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Le Roux, Andreas

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IRON AGE FAUNA FROM SIBUDU CAVE, KWAZULU-NATAL, SOUTH AFRICA

Andreas le Roux

A dissertation submitted to the School of Geography,
Archaeology and Environmental
Studies, Faculty of Science University of the Witwatersrand,
In fulfillment of the requirements for the degree of
Master of Science.

Johannesburg 2014

DECLARATION

I declare that this Dissertation is my own, unaided work. It is being submitted for the Degree of Masters of Science at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

_____
(Signature of candidate)

_____day of _____20_____in_____

ABSTRACT

This dissertation provides an analysis of the faunal remains excavated from the BSV and BSS layers from Sibudu Cave, KwaZulu-Natal. Based on ceramics, presence of daga floors and glass beads found within the layers the BSV and BSS were classified as dating to the Iron Age period (AD 900-1660). The method of analysis follows Driver (2005).

The presence of taxa shows that natural occupants, non-human predators and human occupants accumulated the faunal material in Sibudu Cave. The taxa identified provide strong indication that at this time the site was predominantly occupied by farmers, who hunted wild ungulates and gathered marine taxa. The occupants may have used the site as a temporary shelter between camps or settlements and coastal sites. There is also some indication that the cave was utilised for religious purposes.

To my family

Anna, Gawie and Abrie le Roux

Thank you for your continued support and advice

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CHAPTER 1 – INTRODUCTION

"Part of the fascination of working with ancient bones is that they are parts of formerly living animals. Unlike potsherds or stone tools, bones have been alive, and their complexity reflects their origin"

O'Connor 2000: 5

Ancient bones or faunal material are often seen in the same light as bits of stone and sand, intermixed between other important archaeological artifacts and not worth mentioning or analysing. This seems to be the case for unidentified specimens smaller than 20 mm in length. For this dissertation, I will analyse the faunal remains excavated from the Iron Age layers at Sibudu Cave, KwaZulu-Natal. One particular challenge faced during this analysis was analysing a sample with a majority of faunal material which was less than 20 mm in length, both identified and unidentified. Due to its complexities, faunal material can be identified and analysed to understand how it was altered, both naturally and anthropogenically (Reitz & Wing 1999: 6; O' Connor 2000: 19).

Sibudu Cave is located west-south-west of the Tongati River, 15 km inland off the coast of KwaZulu-Natal and 40 km north of Durban (Figure 1.1). Historically, the location of Sibudu Cave is significant as the KwaZulu-Natal area has many archaeological sites associated with Middle Stone Age, Late Stone Age and Iron Age occupation. Sibudu Cave itself has been studied for more than two decades and has provided a wealth of information based

on Middle Stone Age human behaviour and stone tool production. Furthermore, the surrounding Thukela Basin provides a turbulent history of fighting between hunter-gatherers, farmers and European settlers as well as interaction and trade between such groups.

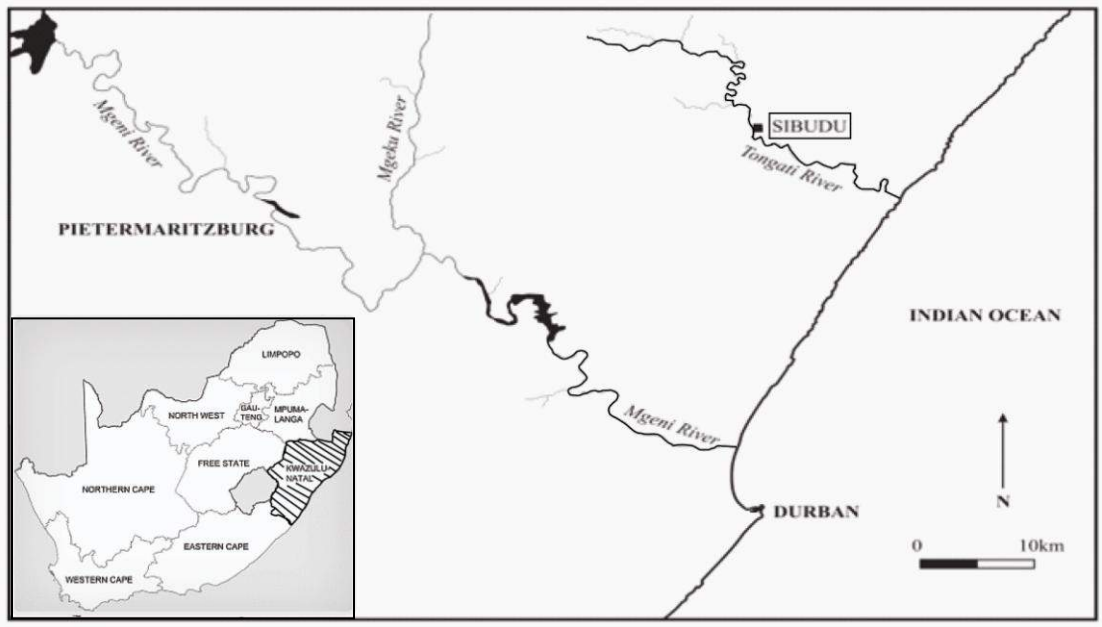


Figure 1-1: Location of Sibudu Cave (after Wadley & Jacobs 2004: 146)

For this dissertation, I will analyse the faunal remains excavated from the BSV and BSS layers at Sibudu Cave, KwaZulu-Natal in order to understand human subsistence patterns. The BSV and BSS material is likely to fall in the range of A.D. 900 – 1660, stretching through the Early to the Late Iron Age. Calibrated radiocarbon dates place the BSV and BSS layers at Sibudu Cave between A.D. 1020 and 1160 (Wadley & Jacobs 2004: 146; Scott 2005b: 7; Wood *et al.* 2009: 240); whereas glass beads, associated with Indian Ocean trade, found in a pit have a possible date of –A.D. 1450 – 1660 (Wood *et al.* 2009: 251).

There was no diagnostic Later Stone Age lithic material recovered from the excavated area, and very little sedimentary material separated the Iron Age material and Middle Stone Age material (Wadley & Jacobs 2006: 15).

1.1 Research goals

The identification of the faunal remains from the BSV and BSS layers of Sibudu Cave will provide insights into aspects such as prey selection and agents of accumulation. Comparisons can be made between the exploitation of animals in the current study and those from the Middle Stone Age, which have already been studied and published. In studying the animal remains, it is possible to provide information about possible selective transport of meat, preparation areas, ritual practices and tools made from faunal material (Reitz & Wing 1999).

1.2 Questions related to the analysis

1.) What animals are present within the BSV and BSS layers?
2.) What is the ratio of wild taxa compared to domesticated taxa within the sample?
3.) What taphonomic modifications are present on the faunal material?
4.) What is the ratio of human *versus* natural accumulation? In other words how much of the faunal material was collected through human activities and how much through other agents (Brain 1981; Reitz & Wing 1999)?

5.) How does the current study compare with the Middle Stone Age assemblage?
6.) Can the faunal assemblage aid in identifying whether hunter-gatherers or farmers accumulated the material?

1.3 Organisation of the dissertation

The chapters following this introductory chapter are as follows: chapter two will provide the history, movement and interaction of the inhabitants of the KwaZulu-Natal area namely San hunter-gatherers, Bantu-speaking farming communities, Portuguese traders and European settlers. Interaction between Khoe-San hunter-gatherers and Bantu-speaking farmers will be discussed, as well as trade on the east coast between Portuguese traders and Bantu-speaking farmers. Chapter two will conclude with reasons why groups such as hunter-gatherers and farmers would occupy cave sites.

In chapter three the deposition, collection and analysis of faunal material will be discussed, followed by chapter four where the methodology adopted during this analysis will be revealed.

Chapter five describes the location, environmental context and excavations conducted in Sibudu Cave. The Middle Stone Age and Iron Age research will also be discussed. The results from the faunal analysis on the BSV and BSS layers from Sibudu Cave will be discussed in Chapter six. Chapter seven will provide concluding comments and a discussion of the faunal material with comparisons between previous Iron Age and Middle Stone Age faunal material associated with Sibudu Cave.

CHAPTER 2 - HISTORY OF KWAZULU-NATAL

This chapter sets out the history of the groups who have inhabited the landscape over several thousand years, namely hunter-gatherer communities, farming communities, Portuguese traders and Dutch settlers. This will be followed by considering the reasons why people occupy cave sites and how caves are utilised by hunter-gatherer and farming societies.

Interaction between Khoe-San and Bantu-speaking communities during the Iron Age led to intermarriage, shifts in economies and exchanges of material culture. As interaction led to mixed material culture, it became difficult to recognise whether Khoe-San hunter-gatherers or Bantu-speaking farmers inhabited certain sites. The distinction is intensified when dealing with cave sites, as cultural material cannot always be linked to specific groups. It is therefore necessary to discuss the effects each group has had on the landscape, changes through time, increase of population densities, differences in diets and factors which influenced diets. In order to avoid confusion in the following chapters, I will refer to the Iron Age only as a period of time and not an industrial complex.

2.1 Hunter-gatherer societies in KwaZulu-Natal area

The tools that hunter-gatherers produced were a variety of stone tools, worked bone, ostrich eggshell beads and ochre (Mazel 1989: 36; Mitchell 2002: 169). Sibudu Cave in the Thukela Basin has provided a wealth of information relating to Middle Stone Age hunter-gatherers and information regarding lithic

production, floral and faunal remains, which will be discussed in chapter five. Other Middle Stone Age sites in KwaZulu-Natal include Umhlatuzana near Marianhill and Border Cave near the border of South Africa and Swaziland, both of which has yielded large archaeological deposits (Kaplan 1990; Beaumont *et al.* 1978). Research conducted in all three Middle Stone Age sites have provided better understanding of the origins and behavioural pattern of anatomically modern humans.

Later Stone Age sites in the KwaZulu-Natal area include iNkolimahashi Shelter, KwaThwaleyakhe Shelter, Collingham Shelter, Maqonqo Shelter, Mzinyashana and Umhlatuzana (Mazel 1992a, 1993, 1996, 1997, 1999, 2009; Mitchell 1996, 2002, 2010; Badenhorst 2003). The fauna associated with these sites are varied and are predominantly wild ungulates which may have occurred in the region at some point (Plug 1993a: 40; Plug & Badenhorst 2001). Ungulates which are historically known and typically found in Later Stone Age sites from KwaZulu-Natal include plains zebra (*Equus quagga*), bushpig (*Potamachoerus larvatus*), common warthog (*Phacochoerus africanus*), blue duiker (*Philantomba monticola*), red duiker (*Cephalophus natalensis*), common duiker (*Sylvicapra grimmia*), springbok (*Antidorcas marsupialis*), suni (*Neotragus moschatus*), steenbok (*Raphicerus campestris*), impala (*Aepyceros melampus*), grey rhebuck (*Pelea capreolus*), buffalo (*Syncerus caffer*), eland (*Tragelaphus oryx*), waterbuck (*Kobus ellipsiprymnus*), common reedbuck (*Redunca arundinum*) and mountain reedbuck (*Redunca fulvorufula*) (Plug 1992, 1993a, 1996b, 2002). The skills of Later Stone Age hunter-gatherers were varied as they hunted wild ungulates with various weapons (see chapter seven under wild

bovids for hunting methods), were proficient in fishing and gathered various plant material to use in foods, medicines and in religious ceremonies (Mitchell 2002: 169; Plug 2002: 55).

An example of a typical Later Stone Age site is Mzinyashana in the Upper Thukela Basin, which has a faunal assemblage that is typically found in the region. Taxa include spotted hyaena (*Crocutta crocutta*), zebra, bushpig, warthog, blue duiker, red duiker, common duiker, springbok, suni, impala, buffalo, eland and waterbuck (Plug 2002: 59-61).

The arrival of food producing communities around 1 400 years ago led to exchange and interaction between hunting and farming groups (Plug 2002: 52). As a result, sites such as iNkolimahashi Shelter, Mzinyashana Shelter and Collingham Shelter show signs that both hunter-gatherer and farming communities lived in the same areas (Mazel 1992a, 1999, 2009; Badenhorst 2003). iNkolimahashi Shelter which is in the Central Thukela Basin shows evidence of sporadic hunter-gatherer occupation and the presence of a single sheep phalanx, which would suggest that there was at least contact with farmers. The presence of domestic remains shows that hunter-gatherers in iNkolimahashi were familiar with domestic taxa or that a short occupation of farmers occurred in iNkolimahashi (Badenhorst 2003: 50-51). Whereas, taxa identified in sites such as Mzinyashana Shelter have very little contact between Bantu-speaking farmers and include species typically found in the area (Plug 2002: 55). Collingham Shelter which is in the Lower Thukela Basin has the presence of pottery several hundred years before the arrival of farming communities (Mazel 1992a: 26). Ceramic sherds from Collingham Shelter show that pottery may have been adopted before the

arrival of Early Iron Age farmers as they appear to lack decoration and differ in thickness (no more than 7-8 mm thick) (Mitchell 1996: 22-23; Mazel 1992b: 49). Faunal species from Collingham Shelter still occur or occurred there until recently which is typical of hunter-gatherer societies and the inhabitants of Collingham Shelter hunted small territorial ungulates as well as large herd ungulates (Plug 1992: 58). Similarities between ceramic traditions and the presence of ostrich eggshell beads and marine ornaments in Sehonghong; suggest that contact with the coast and Lesotho highlands were common (Mitchell 1996: 23).

Periods of short occupation, between the coast and mountains, could be due to increased exchange between other hunter-gatherer groups and farming communities in the area and general shifts in known boundaries (Mazel 2009: 104). Better grazing for wild animals and changes in seasonal vegetation are among the reasons hunter-gatherers would move between the east-coast and Drakensberg Mountains (Mitchell 2002: 169). Exotic cultural material associated with the coast found within inland sites, and *vice versa*, may indicate whether hunter-gatherers visited coastal sites, especially if marine sources are found several kilometres from the coast.

2.2 Iron Age farmers in KwaZulu-Natal area

Wright (2001) has suggested that farmer settlement in the KwaZulu-Natal area occurred in four stages. The first is the arrival of early farmers in the first millennium AD. Wright (2001) states that a ‘golden age’ of production followed between AD 1500 and 1800 where small groups of patriarchal settlements

formed and traded with each other. The third stage is the rise of the Zulu kingdom (known as the Mfecane) around AD 1810 and a general decrease in population and a large migration of people away from the Thukela Basin. The final stage is the arrival of Dutch settlers from the Cape in the mid-1820s which led to trade and increased warfare (Wright 2001: 163-164). The arrival of Dutch settlers will not be discussed in this chapter, as it does not pertain to the BSV and BSS layers of Sibudu Cave, which has a date from AD 900-1660, before the arrival of Dutch settlers.

2.2.1 Early Iron Age farmers

Early Iron Age (dating between AD 200 and AD 900) sites found in KwaZulu-Natal are divided into open air sites and sheltered sites (Table 2.1). Sheltered sites show signs that Later Stone Age occupants occupied the shelters before the arrival of early farmers. Interactions between hunter-gatherers and farmers during this period suggest that sheltered sites may be used for various reasons (which will be discussed below). Various authors (Hall, M. 1986; Maggs 1980a; Whitelaw 1994/95; Plug 2000; Mitchell 2002; Huffman 2007; Badenhorst 2008) suggest that Early Iron Age sites are typically situated around 1000 m above sea level, in coastal lowlands or in river valleys.

The arrival of early farmers in the first millennium AD provided increased trade of material goods such as ceramics, a greater focus on gathering floral resources and the introduction of domestic taxa (both faunal and floral) (Maggs 1980a: 5). Early farmers preferred sites in savannah areas where sorghum and millet was easily grown as well as sites in mixed bushveld which

provided edible plants and grazing for domestic taxa. Early farmers exploited ore sources for iron production and wood for use as fuel and in construction of villages (Maggs 1980a; Whitelaw 1994/95; Greenfield *et al.* 2005). According to Voigt (1986), Early Iron Age farmers hunted a wide variety of animals ranging from elephants (*Loxodonta africana*) and hippopotamis (*Hippopotamus amphibius*) to blue duikers and klipspringers. Domestic taxa such as sheep or goats (Ovis/Capra) dominate samples from the Early Iron Age (Badenhorst 2011: 169). Sheep or goats appear more often in Early Iron Age sites than cattle and early farmers cultivated domestic plant species such as sorghum and finger millet. They also collected wild nuts and marula fruits, marine molluscs and freshwater fishes (Maggs 1980a: 6; Greenfield *et al.* 2005: 310; Whitelaw 2009: 196; Badenhorst 2010: 89, 2011: 169). Evidence of freshwater fishing is mainly found at early farming communities as most settlements are found close to rivers (see chapter seven). Early farmer sites typically have pits for storing grain, and often pots without bases (bottomless pots), associated with girls' initiation rituals, which are associated with these sites (Whitelaw 1994/95: 45; Maggs 1980a: 5).

