period (F) followed by the late pre-contact period (E). During both these phases farmers did not occupy the landscape alongside foragers, whose archaeological signature is poorly represented during these periods. From the late pre-contact phase, however, there is an increase in activity suggested by the occupation of a number of additional sites; only Balerno Main Shelter and Tshisiku Shelter were occupied during the early pre-contact period. The early contact period (D) is when the forager population increased on the landscape possibly because farmers settled further south, forcing foragers to seek new territory. The Zhizo (C) and Leopard's Kopje contact periods (B) are when foragers and farmers shared the landscape and interacted on a more regular basis. The colonial period (A) is void of forager artefacts (Van Doornum 2005), yet, their presence has been recorded via a number of informants (e.g. Eastwood & Eastwood 2006). This is not considered here.

Below is a quantitative comparison between the surface scatters and the surface findings at the excavated shelters and the excavated assemblages. The comparison was made between raw materials frequencies, formal tools and formal tools raw material.

4.2.5.1. Raw material

From the frequency of raw material found at the excavated sites, a 5% range was created around the frequency of raw materials for each dated assemblage, with a 2.5% leeway on either side (Appendix C.4). Data from surface lithic assemblages were then compared to these ranges. The goal of this comparison was to see how many times a single open air site would correspond to the frequency of raw materials with a known date range. The more similarities an open air site has with assemblages from a specific time period, the stronger the association between them. Since there are five different raw material types, there can be combinations of two to five. For example, CCS and quartz frequencies might both fit into their respective ranges from a dated assemblage. If this was the case, one point would be given to that time period, at that site. Three raw material combinations were given two points, four combinations received three points and if all five raw materials matched the criteria of a dated assemblage, four points were given. The more points a site accumulates from a single period, the stronger its association to that date bracket (Table 4.13). Note also that the surface artefacts from Balerno Main Shelter (BMS), Balerno Shelter 2 (B2) and 3 (B3), Tshisiku Shelter (TS) and Little Muck Shelter (LM) are included here. It is interesting that using this quantitative comparison, the surface finds at some of these shelters do not fit into the sequential order revealed through the excavations.

Table 4.13: Chronological variable assessment.

B = Leopard's Kopje
C = Zhizo
D = Early contact
E = Late pre-contact
F = Early pre-contact

	Raw Material					Formal Tools					Formal RM					Total per period					Period
Sites	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	
1	1	2	2	1	0	2	0	2	0	1	0	0	0	0	0	3	2	4	1	1	D
5	0	0	0	1	0	1	0	2	2	2	0	0	1	0	0	1	0	3	3	2	D/E
14	0	0	0	0	0	3	1	2	0	1	0	0	0	0	0	3	1	2	0	1	B
17	0	1	0	0	0	3	1	2	2	3	0	0	0	0	0	3	2	2	2	3	B/F
32	0	1	1	1	0	3	2	3	2	3	0	0	0	0	0	3	3	4	3	3	D
45	0	0	0	0	0	2	1	2	0	1	0	0	0	0	0	2	1	2	0	1	B/D
50	0	0	0	0	0	2	1	2	0	1	0	0	0	0	0	2	1	2	0	1	B/D
55	1	0	0	0	0	2	1	2	0	3	0	0	0	1	0	3	1	2	1	3	B/F
56	0	0	0	0	0	0	0	0	0	1	2	2	2	2	0	2	2	2	2	1	B-E
61	0	1	2	1	0	2	1	1	0	3	0	0	2	0	0	2	2	5	1	3	D
65	0	1	1	0	0	2	1	2	0	1	0	0	0	0	0	2	2	3	0	1	D
66	0	1	0	0	1	0	1	1	0	1	0	0	0	0	0	0	2	1	0	2	C/F
71	1	1	3	1	0	2	1	2	0	1	0	0	0	0	0	3	2	5	1	1	D
76	0	0	0	0	0	2	1	2	0	3	0	0	0	0	0	2	1	2	0	3	F
108	4	1	2	3	1	1	1	1	0	2	0	0	0	1	0	5	2	3	4	3	B
110	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	1	0	1	0	2	F
113	0	0	1	0	0	2	1	2	0	1	0	0	0	0	0	2	1	3	0	1	D
119	0	0	1	0	0	2	1	2	0	1	0	0	0	0	0	2	1	3	0	1	D
126	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	B/D
151	1	1	1	2	0	2	1	2	0	3	1	0	2	1	0	4	2	5	3	3	D
152	1	0	1	1	0	3	2	2	3	3	1	0	2	1	0	5	2	5	5	3	B/D/E
B2	6	0	1	4	0	3	1	2	0	1	0	0	0	0	0	9	1	3	4	1	B
B3	4	1	5	1	1	3	1	2	0	1	0	0	0	0	0	7	2	7	1	2	B/D
BMS	5	2	3	1	0	3	1	1	2	1	0	0	0	1	0	8	3	4	4	1	D
LM	0	0	0	0	0	3	1	2	0	1	0	0	0	0	0	3	1	2	0	1	B
TS	1	2	1	1	1	2	1	2	0	1	0	0	0	0	0	3	3	3	1	2	B/C/D

4.2.5.2. Formal tools

All the dated assemblages were grouped chronologically and a range was created using the minimum and maximum percentage of formal tool types. If an undated assemblage corresponded to a particular range from that of, for example, the Leopard's Kopje period, it would be credited with a point in the Leopard's Kopje category. If there were more similarities between formal tools from undated surface scatters and dated assemblages, points were awarded accodingly (Table 4.13). Few correlations were made with data from the timed collection (Table 4.14).

Table 4.14: Formal tools from the timed analysis.

B = Leopard's Kopje
C = Zhizo
D = Early contact
E = Late pre-contact
F = Early pre-contact

	Formal Tools					Period
Site	B	C	D	E	F	
41	0	1	2	0	1	D
76	0	0	0	0	0	
95	0	1	2	0	1	D
110	0	1	2	0	1	D
113	3	1	2	0	1	B
119	0	1	2	0	2	D/F
128	0	1	2	0	1	D
152	3	1	2	1	2	B
153	0	1	2	0	1	D

4.2.5.3. Formal tool's raw material

Formal tool's raw material varied through time, however, CCS consistently dominated (Appendix C.4). Once again, a range was developed using the minimum and maximum percentages from assemblages during a particular period. If the formal tool's raw material frequency of an undated site corresponded to that of a dated assemblage, points were awarded. The more points the site obtained for a particular time period, the more its association with the time period strengthened. Alas, at most open air sites the formal tool sample size is too small to provide meaningful data for comparison (see Table 4.13).

4.2.5.4. Conceptual control

In addition to using a quantitative approach, a conceptual table was formulated. Based on Van Doornum's (2005) findings, descriptions of each time period were created with regard to the changes in artefact density, raw material frequencies, formal tools, formal tool's raw material and ceramics. Essentially, each site has its own conceptual table, which is a description of all the significant changes that occurred from the site's first occupation to abandonment. Undated sites with a strong association with a specific period were compared to the description of that time period, as described in the conceptual table. However, there is little uniformity between excavated sites and thus little similarity between conceptual tables from different sites (Appendix C.5). As a result, undated sites appeared to correlate with multiple descriptions of assemblages from different periods in time.

4.2.5.5. Forager and farmer spatial relationship

The proximity between forager sites and the changing farmer settlement pattern was compared. Based on the analysis, forager sites were placed into a temporal bracket (as shown above; Table 4.13). The location of sites within a date bracket, including the undated surface assemblage from the excavated shelters, is here compared to farmer settlements dating to the same period. In some cases, more than one period is represented at each site. Where this has occurred, the site has been placed into both periods and is displayed in the appropriate maps. Figures 4.12 and 4.13 shows the location of all the possible early and late pre-contact LSA sites in the survey zone.

The frequency of sites increase during the early contact period. This period marks the arrival of the first Iron Age settlers in the area. LSA sites are not as concentrated on the plateau but there is an increase of sites in this zone. Sites are now also found in the sandstone koppie belt. As of yet, no Early Iron Age sites have been identified (Figure 4.14). All the LSA sites that correspond to assemblages from the Zhizo contact period are located far from any Iron Age settlements. Farmer settlements are concentrated in the area where the Kolope River enters the sandstone koppie belt and in the Kolope drainage basin (Figure 4.15). Farmer sites increase drastically during the Leopard's Kopje contact period. Settlements are located along the Kolope River and along various tributaries leading to the river in the drainage basin. The forager sites are found in all the environmental zones, in close proximity and at great distances to farmer settlements (Figure 4.16).

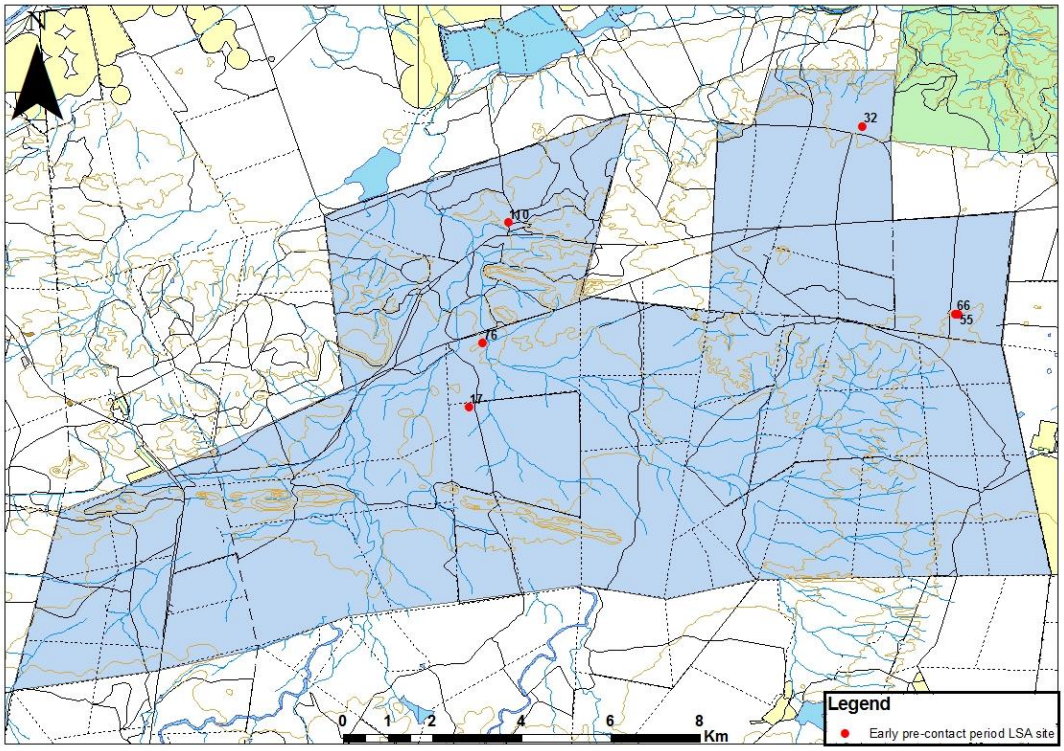


Figure 4.12: Early pre-contact period LSA sites.

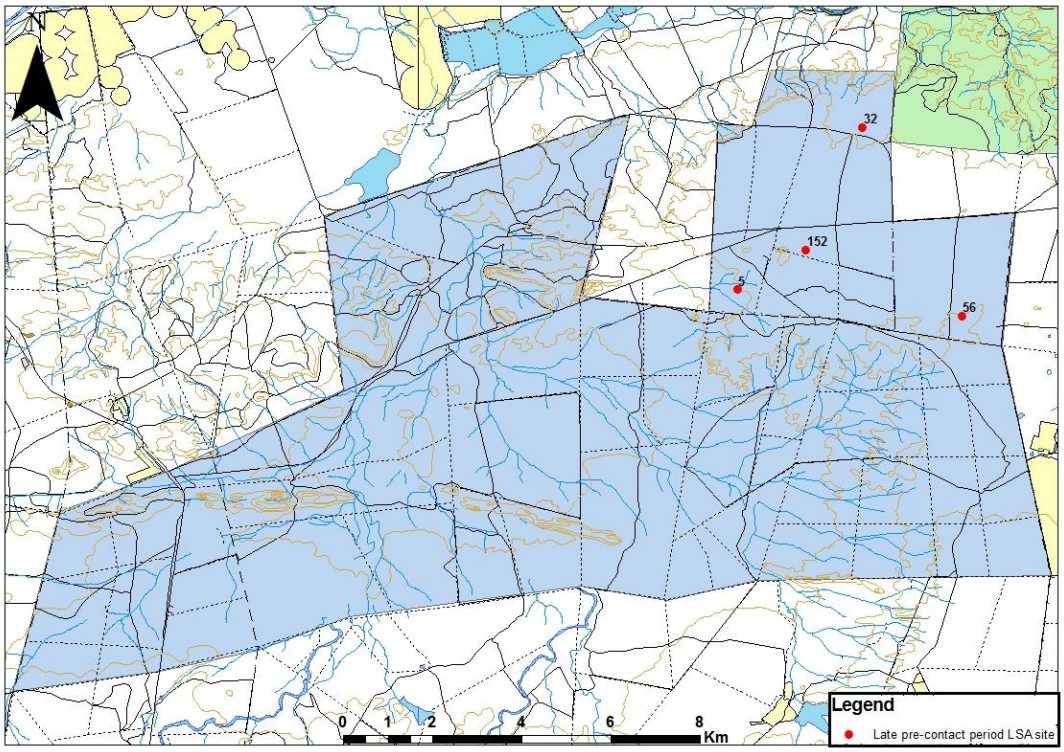


Figure 4.13: Late pre-contact period LSA sites and Zhizo settlements (not yet present on the landscape).

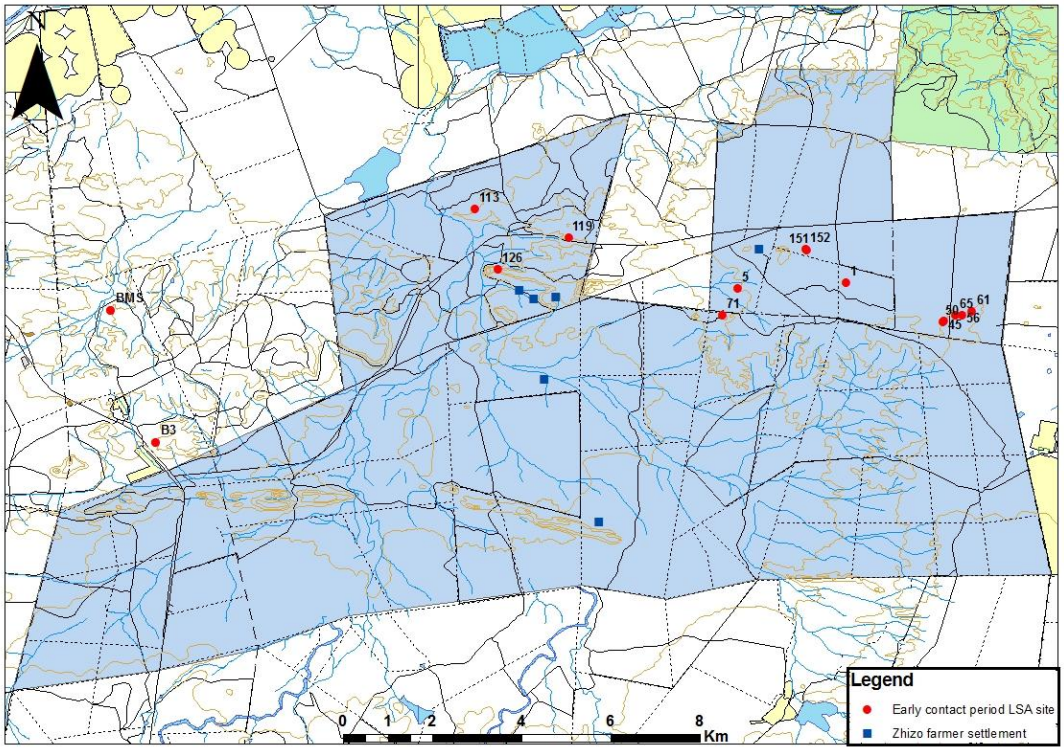


Figure 4.14: Early contact period LSA sites and Zhizo settlements (begin arriving at the end of the early contact period).

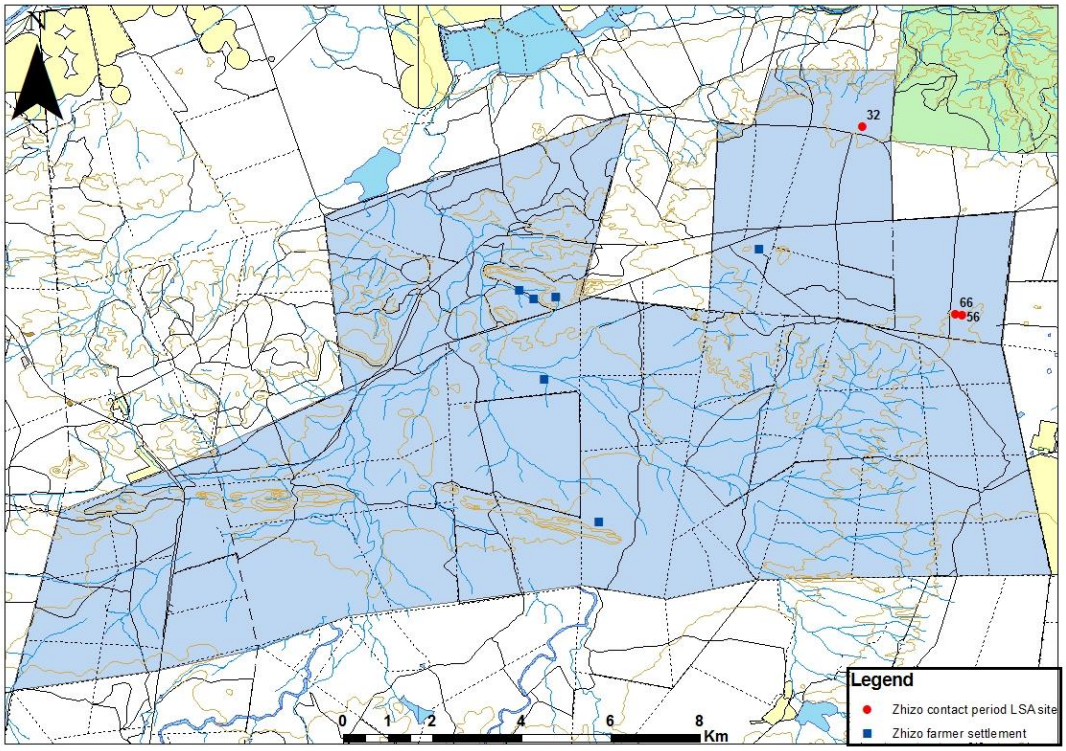


Figure 4.15: Zhizo contact period LSA sites and Zhizo settlements.

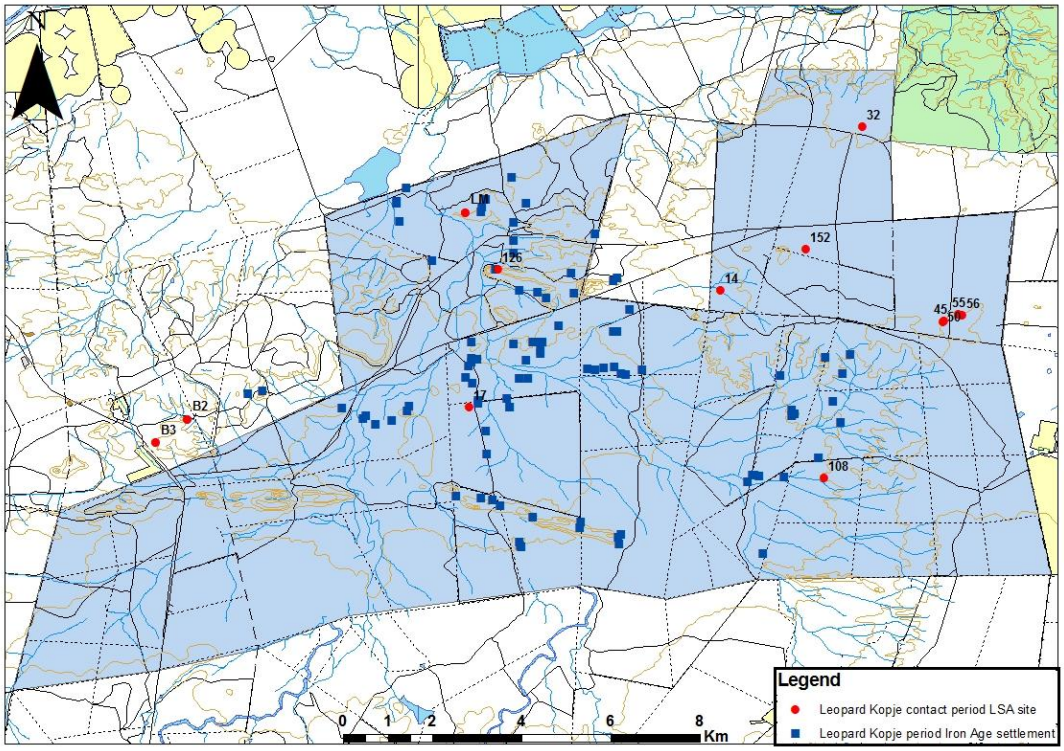


Figure 4.16: Leopard's Kopje contact period LSA sites and Leopard's Kopje settlements.