Table 2-1: Early Iron Age open air and shelter sites from KwaZulu-Natal. Note that shelter sites were also used by Later Stone Age hunter-gatherers

Site type	Site name	Region/area	Reference
Open air sites	Emberton way	KwaZulu-Natal north coast	Mitchell 2002; Horwitz *et al*. 1991
	Enkwazini	KwaZulu-Natal coastal plain	Mithcell 2002; Hall, M. 1980
	KwaGandaganda	Mngeni Valley	Whitelaw 1994/1995; Miller & Whitelaw 1994; Mitchell 2002; Maggs 1994
	Magogo	Thukela Basin	Mitchell 2002
	Mamba 1 & Mamba 2	Lower Thukela catchment	Mitchell 2002; Maggs 1994; Van Schalkwyk, L. 1994a
	Mhlanga Lagoon	KwaZulu-Natal north coast	Horwitz *et al.* 1991
	Mpambanyoni	KwaZulu-Natal north coast	Mitchell 2002
	Msluzi Confluence	Mngeni Valley	Whitelaw 1994/1995; Miller & Whitelaw 1994; Mitchell 2002; Maggs 1980b
	Nanda	Mngeni Valley	Whitelaw 1994/1995; Miller & Whitelaw 1994; Mitchell 2002; Maggs 1994
	Ndonondwane	Lower Thukela catchment	Greenfield et al. 1997; Greenfield et al. 2005; Whitelaw 1994/1995; Maggs 1980a; Maggs 1994; Fowler et al. 2011; Mitchell 2002

	Ntshekane	Thukela Basin	Mitchell 2002; Maggs 1980a
	Shongweni	Shongweni area	Mitchell 2002
	Umbeli Belli	KwaZulu-Natal north coast	Mitchell 2002; Mazel 1989
	Wosi	Lower Thukela catchment	Mitchell 2002; Maggs 1994, Van Schalkwyk, L. 1994b
Shelter sites	Clarke's Shelter	Upper Thukela catchment	Mazel 1992b
	Collingham Shelter	Lower Thukela Basin	Mazel 1992a; Mitchell 2002
	Driel Shelter	Upper Thukela catchment	Mazel 1992b; Mitchell 2002
	KwaThwaleyakhe Shelter	Central Thukela Basin	Mitchell 2002
	Good Hope Shelter	Southern Drakensberg	Mazel 1992b
	Mhlwazini Cave	Upper Thukela catchment	Mazel 1992b

Nanda, which is an Early Iron Age site situated northwest of Durban, has shown that early farmers typically herded cattle, sheep and goats as well as hunting small and very small ungulates (blue duiker and common duiker) and large animals such as bushbuck (*Tragelaphus scriptus*) and buffalo (Plug 1993a: 105-106). More domestic taxa occured than wild taxa, which is typical of Iron Age farming societies. A higher predominance for domestic taxa, especially sheep, is noted in the Nanda deposit. Other taxa which were used less significantly than domestic and wild ungulates include riverine species such as crocodiles (*Crocodylus niloticus*), fishes and freshwater molluscs (Plug 1993a 105-106).

Archaeological sites with a predominance of livestock (mostly sheep and some cattle) dating to the first century AD are predominantly associated with farmers (Sadr 2008: 182, 2013: 646). Before the arrival of farmers, Khoe-khoe herders may have migrated through the landscape, mostly along the western coast, during the second millennium AD, leaving an almost invisible archaeological signature (Sadr 2008: 191). In order to distinguish between farmers and herders the frequency of domestic taxa must be compared to the frequency of wild taxa. Domestic taxa in Later Stone Age sites are generally less than 10%, whereas domestic taxa identified in village-dwelling, iron-using farmer sites account for 40% of the faunal remains (Sadr 2008: 183, 2013: 646). Sadr (2013: 647) argues that a transition from casual herding (where few livestock remains are found in assemblages with predominant wild bovids) occurred before pastoral herders adopted distinct subsistence strategies resulting in the above mentioned siganture (Sadr 2013: 646-647; Sealy 2010).

2.2.2 Middle Iron Age farmers

During the late first Millennium AD (AD 900 – 1300) several parts of southern Africa produced and traded gold, ivory and other commodities extensively (Mitchell 2002: 300). This period of trade is known as the Zimbabwe tradition or Middle Iron Age. During this period trade and production was largely focused between the coast of Mozambique and the Zimbabwe interior. Products were traded for exotic goods such as glass beads and Middle Eastern ceramics (Mitchell 2002: 300; Huffman 2007: 362). During this period, wetter than present conditions allowed for larger human populations. The increased population size and increased trade between inland, coastal and transoceanic traders led to social stratification resulting in elites and commoners (Mitchell 2002: 302; Huffman 2007: 366). Elite residential areas were physically removed from common areas to higher locations such as hills, mountains and inaccessible cliffs. The separation of livestock also reflected social stratification, as commoners, who lived at lower elevations than the elites, relied on sheep or goats for meat, whereas cattle were reserved for the royal enclosure (Mitchell 2002; Voigt 1983; Huffman 1998, 2007; Meyer 1998). This reliance on sheep/goats and cattle, reflected a near-equal use of both taxa during the Middle Iron Age (Badenhorst 2011: 169). As the rich trade and production of gold, ivory and glass beads is not reflected in many sites in KwaZulu-Natal dating to the Middle Iron Age, I will not discuss the Zimbabwe culture any further.

2.2.3 Late Iron Age farmers

Research on Late Iron Age farmers, who appeared in KwaZulu-Natal during the second millennium, suggests a focus on cattle and a preference for sites on hilltops and sides of valleys (Maggs 1980a: 11). Other differences that have been noted between early and late farmers, in KwaZulu-Natal, are that settlements were smaller than early farmer sites and have less archaeological material present, suggesting shorter occupations and smaller groups of people (Maggs 1980a: 11; Badenhorst 2010: 90). Late Iron Age farmers used mixed grassland areas and thornveld fringes to plant crops (Maggs 1980a: 11-13). Ceramic styles changed during the Late Iron Age with differences in surface treatment, fabric, thickness, decoration and form (Van Schalkwyk, J.A. 1994: 113; Whitelaw 1994/1995: 175; Huffman 2007).

The settlement at uMgungundlovu, King Dingane's military headquarters, provides an excellent example of the fauna used by Late Iron Age farmers. Domestic taxa predominate with an abundance of cattle, which were tough and aged, indicating that the cattle were not slaughtered when they were young (Plug & Roodt 1990: 51; Badenhorst 2011: 169). Other taxa which were less in number include sheep/goats, common duiker, steenbok, chicken (*Gallus domesticus*), tortoise and hare (Plug & Roodt 1990: 50). The almost complete reliance on cattle is higher than in other high status sites like Mapungubwe, sites in the Orange Free State and sites along the Limpopo Valley (Plug & Roodt 1990: 52; Voigt 1983; Maggs 1984; Voigt & Plug 1981). Another

example of Late Iron Age sites with heavy reliance on domestic taxa is Mgoduyanuka, which is situated on the Tugela River. The occupants from Mgoduyanuka were cattle and sheep/goat herders, who preferred slaughtering cattle over sheep/goats. The cattle from Mgoduyanuka were of various age ranges, due to a different social structure than that noted in uMgungundlovu (Plug & Brown 1982). Wild animals which may have been hunted for recreational purposes include hippopotamus, impala and rhebuck (Plug & Brown 1982: 120). The reliance of fishing in inland sites in KwaZulu-Natal, decreases during the Late Iron Age and pits with bottomless pots are not present during the Late Iron Age (Maggs 1994/95: 176; Badenhorst 2010: 90). Whitelaw (2009) has suggested that Late Iron Age communities seemed to have avoided fishing (see chapter seven). He notes that Late Iron Age communities collect freshwater molluscs from rivers (Whitelaw 2009: 196). Freshwater molluscs were also found in exceptionally large numbers in Late Iron Age sites on the Shingwedzi River from Kruger National Park (Plug 1988: 46).

2.3 East coast trade during the 1500s

Interaction, trade and exchange were not limited to hunter-gatherers and farmers. Trade between Portuguese and Bantu-speaking farmers also occurred. During the sixteenth century, the east coast of southern Africa experienced various ship wrecks. The Portuguese, who were trading at the Cape of Good Hope at the time, were finding the voyage between Table Bay, Madagascar, Mozambique (Sofala) and India extremely difficult. Due to poor planning, inept pilots and shortage of food and

water, Portuguese were often stranded on the coasts between Cape Town and Sofala from AD 1505-1530 (Axelson 1973: 109-124). During this time, the ports in Mozambique were used to resupply and regroup materials before continuing on to India (Axelson: 1938: 128; Phillipson 2005: 291). The route between Cape Town and Sofala was largely unknown and various ships were ordered to explore the coastlines. Slaves and prisoners were used as explorers and were sent on land with small parties of Portuguese to trade with the Bantu-speaking farmers. Interactions between the Portuguese and Bantu-speaking groups often led to small skirmishes and planned attacks on villages. Very few Bantu-speaking groups traded with or helped the Portuguese and those who did, traded livestock (particularly cattle and sheep) for iron and other metallic implements (Axelson 1973: 119). The Bantu-speaking farmers in the KwaZulu-Natal region provided refuge for some of the Portuguese, who became stranded during the shipwrecks of the time. The Portuguese would seek out farmers and stay with them during winter, after which they tried to reach Mozambique and join other ships that had successfully traversed the coast (Axelson 1973: 202). Forts were built in Sofala and Kilwa in order to protect the trade route between the Cape and Sofala. Control of the trade route and the gold-rich interior was managed by the Portuguese (Phillipson 2005: 291).

2.4 Spread of farming communities in KwaZulu-Natal during the 1800s

During the 1700s, the most influential groups in the lower Thukela Basin were the Mthethwa chiefdom and the Qwabe

chiefdom, who had settled in KwaZulu-Natal before the arrival of the Zulu. The Qwabe settled on the lower Mvoti River and were rulers of the coastal chiefdoms between the Thongati and Mdloti Rivers (Wright 2001: 167; Huffman 2004: 101). During the 1800s, the political landscape was in turmoil due to shifting allegiances and increased trade. This period is known as the Mfecane. Between 1810 and 1820 increased political struggle in Delagoa Bay, between the Zulu and neighbouring chiefdoms, resulted in massive migrations, sporadic raids and battles in the Thukela Basin area. The source of tension was ostensibly due to increased export of ivory (both elephant and hippo), gold and slaves in particular (Wright 2001: 168; Eldridge 2001: 126; Huffman 2004: 107). Cobbing (1988) suggested that slaves were needed by European settlers due to massive demands for labour, and were shipped *en masse* to the Cape from 1827 onwards (Hamilton 1992:45).

In the midst of the tensions and movements across the landscape, the Zulu kingdom under the guidance of Shaka kaSengakhona arose. Military might and political alliances allowed the Zulu to overpower first, the ruling Qwabe and then, spread further south and west. By the early 1820s, the Zulu state ruled over most of the south-western and southern borders of the lower Thukela Basin resulting in major depopulation and devastation (Cobbing 1988: 509; Wright 2001: 169-172). Farming groups who were caught between the fighting were trying to avoid detection from the Zulu and inhabited forested areas and adopted a hunter-gatherer lifestyle with minimal herding and cultivation. Other groups who were attacked by the Zulu were forced to either move to other areas of KwaZulu-Natal, seized cattle from other groups

or make allegiances with neighbouring chiefs (Wright 2001: 168-176).

2.5 Why people occupy cave sites

During the Later Stone Age and Iron Age periods, cave sites in southern Africa were mostly occupied by hunter-gatherer groups and were mainly used as shelter, refuge or as religious sites. Hunter-gatherers in southern Africa have been known to retreat into mountainous areas to stay out of reach of farmers (Klatzow 1994: 9; Mazel 1986: 425; Mitchell 2002: 11). On some occasions, hunters exchanged and interacted with farming communities creating close social, religious, economic and political bonds (Mazel 1986; Hall & Smith 2000; Esterhuysen & Smith 2007; Plug 1996a; Klatzow 1994, 1996). Members of farming communities occupy cave sites in times of turmoil and for religious ceremonies (usually circumcision). Sites such as Balerno Shelter in the Shashe-Limpopo confluence (Hardwick 2013; Van Doornum 2008), Historic Cave in the Makapan Valley (Esterhuysen 2007; 2008 & 2009) and Lepalong Shelter in Carletonville (Hall, S. 1995) have been used as refuge sites by farming communities. Below, I will discuss the uses cave sites had for hunter-gatherers and farmers.

2.5.1 Shelter sites

Hunter-gatherer groups used caves or constructed huts in open air sites for shelter and protection against the elements and, depending on the circumstances, often interacted with farmers (Klatzow 1996: 328). As such, material culture of hunter-

gatherers and farmers may be mixed and may include domesticated animals, pottery, stone tools and ostrich eggshell products (Mazel 1986: 428). Mixed material culture may indicate a reciprocal relationship between hunters and farmers based on the *hxaro* system of exchange, which involves assistance and exchange between groups (Mazel 1986: 428). Balerno Main Shelter in the Shashe-Limpopo Confluence Area is an example of a hunter-gatherer cave site in which interaction and occupation is clearly distinguished. Balerno occupants used the site as an aggregation area until the second millennium AD (Van Doornum 2008: 271; Hardwick 2013). It may not always be clear who occupied shelters, but the presence of specific kinds of material culture and the ratio of domestic and wild taxa present within a site could indicate whether there is a shift in the economy practiced by the occupants of the site (Sadr 2008: 6).

2.5.2 Refuge sites

During periods of strife and dispute, both hunter-gatherer and farming communities have been known to use rock shelters as places of refuge (Klatzow 1996; Esterhuysen 2006; 2007; 2008 and 2010; Hardwick 2013; Le Roux *et al.* 2013; Hall, S. 1995). According to Klatzow (1996: 329), a San hunter-gatherer group near Thaba Bosiu in Lesotho retreated into mountainous areas in order to avoid confrontation with war mongering groups. The San groups, who lived in the Maluti Mountains, were approached by Moshesh the chief of Butha-Bethe, who attempted to establish friendly relations. The hunter-gatherers opted to take refuge and raid cattle from other groups during the eighteenth century

(Klatzow 1996: 329). The taxa identified in Roosfontein where the hunter-gatherers took refuge include wildebeest (alcelaphines), eland and impala (Klatzow 1996: 13).

Historic Cave in Makapans Valley, which is an example of a refuge site used by farmers, was occupied during a siege event in 1854 (Esterhuysen 2009: 1039). The Kekana under Chief Mugombane took refuge in what is now known as Historic Cave. In order to oppose the Trekkers, the Kekana acquired guns and munitions (Esterhuysen 2007; 2008 & 2009). They stored these supplies along with other materials such as cereals, water and a supply of livestock including sheep, goats and cattle in the cave. The evidence suggests that the cave was prepared beforehand for the imminent arrival of the Trekkers. A clear pattern is noted with the fauna from Historic Cave, where cattle and sheep/goats dominate followed by an abundance of small mammals (Le Roux *et al.* 2013: 7). Lepalong Shelter, which is another farmer refuge site, was occupied periodically by Tswana-speaking farming groups during the Mfecane between 1820 and 1830. Seventy decoy huts were built nearby a hilltop to give the impression that the Tswana had deserted their homestead. The group took refuge underground with supplies of maize, sorghum, millet and livestock (both cattle and sheep/goats) stored in several cave systems around the area (Hall, S. 1995: 320). As with Historic Cave, the Lepalong Shelter was prepared and set up beforehand for a lengthy refuge, in the form of stone and daub huts built in rows rather than the typical Central Cattle Pattern (Hall, S. 1995: 314; Lane 2004: 283). Refuge sites may have a short occupational deposit and less diversity in taxa compared to

shelter sites, which are occupied for longer and allow for regular hunting.

2.5.3 Places of power and ritual

Rock shelters have been used as ritual sites by both hunter-gatherer groups and farmer communities. Farmers used the same areas hunters previously used because they considered the sites to possess immense power (Hall & Smith 2000: 37). Sites like Saltpan Shelter and Little Muck Shelter in the Limpopo Province are sites where hunter-gatherers appropriated their use of power (Van Doornum 2008: 252). There are several ways in which hunter-gatherers appropriated their power, including painting ritualistic scenes on rocks and digging pits packed with stones and ash (Hall & Smith 2000: 33). Farmers used cave sites for initiation rituals, dug pits and filled it with artefacts that may have been used during the seclusion phase of girls' puberty rites (Hall & Smith 2000: 33). Cave sites were places where diviners would practice their arts, resulting in a small assemblage of wild animals, ritual paraphernalia and other gifts from perspective costumers (Wood *et al.* 2009: 248). Caves were also used by farmers for rain-control as they are secluded and located on the plateau away from farming settlements (Schoeman 2006: 164). Fauna identified from Ratho-Kroonkop, which is a rain-control site in the Shashe-Limpopo Confluence Area, has been associated with rain and rain-making ceremonies. Animals which have been associated with rain-making include rhinoceroses (*Ceratotherium simum/Diceros bicornis*), giraffes (*Girrafa camelopardalis*),

kudus, small antelope, birds (eg. the lightning bird) snakes, amphibians, fishes and molluscs (Brunton *et al*. 2013: 121-128).

Cave sites are mainly used for shelter and may be inhabited by both hunter-gatherer communities and farmer communities. The use of caves as refuge sites, only occur in periods of strife and dispute. Caves which are used for religious activities can be clearly seen through rock art and divining paraphernalia.

In this chapter, I have discussed the arrival of various groups of people in the KwaZulu-Natal region including hunter-gatherers, farmers Portuguese and Dutch settlers. Each group affecting the political and physical landscape in one way or another through interaction with each other. As mentioned, cave sites are used for shelter, refuge and as religious sites by both farmers and hunter-gatherers.

CHAPTER 3: DEPOSITION, COLLECTION AND ANALYSIS OF FAUNAL MATERIAL

This chapter provides a brief overview of the factors which affect faunal material during deposition, collection and analysis. First and second order processes will be discussed. Taphonomic modification present on faunal material will be discussed, with a particular focus on human and non-human modification and analyses of burned bone. A large amount of faunal material from the Iron Age layers of Sibudu Cave is burned. Finally the methods used to identify, quantify and analyse faunal material in southern Africa will be discussed.

In the 1960s and 1970s, archaeozoology researchers in southern Africa (Brain 1974; Voigt 1983; Plug 2001; O' Connor 2008) and abroad, produced lists of taxa and emphasized differences between biological and anthropogenic modification. These lists were produced without considering other factors which affect faunal assemblages (Plug 2001: 371; Reitz & Wing 1999: 17). As the sub-discipline grew and began to define itself, factors such as environmental, depositional and post-depositional modification, site formation processes, functionality, nutritional value, symbolism, cultural attributes, and human and animal interaction became increasingly significant during analysis of faunal material (Plug 2001: 371; Reitz & Wing 1999: 5-6; O' Connor 2008: 13).

3.1 Depositional and post-depositional factors affecting faunal material

Processes that modify or destroy bone assemblages need to be considered during analyses of faunal material. These can be divided into first and second order changes (Reitz & Wing 1999: 117; Lyman 2008: 7). First-order changes include all depositional and several post-depositional processes. Second-order changes are post-depositional processes which analysts control, such as recovery and identification of faunal material (Reitz & Wing 1999).

3.1.1 First-order changes

First order changes deal with processes that affect faunal material before archaeological recovery and are divided into biotic, thanatic, perthotaxic, taphic and anataxic processes (O'Connor 2000: 20).

Biotic processes are all pre-death processes which involve living animals being brought to a particular point and place in time (O'Connor 2000: 20). For this reason when identifying particular specimens, it is necessary to consider the prevailing climatic conditions in which the specimens would flourish (i.e. the biome) and the anthropogenic factors which caused the specimens to be present in a particular sample (for example the presence of bushpig in a forested biome or the introduction of domesticates to southern Africa) (O'Connor 2000: 20).

Thanatic processes (known as the death assemblage) include factors considered in the death and deposition of faunal remains

(O'Connor 2000: 20). Faunal assemblages accumulate either through active agents, such as human activities, scavenging predators or passive agents, such as natural deaths (known as background accumulation) (O'Connor 2000: 20; Davis 2002: 24; Lyman 2008: 23). The discard of material through human activity, is divided into three categories namely a kill site, residential refuse or an intentional burial (Reitz & Wing 1999: 120). A kill site or processing site, which often has one or two species present (low species diversity) and very little associated cultural material would be an area where an animal has been killed, the carcass processed and the nutritional resources taken back to the camp for processing. Residential refuse sites contain a variety of taxa processed for daily nutrition, processing and refuse and are found in a much larger residential scale with accumulated refuse. Intentional burial sites are the final type of deposit and are used to bury animals for personal reasons, ritual, or animals with economic value (Reitz & Wing 1999: 121).

As faunal material accumulates, it is disrupted and fragmented by post-depositional factors such as perthotaxic, taphic and anataxic processes (O'Connor 2000: 20). Perthotaxic processes include agents which affect and change the composition and location of faunal material within an assemblage. Perthotaxic processes include fluvial, aeolian, anthropogenic forces, bioturbation and topography. Bioturbation is the movement and fragmentation of bones caused by plant roots and small burrowing animals (Reitz & Wing 1999: 134). Taphic processes (chemical and physical processes) act upon faunal material after deposition or burial and affects how well it preserves. The final process, which form part of first order change, is anataxic processes. Anataxic processes

affect buried faunal material that have been re-exposed to the surface and may be altered by any of the factors mentioned above, such as cracking due to exposure to intense heat or weathering (O'Connor 2000: 20).

3.1.2 Second-order changes

Second order changes include sullegic and trephic processes and refer to archaeological activities. Sullegic processes include factors considered during excavation. Archaeological sites are not excavated based on the presumed abundance and location of faunal deposits. During excavation, several considerations are taken into account, which are mainly dependent on the research question, time, financial resources and labour available. An archaeozoologist should be present during sampling and excavation of faunal material in order to provide details on how to recover bone, what kind of sieving techniques are needed and the sample size required for analyses (O'Connor 2000: 29-31; Davis 2002: 28). The parameters for excavation and recovery need to be understood by all excavators in order to avoid missing bones, which may provide important details about taphonomic modification or reasons for deposition of material (Davis 2002: 29). Simple steps include using 1 mm mesh sieves instead of 3-6 mm sieves in order to recover smaller bones that may be missed like teeth, phalanges or micro-faunal and floral material (Klein & Cruz-Uribe 1984: 3; Reitz & Wing 1999: 147-148; O'Connor 2000: 31-33). While it is sufficient to use 1 mm sieves to retrieve most faunal and floral material, it may allow vertebrae of small fish and tiny teeth to go through.

Trephic processes refer to curation and analyses. Decisions employed in the sorting, recording and publication of archaeological material affect the ultimate results of the published work and the way archaeological material is understood and described (O'Connor 2000: 20). The factors discussed for first and second order changes should be identified, when possible, and are useful for reconstructing the deposition of faunal material. Below, I will discuss the factors considered during faunal analysis, with particular focus on trephic processes.

3.2 Taphonomic modification present on faunal material

During analysis, taphonomic modification on faunal material should be recorded. Below, I will discuss human and non-human modification present on faunal material as they are distinguishable from one another and provide details on the accumulators of an assemblage. I will also discuss burning patterns noted on bone and the methods of analysis adopted as it is assumed that a large quantity of the Sibudu Cave material is burned.

3.2.1 Human and non-human modification

Assemblages preserve traces of both human and non-human modification. Cut marks, chop marks, percussion marks, tooth marks, polish, scour marks and burned bone are indicative of human bone modifiers (Fisher 1995: 10-31; O' Connor 2000: 45).

Identifying human modifiers on faunal material, aid in establishing how much of a faunal assemblage has been accumulated through human activity. The same goes for the identification of non-human modifiers. Experimental research on non-human bone modification, focuses on depositional and post-depositional factors. Agents responsible for these modifications are scavengers, predators, rodents and natural or chemical processes (Brain 1981; Fisher 1995; Selvaggio & Wilder 2001; Olsen & Shipman 1988; Marean 1991). Southern African caves are used or occupied by various non-human predators who scavenge faunal material. These predators include hyenas, leopards, wild cats, wild dogs, honey badgers, civets, servals, caracals, vultures, owls and certain species of mongoose (Brain 1981: 56; Plug 2001: 376). Distinguishing characteristics present on faunal material, which have been modified by animals include rodent gnawing, carnivore marks, insect damage and regurgitated micro-faunal remains (Fisher 1995: 36-43). Natural or chemical processes include cracking, splitting, decomposition, exfoliation, abrasion, polish, trampling, root etching, bioturbation, disintegration and burning of bone (Fisher 1995: 31-36; Reitz & Wing 1999: 134).

3.2.2 Analysing burned bone

Faunal remains are analysed for thermal alterations to identify the use of fire in archaeological sites. This includes both natural and human-produced fires. According to various researchers (Hanson & Cain 2007: 1902; Stiner *et al.* 1995: 226; Nicholson 1993: 423; Clark & Ligouis 2010), burned bone is classified in

six colour gradients, ranging from light brown (localised and bones which show light brown texture); dark brown; black (carbonised); light and dark shades of grey and completely white (calcined). Changes are noted both visually and through examination of the microscopic internal structure of burned and unburned bone.

Shipman *et al.* (1984: 307) consider colour, microscopic morphology, crystalline structure and shrinkage to be noted when analysing burned bone. They provide five stages of burning with colours associated in each, noting that caution should be exercised when distinguishing between human-made and natural fires, as discolouration of bone occurs when a fire is sustained at high temperatures for several hours (Shipman *et al.* 1984: 322-323). Shipman *et al.* (1984) suggest that grass and savannah fires should be eliminated during visual identification, as they burn for a short period and such fires do not produce surface temperatures exceeding 65°C. They state that data from forested areas can be used when analysing burned bone, as higher temperatures are generated and the duration of forest fires are longer, resulting in changes in bone morphology (Shipman *et al.* 1984: 323). Burned bone is only useful as an indication of maximum temperature achieved by the specimen and not by the temperature of the heat source. The position of bone in relation to the fire, the amount of flesh present on bone and the rate of heating affect the colour of bone (Nicholson 1993: 423).

Advantages of analysing the microstructure of burned bone are to better understand butchery and disposal of bone and to determine the origin of controlled use of fire (Hanson & Cain 2007: 1902; Cain 2005: 874). A similar pattern of discolouration and cracking

of bone have been noted in bones that are weathered or fossilised (Hanson & Cain 2007: 1903). Chemical analysis can be done on burned bone to test the presence of organic carbon, carbon-nitrogen ratios and amino acids. Chemical tests are limited to bone that has been carbonised (Hanson & Cain 2007: 1903; Nicholson 1993: 412). Bone histology has proven to be a reliable indicator for burned bone as weathering and fossilisation does not affect internal bone structure. Scanning Electron Microscopy (SEM) is the most commonly used by archaeologists to identify burnt bone apart from visual inspection (Nicholson 1993: 412). Examples of studies done on burned bone include the research conducted by Hanson & Cain (2007) on bone material from Sibudu Cave in KwaZulu-Natal and Cave of Hearths in Limpopo Province (Hanson & Cain 2007: 1909). They found that archaeological material and experimentally burned material show similar characteristics when compared microscopically. They do note that visual identification and microscopic analysis of material may differ. During analysis they had visually classified one or two fragments of faunal material as extremely burned and when it was placed under the microscope the histology gave no indication that it was burned (Hanson & Cain 2007: 1909).

3.3 Identifying and describing faunal material

Once faunal material has been collected and a sample has been selected for analysis, the next step should be identification of particular elements. Faunal fragments are conventionally identified in terms of anatomical/diagnostic zones and, when possible, the species level is identified (Dobney & Riley 1988:

80). When identifying fauna in this manner, it is possible to provide details of biotic and thanatic processes (taphanomic markers present on bones) which produced the assemblage. Identifying whether faunal material has natural (burnt, cracked, bleached, or stained fragments) or anthropogenic modification (cut, chop or scrape marks) is useful when recording, as it provides details on whether the site was deposited by natural and/or anthropogenic forces (Reitz & Wing 1999: 127; O' Connor 2000: 44). In most cases, archaeological sites show both natural and anthropogenic disturbance and it is interpreted as a site which was occupied sporadically (Reitz & Wing 1999: 124).

3.3.1 Methods used to identify faunal material

One form of analysis is measuring and describing faunal fragments in order to calculate the degree of fragmentation (O'Connor 2000: 43). In order to positively identify a bone fragment to taxonomic level, the use of a reliable and extensive comparative collection is necessary (Davis 2002: 32; Driver 1992: 39). The use of schematic drawings of particular elements is used to show the fragmentation of samples or the taphonomic damage present (Reitz & Wing 1999: 163). Identification of faunal material is dependent on the experience of the analyst, how fragmented the sample is and the representativeness of the comparative collection (O'Connor 2000: 37). Once a faunal assemblage is identified, it should be compared to other ecological material found within the excavated material, such as flora. Faunal and floral assemblages may show similar patterns in terms of species diversity and habitats. The kinds of species

identified within a faunal and floral sample may indicate a particular habitat, which provides two lines of evidence that can be compared to each other. Faunal samples from nearby sites and similar ages could also be compared to each other in order to identify possible inhabitants or groups which may have deposited the faunal material (Lyman 2008: 25).

3.3.2 Identification methods used in southern Africa

In southern Africa, two methods have been adopted to identify faunal material. The first, known as the Brain-Voigt method of identification, has been widely used (O' Connor 2008: 9). Brain (1974) suggested three sorting steps. First, removing all bone fragments which can be identified with certainty to species level. This is to say, faunal material which have clear diagnostic zones (Brain 1974: 2). Secondly, Brain (1974) suggested a second sorting to separate out any other identified bones into broader taxonomic categories. The final sorting step would deal with the residue which is categorised as unidentified fragments (Brain 1974: 2-3). Voigt (1983) adopted this method, but refined the process by suggesting that identified bone should be separated into teeth, post-crania and other identifiable elements during identification. The separation provides adequate information to compile a species list and calculate Minimum Number of Individuals. She also provided five categories for unidentified bone namely: skull, vertebrae, ribs, miscellaneous and bone flakes (Voigt 1983: 9). According to Voigt (1983: 9), skull, vertebrae and rib fragments should not be included in identified bone as these elements, especially when fragmented; do not

provide additional information for taxonomic classification. Long bone fragments were identified to an element (e.g. humerus, radius, femur, etc.) and elements which could not be classified to genus or species were classified to family or genera (e.g. Bov I-IV) (Voigt 1983: 9).

The second identification method used in southern Africa, was developed by Driver (1992, 2005). The difference between the Brain-Voigt method and the Driver method of identification is based on the first step of identification. Driver (1992: 21) regards any specimen that can be identified to an element (e.g. humerus, radius, tooth, cranium or vertebrae) as an identified specimen. The use of an element as the identifying first step during identification differs from the Brain-Voigt (Brain 1974: 2-3) method, which considered diagnostic zones as the identification criteria. The second step during identification, is to provide a taxonomic classification which may range from the very general (family or genera) to particular species. Identification methods must be consistent, comparable to each other and analysts should not make assumptions during identification. 'Identification by association' should be avoided for particular specimens, and each faunal fragment should be identified on its own merits (Driver 1992: 25-27). This differs from other methods, where assumptions are made during analysis. Driver (1992: 25) advanced the position that once data is collected and samples tabulated, assumptions can be made with regard to faunal fragments identified to general taxonomic categories (such as medium mammal) or particular species (such as *Bos taurus*) (Driver 1992: 25; Gobalet 2001: 379).

3.4 Quantifying faunal material

Once the process of identification to some taxonomic category has been completed, the numeric data has to be calculated. This process is known as gathering primary data and has been undertaken in a number of different ways (Reitz & Wing 1999; O'Connor 2000). Three forms of quantification methods are commonly used in southern Africa, namely the Number of Identified Specimens (NISP), the Minimum Number of Individuals (MNI) and the Quantifiable Skeletal Part (QSP).

3.4.1 Number of Identified Specimens

The simplest way of quantifying faunal material is counting the number of specimens or fragments (known as Number of Identified Specimens or Total Number of Fragments). It has been argued that NISP is only valid for describing what can be counted from the sample taken from a site, and it cannot predict the true number of fauna deposited within a site (O' Connor 2000: 55). The more samples there are taken from a site, the more accurate the NISP results will be. NISP is biased in the sense that certain taxa may have more identified elements than others (O'Connor 2000: 56; Grayson 1984: 22). The bias is a result of the variety in the distinctiveness of several elements present within a particular assemblage. Faunal fragments which have an articulation area (diagnostic zone) can be identified to some taxonomic level. However, the fewer diagnostic features there are, the more difficult it could be to reliably place the specimen into a particular taxonomic classification (Grayson

1984: 22; Driver 1992: 22). A second bias with NISP derives from unequal sample recovery. Entire sites are not excavated and the distribution of elements may be random within a particular sample (Davis 2002: 36; Grayson 1984: 22). The third source of bias in NISP is the varied fragmentation of faunal material. Elements fragment in differing ways and a single element may be counted various times, especially when distal ends are not articulated to proximal ends of the same element (Davis 2002: 36; Grayson 1984: 21). This is also noted with differences in butchering patterns and lack of preservation in sites (Grayson 1984: 20-21).

3.4.2 Minimum Number of Individuals

The second most commonly used quantification method is counting Minimum Number of Individuals (MNI). MNI data is used to rectify problems inherent with NISP data. Elements are sorted into left, right and indeterminate (e.g. vertebrae) categories, along with the species level (O' Connor 2000: 59). MNI counts are derived from the skeletal parts which have a greater abundance of either right or left elements (Lyman 2008: 1). The dependence on quantifying similar elements, which appear more than once and calculating the individual species allows MNI to overcome one challenge of NISP data, which is the presence of individuals. According to Lyman (2008), the presence of individuals is difficult to calculate using NISP. He states that by counting the most commonly occurring element, one is able to state exactly how many individuals are present within a particular sample (Lyman 2008: 39). Several problems

have been noted for MNI data namely lack of comparability with other methods used in southern Africa, exaggeration of rarely represented taxa or taxa represented by low NISP, ratios of taxanomic abundances cannot be calculated using MNI, information gathered from MNI data is adapted from NISP amounts and differences in aggregate data will produce different MNI values (Lyman 2008: 45-46; Grayson 1984: 49; Plug & Plug 1990: 54; O' Connor 2000: 60). As a result MNI data should be viewed as an estimate of the minimum number of individuals within a site and NISP data would be the maximum range of individuals applicable within a sample (Grayson 1984: 49; Plug & Plug 1990: 60). It is important to note that neither method produces an accurate number of what is truly represented in an assemblage (Lyman 2008: 39; O' Connor 2000: 60).

3.4.3 Quantifiable Skeletal Parts

The third most commonly used quantification methods used in southern Africa is Quantifiable Skeletal Parts (QSP). QSP methods are largely based on NISP data and provide similar results. It was first applied by Plug (1988) to correct for skeletal complexity (the number of bones in an animal's body) noted in NISP and the fragmentary nature of faunal assemblages (De Ruiter 2004: 268). The complexity is corrected by dividing the NISP of a given taxon by the number of discrete elements available in a complete skeleton of that taxon (De Ruiter 2004: 268). If NISP and QSP data for large samples are plotted on X and Y axis there is a strong linear tendency (see Bayham 1987: 57; De Ruiter 2004: 269). De Ruiter (2004) states that: "QSP is not an estimate of the number of individuals represented on a

site. It is a ratio produced in order to normalise a selected subset of an assemblage NISP for skeletal complexity. The values obtained do not represent individuals. Rather, they are calculated strictly for comparison with the other taxa from the site to estimate relative abundance" (De Ruiter 2004: 269).