4.2.5.6. Beads and ceramics

Beads and ceramics were also present at many sites (Tables 4.7 & 4.8). Ceramics traditions are well dated and help establish time frames for site occupation. At sites 32, 108 and 152 the lithic inventory and ceramic index suggest the same time period. Interestingly, at site 152, the grid and timed analysis both suggest the same but also different time periods (Table 4.15).

Table 4.15: Ceramic, bead and lithic time frames relationships (grey blocks indicate temporal matches).

							Lithic Analysis					
Site	Ceramic Period				Bead Period		Grid Analysis				Timed Analysis	
32	Bambata	Zhizo					Early pre-contact	Late pre-contact	Zhizo	Leopard Kopje		
95	Zhizo	Leokwe	Leopard Kopje	Letaba	1830s onwards						Early contact	
108	Leopard Kopje						Leopard Kopje					
110					Venda		Early pre-contact				Early pre-contact	
113	Leopard Kopje						Early contact				Early contact	
119	Leopard Kopje	Khami	Venda		Khami	EU trade beads (Venda)	Early contact				Early pre-contact	Early contact
152	Bambata	Zhizo	Leokwe				Late pre-contact	Early contact	Leopard Kopje		Leopard Kopje	

4.3. ANALYSIS OF MBERE SHELTER AND DEN STAAT AB 32

4.3.1. Mbere Shelter

4.3.1.1. Lithic artefacts

In total 5 469 lithic artefacts were analysed (Table 4.16; Appendix C.6 & Appendix D.6-D.9). CCS are the most common raw material type (n=2 982; 54.53%) followed by quartz (n=1 684; 30.79%), dolerite (n=492; 9%), quartzite (n=277; 5.06%) and agate (n=34; 0.62%). These frequencies most closely resemble early contact and Leopard's Kopje assemblages (see Appendix C.4). From the assemblage, 2.14% (n=112) of the lithics are formal tools. This includes scrapers, adzes, awls, backed bladelets, a plane, a segment and miscellaneously backed and retouched pieces. Almost all of the formal tools are made from CCS (n=106; 94.6%). There are only three quartz tools (2.68%), two dolerite tools (1.79%) and one quartzite tool (0.89%; Appendix C.6).

4.3.1.2. Non-lithic artefacts

Earthenware ceramics, beads, charcoal, bone, worked wood, dung, ash and seeds were present at the site. For the purpose of this project only the ceramics and beads were analysed. Thirty seven beads were recovered in various stages of production. The most common bead type is bone beads (n=23; 62.2%), there are much fewer OES beads (n=5; 13.5%) and one *Achatina* bead (2.7%). Analysed beads came from spits 99.500 to 99.300 (Figure 4.17), which corresponds to the depth with the highest concentration of lithics. No glass beads were analysed as they are amongst the misplaced artefact bags.

No decorated ceramics were found; only undecorated and undecorated rim sherds. All came from between the spits 99.500 and 99.400 (Figure 4.18) where most of the lithics and beads were found. Some ceramics may also be missing.

4.3.1.3. Sequence

The change in artefact density is the most noticeable change in the Mbere assemblage (Figure 4.19). There is a concentration of artefacts within which nearly all the known ceramics and beads were found. Raw material diversity is variable throughout the sequence but does not change significantly. Only at 99.350 is there a noticeable difference (refer to Appendix C.6). Here, crypto-crystalline and agate peak and quartz is at its lowest. At this level, the relationship between scrapers and backed bladelets is 5:1 as opposed to 16:1 and 19:1 in the two overlying levels. In addition, other

tools are the most common tool category representing 50% (n=6) of the formal tools at this level. Above this relatively high level of formal tool diversity, the trend is resumed and scrapers dominate.

4.3.1. Den Staat AB 32

4.3.1.1. Lithic artefacts

Two thousand four hundred and sixty nine lithic artefacts were recovered from trench IV at Den Staat AB 32 (Table 4.17; Appendix C.7 & Appendix D.9). Quartz dominates the lithic assemblage (n=1 176; 47.63%) as opposed to crypto-crystalline (n=849; 34.39%). Dolerite (n=259; 10.49%), agate (n=112; 4.54%) and quartzite (n=73; 2.96%) are poorly represented at the site. In total the tools account for 1.05% (n=26) of the total lithic assemblage. Other tools (n=10; 38.5%) are the most common tool type, followed by backed bladelets (n=6; 23.1%), scrapers and segments (each n=4; 15.4%) and adzes (n=2; 7.69%).

4.3.1.2. Non-lithic artefacts

A range of farmer items were found in the excavation. This includes ceramics, OES and glass beads and copper. Farmers occupied the site from the Zhizo period to the more recent Letaba period. This has been determined by Tom Huffman using the ceramic index (Huffman pers. comm.). Glass and OES beads were found at the sites throughout the levels. None of the above is reported here as their association with the forager or farmer record is uncertain. The deposition sequence in trench IV is uncertain as the deposit has been heavily burrowed.

4.3.1.1. Sequence

Throughout the deposit quartz is consistently dominant and raw material frequencies remain relatively constant. Few formal tools are present in the assemblage but tool diversity is high. More than half the tools are crypto-crystalline (n=14; 53.8%), while 30.8% (n=8) are made from agate and 15.4% (n=4) are made from quartz. Spits 1, 2 and 6 have high frequencies of tools where as the remaining spits have relatively similar tool frequencies. This assemblage closely resembles many of the open air assemblages identified in the archaeological survey (Appendix C.3).

Table 4.16: Mbere Shelter analysis.

		Raw material (%)					Formal tools													Formal tool raw material (%)					Intensification					Ceramics	Beads						
Square	Spit	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Scrapers	Scraper %	Backed bladelets	Backed bladelet %	Segments	Segment %	Adzes	Adze %	Other tools	Other tool %	Scraper ratio	to Backed bladelets	including segments	and adzes	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Total artefacts	Total per spit	Percent per spit	Formal tools per spit	Total formal tool percent		OES	OES incomplete	OES frag	Achatina	Achatina frag	Bone	Bone frag
P8	99.65	55.81	0.00	32.56	6.98	4.65	1	100	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	100	0	43	43		1	2.33		0	0	0	0	0	0	0
	99.60	53.57	3.57	17.86	8.93	16.07	1	100	0	0	0	0	0	0	0	0	1	0	0	0	100	0	0	0	0	56	56		1	1.79		0	0	0	0	0	0	0
	99.55	54.64	1.03	25.77	12.37	6.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	97		0	0		0	0	0	0	0	0	0
	99.50	51.29	0.35	29.98	8.55	9.84	6	60	0	0	0	0	0	0	4	40	6	0	0	0	90	0	0	0	10	854	854		10	1.17	9	2	0	0	0	2	2	0
	99.45	51.52	0.49	34.00	8.95	5.04	19	59.4	1	3.13	0	0	2	6.25	10	31.3	19	1	0	2	90.6	0	9.38	0	0	1844	1844		32	1.74	2	1	1	1	1	0	10	1
	99.40	55.32	0.52	31.41	9.54	3.20	32	69.6	2	4.35	1	2.17	2	4.35	9	19.6	16	1	0.5	1	97.8	0	0	2.17	0	1719	1719		46	2.68	1	0	1	1	0	0	8	1
	99.35	66.77	2.17	19.88	9.01	2.17	5	41.7	1	8.33	0	0	0	0	6	50	5	1	0	0	100	0	0	0	0	322	322		12	3.73		2	0	0	0	0	2	0
	99.30	50.00	1.85	37.04	9.26	1.85	0	0	0	0	0	0	0	0	1	100	0	0	0	0	100	0	0	0	0	54	54		1	1.85		0	0	0	0	0	1	0
Q8	99.65	55.5	1.37	24	10.3	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	146		0	0		0	0	0	0	0	0	0
	99.60	65.7	0	29.2	3.43	1.72	6	66.7	1	11.1	0	0	0	0	2	22.2	6	1	0	0	100	0	0	0	0	233	233		9	3.86		0	0	0	0	0	0	0
	99.55	59.4	0	24.8	12.9	2.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101	101		0	0		0	0	0	0	0	0	0
P&Q	99.65	55.6	1.06	25.9	9.52	7.94	1	100	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	100	0	189	189		1	0.53		0	0	0	0	0	0	0
	99.60	63.3	0.69	27	4.5	4.5	7	70	1	10	0	0	0	0	2	20	7	1	0	0	100	0	0	0	0	289	289		10	3.46		0	0	0	0	0	0	0
	99.55	57.1	0.51	25.3	12.6	4.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	198	198		0	0		0	0	0	0	0	0	0
	99.50	51.29	0.35	29.98	8.55	9.84	6	60	0	0	0	0	0	0	4	40	6	0	0	0	90	0	0	0	10	854	854		10	1.17	9	2	0	0	0	2	2	0
	99.45	51.52	0.49	34.00	8.95	5.04	19	59.4	1	3.13	0	0	2	6.25	10	31.3	19	1	0	2	90.6	0	9.38	0	0	1844	1844		32	1.74	2	1	1	1	1	0	10	1
	99.40	55.32	0.52	31.41	9.54	3.20	32	69.6	2	4.35	1	2.17	2	4.35	9	19.6	16	1	0.5	1	97.8	0	0	2.17	0	1719	1719		46	2.68	1	0	1	1	0	0	8	1
	99.35	66.77	2.17	19.88	9.01	2.17	5	41.7	1	8.33	0	0	0	0	6	50	5	1	0	0	100	0	0	0	0	322	322		12	3.73		2	0	0	0	0	2	0
	99.30	50.00	1.85	37.04	9.26	1.85	0	0	0	0	0	0	0	0	1	100	0	0	0	0	100	0	0	0	0	54	54		1	1.85		0	0	0	0	0	1	0