This chapter focused on depositional processes, taphonomy and analysis of faunal material. Analysis of faunal material follows various steps which include explaining how faunal material is deposited, excavated, identified, quantified and analysed. First order changes include biotic, perthotaxic, thanatic, anataxic and taphic processes. Second order changes include collection, analysis and curation of faunal material known as sullegic and trephic processes. Human and non-human accumulation and modification of faunal material should be identified during analysis, as cave sites are known to have both humans and non-human predators contributing to faunal accumulation. Analysis of burned bone, which provides details on the use of fire in archaeological sites, has been discussed in more detail, as it is presumed that a large amount of faunal material from Sibudu Cave has been burned. Analysis of faunal material is divided into identification, quantification and various other methods of analysis. Two methods of identification have been adopted in southern Africa namely the Brain-Voigt method and the Driver method. Quantification methods generally used during faunal analysis include the Number of Identified Specimens (NISP), Minimum Number Individuals (MNI) and Quantifiable Skeletal Parts.

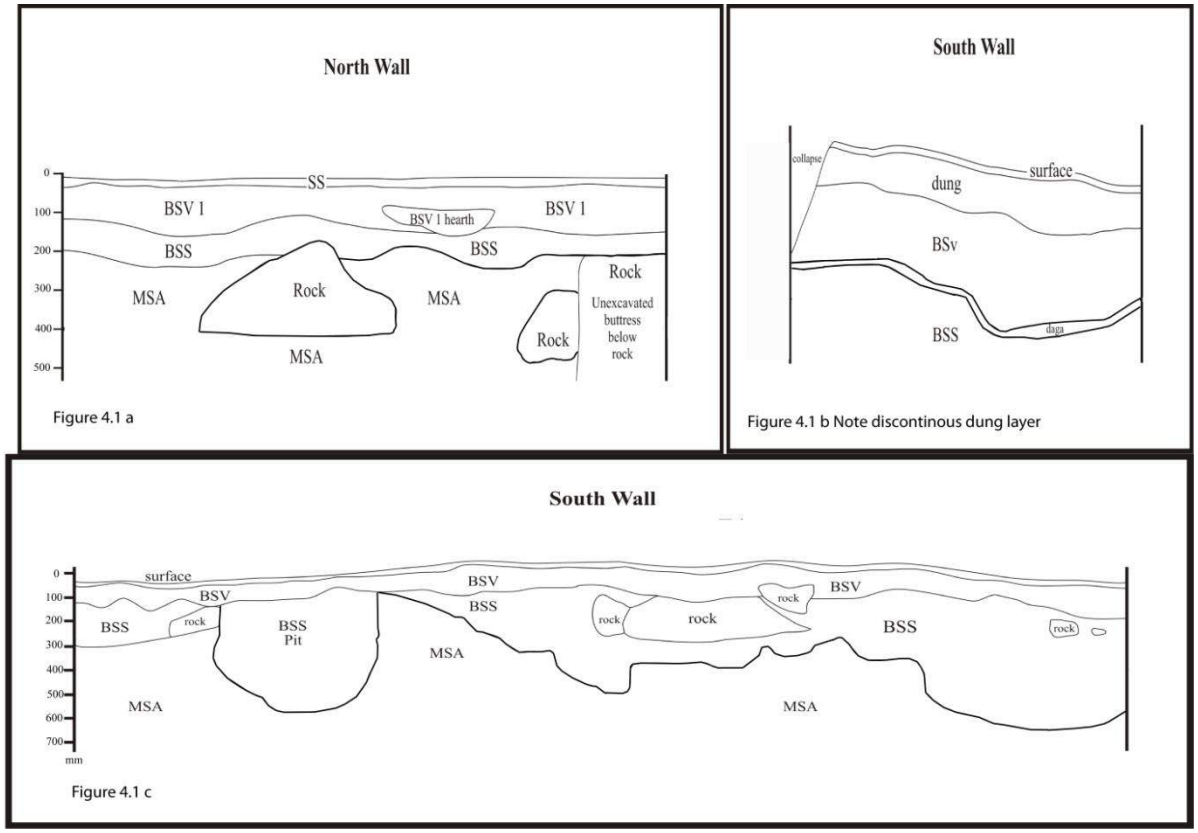
CHAPTER 4 – METHODOLOGY

In this chapter, I will be discussing the methods I have adopted during analysis of the Sibudu Cave fauna. I will discuss the method of excavation and the sample size, followed by the steps taken during initial sorting of the faunal material before it was taken to the Ditsong National Museum of Natural History (former Transvaal Museum). I will then discuss the methods, criteria and categories of identification employed during analysis of the faunal material.

4.1 Excavations and sample size

For this dissertation, I will analyse the faunal remains from the BSV and BSS layers from Sibudu Cave. A test excavation conducted by Aron Mazel during 1983 and several excavations under the guidance of Lyn Wadley have been on going from 1998 to 2012 (Wadley 2001; Wadley & Jacobs 2004). The project has since been run by Nicholas Conard at the Univeristy of Tübingen in Germany. The initial deposit was excavated in 50 cm^2 quadrants and sieved through a 2 mm mesh. The mesh size was changed to a 1 mm sieve during and after 2003 in order to retrieve micro-faunal and micro-floral specimens. Quadrants were organised so that the quadrant labelled ‘quadrant A’ faced the north- and east-facing corner of each 1 m^2 square (Wadley & Jacobs 2006: 4). The BSV and BSS material was excavated during 1998-1999 and each quadrant was curated and labelled separately.

Two layers are associated with what has been identified as the Iron Age (Figures 4.1 a-c), excluding the surface and sub-surface layers, namely: Brown Soil with Vegetation (BSV; BSV1 and BSV2) and Brown Soil with Stones (BSS; BSS2 and BSS/LFA). There is also a discontinuous dung layer across the deposit above the BSV layer (Figure 4.1 b) (Scott 2005b: 5; Wadley & Jacobs 2006: 10). The layers were identified based on the abundance of ceramics associated with Blackburn or Moorpark, the presence of a cache of glass beads found in a pit going through the BSS layer (associated with BSV) and the presence of a dung layers between the BSV and BSS layers (Scott 2005b: 5; Wood *et al.* 2009: 252; Wadley 2001: 3; Wadley & Jacobs 2004: 240; Whitelaw pers. comm.). The layers identified as Iron Age are directly above the Middle Stone Age layers, as there is no Later Stone Age material associated with Sibudu Cave (Wadley & Jacobs 2006: 10). One box (out of a total of seven) from the BSV layer (first layer) was selected in order to evaluate whether similar taxa occured in both the BSV and BSS layers. The single box from the BSV layer was a representative sample ranging from squares B to E. Seven boxes (out of a total of seven) of faunal material were selected for analysis from the BSS layer (second layer). The BSS layer was selected for analysis as it was directly above the Middle Stone Age layers and allows for comparison. At least three or more pits and two hearths have been identified in the BSS layer. Middle Stone Age and Iron Age material have been mixed due to the pits that have been dug into the top layers (Scott 2005b: 7).



Figures 4-1a; 4-1b and 4-1c: Stratigraphy of Iron Age layers in Sibudu Cave (note discontinuous dung layer in Figure 4.1b) (after Scott 2005b: 6-7)

4.2 Initial sorting

During sorting, the faunal material was divided into identified and unidentified specimens and the unidentified specimens were counted and taphanomic modification noted. The identified specimens were separated and taken to a reference collection (see below) to be identified. The material was placed into clear plastic bags and labelled according to what was written on the paper bags used during excavation. Miscellaneous material which was not associated with the faunal material were placed in separate plastic bags, labelled, and replaced in the same paper bags.

4.3 Identification

In order to identify the faunal material, using diagnostic zones, a reference collection (housed at the Ditsong National Museum of Natural History) was used and specialists were consulted where necessary. Identification of elements, range from species, genus, family, order and class. Where identifications were ambiguous, two or more species was provided such as sheep/goat (*Ovis/Capra*) or cattle/buffalo (*Bos/Syncerus*). Indeterminate small mammals were classified as smaller in size than Bov II sized antelopes and include animals such as hares, dassies, mongooses and smaller antelopes. Indeterminate medium mammals are similar in size to Bov II and medium sized carnivores such as wild dogs. Indeterminate large mammals include animals that are similar in size to equids, Bov III, Bov IV and large carnivores such as lions. Indeterminate small birds

were classified as smaller in size than chicken or guinea-fowls and include animals such as swifts, larks and sparrows. Indeterminate medium birds are similar in size to pigeons, chickens and other game birds. Indeterminate large birds were classified as similar in size to vultures, eagles and owls. Elements were counted using Number of Identified Specimens (NISP). The Minimum Number of Individuals (MNI) was not used due to its problematic nature (see chapter 3) (Lyman 2008: 45; O'Connor 2000: 60; Reitz & Wing 1999: 208; Plug & Plug 1990: 53).

4.4 Methods used during analysis

The analysis I have adopted was derived from work done by Driver (1992). Following Driver (2005), a set of criteria was used to identify faunal fragments during analysis (see chapter 3). During identification, specimens were visually inspected for taphonomic modification which were noted and labelled based on criteria set by Driver (2005) (see Appednix A) (Lyman 1994; Reitz & Wing 1999; O' Connor 2000). Teeth were counted irrespective of whether they were isolated, broken or part of toothrows (i.e. found on manible or maxilla fragments). Breakage patterns, as identified by Driver (2005), were only recorded for long bone specimens and phalanges. Unidentified faunal material were separated into two length categories namely less than and more than 20 mm. It has been noted that a large percentage of the Middle Stone Age fauna were less than 20 mm in length (Clark 2009: 139-149). By including both length categories it may be

possible to establish whether a similar pattern would emerge for the BSV and BSS layers.

Two criteria of burning categories were used for any identified specimen that has been burned. The first, used by Driver (2005), noted whether the specimen was burnt white, black or localised. The second set of criteria I adopted for the unidentified specimens category involves using six different burning categories (Stiner *et al.* 1995) (see discussion in chapter three – analysing burned specimens). This approach was used by Clark (2009: 122) during her analysis of the Middle Stone Age fauna from Sibudu Cave.

In summary, the faunal material identified during this analysis focused primarily on the BSS layer, which was the second layer associated with what has been called the Iron Age levels. One box from the BSV layer was also identified in order to verify whether similar taxa occur in both layers. During sorting the material was placed into plastic bags and labelled according to the information recorded during excavation. The material was divided into identified and unidentified categories. The reference collection housed at the Ditsong National Museum of Natural History (former Transvaal Museum) was used to identify the faunal material and specimens were identified in a range of taxanomic categories from species, genus, family, order and class. Ambiguous species had two possible identifications. The analysis I have adopted was developed by Driver (1992, 1999, 2005) and involves the use of a manual for description (see Appendix A). Two criteria were used for burned identified specimens namely white, black or localised burned specimen and the use of six different burning categories.

CHAPTER 5: EXCAVATIONS AT SIBUDU CAVE

This chapter will provide a brief overview of Sibudu Cave. The location, climate and environmental context will be discussed followed by the research conducted at Sibudu Cave. The Middle Stone Age lithic, faunal and floral research will be discussed followed by the Iron Age research. The Iron Age research will include a discussion on a partial faunal study, the floral research and the excavation of a small cache of glass beads found in one of the Iron Age pits.

5.1 Location, climate and environmental context

Sibudu Cave is located west-south-west of the Tongati River, 15 km inland off the coast of KwaZulu-Natal and 40 km north of Durban. The site is elevated (~20 m above the river) (Clark 2009: 30) and is well known for its extensive Middle Stone Age deposits. The area is well watered and tropical conditions persist throughout the year (Wadley 2001: 1; Wadley & Jacobs 2004; 148). The average rainfall in the area, ranges between 750mm (summer) and 250mm (winter) and humid and hot weather persist during the summer, with average January temperatures between 22-25°C and mild winter temperatures between 17-20°C (Wadley 2001: 1). The vegetation in the Sibudu area is classified as part of the Indian Ocean Coastal Belt, which extends from Mozambique to the Great Kei River mouth (an area of approximately 800 km in length). The Indian Ocean Coastal Belt biome was established 15 000 - 7 000 years ago. A mosaic of coastal, woodland, bushland and riverine forests surrounds the

cave area. Agricultural activities of Iron Age farmers over the last two millennia have stripped the area of most of its indigenous vegetation which resulted in deforestation and encroaching exotic plant species invading the area (Hall, G. 2010: 28-29; Wadley 2001: 1; Wadley & Jacobs 2004: 149). Additionally, a nearby sugar plantation has caused increased deforestation and environmental damage in more recent times (Wadley 2001: 1; Wadley & Jacobs 2004: 149).

Sibudu Cave was formed through river activity which eroded the arkosic sandstone and shale cliff around the shelter during a marine regression (Wadley & Jacobs 2006: 3; Pickering 2006: 123, Hall, G. 2010: 30). The sandstone forms part of the Mariannhill Formation of the Natal Group, which is purple-red in colour and comprises grains of quartz, feldspar and hornblende and dates to 490 Ma (Pickering 2006: 123; Wadley & Kempson 2011: 94). Some clay is present in the grains and is a product of *in situ* weathering of feldspar (Pickering 2006: 123). The sandstone floor of the shelter is exposed and covered with fine sandy sediment (Pickering 2006: 124). According to Wadley and Jacobs (2006), wind storms or other aeolian activity in the past could have prevented the accumulation of sandy sediment during periods of non-occupation, resulting in the presence of Iron Age material deposited directly above the Middle Stone Age layers (Wadley & Jacobs 2006: 14; Wood *et al.* 2009: 239).

5.2 Middle Stone Age research at Sibudu Cave

Research at Sibudu Cave over the last two decades has focused on Middle Stone Age patterns and habitats and has included

research on stone tool production (Lombard 2004, 2005, 2006a, 2006b; Wadley 2005; Wadley & Jacobs 2006; Delagnes *et al.* 2006; Cochrane 2006), faunal remains (Plug 2004; 2006; Cain 2005; 2006; Wells 2006; Glenny 2006; Clark & Plug 2008; Clark 2009; Wadley *et al.* 2008), bone tools (Cain 2004; Backwell *et al.* 2008; d'Errico *et al.* 2012), possible shell beads (d'Errico *et al.* 2008), botanical remains (Scott 2005b; Sievers 2006; Sievers and Wadley 2008; Schiegl *et al.* 2004; Allot 2006), charcoal analysis (Allot 2004, 2006; Schiegl *et al.* 2004; Schiegl & Conrad 2006), reconstruction of past habitats (Wadley 2004; Allot 2006; Hall, G. 2010), bedding (Wadley *et al.* 2011), stone tool residue analysis (Delagnes *et al.* 2006) and combustion features (Wadley 2012).

5.2.1 Middle Stone Age lithic studies

Lithics dominated the assemblages that were excavated from the Middle Stone Age layers at Sibudu Cave. The industries identified are sub-divided into pre-Still Bay, Still Bay, Howieson's Poort, post-Howieson's Poort, late Middle Stone Age and final Middle Stone Age. The layers have been categorised into three age clusters, namely the ~60 ka assemblage of post-Howieson's Poort and Howieson's Poort; the ~50 ka assemblage labelled 'late Middle Stone Age' and the ~37 ka assemblage named 'final Middle Stone Age' (Wadley & Jacobs 2006: 16). Accessibility to raw lithic material was not difficult, as most of the cobbles needed for tool production could be sourced from the nearby Tongati River or stone outcrops. Hornfels would be the only material that may have posed a problem to source, as its

closest modern outcrop is at least 15 km from the site. It is possible that closer hornfels outcrops were visible during the Middle Stone Age periods and that they may have disappeared sometime after the ~30 ka occupations (Cochrane 2006: 74).

Howieson's Poort and post-Howieson's Poort layers (~60 ka)

The post-Howieson's Poort and the Howieson's Poort (~60 ka) layers identified in Sibudu Cave contain mostly dolerite and hornfel blades. Non-retouched flakes and chips dominate the post-Howieson's Poort layers and very little cores were found (Cochrane 2006: 72-85). Seven grindstones are associated with the ~60 ka layers from Sibudu. They were used for various activities including breaking bone and grinding plants and ochre (Cochrane 2006: 81). Discoidal, Levallois and less formal reduction strategies were employed during tool production. Micro-residue analysis conducted on the quartz backed-tools, show animal and bone collagen tissue, which suggests hafting, hunting and butchering of faunal material (Delagnes *et al.* 2006: 51). The Howieson's Poort layers from Sibudu Cave is a primarily blade-based industry which differs from the post-Howieson's Poort layers as it is primarily flake-based. Both industries have quartz backed tools (Delagnes *et al.* 2006: 52; Cochrane 2006: 72; Lombard 2005: 283, 2007: 48, 2008: 27; Lombard & Phillipson 2010: 642; Wadley & Mohapi 2008: 2596).

Late Middle Stone Age layers (~50 ka)

The ~50 ka layers have an abundance of unifacial points which appear mostly in the northern excavation grid followed by a smaller quantity of bifacial points (Wadley & Jacobs 2006: 17; Villa & Lenoir 2006: 103). Comparisons has been made between spear points found in the ~50 ka layers from Sibudu Cave and unifacial points from Rose Cottage Cave, in eastern Free State and Bouheben, a Middle Palaeolithic/Final Acheulean site from south-western France. It was found that stone-tipped spear points were commonly used during the Middle Stone Age of ~50 ka and ~30 ka (Villa *et al.* 2005: 410-412; Villa & Lenoir 2006: 117). The lithic technology from the late Middle Stone Age layers are similar to the industries identified from sites in France and Europe and those from the final Middle Stone Age, which will be discussed below (Villa *et al.* 2005: 418).

Final Middle Stone Age layers (~30 ka)

The final Middle Stone Age lithics (~30 ka assemblage) is characterised by sidescrapers, bifacial and unifacial points, bifacial cutting tools, hollow-based points and backed tools, including large, wide segments (Wadley 2005: 51). Retouched tools collected from the eastern section of the excavation include backed tools, scaled pieces (*pièces esquellées*), bifacial and unifacial points, straight and convex scrapers, notches and rare examples of small bifaces and hollow-based points. The bifaces are elliptically shaped tools with sharp cutting edges which are worked across both faces. The hollow-based points are bifacial, triangular points with thinned and shaped bases. It is presumed, that these points' bases were shaped concavely to facilitate

hafting (Wadley 2005: 52). Mastic and twine was used to haft the tools onto spears which were used for thrusting or throwing during hunting (Wadley 2005: 53; Lombard 2005: 296). The most common retouched tool in the Final Middle Stone Age layers was scrapers followed by points. Cores are not abundant and the most common cores were minimal and bipolar cores (Wadley 2005: 53-54).

5.2.2 Middle Stone Age faunal studies

Previous research on the Middle Stone Age fauna from Sibudu Cave include studies conducted by Plug (2004; 2006), Cain (2005; 2006), Wells (2006), Glenny (2006), Clark (2011, 2013), Clark & Ligouis 2010, Plug & Clark (2008) and Wadley *et al.* (2008). The Middle Stone Age layers from Sibudu Cave has a faunal sample dominated by medium-large sized bovids namely buffalo (*Pelorovis/Syncerus*), Tragelaphini (kudu/eland) and alcelaphine (hartebeest/wildebeest) (Cain 2006: 250; Plug 2004: 155). Equids (zebras) and suids (warthog/bushpig) are also found in abundance throughout all of the layers. Other non-bovid taxa found in smaller numbers include small rodents (Glenny 2006), carnivores (Cain 2006: 250), avian taxa (Plug & Clark 2008) and aquatic taxa (Plug 2006). The presence of equids and alcelaphines suggests grassland or savannah type environments were prevalent during the Middle Stone Age at Sibudu Cave, with the exception of the Howieson's Poort layers (Plug 2004: 155; Cain 2006: 250; Clark & Plug 2008; Clark 2011; Clark 2013).

The agents of accumulation include humans, birds of prey, carnivores and porcupines. Due to the large quantity of fauna,

lithic artefacts and hearths it is clear that humans were the major agent of accumulation (Cain 2006: 251; Glenny 2006: 279; Plug 2004: 152; Wells 2006: 273). The lack of carnivore coprolites and regurgitated owl pellets support human accumulation as the predominating agent of the faunal assemblage (Wells 2006: 265; Glenny 2006: 279). Middle Stone Age occupants from Sibudu Cave were experienced hunters and exploited docile and dangerous animals and rarely supplemented their diet with small animals and marine resources (Cain 2006: 274; Plug 2006: 294; Wells 2006: 274). Below, I will discuss the macrofaunal, microfaunal, avian and aquatic species found in the Middle Stone Age levels in more detail.

Middle Stone Age macrofaunal remains

The taxa, excluding those mentioned above, found in the three age clusters identified in Sibudu Cave are discussed below. The faunal remains from the Howieson's Poort and post-Howieson's Poort (~60 ka) is less diverse than the Late Middle Stone Age (~50 ka). Large and very large bovids predominate in the post-Howieson's Poort layers, with small bovids less common than the other layers (Clark 2011: 284). The blue duiker (*Philantomba monticola*) which is present in all other layers is replaced with klipspringer (*Oreotragus oreotragus*) which is the only small bovid identified to species level in the ~60 ka layers. The extinct large bovid species identified include extinct Cape horse (*Equus capensis*) and giant buffalo (*Pelorovis antiquus*). A small quantity of marine bivalves and rodent remains were identified from the ~60 ka layers (Plug 2004: 155).

The faunal remains from Late Middle Stone Age layers (~50 ka) from Sibudu Cave are highly diverse and suggest a drier environment than today. They include giraffe (*Giraffa camelopardalis*), scaly anteater (*Manis temminckii*) and crocodile (*Crocodylus niloticus*) (Wells 2006: 274; Plug 2004: 155). Woodland species are predominantly found in the ~50 ka layers but savannah, grassland and water-requiring taxa are also common. The presence of forest and water-requiring taxa suggest a riverine forest biome. All indeterminate bovid size classes are represented in the ~50 ka layers and Bov II-III dominate (Wells 2006: 267).

The faunal remains from the Final Middle Stone Age layers (~30 ka) include large mammals such as an extinct alcelaphine, elephant (*Loxodonta africana*) and hippopotamus (*Hippopotamus amphibius*) and an unknown possibly extinct sheep/goat. Medium and large bovids predominate and smaller bovids are also present. Blue duiker (*Philantomba monticola*) and plains zebra (*Equus quagga*) have also been identified (Plug 2004: 152-155).

Middle Stone Age microfaunal remains

The microfaunal remains from the Middle Stone Age were predominantly situated along the back wall (eastern wall) of Sibudu Cave which suggests a raptor roosting site (Glenny 2006: 285). The barn owl (*Tyto alba*) is the primary accumulator of the microfauna while the other two species, marsh owl (*Asio capensis*) and grass owl (*Tyto capensis*), roost in trees or nest on the ground and do not regularly return to their roosting sites (Glenny 2006: 286). The analysis of the microfaunal remains,

suggests that the environment for the Final and Late Middle Stone Age (~30 and ~50ka) was similar (Glenny 2006: 286). The macrofaunal and floral remains show a similar pattern with a dominance of woodland taxa (Plug 2004: 156; Wells 2006: 267; Sievers 2006: 220; Wadley 2004: 171; Allot 2006: 194).

Middle Stone Age avian remains

Avian taxa present in the Middle Stone Age layers from Sibudu Cave are limited and the greatest diversity is found in the older layers, namely the pre-Still-Bay, Still Bay and the Howieson's Poort (pre-~60 ka and ~60 ka). Freshwater birds such as duck or geese (Anatidae) were found in all the Middle Stone Age layers. Exotic marine taxa such as a prion (*Pachyptila* sp.) and petrels (Procellariidae) were found in the pre-Still Bay and Howieson's Poort layers. Doves and pigeons (*Columbidae* sp.) dominate the sample and the most common taxa identified is the olive dove (*Columba arquatrix*) (Plug & Clark 2008: 137). The small birds found within the Middle Stone Age could have been brought in by avian predators. It is argued that the swift (*Apus* sp.), nightjar (*Caprimulgus* sp.), starling (Sturnidae), dove/pigeon (*Columbidae*) and owls (*Tyto* sp.) identified died naturally within Sibudu Cave. The marine and pelagic birds (birds that spend a lot of time over the ocean), sea gull (*Larus* sp.) and avocet (*Recurvirostra avosetta*) may have been introduced through human activities or were blown inland during a massive storm (Plug & Clark 2008: 138-140). Trips between the coast and the cave for marine mussels and other shells were prevalent during

the Howieson's Poort, Still Bay and pre-Still Bay layers (Plug 2006: 296).

Middle Stone Age aquatic remains

Aquatic animals associated with the Middle Stone Age of Sibudu Cave are separated into freshwater and marine taxa. The freshwater taxa include aquatic mammals, water birds, reptiles, amphibians, fish, crustaceans and molluscs and the marine taxa include fish, turtles, crustaceans (crabs and barnacles) and molluscs. Although the frequency of marine taxa is small it was found that the black mussel (*Perna perna*) dominated. Taxa which are not found in the area today include marine turtle (*Caretta* sp.) and the Tugela mudfish (*Labeo cf. rubromuculatus*) (Plug 2006: 290). Several of the taxa were brought in by humans, including the crocodile and monitor lizard (*Varanus niloticus*) remains. The larger fish like *Labeo* and *Labeobarbus* as well as the marine animal remains had to be brought in by humans (Plug 2006: 294-295). Bivalves and marine gastropods appear to be beach-worn, indicating the dead shells were washed ashore and collected and brought back to Sibudu Cave (Plug 2006: 296). Taphonomic analysis on the gastropod remains show that they were possibly used as shell beads (d'Errico *et al.* 2008).

5.2.3 Middle Stone Age floral studies

Carbonised and uncarbonised floral material were collected and analysed during excavation of Sibudu Cave. During analysis, it was discovered that the Iron Age layers contained more seeds

than the Middle Stone Age layers. It was found that uncarbonised seeds are associated with the Iron Age layers, whereas the carbonised seeds are associated with the Middle Stone Age layers (Wadley 2004: 167; Sievers 2006: 206). Because of the low frequency of seeds collected from the Middle Stone Age layers data were collected from seeds, charcoal and phytoliths (Sievers 2006; Allott 2004, 2006; Schiegl *et al.* 2004; Schiegl & Conrad 2006; Renaut & Bamford 2006). Most of the Middle Stone Age flora consists of taxa that are currently present in the area (plants which grow near the entrance of the cave and the Tongati River) namely evergreen trees, shrubs and climbers (Wadley 2004: 171; Sievers 2006: 206).

The most common taxon identified in the Middle Stone Age layer is sedges (*Cyperaceae*) (Sievers 2006: 209). Sievers and Muasya (2011: 79) argue that the sedges identified in almost all the Middle Stone Age layers could be 'saw-sedge' or 'saw-grass' (*Cladium mariscus*). The presence of sedges is linked to water (probably the Tongati River) and human behaviour in the form of 'bedding' as a surface for working and sleeping (Wadley *et al.* 2011: 1389; Sievers & Muasya 2011: 78; Sievers 2006: 214). The carbonisation of the sedges is most likely due to site maintenance and repeated use against insects and larvae (Wadley *et al.* 2011: 1388). It is also possible that the 'bedding' may have ignited due to close proximity to hearths or fires created above the sedge bedding after deposition (Sievers & Muasya 2011: 85; Goldberg *et al.* 2009: 110; Goldberg & Berna 2010: 60; Sievers & Wadley 2008: 2916). The identification of the possible anthropogenic use of sedges during the Middle Stone Age is the first of its kind in southern Africa (Sievers 2006: 221).

Comparison between deciduous and evergreen taxa show that evergreen woody plants predominate during the ~60 ka period (Howieson's Poort and post-Howieson's Poort) and a slight change in the composition of both evergreen and deciduous communities is observed during the ~50 ka period. There is a marked increase of deciduous taxa at ~50 ka compared to the constant frequency of evergreen forests (Sievers 2006: 220; Wadley 2004: 171; Allot 2006: 194). More riverine and forest taxa occur in the Howieson's Poort (~60 ka layers) and more bushveld taxa occur in the late Middle Stone Age (~50 ka layers) (Allot 2006: 194).

5.2.4 Burning events in the Middle Stone Age

Burning events within Sibudu Cave is clearly visible through discrete hearths containing burnt bone, lithics and charcoal. A large portion of the faunal material show signs of burning which are associated with hearths and ash features (Cain 2005: 873). The burning events are associated with food preparation, site maintenance in the form of disposal of bone into fires to prevent scavengers entering the cave or general hygiene and accidental burning from hearths constructed above discarded bone (Cain 2005: 874). The ~60 ka layers of Sibudu Cave show large and frequently layered ash deposits which suggest repeated use. The pre-60 ka ash deposits are smaller and have well-defined hearths (Allot 2006: 178). Due to the abundant traces of charcoal associated with the Middle Stone Age layers in Sibudu Cave and the large evergreen and deciduous forests identified around the cave area, it is highly unlikely that bone was used as a source for

fire (Allot 2006: 179). There is some evidence that wood was brought into the cave to assist in the destruction of faunal material and not for use as fuel (Allot 2006: 179). The large quantity of burnt faunal material found in and around the hearths is linked to deliberate disposal into hearths and the subsequent removal and clearance of the hearth afterwards, producing rich charcoal and bone ash deposits (Allot 2006: 179; Cain 2005: 882, 2006: 255; Pickering 2006: 125; Schiegl *et al.* 2004: 192). Fresh (green) and dried bone was discarded during the burning events identified in Sibudu Cave (Cain 2005: 881). The Middle Stone Age hunters occupied the site long enough to maintain the hearths regularly without creating distinct midden areas but rather leaving bone in the general matrix (Cain 2005: 882).

5.3 Iron Age research at Sibudu Cave

Research conducted on Iron Age material from Sibudu Cave include an initial faunal study (Plug 2004), floral analysis (Scott 2005a; Scott 2005b) and a study conducted on a small cache of beads (Wood *et al.* 2009). The Iron Age of Sibudu Cave is divided into two layers known as BSV and BSS layers and contain potsherds, upper and lower grindstones, glass beads, remains of daga hut floors with grass matting (Figure 4.1 b) and pits filled with bones, ash and seeds (Wadley & Jacobs 2004: 146). The Iron Age sequence has about 30cm of strata and charcoal obtained from one of the three or four pits associated with the Iron Age levels provide a radiocarbon date of 960 ±25 BP (Pta-8015) (Cochrane 2006:69-70). The ceramics show sparse decoration and, based on the shape of some rim fragments,

belong to the Blackburn facies of the local Iron Age sequence (Wadley & Jacobs 2004: 240). Blackburn sites date to between AD 1100 and 1300 and perhaps extend to AD 1500 (Huffman 2004, 2007; Wadley & Jacobs 2004).

5.3.1 Initial Iron Age faunal studies

A small sample of Iron Age faunal material analysed by Plug (2004) demonstrates a high percentage of small wild bovids and domestic taxa compared to the Middle Stone Age levels which are dominated by medium and large-sized bovids (Plug 2004: 152-155). In the Iron Age levels, Plug (2004: 153) noted that cattle (*Bos taurus)* and blue duiker (*Philantomba monticola)* dominate the sample. Other wild and domestic bovid taxa identified include sheep/goat (*Ovis/Capra*); grey rhebuck *(Pelea capreolis)* and rhebuck/reedbuck *(Pelea/Redunca).* Species classified as possibly present in the Iron Age are grey duiker (*Sylvicapra grimmia*) and red duiker (*Cephalophus natalensis*). The largest wild animal identified in the Iron Age levels is zebra (*Equus quagga).* Other wild taxa identified, include the water mongoose (*Atilax paludinosis)*; rock hyrax (*Procavia capensis)*; bushpig (*Potamachoerus larvatus);* porcupine (*Hystrix africaeaustralis);* cane rat (*Thryonomys swinderianus);* domestic fowl (*Gallus domesticus)* and fragmented marine and freshwater mollusc shells, including freshwater mussel (Unionidae) and brown mussel (*Perna perna)* (Plug 2004: 153-154).

5.3.2 Iron Age floral study

A complete analysis of floral remains from the Iron Age levels of Sibudu Cave was conducted. The layers which were discussed in the study were Surface, Dung, BSV and BSS (Figure 4.1 b) (Scott 2005b). The bulk of the floral material excavated was uncharred and it was assumed that the few charred remains that were found were fragments associated with the Middle Stone Age layers and were not included in the study (Scott 2005a: 1; Scott 2005b: 23). Seventy three taxa were identified to tribe, genus or species and thirty one of the identified specimens were found in all of the Iron Age layers (Scott 2005b: 36). The taxa consisted predominantly of trees, shrubs and to lesser extent climbers (Scott 2005a: 2; Scott 2005b: 43). The BSV layer had the highest number of recovered seeds and BSS had the second largest amount. No evidence of sorghum, millet or maize was found in the analysed Iron Age layers. The most common taxa identified include wild plum (*Harpehyllum caffrum*); turkey berry (*Canthium* sp.); castor-oil bush (*Ricinus communis*); corkwood (*Commiphora* sp.); medlars (*Vanguerieae*); forest croton (*Croton sylvaticus*) and syringa berry (*Melia azedarach*) (Scott 2005a: 2-3; Scott 2005b: 40-46). The identified fruiting taxa show that the cave was occupied or visited year round (Scott 2005b: 40-46).

The three main agents of seed accumulation for the Iron Age material were birds, monkeys and humans. Seventy seven percent of the identified material could have been brought in by birds; fifty eight percent by monkeys and forty six percent by humans. None of the identified specimens were brought in by wind or water (Scott 2005b: 52). An actualistic study was conducted to observe the non-anthropogenic agents of seed accumulation and it

was observed that wind and other agents redistributed and introduced several seed taxa onto the surface of the cave floor. It was noted that vertical and horizontal redistribution by birds, wind, gravity, monkeys and possibly hyraxes, accounted for various taxa introduced into the cave system (Scott 2005b: 66). The various pits dug into the Iron Age layers, as well as evidence of trampling and scuffing in the deposit account for anthropogenic displacement of floral material (Scott 2005b: 70).

The floral analysis of the Iron Age material does not indicate any change in vegetation within the last 1 000 years. There is no marked variation between the taxa found on the surface level, which represents the modern vegetation, and the Iron Age levels, which represents a 150 year occupation 1 000 years ago (Scott 2005b: 113). This led to concerns that the floral material from the Iron Age levels were not detailed enough for short-term vegetation change or alternatively, the concern was that the climatic conditions during the second millennium AD were not severe enough to show vegetation change. An additional explanation provided is, that the proximity to the Tongati River created a biased sample of vegetation types (Scott 2005b: 113).