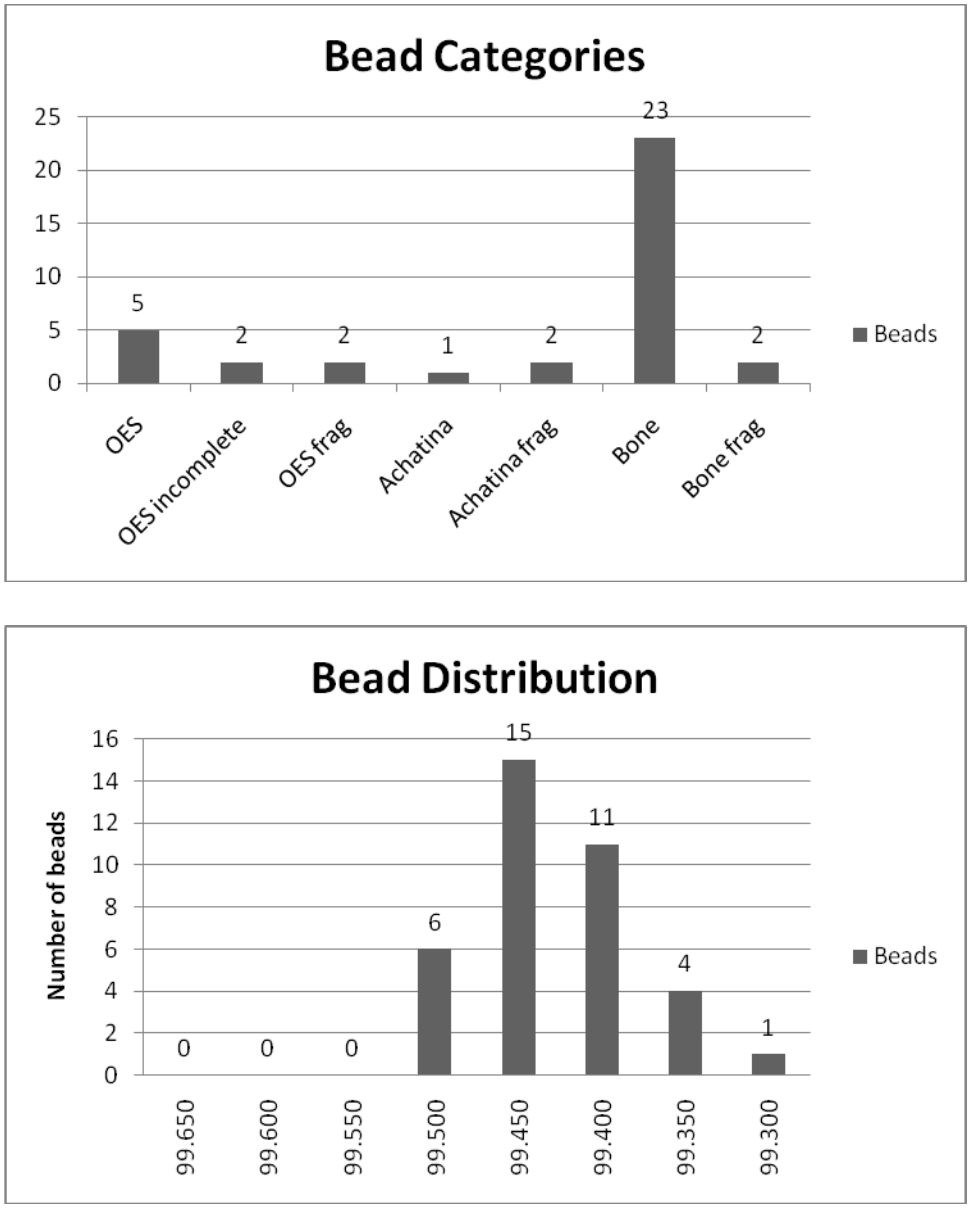
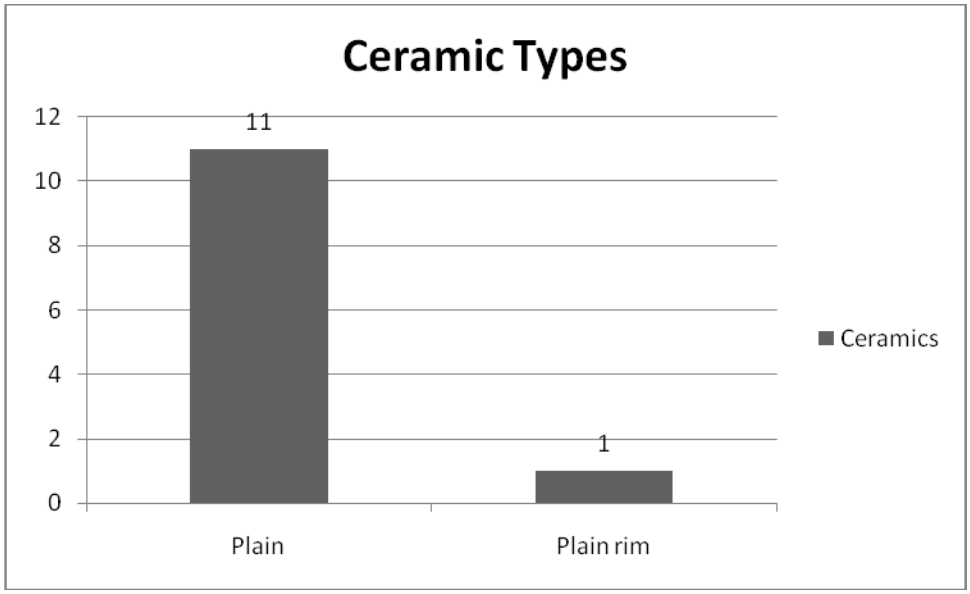


Figure 4.17: Bead details from Mbere Shelter.



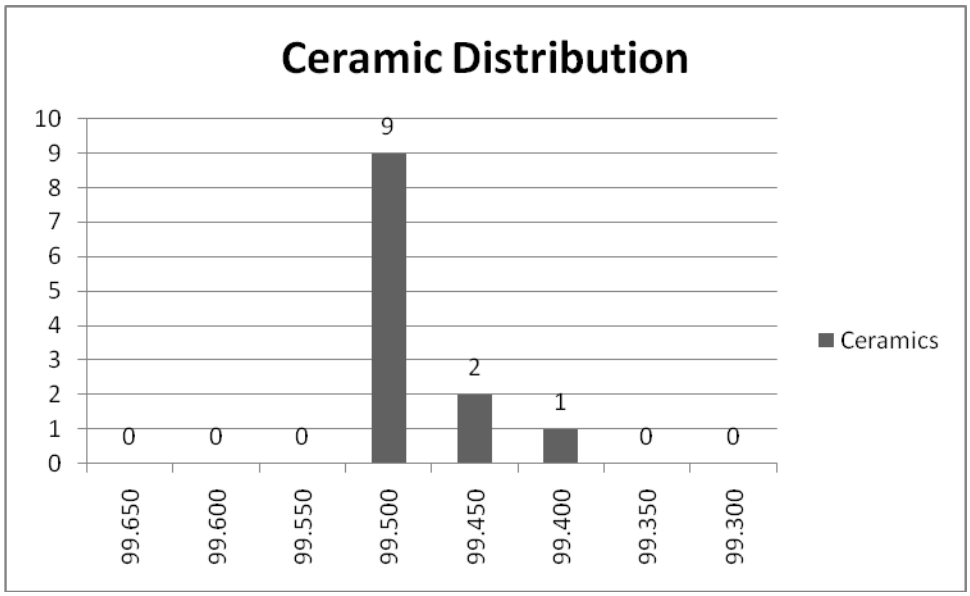


Figure 4.18: Ceramic details from Mbere Shelter.

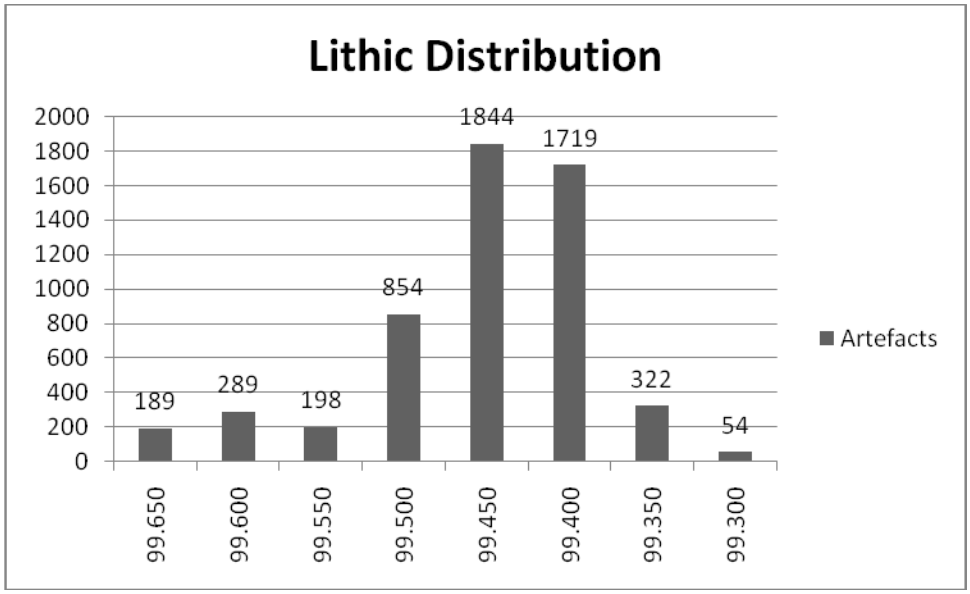


Figure 4.19: Lithic distribution at Mbere Shelter.