5.3.3 Other Iron Age studies conducted

During excavation of the Iron Age layers, an unexpected cache of 5000 glass beads (some still coiled in string) were found in one of the pits (Wadley 2001: 3). The beads were analysed and found to be mainly brownish-red, blue-green and a few copper beads (Wood *et al*. 2009: 241). Chemistry analysis show that the Sibudu Cave beads were made in India and likely arrived in southern

Africa during the 17th century (Wood *et al.* 2009: 251). The glass beads date to between AD 1450 and 1660. According to Wood *et al.* (2009), there is a discrepancy between the calibrated radiocarbon dates (AD 1020 – 1160); the termination of Blackburn ceramics around AD 1500 and the arrival of the beads, which may indicate more than one Iron Age occupation (Wood *et al.* 2009: 252; Wadley & Jacobs 2004: 240).

The wealth of research discussed in this chapter (and elsewhere) for Sibudu Cave provides a multi-analytical approach to explaining Middle Stone Age human behaviour and environmental reconstruction. Analysis of lithic tool technology, faunal remains and floral remains, provide insights into behavioural activities such as site maintenance in the form of burning sedges and clearing bones from hearths after burning and deposition. The floral analysis conducted on the Iron Age layers suggests little climatic variation within the last millennium and more importantly it shows that no maize, sorghum or millet specimens are associated with the Iron Age layers of Sibudu Cave. Discrepancies between the dates of ceramics and glass beads in the Iron Age indicate that more than one occupation event may be visible.

CHAPTER 6: RESULTS

This chapter will discuss the results of the faunal analysis of the BSV and BSS layers from Sibudu Cave. During excavation, two continuous layers, labelled BSV and BSS, and two discontinuous layers, labelled Dung and Daga, were classified for the Iron Age from Sibudu Cave. During analysis, fauna from the entire BSS layer was identified. A representative sample of the fauna from the BSV layer, which is located above the BSS layer, was identified in order to verify differences or similarities between the two layers. The two discontinuous layers were not identified during this analysis as no faunal material was associated with them. The layers were designated based on soil colour and material associated with the layer, namely Brown Soil with Vegetation (BSV; BSV1 and BSV2) and Brown Soil with Stones (BSS; BSS2 and BSS/LFA). The layers were identified based on the abundance of ceramics associated with Blackburn or Moorpark, the presence of the cache of glass beads found in a pit going through the BSS layer (associated with BSV) and the presence of a discontinuous Dung layer between the BSV and BSS layers (Scott 2005b: 5; Wood *et al*. 2009: 252; Wadley 2001: 3; Wadley & Jacobs 2004: 240; Whitelaw pers. comm.).

6.1 Total sample

The total faunal sample from the BSV and BSS layers, identified during this analysis, consists of 47 721 specimens (Table 6.1). The sample analysed from the BSV layer consists of 3 236 specimens of which 589 or 18% could be identified. The sample analysed from the BSS layer consists of 44 485

specimens, of which 2 760 (6%) could be identified. A total of 7% of the sample was identified to taxa.

Table 6-1: Total sample size from BSV and BSS layers

Sample	Identified (NISP)	Unidentified specimens	Total	Percentage of identified specimens
BSV	589	2 647	**3 236**	**18%**
BSS	2 760	41 725	**44 485**	**6%**
Total	**3 349**	**44 372**	**47 721**	**7%**

6.2 Taxa represented

The taxa identified from the BSV and BSS layers consist of primates, carnivores, ungulates, rodents, birds, reptiles, freshwater and marine shells (Table 6.2).

6.2.1 Mammals

The primates identified include Chacma baboon (*Papio hamadryas*) and vervet monkey (*Cercopithecus pygerythrus*) and occur in both the BSV and BSS layers. Carnivores identified include possible wild dog (*cf. Lycaon pictus*), dog/jackal (Canidae indet.), possible honey badger (*cf. Mellivora capensis*), mongoose (Vivirridae sp.), possible spotted hyaena (*cf. Crocuta crocuta*), possible wild cat (*cf. Felis silvestris*) and cat sp. (Felidae indet.). The possible wild dog and feline sp. were only identified in the BSV layer, whereas the Canidae indet., possible honey badger and possible spotted hyaena were identified in the BSS layer. The mongoose and wild cat were identified from both the BSV and BSS layers.

The ungulates which were identified include zebra/horse (Equus sp.), common warthog (*Phacochoerus africanus*), bushpig (*Potamochoerus larvatus*), wild pigs (Suidae indet.), wildebeest/hartebeest/blesbok/tsessebe (Alcelaphini), blue duiker (*Philantomba monticola*), possible blue duiker/suni (*cf. Philantomba*/*Neotragus*), red duiker (*Cephalophus natalensis*), possible red duiker/steenbok (*cf. Cephalophus/Raphicerus*), grey duiker (*Sylvicapra grimmia*), klipspringer (*Oreotragus oreotragus*), steenbok/grysbok (*Raphicerus* sp.), impala (*Aepyceros melampus*), buffalo (*Syncerus caffer*), cattle (*Bos taurus*), possible eland (*cf. Tragelaphus oryx*), southern reedbuck (*Redunca arundinum*) and southern reedbuck/mountain reedbuck (*Redunca* sp.). The taxa which were only identified in the BSV layer include klipspringer and cattle. The taxa which were only identified in the BSS layer include warthog, bushpig, Alcelaphini, red duiker, possible steenbok, grey duiker, impala, eland, southern reedbuck and southern reedbuck/mountain reedbuck. Taxa which were identified from both layers were wild pigs, zebra/horse, blue duiker, possible blue duiker/suni and buffalo. The dominant ungulate identified from the BSV and BSS layers is blue duiker. The dominant indeterminate taxa identified include Bov II, Bov III, small mammal and medium mammal.

Other mammals which have been identified include shrew (Insectivora indet.), rock hyrax (*Procavia capensis*), hare (Lagomorpha/*Pronolagus* sp.), pangolin (*Manis temminckii*) and porcupine (*Hystrix africaeaustralis*). Rodents which have been identified are cane rat (*Thryonomis swinderianus*) and vlei rat (*Otomys* sp.). All the rodents identified occur in both the BSV and BSS layers. The vlei rat was identified based on tooth morphology and the cane rat was identified based on tooth morphology and post-crania. It is possible that many

small indeterminate rodents, which dominate the sample, could be identified as vlei rat.

6.2.2 Birds

Birds, due to time constraints, were mostly identified as indeterminate small, medium and large birds, except for two identified taxa which were classified as ostrich (*Struthio camelus*) and chicken/francolin/guinea-fowl *(*Galliformes indet.) (Table 6.2). The ostrich eggshell (NISP = 1) was identified in the BSS layer and the Galliformes indet. (NISP = 2) was identified from both the BSV and BSS layers. Small (NISP = 53) and medium birds (NISP = 27) were largely identified in the BSV and BSS layers. Indeterminate large bird taxa (NISP = 1) were only identified in the BSV layer.

6.2.3 Reptiles

Reptile taxa identified include Nile monitor (*Varanus niloticus*) (which also falls under aquatic taxa), rock monitor (*Varanus exanthematicus*), leopard tortoise (*Stygmochelys pardalis*), terrapin/tortoise/turtle (Cryptopodira indet.), snake (Serpentis indet.) and lizard (Sauria indet.). Taxa which predominate are small reptiles (NISP = 9 for BSV and NISP = 41 for BSS) and snakes (NISP = 3 for BSV and NISP = 13 for BSS).

6.2.4 Amphibians

The frog/toad taxa identified include indeterminate amphibians and platanna (*Xenopus* sp.). The platanna was identified in the BSS layer and the amphibians were identified in the BSV (NISP = 19) and BSS (NISP = 34) layers.

6.2.5 Aquatic taxa

Other aquatic taxa identified include Nile monitors, fishes, crabs, gastropods and bivalves. Freshwater taxa identified are yellowfish, (*Labeobarbus* sp.), Labeo (*Labeo* sp.), freshwater catfish/barbel (*Clarias/Synodontus* sp.), squeaker (*Clarias/Cyprinidae* indet.), freshwater mussel (Unionidae sp.), possible freshwater snail (*cf. Neritta natalensis)* and possible pulmonate snail (*cf. Xerocerastus* sp.). Marine taxa identified include brown mussel (*Perna perna*), possible ark shell (*cf.* Arcidae sp.), possible common nut clam (*cf. Nucula nucleus*) and barnacle (Cirripedia indet.). Taxa which could be identified as freshwater and marine taxa are the crabs (Brachyura indet.) which were identified from both layers. Shell taxa which could be identified as land taxa include giant land snail (*Achatina* sp.). Small fishes, medium fishes and marine bivalves dominate the sample and occur in both layers.

Table 6-2: Taxa present in BSV and BSS layers (NISP)

Taxa	Common name	BSV	BSS	Total
Insectivora indet.	shrew	20	14	**34**
Papio hamadryas	Chacma baboon	2		**2**
cf. Papio hamadryas	possible Chacma baboon		2	**2**
Cercopithecus pygerythrus	vervet monkey	1	3	**4**
cf. Lycaon pictus	wild dog	1		**1**

Canidae indet.	dog/jackal		3	**3**
cf. Mellivora capensis	honey badger		1	**1**
Viverridae indet.	mongoose	4	7	**11**
cf. Crocuta crocuta	spotted hyaena		1	**1**
Felis cf. silvestris	possible wild cat	1	2	**3**
cf. Felis silvestris	possible wild cat		1	**1**
Felidae indet.	cat sp.	1		**1**
Carnivora indet. small	small carnivore		4	**4**
Carnivora indet. small-medium	small-medium carnivore		1	**1**
Carnivora indet. medium	medium carnivore	2	1	**3**
Equus indet.	zebra/horse	9	10	**19**
Procavia capensis	rock hyrax	11	20	**31**
cf. Procavia capensis	possible rock hyrax	1	2	**3**
Phacochoerus africanus	common warthog		2	**2**
Potamochoerus larvatus	bushpig		5	**5**
cf. Potamochoerus larvatus	possible bushpig		1	**1**
Suidae indet.	pig/bushpig/warthog	2	4	**6**
cf. Suidae indet.	possible pig/bushpig/warthog	1		**1**
Alcelaphini indet.	wildebeest/hartebeest/ blesbok/tsessebe		1	**1**
Philantomba monticola	blue duiker	19	56	**75**
cf. Philantomba moniticola	possible blue duiker	3	5	**8**
Philantomba/Neotragus	blue duiker/suni	8	9	**17**
Cephalopus natalensis	red duiker		3	**3**
cf. Cephalophus natalensis	possible red duiker		4	**4**
Cephalophus/Raphicerus	red duiker/steenbok		2	**2**
Sylvicapra grimmia	grey duiker		8	**8**
Oreotragus oreotragus	klipspringer	1		**1**
cf. Oreotragus oreotragus	possible klipspringer		1	**1**
Raphicerus sp.	steenbok/grysbok		1	**1**
Aepyceros melampus	impala		3	**3**
cf. Aepyceros melampus	possible impala		1	**1**
Syncerus caffer	buffalo	1	2	**3**
cf. Syncerus caffer	possible buffalo		3	**3**

Bos taurus	cattle	1		**1**
Bos/Syncerus	cattle/buffalo		8	**8**
cf. Bos/Syncerus	possible cattle/buffalo		1	**1**
cf. Tragelaphus oryx	eland		1	**1**
Redunca arundinum	southern reedbuck		5	**5**
cf. Redunca arundinum	possible southern reedbuck		3	**3**
Redunca sp.	southern reedbuck/mountain reedbuck		1	**1**
Bov I	small bovid	4	27	**31**
Bov I-II	small-medium bovid		7	**7**
Bov I-II non-domestic	small-medium non-domestic bovid		1	**1**
Bov II	medium bovid	6	100	**106**
Bov II non-domestic	medium non-domestic bovid		6	**6**
Bov II-III	medium-large bovid	1	19	**20**
Bov III	large bovid	1	138	**139**
Bov III non-domestic	large non-domestic bovid		9	**9**
Bov III-IV	large-very large bovid	11	47	**58**
Bov IV	very large bovid		10	**10**
Manis temminckii	pangolin		1	**1**
Hystrix africaeaustralis	porcupine		1	**1**
Thryonomys swinderianus	cane rat	1	5	**6**
Otomys sp.	vlei rat	17	65	**82**
Rodentia indet. small	small rodent	225	490	**715**
Rodentia indet. medium	medium rodent		4	**4**
Lagomorpha indet.	hare	1	7	**8**
Pronolagus sp.	red rock hare		1	**1**
Mammalia indet. small	small mammal	32	203	**235**
Mammalia indet. small-medium	small-medium mammal	4	9	**13**
Mammalia indet. medium	medium mammal	66	501	**567**
Mammalia indet. medium-large	medium-large mammal	8	29	**37**
Mammalia indet. large	large mammal	23	341	**364**
Struthio camelus	ostrich		1	**1**
Galliformes indet.	chicken/francolin/guinea-fowl	1	1	**2**
Aves indet. small	small bird	8	45	**53**

Aves indet. small-medium	small - medium bird	1	13	**14**
Aves indet. medium	medium bird	8	19	**27**
Aves indet. large	large bird	1		**1**
Varanus niloticus	Nile monitor		3	**3**
Varanus cf exanthematicus	possible rock monitor		1	**1**
Varanus indet.	Nile/rock monitor		9	**9**
cf. Varanus indet.	possible Nile/rock monitor		1	**1**
Sauria indet.	lizard	1	2	**3**
Serpentis indet.	snake	3	13	**16**
Reptilia indet. small	small reptile	9	41	**50**
Reptilia indet. small-medium	small-medium reptile		2	**2**
Reptilia indet. medium	medium reptile		1	**1**
Stygmochelys pardalis	leopard tortoise	1		**1**
Cryptopodira indet.	terrapin/tortoise/turtle		4	**4**
Xenopus sp.	platanna		1	**1**
Amphibia indet.	frog/toad	19	34	**53**
Labeobarbus sp.	yellowfish	1	1	**2**
Labeo sp.	Labeo		7	**7**
Clarias/Synodontus indet.	freshwater catfish/barbel		1	**1**
Cyprinidae/Clarias indet.	squeaker		1	**1**
Pisces indet. small	small fish	2	77	**79**
Pisces indet. small-medium	small-medium fish		3	**3**
Pisces indet. medium	medium fish	1	24	**25**
cf. Pisces indet.	possible fish		3	**3**
Brachyura indet.	crab	2	2	**4**
Achatina sp.	giant land snail	1	3	**4**
cf. Neritina natalensis	freshwater snail		1	**1**
cf. Xerocerastus sp.	pulmonate snail		1	**1**
Gastropoda indet. terrestrial	terrestrial gastropod	1	1	**2**
Unionidae sp.	freshwater mussel		2	**2**
Bivalvia indet. freshwater	freshwater bivalve		21	**21**
Gastropoda indet. marine	marine gastropod		5	**5**

Perna perna	brown mussel	6	7	**13**
cf. Perna perna	possible brown mussel		1	**1**
cf. Nucula nucleus	common nut clam		1	**1**
cf. Arcidae sp.	ark clam		2	**2**
Bivalvia indet. marine	marine bivalve	26	91	**117**
cf. Bivalvia indet. marine	possible marine bivalve		1	**1**
Gastropoda indet.	gastropod	1	3	**4**
Bivalvia indet.	bivalve	2	70	**72**
Bivalvia/Gastropoda indet.	bivalve/gastropod	1		**1**
Cirripedia indet.	barnacle	4	15	**19**
cf. Cirripedia indet.	possible barnacle		2	**2**
Total		**589**	**2760**	**3349**

6.3 Taphonomy

During analysis, various taphonomic modifications were noted including burnt specimens, cut-, chop marks, worked specimens, carnivore marks, rodent gnawing, root etching, gypsum, digested remains and insect damage (Table 6.3). A high frequency of burning was noted for both the BSV (42%) and BSS (56%) samples with less dominance observed in other taphonomic modification (between 2% to <1% for other taphonomic modification). Slightly more specimens showed cut marks (2% for BSV and 1% for BSS) than chop marks (1% for BSV and <1% for BSS). Carnivore and rodent marks were less dominant with 1% observed from both layers. Taxa which were digested include small rodent (NISP = 1) identified in the BSV layer and blue duiker (NISP = 2), rock hyrax (NISP = 1), possible rock hyrax (NISP = 1), hare (NISP = 1) and indeterminate small mammal (NISP = 1) identified in the BSS layer.

Table 6-3: Taphonomic modification on specimens based on specimen counts

Taphonomic modification	BSV	Percentage of subtotal	BSS	Percentage of subtotal	Total
Burnt	1 344	42%	24 939	56%	**26 283**
Cut marks	50	2%	306	1%	**356**
Chop marks	20	1%	107	<1%	**127**
Copper/ochre stains	1	<1%	2	<1%	**3**
Carnivore marks	25	1%	381	1%	**406**
Rodent gnawing	27	1%	300	1%	**327**
Root etching	6	<1%	137	<1%	**143**
Gypsum formation	1	<1%	148	<1%	**149**
Digested	1	<1%	22	<1%	**23**
Insect damage	1	<1%	5	<1%	**6**
Weathered	0	<1%	3	<1%	**3**

6.3.1 Burnt taxa

Identified taxa which showed signs of burning were recorded during analysis. Of the 26 283 specimens which were burnt, only 528 (1%) were identified to taxa. A wide variety of taxa were burnt from both layers (Table 6.4). The bovid taxa with the largest percentage of burning from both the BSV and BSS layers are cattle, alcelaphine and impala (100%). The cattle specimen was identified in the BSV layer and the alcelaphine and impala specimens were identified in the BSS layer. The second highest burned taxa identified is possible blue duiker (50%) followed by red duiker and buffalo (33%). The largest indeterminate bovid which shows signs of burning is Bov III non-domestic taxa (67%) followed by Bov II-III (50%). Other mammal taxa which show signs of burning are Suidae indet. (33%), possible bushpig (100%), rock hyrax (9%) and hare (13%). The Suidae indet. and bushpig specimens were identified in the BSS layer. Bird specimens with the highest

percentage of burning are medium birds (11%). The reptile taxon with the highest percentage of burning is a possible rock monitor identified in the BSS layer (100%) and the highest percentage of fishes in the same level is medium fishes (4%). Frog or toad identified in the BSS layer show less burnt specimens (3%) and crab (25%) shows more burnt specimens. Freshwater and marine taxa which show signs of burning include barnacle (5%) and possible marine bivalve (100%).