Table 4.17: Den Staat AB 32 analysis.

Spit	Raw material (%)					Formal tools													Formal tool raw material (%)					Intensification				
	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Scrapers	Scrapers/spit	Backed bladelets	Backed bladelets/spit	Segments	Segments/spit	Adzes	Adzes/spit	Other tools	Other tools/spit	Scrapers ratio	to Backed bladelets	including segments	and adzes	Crypto-crystalline	Agate	Quartz	Dolerite	Quartzite	Total artefacts	Total per spit	Percent per spit	Formal tools per spit	Total formal tool percent
1	32.6	6.19	48.3	9.11	3.83	2	20	2	20	3	30	1	10	2	20	1	1	1.5	0.5	40	50	10	0	0	549	549	100	10	1.82
2	34	5.5	45	11.8	3.66	1	14.3	2	28.6	0	0	0	0	4	57.1	0.50	1	0	0	85.7	0	14.3	0	0	655	655	100	7	1.07
3	37.1	6.82	36.4	15.9	3.79	0	0	0	0	0	0	0	0	1	100	0	0	0	0	100	0	0	0	0	132	132	100	1	0.76
4	40.6	6.52	45.7	5.8	1.45	0	0	0	0	0	0	1	33.3	2	66.7	0	0	0	1	33.3	66.7	0	0	0	138	138	100	3	2.17
5	37.8	2.8	52.4	5.59	1.4	1	33.3	1	33.3	0	0	0	0	1	33.3	1	1	0	0	33.3	33.3	33.3	0	0	143	143	100	3	2.1
6	35.4	1.84	51.1	9	2.66	0	0	1	100	0	0	0	0	0	0	0	1	0	0	0	0	100	0	0	489	489	100	1	0.2
7	29.6	4	45.6	18.4	2.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125	125	100	0	0
8	34.7	2.04	52	10.2	1.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	98	100	0	0
9	31.4	2.86	51.4	12.9	1.43	0	0	0	0	1	100	0	0	0	0	0	0	1	0	100	0	0	0	0	140	140	100	1	0.71

4.3.2. Mbere Shelter, Den Staat AB 32 and the Dated Cultural Sequence

Mbere Shelter and Den Staat AB 32 were compared to the excavated sequence the same way as open air assemblages. Each spit was considered in isolation before being grouped together with the spits above and below it. In this way, it could be seen whether preceding and succeeding spits fitted into the same cultural period. If so, one can argue that the site was occupied or utilised during one cultural phase. Mbere Shelter provided the most useable data since it was more similar to the excavated sequence than Den Staat AB 32. The most similar assemblages come from either the early contact or Leopard's Kopje periods (Table 4.18). No period dominated at Den Staat AB 32. Instead a range of possibilities presented themselves. Most frequently, Den Staat AB 32 compared to early contact and Leopard's Kopje contact periods followed by late pre-contact and Zhizo contact periods. The high diversity in tool types has been noted at Balerno Main Shelter, Tshisiku Shelter and Balerno Shelter 2 during these periods. Alas, due to mixing, it cannot be said whether the lithic assemblage at Den Staat AB 32 represents a palimpsest, as it seems, or is a single occupation (Table 4.19).

Table 4.18: Critical variables from Mbere Shelter compared to the dated sequence.

B = Leopard's Kopje
C = Zhizo
D = Early contact
E = Late pre-contact
F = Early pre-contact

	Raw Material					Formal Tools					Formal RM					Total					
Spits	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	
99.650	4	1	3	1	1	4	3	1	0	3	0	0	0	0	0	8	4	4	1	4	B
99.600	2	2	2	1	0	3	2	4	0	1	0	0	0	0	0	5	4	6	1	1	D
99.550	2	1	3	0	1	1	1	4	0	1	0	0	0	0	0	3	2	7	0	2	D
99.500	3	0	0	3	0	7	1	4	0	3	0	0	1	0	0	10	1	5	3	3	B
99.450	1	3	2	0	0	5	0	4	1	3	0	0	0	0	0	6	3	6	1	3	B/D
99.400	1	1	1	0	0	3	4	3	4	2	0	0	0	0	0	4	5	4	4	2	B/D/E
99.350	2	0	1	1	0	1	1	0	0	3	0	0	0	0	0	3	1	1	1	3	B/F
99.300	1	0	1	0	0	1	1	3	0	1	0	0	0	0	0	2	1	4	0	1	D

Table 4.19: Critical variables from Den Staat AB 32 compared to the dated sequence.

B = Leopard's Kopje
C = Zhizo
D = Early contact
E = Late pre-contact
F = Early pre-contact

	Raw Material					Formal Tools					Formal RM					Total					
Spits	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	B	C	D	E	F	
1	1	2	1	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	1	0	C
2	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	2	1	1	0	0	B
3	3	3	2	1	0	2	1	2	0	1	0	0	0	0	0	5	4	4	1	1	B
4	0	1	2	2	0	1	0	1	0	0	0	0	0	1	0	1	1	3	3	0	D/E
5	1	0	2	0	0	1	0	1	0	0	0	0	0	1	0	2	0	3	1	0	D/E
6	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	1	0	0	B
7	0	0	0	1	0	2	1	2	0	1	0	0	0	0	0	2	1	2	1	1	B/D
8	0	0	0	0	0	2	1	2	0	1	0	0	0	0	0	2	1	2	0	1	B/D
9	0	1	1	0	0	1	1	1	0	1	0	0	0	0	0	1	2	2	0	1	C/D

5. DISCUSSION

In southern Africa, foragers interacted with farmers in different ways with disparate outcomes. On the Mapungubwe landscape, Van Doornum (2005) believes that contact with farmers was sporadic. She suggests this based on a series of shelter excavations in which few farmer trade items were present. Here, however, it is shown that this may be the case at many shelters but certainly not at all forager sites. The cultural signature of many open air sites differs remarkably to those in shelter contexts. Below, the discrepancies in the lithic inventory between shelter and open air sites are discussed as well as other related topics.

5.1. FORAGER CAMPS ON THE MAPUNGUBWE LANDSCAPE

Foragers occupied their landscape unevenly (Foley 1981). Two periods of occupation can be defined. Before the arrival of farmers, foragers had access to 'free space' (Hall & Smith 2000), while during contact periods, forager movements were restricted by farmers (Moore 1985). The degree to which forager mobility patterns were restricted relates to how farmers subjugated foragers (Kent 2002b). Therefore, by studying the changes in forager mobility patterns across the contact divide, one may be able to determine something about the nature of forager and farmer relationships. To do so, we need to look at the distribution of forager camps and consider what factors may have played a role in influencing site selection.

Forager camps are found in all environmental zones in the study area. On the plateau, where there is little water and thus an area unfavoured by farmers, the highest amount of Holocene sites is found. However, this may not be entirely accurate because four additional sites were analysed here as test samples but were not included in the study. A large number of sites exists in the sandstone koppie belt. Here, there is limited space and where open areas do occur, farmer settlements are frequently found (Hanisch 1981a). Fewer sites were found in the Kolope drainage basin relative to the other zones in the survey area. Koppies in the basin do not possess as many sites relative to other zones in the survey area. The only exception is Hilda Koppie in the west where there are a number of sites with assemblages dominated by quartz near to a rain-control site. The relationship between these two site types has been examined by Schoeman (2006) and is discussed later in this chapter.

The study sites are found throughout the research zone in different environmental settings (Figure 4.4). Interestingly, a large amount of sites were identified on top of koppies (n=9; 28.13%). In some instances these are found near to rain-control sites such as at sites 93-96, 104, 105, 118-121, 123 and

124. Of these, sites 95 and 119 were analysed and it was found that both assemblages are dominated by quartz and lacked formal tools. Some sites, including 76, 78-89, 108-110, 125 and 126, were found on hill tops alongside farmer settlements. Although these sites were not analysed, when identified, the dominance of quartz was noticeable. However, the chronological relationship between the forager and farmer occupations cannot be firmly established without dates. Shelters, which are commonly excavated (Arthur 2008), may be less frequently utilised on the Mapungubwe landscape (n=5; 19.23%); although one cannot be certain due to the absence of dates. This is significant as more emphasis is placed on information collected in such contexts than from outside the shelter, where the majority of sites is located.

Forager site selection is influenced by a number of topographical features (Foley 1981; Cashdan 1983) and possibly human relationships (Hall & Smith 2000). On the Mapungubwe landscape, the environment is fairly uniform (Smith 2005) and animal populations are consistent throughout (see Estes 1992; Huffman 2008). Mopane woodland and shrub woodland dominates the area, with pockets of micro-environments found in the koppies and along river networks (see van Wyk & van Wyk 2007). The sandstone belt is densely interspersed by koppies, whereas the plateau is punctuated by them. Only one dominant sandstone ridge runs through the Kolope drainage basin and the escarpment marking the watershed is characterised by a hill complex in places. Overall, the terrain of the area is not rugged. Water courses are common in some areas but the only major water courses in the area are the Setonki and Kolope Rivers. When drawn up in a map (Figure 4.7), terrain ruggedness and water courses have an inverse relationship.

The distribution of sites does not correspond to either terrain ruggedness or the location of water courses. It may be as Hall and Smith (2000) argue that the human environment played more of a role with regard to forager site selection. Based on the results I have collected, those of the forager settlement pattern (see Figures 4.12 – 4.16) and the variable lithic assemblages (see Figures 4.10 & 4.11), this seems possible. Sites may have been used for different purposes (see Wadley 1989), hence their range of locations. Van Doornum's (2005) study sites all have different cultural signatures, which she believes is the result of variable activities at each site and the site's proximity to farmer settlements. To assess this, first the assemblages of the undated sites must be compared to the known sequence, and then, based on these results, the sites' chronological relationship with the changing Iron Age sequence can be discussed.

5.2. THE SIGNIFICANCE OF HOLOCENE SURFACE SCATTERS ON THE MAPUNGUBWE LANDSCAPE

Assemblages were analysed using Van Doornum's (2005) typological scheme. Subsequently, the analysis was reformed to only include three chronological indicators: raw material, formal tools and formal tool's raw material. Both Hall and Smith (2000) and Van Doornum (2005) recorded changes in occupation or activity intensity at sites during different periods. The density of surface assemblages, however, may be linked to occupation length and frequency rather than increases in activity or population size. Based on the appearance and relationship of the three chronological variables, sites can be compared to the changing archaeological sequence identified in a number of excavations (see Gelfand 1971).

Lithic assemblages are dominated by either CCS, quartz or both material types. Of these categories, the most insignificant are sites with fairly equal frequencies of CCS and quartz. Only three such examples were identified (11.54%). On the other hand, assemblages dominated CCS are common (n=14; 53.85%). This category includes all of the surface finds in shelters and some in the open. However, most open air assemblages are dominated by quartz (n=9; 34.62%). In fact, no quartz dominated assemblage was identified within a shelter. The location of sites' is therefore, a significant variable in explaining the different raw material combinations.

The spatial relationship of CCS versus quartz dominated assemblages is somewhat different. Assemblages dominated by CCS are distributed inside, and to a lesser extent outside, of shelters. Quartz dominated assemblages, on the other hand, are found exclusively in the open. In some cases, such as at Stindal Koppie to the east (sites 45, 50, 61, 65 & 66 in Figure 4.4), shelter and open air sites occur in close proximity to one another. These sites may be the product of variable activity patterns on the landscape, as has been found elsewhere (e.g. Wadley 1989; Hall 2000; Van der Ryst 2003; Van Doornum 2005). It may also be that some sites are located nearer to raw material sources. This is unlikely as many CCS and quartz dominated sites, such as those at Stindal Koppie, are in close proximity to one another and, therefore, any nearby raw material source. However, as I will argue, it seems more likely that quartz dominated sites are situated where they are because of the farmer settlement of the region even though the way in which foragers and farmers interacted over time may have varied. Zhizo ceramic-producing farmers first settled in the area, on the escarpment edge, AD 900 (Du Piesanie 2008). Later, when K2 ceramics appear around AD 1000, the farmer settlement became more extensive and the Kolope drainage basin was densely populated. The occupation alongside rivers and tributaries increases until the abandonment of Mapungubwe. In the Late Iron Age, this same occupation pattern is resumed (see Huffman 2007). Interestingly, the

zone most densely populated by farmers corresponds to the highest concentration of quartz dominated assemblages (Figure 4.11). In order to test whether the forager assemblages and farmer settlements are contemporaneous with one another, we must turn to the chronological indicators.

The change that formal tool categories and frequencies underwent when foragers came into contact with foreign communities has been extensively published (e.g. Deacon 1984a; Parkington *et al.* 1986; Wadley 1989; Hall 1994, 2000; Sadr 1997, 2002, 2005; Van der Ryst 1998, 2003; Hall & Smith 2000; Van Doornum 2000, 2005, 2007 2008). However, many of the study sites analysed for this project did not have a large amount of formal tools. Of significance, these are mostly sites where quartz dominated the assemblage; the average percentage of formal tools at these sites is 0.71%. This is in contrast to the much higher percent of formal tools at CCS dominated assemblages (2.11%) and assemblages in which both materials are equally represented (2.2%). Scrapers, backed bladelets, segments, adzes and other tools are found at sites dominated by CCS, quartz and both materials. The formal tool inventory does not differ between sites with different dominant raw materials, although, the frequency of tools does.

Noticeably, formal tools are consistently made on CCS and to a lesser degree on agate. This is recorded at sites where CCS, quartz or both materials dominate. Quartz is generally used in expedient tool technologies because it shatters into many pieces easily (Wadley 1996) thus creating many tools by using a bipolar flaking technique (Van Doornum 2005). CCS requires more work in order to produce a useable formal tool. It may be that at this juncture in time, foragers did not need as an extensive and large toolkit as before since they had included iron implements into their repertoire of tools. This would not only explain the lack of formal tools at sites near to farmer settlements, but also why they chose to live near to the farmers; for access to tools to perform various tasks and possibly resources. Nevertheless, the material from which tools are made is not related to the dominant raw material but does vary over time slightly (see Appendix C.4).These chronological indicators – raw material, formal tools and formal tools raw material – compare variably to the dated Holocene sequence. Surface shelter assemblages compare well to the excavated sequence as they are both dominated by CCS and have a large number of formal tools. In contrast, open air assemblages are not as comparable as few quartz dominated assemblages are found in shelters. The only shelter assemblage dominated by quartz is in the basal level at Little Muck Shelter. Its date has been suggested as pre-contact since no ceramics were found. However, this is not always the case as has recently been found in the Northern Cape. Here, researchers have identified an extensive LSA assemblage dating to within the last 500 years even though ceramics and other trade items are completely absent (Forssman *et al.* in press). Therefore, ascribing an

assemblage to a time frame based on the absence of artefacts is not advisable. In addition, the Little Muck Shelter assemblage is also rich in formal tools, unlike the open air assemblages. Alas, the assemblage is small and may not be a good indicator of what a shelter quartz dominated assemblage looks like. Therefore, chronological indicators do not only help in establishing a possible time frame in which assemblages can be grouped into, but they also highlight cultural inconsistencies between archaeological sites such as the CCS and quartz divide.

One major concern with surface assemblages is the superimposing of occupations. Some surface assemblages, however, appear to be single component. Included in this category are sites 1, 14, 32, 61, 65, 71, 76, 108, 110, 113, 119, 151, Balerno Shelter 2, Balerno Main Shelter and Little Muck Shelter. In each case the lithic inventory is associated to mostly one period based on its comparison to the excavated sequence. Furthermore, at sites 108, 110 and 119 the bead and ceramic index suggests the same time period as do the lithics. Unfortunately, these sites are the exception and not the rule. Most sites are in fact multi-component, suggesting multiple occupations over different pre-contact or contact phases. At sites 119 and 152 the lithic, bead and ceramic periods agreed with each other even though multiple periods were suggested. Therefore, typological cross-referencing helps in discriminating sites as either single or multi component.

We can now turn to placing the sites into chronological brackets and relating them to farmer settlements. Early and late pre-contact sites are found spread over the landscape in a variety of locations. This is to be expected as there were no farmers hindering the forager occupation. However, the sample size is small. Van Doornum (2005) believes this is because few foragers occupied the landscape pre-2000 BP. With the settlement of farmers at the Soutpansberg, forager activity on the Mapungubwe landscape increased (Hall & Smith 2000). However, forager camp distribution did not alter (Figures 4.12 – 4.16). Be that as it may, the locations of their sites may have changed; it is possible that while staying in the same area, foragers may have occupied land less favoured by farmers. Therefore, it does not seem likely that forager mobility patterns were considerably altered on the Mapungubwe landscape, as has been suggested elsewhere (see Moore 1985; Kent 2002b; Van Doornum 2005). Instead foragers adjusted their mobility pattern to suite interactions with farmers.

Shelter and open air sites relate differently to farmer settlement. Both are situated in close proximity to farmers, but it is the quartz dominated open air sites that are located alongside farmers. This is found in five cases (55.56%) whereas only 3 shelter sites are located near to farmer settlements (21.43%), some of which were occupied before the arrival of farmers (for example Tshisiku Shelter and possibly Little Muck Shelter). Furthermore, five of the open air sites may have

been occupied during contact periods (55.56%), one during pre-contact times (11.11%) and three sites were possible occupied in both pre-contact and contact periods (33.33%; Table 4.13). Interestingly, all the pre-contact possibilities of quartz sites fall into the early pre-contact bracket. This is in contrast to Schoeman's (2006) findings. She found quartz dominated assemblages, which lacked formal tools, associated with farmer rain-control rituals. Based on the similarities between the assemblages, it is possible that quartz dominated sites are directly related to the contact period and specifically to foragers interacting with farmers. However, whether Schoeman's (2006) assemblages are contemporaneous with open air assemblages discussed here is uncertain. In fact, whether all open air assemblages are contemporaneous is also unknown. It may be that there are in fact two periods in which quartz dominated assemblages occurred, one prior and one post contact with farmers. It is almost impossible to tell in the absence of dates. Further enquiry is required to test the link between these assemblages.

Shelter sites reflect a different pattern. Ten sites were occupied during contact periods (71.43%), one site before farmer settlement (7.14%) and three during both pre-contact and contact times (21.43%). Once again, there are more sites occupied during the contact period, suggesting an increase in forager activity or occupation on the landscape during these periods (see Hall & Smith 2000; Van Doornum 2005).

Open air assemblages may be the result of contact. It has been shown that CCS dominated assemblages, which are high in formal tool numbers, have occurred in shelters on the landscape for almost 10 000 years (see Van Doornum 2005). The only shelter with a quartz assemblage is Little Muck Shelter (see Hall & Smith 2000; Van Doornum 2005). It has also been noted that this assemblage is small and does not compare well to open air assemblages. The Little Muck Shelter assemblage has been given a pre-contact date based on the lack of ceramics. This may be the case, but the date afforded by Hall and Smith (2000) must be taken with a note of caution since Forssman *et al.* (in press) found that an absence of ceramics does not necessarily indicate a pre-contact period. Using typological cross referencing, open air sites are linked to assemblages from both pre-contact and contact periods, agreeing with Hall and Smith's (2000) but also Schoeman's (2006) findings. Nevertheless, the greater similarity with Schoeman's (2006) assemblages suggests open air sites may post-date contact.

The disparity quartz assemblages' has with known shelter sites may be the result of a different group of people occupying the landscape along with foragers prior to the arrival of farmers. In the Northern Cape, Doornfontein assemblages are predominantly made on quartz and have a high percentage of crudely made backed blades and flake blades (Humphreys & Thackeray 1983;

Sampson 1986; Parsons 2003) and thin-walled ceramics (Morris & Beaumont 1991). It has been suggested that these assemblages were produced by herding communities (see Parsons 2003, 2007). To the south, in the Western Cape, Smith *et al.* (1991) found that herder assemblages lack formal tools and may be complimented by a high index of ceramics.