Table 6-4: Burnt taxa in BSV and BSS layers

Taxa	Common name	BSV	BSS	Total	% of Identified specimens
Insectivora indet.	shrew		1	**1**	3%
Procavia capensis	rock hyrax	1	2	**3**	10%
cf. Procavia capensis	possible rock hyrax		1	**1**	33%
cf. Potamochoerus larvatus	possible bushpig		1	**1**	100%
Suidae indet.	pig/warthog/bushpig		2	**2**	33%
Alcelaphini indet.	wildebeest/hartebeest/ blesbok/tsessebe		1	**1**	100%
Philantomba monticola	blue duiker	1	10	**11**	15%
cf. Philantomba monticola	possible blue duiker	1	3	**4**	50%
Cephalophus natalensis	red duiker		1	**1**	33%
Philantomba/Neotragus	blue duiker/suni		1	**1**	6%
Aepyceros melampus	impala		3	**3**	100%
Syncerus caffer	buffalo	1		**1**	33%
cf. Syncerus caffer	possible buffalo		1	**1**	33%
Bos taurus	cattle	1		**1**	100%
Bos/Syncerus	cattle/buffalo		2	**2**	25%
Redunca arundinum	southern reedbuck		1	**1**	20%
Bov I	small bovid		7	**7**	23%

Bov I-II	small-medium bovid		1	**1**	14%
Bov II	medium bovid	2	38	**40**	38%
Bov II non-domestic	medium non-domestic bovid		1	**1**	17%
Bov II-III	medium-large bovid		10	**10**	50%
Bov III	large bovid		39	**39**	28%
Bov III non-domestic	large non-domestic bovid		6	**6**	67%
Bov III-IV	large - very large bovid	3	9	**12**	21%
Bov IV	very large bovid		2	**2**	20%
Rodentia indet. small	small rodent	5	17	**22**	3%
Lagomorpha indet.	hare	1		**1**	13%
Mammalia indet. small	small mammal	2	47	**49**	21%
Mammalia indet. small-medium	small-medium bird		1	**1**	7%
Mammalia indet. medium	medium mammal	13	158	**171**	30%
Mammalia indet. medium-large	medium-large mammal		7	**7**	19%
Mammalia indet. large	large mammal	6	93	**99**	27%
Aves indet. small	small bird	1	3	**4**	8%
Aves indet. medium	medium bird	1	2	**3**	11%
cf. Varanus indet.	possible rock monitor		1	**1**	100%
Reptilia indet. small	small reptile	1	5	**6**	12%
Cryptopodira indet.	terrapin/tortoise/turtle		3	**3**	75%
Amphibia indet.	frog/toad		2	**2**	3%
Pisces indet. small	small fish		2	**2**	3%
Pisces indet. medium	medium fish		1	**1**	4%
Brachyura indet.	crab	1		**1**	25%
cf. Bivalvia indet. marine	possible marine bivalve		1	**1**	100%
Cirripedia indet.	barnacle		1	**1**	5%
Total		**41**	**487**	**528**	

Two different methods of classifying burned specimens were used for the identified material from the BSV and BSS layers (Table 6.5). They include slightly burned, lightly burned, fully carbonised, less than half calcined, more than half calcined and fully calcined as well as localised, burned black and burned white/calcined. Calcined specimens (<1% for BSV and 2% for BSS) are identified as burnt grey, -blue or -white in colour. Localised burning (<1% for the BSV layer and 6% for the BSS layer) refer to any sharply defined burned zone noted on an element degrading to the normal colour of bone. Specimens which are burned black are completely shaded in black or brown (1% for BSV layer and 6% for BSS layer). Black and localised burnt specimens dominate the sample from both layers. Lightly burned specimens (1%) dominate in the BSV layer and lightly burned (6%) and slightly burned specimens (5%) dominate in the BSS layer.

Table 6-5: Degrees of burning for identified specimens based on Stiner *et al.* (1995) and Driver (1999)

Colour gradient	**BSV**	**% of subtotal**	**BSS**	**% of subtotal**	**Total**
Stiner *et al.* (1995) method					
1 - slightly burned	6	<1%	152	5%	**158**
2 - lightly burned	29	1%	217	6%	**246**
3 - fully carbonised	0	<1%	15	<1%	**15**
4 - <half calcined	4	<1%	44	1%	**48**
5 - >half calcined	3	<1%	33	1%	**36**
6 - fully calcined	2	<1%	16	<1%	**18**
Total	**44**		**477**		**521**
Driver (1999) method					
Localised	16	<1%	195	6%	**211**
Burned Black	24	1%	215	6%	**239**
Calcined/white	4	<1%	67	2%	**71**
Total	**44**		**477**		**521**

One classification system was chosen for unidentified specimens (Table 6.6) and include not burned, slightly burned, lightly burned, fully carbonised, less than half calcined, more than half calcined and fully calcined. 25 757 unidentified specimens show signs of burning. Slightly burned unidentified specimens (2%) dominate in the BSV layer, which differs from the identified specimens which has a dominance of lightly burned specimens. Slightly (24%) and lightly burned specimens (19%) dominate in the BSS layer for both identified and unidentified material. Half calcined specimens (4%) follow lightly burned material in the BSS layer. Fully carbonised and fully calcined specimens were less dominant in both the BSV and BSS layers.

Table 6-6: Degrees of burning for unidentified specimens based on Stiner *et al.* (1995)

Colour gradient	**BSV**	**% of subtotal**	**BSS**	**% of subtotal**	**Total**
1 - slightly burned	765	2%	10 517	24%	**11 282**
2 - lightly burned	192	<1%	8536	19%	**8728**
3 - fully carbonised	25	<1%	1107	2%	**1132**
4 - <half calcined	148	<1%	1935	4%	**2083**
5 - >half calcined	122	<1%	1567	4%	**1689**
6 - fully calcined	49	<1%	794	2%	**843**
Total	**1301**		**24 456**		**25 757**

6.3.2 Distribution of burnt specimens

Table 6.7 shows the horizontal distribution of burnt specimens for the BSV and BSS layers. Four squares were excavated and labelled square B to E. Square B was excavated in front of the

northern rock fall and is smaller than the other three squares (Wadley & Jacobs 2004: 147). Faunal material with signs of burning occurs in all the squares and layers for the Iron Age with slight variation between the squares. Squares E (18%) and D (13%) show the highest degree of burning in the BSV layer followed by squares B and C (5% each). Squares E (22%) and C (14%) show the highest degree of burning for the BSS layer followed by squares B (8%) and D (8%). Square E dominates the sample with an average of 22% burned specimens.

Table 6-7: Distribution of burnt specimens for BSV and BSS based on layers and squares

Square	BSV burnt specimens	% of subtotal	BSS burnt specimens	% of subtotal	Total burnt bone
B	156	12%	3 690	16%	**3 846**
C	173	13%	6 272	26%	**6 445**
D	429	32%	3 502	15%	**3 931**
E	591	43%	9 991	43%	**10 582**
Total	**1 349**	**100%**	**23 455**	**100%**	**24 804**

6.3.3 Fresh specimens

Table 6.8 shows the specimens which were fresher and represent recent disturbances or intrusions. 11% of the BSV sample and 10% of the BSS sample contain fresh specimens. The taxa identified include shrew, vervet monkey, mongoose, small carnivore, small bovid, medium bovid, vlei rat, small rodent, hare, small mammal, medium mammal, small bird, medium bird, lizard, snake, small reptile, medium reptile and amphibians. The taxa are most likely natural intrusions and represent recent disturbance through non-human predators or natural deaths in the cave itself. Lizard (100%), shrew (25%) and small bovid (25%) is predominantly represented in the

BSV layer. Frog/toad (5%) and vlei rat (6%) have the least percentage of fresh specimens in the BSV layer. Dominant taxa in the BSV include medium reptile (100%), small-medium bird (38%), frog/toad (35%), vervet monkey (34%), mongoose (29%) and small carnivore (25%). Small bovid (7%), medium bovid (2%) and small mammal have the least percentage of fresh bone in the sample. Based on NISP counts, small rodents have the lowest percentage of fresh specimens from both the BSV (14%) and BSS (20%) layers suggesting that several natural intrusions or predation (regurgitated owl remains) events occur in the layers.

Table 6-8: Fresh specimens identified from BSV and BSS layers. N/A = not applicable to identified sample

Taxa	Common name	BSV	% of Identified specimens	BSS	% of Identified specimens
Insectivora indet.	shrew	5	25%	3	21%
Cercopithecus pygerythrus	vervet monkey			1	34%
Viverridae indet.	mongoose			2	29%
Carnivora indet. small	small carnivore			1	25%
Bov I	small bovid	1	25%	2	7%
Bov II	medium bovid			2	2%
Otomys sp.	vlei rat	1	6%	11	17%
Rodentia indet. small	small rodent	31	14%	98	20%
Lagomorpha indet.	hare			1	13%
Mammalia indet. small	small mammal			11	5%
Mammalia indet. medium	medium mammal			12	2%
Aves indet. small	small bird	1	13%	11	24%
Aves indet. small-medium	small - medium bird			5	38%
Aves indet. medium	medium bird			3	16%
Sauria indet.	lizard	1	100%		
Serpentis indet.	snake			1	8%

Reptilia indet. small	small reptile			7	17%
Reptilia indet. medium	medium reptile			1	100%
Amphibia indet.	frog/toad	1	5%	12	35%
Unidentified bones		26	N/A	105	N/A
Total		**67**	**11%**	**289**	**10%**

6.3.4 Worked specimens

During analysis, all possible worked specimens were noted and identified (Table 6.9). A large percentage of the worked specimens were unidentified bone fragments with smoothed worked surfaces (N = 8). Other specimens include unidentified worked bone/bead fragments (N = 2), one unidentified specimen with an ochre stain and one bone point which was in the BSS layer.

Table 6-9: Worked specimens modified as tools or artefacts

Layer	Square	Length	Description
BSV	C2	30 mm	Unidentified bone, worked on surface
BSV	E2	6 mm	Unknown material, possibly bone, entirely smoothed surface with hollow centre
BSS	B6-b	Unknown	Unidentified bone, smoothed on surface
BSS	B5-c	Unknown	Unidentified bone with ochre stain present
BSS	C6	Unknown	Unidentified long bone shaft, smoothed on perpendicular edge
BSS pit	C6	32 mm	Indeterminate Bov II carpal smoothed on surface
BSS	C6-a	23 mm	Unidentified bone, smoothed on surface and perpendicular edge
BSS	E2	62 mm	Unidentified bone, smoothed on surface with cut marks
BSS	E2	44 mm	Unidentified bone, smoothed on surface and one perpendicular edge

BSS hearth	E2-d	12 mm	Unknown material, possibly bone, entirely smoothed surface with hollow centre, cut marks present
BSS	E4-d	94 mm	Unidentified long bone shaft worked into a bone point

6.4 Aging

Only those specimens that could be aged are considered. The age ranges for taxa was taken for teeth and post-crania and represented in table 6.10 for the BSV layer and table 6.11 for the BSS layer. Age ranges were only estimated as neonate, juvenile or adult and data for teeth and post-crania were combined. The taxa which showed signs of age range for the BSV layer (Table 6.10) include baboon, mongoose, medium carnivore, rock hyrax, Suidae indet., blue duiker, klipspringer, buffalo, cattle, medium bovid, large-very large bovid, small rodent, hare, small bird, medium bird, large bird, snake, small reptile, frog/toad, small fishes and medium fishes. Baboon taxa are represented by juvenile specimens and mongoose and medium carnivore specimens were adults. The ungulates in the BSV layer were predominantly adult specimens, except for the blue duiker which had more juveniles (NISP = 32) than adults (NISP = 2). Small rodents in the BSV layer had more adult specimens (NISP = 88) than juvenile (NISP = 52) whereas, rock hyrax identified were only juveniles (NISP = 11). Bird remains which showed age range were predominantly adults for small and medium birds, whereas the large bird taxon identified was a neonate. Reptile specimens were all adults and frog/toad identified in the BSV layer had more adults (NISP = 6) than juveniles (NISP = 3). Fish remains identified in the BSV layer were all adult specimens.

Several young rock hyrax individuals were identified from the Iron Age layers at Sibudu Cave. Mating in rock hyrax are triggered by photoperiods, and is progressively later at lower latitudes and differs geographically during the year (Smither 1983: 544). In KwaZulu-Natal, the time of parturition (peak of birth) is between August and February (Skinner & Chimimba 2005: 46). A left refitted mandible of a young individual (8-11 months) was identified in the BSV layer and the calculated birth was in October and it died during the winter months.

Table 6-10: Age range for taxa identified from BSV layer

Taxa	Common name	Neonate	Juvenile	Adult
Papio hamadryas	baboon		4	
Vivirridae sp.	mongoose			4
Carnivora indet. medium	medium carnivore			2
Procavia capensis	rock hyrax		11	
Suidae indet.	pig/bushpig/warthog			2
cf. Suidae indet.	possible pig/bushpig/warthog			1
Philantomba monticola	blue duiker		32	2
cf. Philantomba monticola	possible blue duiker		2	1
Philantomba/Neotragus	blue duiker/suni		2	3
Oreotragus oreotragus	klipspringer			1
Syncerus caffer	buffalo			1
Bos taurus	cattle			2
Bov II	medium bovid			5
Bov III-IV	large-very large bovid		1	1
Rodentia indet. small	small rodent		52	88
Lagomorpha indet.	hare			1
Mammalia indet. small	small mammal		1	1
Mammalia indet. small-medium	small-medium mammal			1
Mammalia indet. medium	medium mammal		4	2
Mammalia indet. large	large mammal		1	1
Aves indet. small	small bird			3
Aves indet. medium	medium bird		1	5

Aves indet. large	large bird	2		
Serpentis indet.	snake			6
Reptilia indet. small	small reptile			18
Amphibia indet.	frog/toad		3	6
Pisces indet. small	small fish			4
Pisces indet. medium	medium fish			2

The taxa which showed signs of age range for the BSS layer (Table 6.11) include shrew, vervet monkey, canine sp., honey badger, mongoose, small carnivore, medium carnivore, equids, rock hyrax, bushpig, Suidae indet., alcelaphine, blue duiker, red duiker, grey duiker, steenbok/grysbok., impala, buffalo, possible eland, southern reedbuck, small bovid, medium bovid, large bovid, very large bovid, pangolin, cane rat, small rodent, medium rodent, hare, small bird, medium bird, lizard, snake, small reptile, platanna, amphibian, small fishes, medium fishes, brown mussel, freshwater snail and marine bivalve. All the primate, carnivore and rodent taxa which showed signs of aging were adult specimens except for rock hyrax which had a predominance of juvenile specimens (NISP = 11) over adult specimens (NISP = 5), small rodents which had a predominance of adult specimens (NISP = 213) followed by juveniles (NISP = 125) and neonates (NISP = 1) and one hare specimen which was classified as a neonate. A young rock hyrax individual (28-34 months) maxilla fragment (NISP = 3) was identified in the BSS layer. If date of birth was in October, the hyrax would have died sometime between January-June.

Ungulates vary in age range (see table 6.11 and figure 6.1) and equids, grey duiker and southern reedbuck/mountain reedbuck were all identified as juvenile specimens whereas, bushpig, Suidae indet., blue duiker, red duiker, cattle/buffalo and southern reedbuck had a predominance of adult specimens over

juveniles. Adult specimens were predominantly identified for all indeterminate bovid taxa. Bird, reptile, frog/toad, fishes and shell taxa which showed signs of aging were predominantly adult specimens except for a possible freshwater snail (*cf. Nerita natelensis*) which was classified as a juvenile specimen. The predominance of adult specimens in all the taxa except for ungulates, marine and freshwater specimens suggest that the taxa were natural intrusions.