On the Mapungubwe landscape, herder artwork has been identified (see Hall & Smith 2000; Eastwood & Smith 2005; Eastwood & Eastwood 2006). Foragers also painted Fat-tailed sheep, a species introduced into southern Africa by arriving herding communities (Eastwood & Eastwood 2006). Other than their art, there is no evidence that suggests herders settled on the landscape (Hall & Smith 2000). Therefore, one might be led to believe that the CCS and quartz divide is not so much a change in the way foragers used the landscape, but the result of the different people of the area. Three strands of evidence, however, cast doubt on this possibility:

1. Many quartz dominated assemblages have been found alongside and within farmer settlements. This may suggest that the two sites are linked.

2. Quartz dominated assemblages are similar to the assemblages Schoeman (2006) identified at rain-control sites. Foragers frequently partook in such rituals (see Van Doornum 2005).

3. At Little Muck Shelter, the small quartz dominated assemblage pre-dates early contact assemblages (although, as suggested above, this date must be taken cautiously).

Based on current evidence, it seems likely that these quartz assemblages were produced by foragers. However, whether this is because of variable site usage patterns or forager interactions with farmers cannot be said for certain. Further excavations at quartz dominated sites are needed to better understand these differences.

It seems likely that shelter and open air sites were used during the same period even though they have different lithic indices. Furthermore, it seems both were produced by foragers. Therefore, foragers were using the Mapungubwe landscape variably. Some sites are situated in or near farmer settlements while others slightly away inside shelters. Even though both site types are near to farmers, there are clear differences in their cultural signatures. Significantly, raw materials vary as do the frequency of formal tools. Sites near to farmers are dominated by quartz, an easy material to manipulate using bipolar techniques (Van Doornum 2005); possibly suggesting they began using iron implements. Strengthening this argument is the lack of formal tools in open air assemblages. It may be that this shift in forager mobility patterns and the reconstitution of their lithic index is the result of an increase in their dependence on farmers.

5.3. DISPARITIES IN THE EXCAVATED RECORD

All shelter excavations on the Mapungubwe landscape are dominated by CCS and are rich in formal tools. This has been recorded at five shelters. Analysis of surface assemblages located in shelters, with few exceptions outside of shelters, agrees with this trend. However, as has been discussed, most sites found in the open show a very different record. In two recent excavations, Mbere Shelter and Den Staat AB 32, the disparity between shelter excavations and open air surface assemblages is upheld. This further emphasises that foragers used shelter and open air sites differently.

5.3.1. Mbere Shelter

Mbere Shelter is situated less than 8 km from the Limpopo River, in the sandstone koppie belt. The shelter lies in the mopane veld zone close to a number of Iron Age settlements, which may be contemporaneous with the shelter's occupation. Mbere Shelter is approximately 4 km from Little Muck Shelter, 5 km northwest of Den Staat AB 32 and more than 9.5 km east from the Balerno sites and Tshisiku Shelter.

The Mbere Shelter assemblage is generally uniform throughout the deposit. It is dominated by CCS, quartz is frequent and all other materials are relatively low. While these figures fluctuate throughout the deposit, the general trend described is consistent. Only at 65 cm below the surface is there a noticeable change. Here, both CCS and agate peak, quartz declines, there is a high diversity of tools made exclusively on CCS and two OES and two bone beads are found. Little can be said about this difference in the cultural record as it is only represented by 322 artefacts with no dates.

The artefact distribution varies throughout the deposit. The majority of artefacts are concentrated between 50 cm and 60 cm below the surface (Figure 4.19). All the known ceramics appeared at these levels (Figure 4.18) and most of the beads (Figure 4.17). This data, the uniformity of the assemblage and its vertical distribution, suggest that if there were multiple occupations at Mbere Shelter, they may have been during one of the cultural phases. Alas, this cannot be said for certain without more data and radiocarbon dates. It may be that lithics found around this concentration are due to post-depositional processes. In the upper levels, it may be the equivalent of what Hall and Smith (2000) and Van Doornum (2005) found during the Leopard's Kopje contact period. They interpreted the decline in artefact numbers as indicating a decrease in occupation intensity. Morris Sutton, the primary excavator, reported more ceramics in the upper levels than in the lower bead rich levels (Sutton 2004) along with tools. Unfortunately, this was not analysed (as many of the artefact bags are missing) and the implications of these observations cannot be determined as most

of the non-lithic samples were misplaced prior to this study. Nevertheless, it is difficult to determine whether this is in fact a decrease in forager activity at the shelter in the absence of dates and refitting studies.

According to Hall and Smith (2000), Little Muck Shelter was used for its proximity to Leokwe Hill, an Iron Age centre. At the shelter, a range of farmer and forager trade items dating to the Zhizo contact period were found suggesting foragers here were interacting with the farmers on a frequent basis. Mbere Shelter is located approximately 2.6 km from Leokwe Hill. Excavators reported glass beads at the shelter (which have also been misplaced), yet other than a few examples, only ceramics were found. Therefore, it does not seem likely that the site was not utilised as a campsite and/or workshop as Hall and Smith (2000) argue for Little Muck Shelter based on the sporadic findings of trade items. At Balerno Shelter 2 and 3 and Tshisiku Shelter few farmer artefacts were recorded (Van Doornum 2005). Mbere Shelter is most like these sites, which, excluding Tshisiku Shelter, were most probably occupied during dispersal phases explaining the limited assemblages'.

5.3.1.1. Comparison with the dated sequence

The lithic assemblage from Mbere Shelter most closely resembles either an early contact or Leopard's Kopje contact period assemblage. Artefacts from LSA sites dating to the Leopard's Kopje period (AD 1010 – AD 1300) are characterised by formal tools mainly on CCS, which are only or mostly scrapers. A general decline in artefact numbers is recorded at all sites from this period (Hall & Smith 2000; Van Doornum 2005). Hall and Smith (2000) and Van Doornum (2005, 2008) believe this is because foragers either began assimilating with farmers, spending more time at fewer shelters or moving off the landscape. This might explain the few artefacts in the upper levels. On the other hand, early contact assemblages (AD 100 – AD 900) are scraper rich but with some tool diversity. Formal tools are mostly made on CCS, yet other raw materials such as quartz, agate, dolerite and quartzite feature more so than in Leopard's Kopje assemblages. Discriminating between assemblages from different time periods is made difficult by the variability between excavated sites. In order to accurately place Mbere Shelter into the chronological sequence of the Mapungubwe landscape carbon dates are required.

5.3.1.2. Comparison with open air assemblages

Regardless of when Mbere Shelter was occupation, it bears little resemblance to many of the open air scatters. Outside of shelters quartz dominated sites occur alongside CCS dominated sites, suggesting that raw material variation may be linked to site function. Activities determine stone tool types (see Deacon & Deacon 1980, 1999; Parkington 1980; Deacon 1984a; Hall & Smith 2000).

Therefore, depending on the function of a site, the stone toolkit varies (Mazel & Parkington 1981; Parkington & Hall 1987). The lithic material type dichotomy on the Mapungubwe landscape may be the result of variable site activities occurring outside of shelters. Alternatively, and more likely, foragers may have moved to occupy space alongside or within farmer settlements and possibly began using iron implements. If so, this explains why there are fewer formal tools in the assemblage and why mostly quartz is utilised. To identify the presence of quartz dominated assemblages in shelters, more excavations are needed.

5.3.2. Den Staat AB 32

The ceramic sequence at Den Staat AB 32 includes Zhizo or Leokwe, K2, Transitional K2, Mapungubwe and Khami sherds. During the Khami period the site was a level 3 capital; however, before this the site was occupied during the Zhizo and Leopard Kopje periods. Nevertheless, in trench four a lithics assemblage was excavated. The site itself is located on the farm Den Staat alongside a sandstone ridge below the escarpment on the Limpopo River's floodplain approximately 3.8 km from the river. Little Muck Shelter is little over 2 km south of Den Staat AB 32, Mbere Shelter is 5.1 km southeast, the Balerno sites are between 7.9 km and 9.4 km southwest and Tshisiku Shelter is 12 km west.

The presence of lithics in this farmer settlement is significant. Unfortunately, it is difficult to make inferences based on the provenance of artefacts within the deposit as it has been heavily burrowed by animals. The lithics were excavated from the same levels as a range of earthenware ceramic sherds, spindle whorls, glass and OES beads and iron and copper items, which are all produced by farmers. Associations between cultural items cannot be established because of the degree of mixing. The highest proportion of lithics is found in the upper levels where as below, barring spit 6, tool frequencies are fairly consistent. To better understand the LSA sequence at Den Staat AB 32, more excavations in the vicinity of trench four are required.

All the lithics came from the eastern edge of the settlement where households were expected (Huffman pers. comm.). In the floodplain, where the site is located, large elephant herds supposedly occur naturally due to the extensive stand of grass (Huffman 2008 describes this as *Sporobolus pyramidalis* which he states is elephant grass. According to Gibbs Russell *et al*. (1991) and Van Oudtshoorn (1992) elephant grass is *Hyparrhenia collina* and *Pennisetum purpureum*. None of these species occur on the Mapungubwe landscape). This is where elephants were traditionally hunted by Zhizo ceramic-producing people occupying the escarpment edge (Huffman 2007, 2008a). Elephant ivory was traded for glass beads and cloth entering the area from the east coast (Huffman 2008). As

the Mapungubwe landscape farmers shifted their focus from trade to agricultural maximisation (Smith 2005), they began occupying this fertile zone (Du Piesanie 2008).

Based on the ceramic sequence, the initial Iron Age occupation of Den Staat AB 32 occurred early in the farmer sequence since Huffman (pers. comm.) identified either Zhizo or Leokwe ceramic sherds at the site. If the foragers occupied the site prior to the farmer occupation, the assemblage is possibly pre-AD 900. This places the assemblage into the shelter occupation period (from at least 8000 BP until AD 1000-1220) and during either the early or late pre-contact, early contact or Zhizo contact periods. Yet during these periods no assemblage with these features has been recorded in any shelter. It is suggested here that these quartz dominated sites reflect variable activity patterns at special purpose sites (see Wadley 1989) and that these sites, in general, have a different function to shelter occupations possibly because they are linked to the farmer settlement of the area.

Yet foragers may have been using the site in conjunction with farmers as has been recorded elsewhere (see Hall 2000). Foragers may have been allocated space in the settlement and disposed of lithics, as Hall (2000) believes, in their private areas. Seasonal interactions involving foragers moving to farmer settlements have been recorded in, but not exclusively, the Eastern Cape (Parkington *et al.* 1986; Hall 1994), the Magaliesberg (Wadley 1996), in Kutse (Kent 1992) and Thamaga in Botswana (Sadr 2002) and amongst Pygmy foragers in central Africa (Kenny 1981). In such cases, the lithic assemblage reflects different activities at sites located at different distances to farmer settlements. Schoeman (2006) found assemblages at rain-control sites on the Mapungubwe landscape associated with the farmer's use of the site. During the fieldwork for this project, sites were found that were possibly used in the same way (e.g. on Hilda Koppie; Huffman pers. comm.). Quartz is used in farmer rituals because of its triboluminescent qualities (it glows when hammered; see Whitely *et al.* 1999), which may explain its appearance at rain-control sites and alongside farmer settlements.

5.3.2.1. Comparison with the dated sequence

The Den State AB 32 assemblage is dominated by quartz and lacks a high frequency of formal tools. Van Doornum (2005) did not make such findings in any levels of her excavations, nor were such features recorded at Mbere Shelter. Little Muck Shelter has a quartz dominated basal level, which is thought to belong in the pre-contact period (Hall & Smith 2000; Van Doornum 2000). However, quartz dominated sites do not compare well to this assemblage as they lack a high frequency of tools. Tshisiku Shelter was occupied over the last 8000 years and a quartz dominated assemblage has not been recorded at the site (Van Doornum 2005, 2007). At Balerno Main Shelter the oldest dated lithic assemblage is *c*. 12000 BP; this is followed by a hiatus until *c*. 2400 BP from which it was

occupied into the Leopard's Kopje period (Van Doornum 2005, 2008). No quartz dominated periods were recorded here. This suggests the appearance of open air assemblages may be because of activities performed at sites outside of the shelter. Since these assemblages compare well to Schoeman's (2006) findings, it may be that foragers were living near farmers and performing various tasks. One cannot be certain but this may be ritualistically based (see Whitely *et al.* 1999) or represent an increased dependence on Iron Age tools. Examples of this have been recorded in many other contact situations in southern Africa (see Yellen 1984; Moore 1985; Hall 1990, 2000; Wadley 1996; Lee 2002; Sadr 2002; Van Doornum 2005).

5.3.2.2. Comparison with open air assemblages

The same quartz dominated assemblages are found at open air sites on the Mapungubwe landscape. Since we know that sites fulfil a function (see Binford 1964; Parkington & Hall 1987; Wadley 1996) and tools are designed for activities (see Parkington 1980; Deacon 1984a; Deacon & Deacon 1980, 1999; Hall & Smith 2000) it is tempting to view CCS and quartz dominated assemblages as the result of different activity patterns. The changes seem likely to be the product of foragers interacting with farmers. Even though the chronological association of Den Staat AB 32 and other open air assemblages is questionable, one must not forget that in the 8000 year occupation of Tshisiku Shelter, no quartz dominated assemblage was found (Van Doornum 2005, 2007).

Mbere Shelter and Den Staat AB 32 maintain the lithic trend discussed in this chapter. Quartz dominated assemblages are almost exclusively reserved to open air sites, whereas CCS assemblages are very much reserved to shelters. This paucity of overlap indicates a variation in the way these sites were used. Of interest is that it seems likely that the open air assemblages are linked to the Iron Age occupation of the area, and Den Staat AB 32 is found within a farmer settlement. Alas, dates at both site types are required to verify these links.

The major trends noted between shelter and open air sites are in terms of raw material and formal tools. Open air sites, like Schoeman's (2006) assemblages at rain-control sites, are dominated by quartz and have low numbers of formal tools whereas at shelter sites, CCS dominate and formal tools are common. Nevertheless, at both site types formal tools are predominantly made on CCS and to a lesser extent on agate. Spatially, open air sites are mostly located near to or within farmer settlements. While the chronological appearance of these sites may be during pre-contact or contact periods, at present it seems most likely that they are the result of interactions with farmers. Clear differences in forager sites suggest a spatially variable record that may hinge on the arrival of farming communities.

6. CONCLUSION AND RECOMMENDATIONS

One way to understand the way how ancient foragers and farmers interacted is through a regional archaeological study. On the Mapungubwe landscape, shelter excavations were used to determine the degree of contact, exchange and assimilation between these ethnic groups. Such excavations only cover part of the diversity in Holocene Stone Age sites. Studying a range of sites in a variety of locations offers better insight into the foragers varied interactions. Selecting facets of the landscape to study does not do justice to the rich archaeological record found throughout the landscape. Furthermore, the Holocene record is not continuous either temporally or culturally. Therefore, to understand foragers, we need to study a complete sample of sites distributed over the landscape.

The changing forager settlement pattern illustrates the nature of their relationship with farmers. It is thought that their mobility structure was disrupted when farmers first appeared. On the contrary, I did not find corresponding evidence on the Mapungubwe landscape. Instead, I believe that forager mobility patterns were altered on the arrival of farming people to complement their relationship. Using typological cross referencing, sites are given date brackets. In this way, it has been shown that foragers continued occupying a range of locations unevenly across the landscape regardless of the Iron Age farmers' presence. However, it is likely that foragers were in places unfavoured by farmers, such as the plateau or in the sandstone koppie belt. Therefore, farmer settlements influenced site selection, but did not inhibit forager mobility.

There is a clear difference between shelter and open air sites. Shelter sites are dominated by CCS and possess high numbers of formal tools relative to open air sites. On the other hand, open air sites lack tools and are dominated by quartz. The lithic index suggests that foragers were using these sites differently and possibly moving between them. Alas, the chronological placement of such sites and the forager's utilisation of them are uncertain.

CCS dominated assemblages have been found dating to at least 8000 BP (see Van Doornum 2005). Quartz assemblages, in contrast, have only been found at the basal level of Little Muck Shelter. This small assemblage has a range of formal tools, unlike open air assemblages. Alternatively, Schoeman (2006) found quartz assemblages in farmer rain-control sites, which lack formal tools. In such cases, quartz assemblages are directly linked to farmer activities. In comparing the open air assemblages to that of Little Muck Shelter and the rain-control assemblages, it appears there is a closer link to Schoeman's (2006) findings. If so, it seems likely that the open air site type appeared after the arrival of farming communities.

The spatial relationship between open air sites, shelter sites and farmer settlements further supports a post-contact date. Shelter and open air sites occur alongside each other. If the site types are the result of different activities, one would expect them to occur in different locations. Since this is not the case, it becomes necessary to turn to the human environment. Most of the open air sites are found next to, or in the case of Den Staat AB 32, within farmer settlements. This, I suggest, is because the sites are intrinsically linked to the Iron Age occupation of the landscape. At this time, foragers became more dependent on farmers and adjusted their lithic assemblage accordingly.

Foragers were not completely dependent on farmers. During contact periods, all the excavated sites including Mbere Shelter were occupied. At these shelters, CCS dominate, formal tools are frequent and the various stages of bead manufacture are present. Therefore, foragers moved between these two *modus operandi*; at times they lived alongside farmers but would also leave these comforts to maintain a more traditional lifestyle. Seasonal occupation alongside farmers has been recorded elsewhere in southern Africa (e.g. Kenny 1981; Parkington *et al.* 1986; Hall 1994; Kent 1992; Wadley 1996; Sadr 2002). It may be that foragers began living alongside farmers during dispersal phases in addition to small shelters. The reasons for this may be because foragers became ritual specialists such as in the Eastern Cape (Dowson 1998) and elsewhere (see Van Doornum 2005). Furthermore, moving towards farmers offers foragers a set of amenities and various subsistence securities (Lee 2002), which might prove favourable during the harsher winter months. Once this period is over, the aggregation phase of forager life begins and foragers congregate at sites such as Balerno Main Shelter, resuming a more traditional way of life. Over time, this pattern may deteriorate as foragers become sedentary, depending more so on the agropastoralist way of life (see Guenther 1977).

Without the use of a regional approach this data would not have been considered and yet it shows an important aspect of forager lifeways on the Mapungubwe landscape. I suggest three approaches to Holocene research in the area:

1. Significantly, this project has shown that we should conduct open air excavations. Den Staat AB 32 is a rich site that raises important questions about forager mobility and their relationships with farmers. As of yet, this is the only Holocene open air excavation that has been studied. Excavations at similar sites, but with a more secure stratrigraphic sequence, offers the possibility of dating such assemblages.
2. Additional survey is needed (a) to account for the sandveld zone, which was neglected in this project, and (b) to test the discontinuities between sites in the farmer-dense Kolope drainage basin and on the farmer-uninhabited plateau. It is in these zones that I suspect forager sites have different lithic indices.

3. Dates are needed to place open air sites into pre-contact or contact periods. If they can be obtained they will help to establish the changing forager mobility pattern from pre-contact to post-contact periods. Obtaining dates is a major challenge in open air archaeology as dateable material is seldom present on the surface (see Sadr 2009).
4. Van Doornum (2005) has shown that it is possible to identify cultural phases in the forager record found inside shelters. Is it, thus, possible to do the same with open air / quartz assemblages? To do so, dating is essential and a number of open air sites need to be excavated.
5. If it can be shown that open air assemblages are the result of forager interactions with farmers, it would be useful to investigate the differences between open air and shelter sites in a more robust one. For example, why did the foragers need to alter their lithic toolkit when they were occupying sites alongside or within farmer settlements? In other words, how did their activities change that required them to alter their lithic assemblage?
6. Once again, if it is shown that foragers did indeed alter their settlement pattern in relation to the changing Iron Age sequence of the Mapungubwe landscape, what are the reasons behind this? There are a number of possible responses to contact with farmers, such as assimilation, migration or co-operation, which of these did foragers undertake when farmers arrived on the landscape and why?

The forager occupation of the Mapungubwe landscape is complex. Previously, it was shown that each site has its own signature. Variables that influenced this are the site's proximity to farmers and its function. It has now been shown that there are in fact two site types and previous research only dealt with one of these. It is important to now complement what has been learnt through shelter excavations with what can be found at open air sites. Only in doing so, will we fully be able to understand the impact farmers had on foragers and why the forager record ceases when farmers abandon the landscape.

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