Table 6-11: Age range for taxa identified from BSS layer

Taxa	Common name	Neonate	Juvenile	Adult
Insectivora indet.	shrew			1
Cercopithecus pygerythrus	vervet monkey			2
Canidae indet.	dog/jackal			4
cf. Mellivora capensis	possible honey badger			2
Viverridae indet.	mongoose			3
Carnivora indet. small	small carnivore			1
Carnivora indet. medium	medium carnivore			2
Equus indet.	zebra/horse		1	
Procavia capensis	rock hyrax		11	5
cf. Procavia capensis	possible rock hyrax			1
Potamachoerus larvatus	bushpig		2	5
cf. Potamochoerus larvatus	possible bushpig		2	
Suidae indet.	pig/bushpig/warthog		1	4
Alcelaphini indet.	wildebeest/hartebeest/blesbok/tsessebe			1
Philantomba monticola	blue duiker		1	33
cf. Philantomba monticola	possible blue duiker		1	1
Philantomba/Neotragus	blue duiker/suni			4
Cephalophus natalensis	red duiker			4
cf. Cephalophus natalensis	possible red duiker		2	2
Cephalophus/Raphicerus	red duiker/steenbok			2
Sylvicapra grimmia	grey duiker		5	
Raphicerus sp.	steenbok/grysbok			1
Aepyceros melampus	impala			3

cf. Aepyceros melampus	possible impala			2
Syncerus caffer	buffalo			3
cf. Syncerus caffer	possible buffalo			1
Bos/Syncerus	cattle/buffalo		1	8
cf. Taurotragus oryx	possible eland			2
Redunca arundinum	southern reedbuck			4
cf. Redunca arundinum	possible southern reedbuck		1	2
Redunca sp.	southern reedbuck/mountain reedbuck		1	
Bov I	small bovid			3
Bov I-II	small - medium bovid	1		1
Bov II	medium bovid		9	19
Bov II non-domestic	medium non-domestic bovid		2	2
Bov II-III	medium - large bovid			3
Bov III	large bovid	5	12	12
Bov III non-domestic	large non-domestic bovid		1	1
Bov III-IV	large - very large bovid		7	9
Bov IV	very large bovid		1	5
Manis temminckii	pangolin			1
Thryonomys swinderianus	cane rat			1
Rodentia indet. small	small rodent	1	125	213
Rodentia indet. medium	medium rodent		4	1
Lagomorpha indet.	hare	1		4
Pronolagus sp.	red rock hare			1
Mammalia indet. small	small mammal	2	20	15
Mammalia indet. medium	medium mammal	2	20	18
Mammalia indet. large	large mammal		4	2
Aves indet. small	small bird		3	42
Aves indet. small-medium	small - medium bird		1	20
Aves indet. medium	medium bird			10
Sauria indet.	lizard			2
Serpentis indet.	snake			26
Reptilia indet. small	small reptile		1	58
Reptilia indet. small-medium	small - medium reptile			4

Xenopus sp.	platanna			2
Amphibia indet.	frog/toad		2	25
Pisces indet. small	small fish			37
Pisces indet. small-medium	small - medium fish			2
Pisces indet. medium	medium fish		1	22
Perna perna	brown mussel			2
cf. Nerita natalensis	freshwater snail		2	
Bivalvia indet. marine	marine bivalve			2

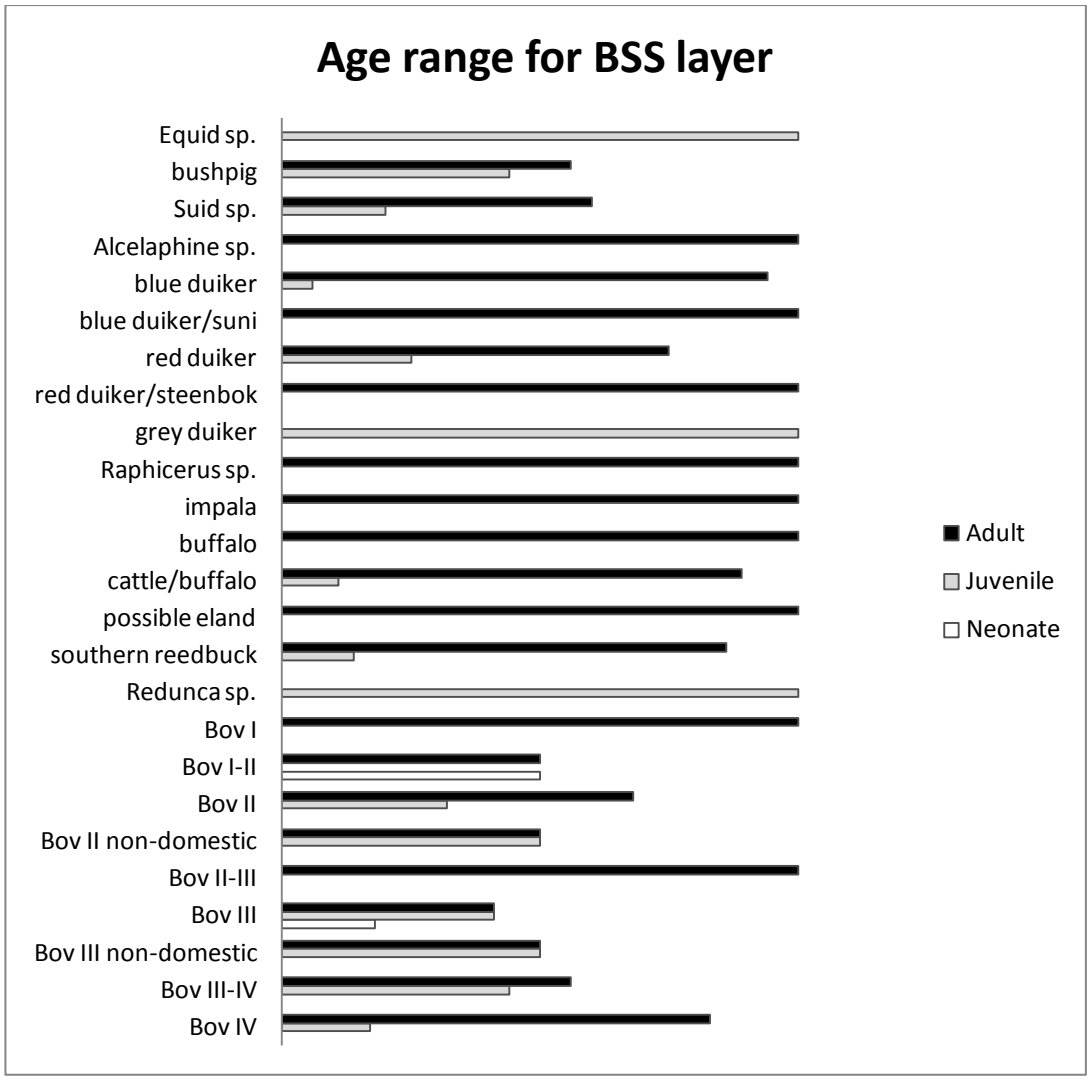


Figure 6-1: Age range for ungulates identified in BSS layer

6.5 Skeletal part representation

Skeletal part representation of bovid taxa was calculated for the BSV (Table 6.12) and BSS layers (Table 6.13). The specimens that were included for Bov I taxa are blue duiker, blue duiker/suni, red duiker, red duiker/steenbok, grey duiker, klipspringer, steenbok/grysbok, indeterminate Bov I and indeterminate Bov I-II. Bov II taxa include impala, southern reedbuck, southern reedbuck/mountain reedbuck, indeterminate Bov II and indeterminate Bov II-III. Bov III taxa include alcelaphine, cattle, Bov III and indeterminate Bov III-IV. Bov IV taxa include buffalo, cattle/buffalo and eland. The BSV layer shows a predominance of Bov I and Bov III-IV specimens, with parts of the entire skeleton represented for Bov I taxa. Bov III-IV taxa only have teeth, radius/ulna, tarsals and metapodials represented. Bov II taxa have lower section of the skeleton largely represented except for one radius/ulna fragment. Bov III and IV elements were less predominant and were phalanx and sesamoid fragments. During analysis, ribs and vertebrae (except atlas and axis fragments) were identified as indeterminate small, medium or large mammal resulting in no family level identification. The vertebrae fragments for BSV include N = 1 for small mammal, N = 10 for medium mammal and N = 1 for large mammal. The rib fragments for BSV include N = 15 for small mammal, N = 11 for medium mammal and N = 3 for large mammal.

Table 6-12: Skeletal part representation for BSV layer (NISP)

Element	Bov I	Bov II	Bov III	Bov III-IV	Bov IV	Total	%
Cranium + mandible	17					**17**	26%
Tooth	2			7		**9**	16%

Atlas + axis	1					**1**	2%
Scapula	1					**1**	2%
Pelvis	5	1				**6**	11%
Femur	1					**1**	2%
Radius + ulna	1	3		1		**5**	9%
Carpal	1					**1**	2%
Tarsal	3	1		2		**6**	11%
Metatarsal	2	1				**3**	5%
Metapodial	1	1		1		**3**	5%
Phalanx			1		1	**2**	4%
Sesamoid			1			**1**	2%
Total	**35**	**7**	**2**	**11**	**1**	**56**	

The BSS layer shows a predominance of Bov III (NISP = 146), Bov II (NISP = 117) and Bov I (NISP = 116) specimens respectively. Interestingly, most of the skeletal parts are represented for all indeterminate bovid taxa in the BSS layer, except for Bov I-II specimens which shows a predominance of the lower legs of the skeleton. The predominant skeletal parts of Bov I and Bov II taxa are cranium/mandible, tooth and phalanx fragments. The predominant skeletal parts of Bov III-IV taxa are mostly tooth, femur, tibia, humerus, phalanx and tarsal elements. The vertebrae fragments for BSS include N = 35 for small mammal, N = 95 for medium mammal and N = 15 for large mammal. The rib fragments for BSS include N = 73 for small mammal, N = 60 for medium mammal and N = 16 for large mammal.

Table 6-13: Skeletal part representation for BSS layer (NISP)

Element	Bov I	Bov I-II	Bov II	Bov II-III	Bov III	Bov III-IV	Bov IV	Total	Percentage
Cranium + mandible	29		15	2	2	5		**53**	11%
Tooth	17		20	5	80	23	1	**146**	31%
Atlas + axis	2		3			1	1	**7**	1%
Sternum + hyoid			2		1			**3**	1%
Scapula	7		5			2		**14**	3%
Pelvis	6	2	6	1	2			**17**	4%
Humerus	5	2	4		6		1	**18**	4%
Femur	5		4	2	5		1	**17**	4%
Patella	1					1		**2**	<1%
Radius + ulna	6		6		5			**17**	4%
Tibia	6	1	5		8	1		**21**	4%
Carpal			6			1		**7**	1%
Tarsal	6		4	2	9	3	2	**26**	5%
Metacarpal	1		5			4		**10**	2%
Metatarsal	3		6		1			**10**	2%
Metapodial	3	2	8	1	5	2		**21**	4%
Phalanx	19	1	16	8	12	11	4	**71**	15%
Sesamoid			2		10	1	5	**18**	4%
Total	**116**	**8**	**117**	**21**	**146**	**55**	**15**	**478**	

Table 6.14 shows the percentage of elements found in the BSV and BSS layers from Sibudu Cave as well as how dense particular elements are. The higher the density of an element the higher the chance it would survive within an archaeological assemblage. The elements from the BSV layer which were represented the most include cranium/mandible (26%), tooth (16%), inominate (12%), radius/ulna (9%) and tarsal (12%) fragments. The elements from the BSS layer are similarly higher in density and include cranium/mandible (11%), tooth (31%) and phalanx (15%) fragments. These elements all have higher density categories and may survive longer in deposits.

Table 6-14: Bone density categories for elements from the BSV and BSS layers. Bone density categories from Brain (1981)

Element	BSV layer	BSS layer	Density categories
Cranium + mandible	26%	11%	Low to High
Tooth	16%	31%	High
Atlas + axis	2%	1%	High
Sternum + hyoid	<1%	1%	Low
Scapula	2%	3%	Low to High
Pelvis	12%	4%	Intermediate to High
Humerus	<1%	4%	Low to High
Femur	2%	4%	Intermediate
Patella	<1%	<1%	Low to High
Radius + ulna	9%	4%	Intermediate to High
Tibia	<1%	4%	Low to High
Carpal	2%	1%	High
Tarsal	12%	5%	High
Metacarpal	<1%	2%	High
Metatarsal	5%	2%	High
Metapodial	5%	4%	High
Phalanx	4%	15%	High
Sesamoid	2%	4%	High

6.6 Greatest length of specimens

During analysis, the greatest length of identified specimens were recorded for each specimen and measured in millimetres (Table 6.15). The highest percentage of identified specimens were between 10-19 millimetres (41%) followed by 0-9 millimetres (31%) and 20-29 millimetres (13%).

Table 6-15: Greatest length of identified specimens (NISP)

Driver code	BSV	BSS	Total	Percentage of ID specimens
1 – 0-9 mm	235	812	1047	**31%**
2 – 10-19 mm	178	1211	1389	**41%**
3 – 20-29 mm	71	364	435	**13%**
4 – 30-39 mm	27	172	199	**6%**
5 – 40-49 mm	42	82	124	**4%**
6 – 50-59 mm	13	42	55	**2%**
7 – 60-69 mm	8	31	39	**1%**
8 – 70-79 mm	4	12	16	**<1%**
9 – 80-89 mm	8	18	26	**1%**
10 – 90-99 mm	3	9	12	**<1%**
11 – 100-109 mm	0	4	4	**<1%**
12 – 110-119 mm	0	1	1	**<1%**
13 – 120-129 mm	0	1	1	**<1%**
14 – 130-139 mm	0	0	0	**0%**
15 – 140-149 mm	0	0	0	**0%**
16 – 150-159 mm	0	1	1	**<1%**
Total	**589**	**2760**	**3349**	

Unidentified specimens were placed into two categories namely less than or more than 20 mm (Table 6.16). The highest percentage of unidentified specimens was recorded in

the less than 20 mm category (79% for BSV layer and 85% for BSS layer).

Table 6-16: Greatest length of unidentified specimens

Layer	< 20 mm	% of unidentified specimens	> 20 mm	% of unidentified specimens
BSV	2085	79%	562	21%
BSS	35446	85%	6279	15%

6.7 Measurements

During analysis, all complete and semi-complete adult specimens were measured using a calliper (Table 6.17). The measurements were taken for canine sp., rock hyrax, bushpig, Suidae indet., blue duiker, blue duiker/suni, red duiker, red duiker/steenbok, grey duiker, klipspringer, impala, buffalo, cattle, eland, southern reedbuck and indeterminate bovid taxa. The possible eland (*cf. Tragelaphus oryx*) specimen identified was cut vertically in half through the proximal and distal ends.

Table 6-17: Limb bone measurements of complete and semi-complete taxa based on Von den Driesch (1976)

Taxa	Element	Side	Measurements (mm)
Canidae indet.	Third phalanx	N/A	DLS - 15.00; HP - 7.6; Ld - 12.10; MBS - 2.65
Procavia capensis	Humerus	Right	Bd - 10.70
Procavia capensis	Humerus	Left	Bd - 11.90; BT - 9.20
Procavia capensis	Femur	Right	Bp 14.55; SD - 5.70; BTr - 10.60
Procavia capensis	Radius	Left	BP - 7.55
Procavia capensis	Radius	Right	BP - 8.7
Potamochoerus larvatus	Humerus	Right	Bd - 44.90; BT- 32.55
Potamachoerus larvatus	First phalanx	Left	GL - 34.15; Bp - 15.20; SD - 13.63; Bd - 14.05
Potamachoerus larvatus	First phalanx	Left front	GL - 25.46; Bp - 12.80; SD - 8.30; Bd - 8.55
Suidae indet.	Ulna	Right	BPC - 18.50
Suidae indet.	Third phalanx	Left	DLS - 19.60; HP - 13.70; Ld - 21.90; MBS - 10.60; BFp - 10.85
Suidae indet.	Metacarpal	N/A	Bd - 17.05; DD - 16.25
Philantomba monticola	Scapula	Left	GLP - 13.20; BG - 9.05; SLC - 8.00
Philantomba monticola	Scapula	Left	GLP-14.34; BG - 10.15
Philantomba monticola	Inominate	Right	LA - 16.04
Philantomba monticola	Humerus	Left	Bd - 13.85; BT - 12.92; Dmd - 11.40
Philantomba monticola	Humerus	Right	Dmd - 11.95
Philantomba monticola	Humerus	Right	SD - 6.54; Bd - 14.16; Dmd - 11.49
Philantomba monticola	Radius	Left	Bp - 12.15; Dp - 6.60
Philantomba monticola	Radius	Right	Bfd - 9.30; Bd - 10.80

Philantomba monticola	Tibia	Left	Bd - 13.95; Dd - 9.61
Philantomba monticola	Tibia	Right	Bd - 13.30; Dd - 9.70
Philantomba monticola	Astragalus	Left	Dm - 8.42; Bd - 9.75; Gli - 15.10; GLm - 9.55; DI - 8.75
Philantomba monticola	Astragalus	Right	GLI - 14.32; Bd - 9.10; DI - 7.92; GLm - 13.26; Dm - 8.00
Philantomba monticola	Tarsal	Right	GB - 12.20; GD - 10.60
Philantomba monticola	Metacarpal	Left	GL - 57.30; Bp - 10.48; BFpn - 6.09; SD - 5.84; DD - 4.37; Bd - 9.45; Dd - 6.28; DP - 7.19
Philantomba monticola	First phalanx	Left	GL - 13.25; SD - 6.05
Philantomba monticola	First phalanx	Right front	GL - 13.80; Bp - 5.00; SD - 4.65; Bd - 4.40
Philantomba monticola	First phalanx	Left front	GL - 13.15; Bp - 4.85; SD - 4.50; Bd - 4.70
Philantomba monticola	Second phalanx	Right	GL - 12.44 (EST.); Bp - 4.90; SD - 3.49; Bd - 3.60; Dp - 6.00
Philantomba monticola	Second phalanx	N/A	GL 12.39; Bp 5.06; SD 3.85; Bd 4.28; Dp 7.51
Philantomba monticola	Second phalanx	Left	Bd - 4.80
Philantomba monticola	Third phalanx	N/A	DLS - 13.30; HP - 6.81; Ld - 12.11; MBS - 2.86; BFp 3.92
Philantomba monticola	Third phalanx	N/A	GL - 13.30; Bp - 6.73; SD - 4.28
Philantomba monticola	Third phalanx	N/A	DLS - 14.11; HP - 6.81; Ld - 12.11; MBS - 2.86; BFp - 4.25
Philantomba /neotragus	Femur	Left	Bp - 20.75; DC - 9.50
Philantomba /neotragus	Femur	Left	DC - 10.00
Philantomba /neotragus	Metatarsal	Left	Dd - 7.75; Bd - 10.60
Philantomba /neotragus	Third phalanx	N/A	HP - 6.75; MBS - 3.10; Bfp - 3.55
Cephalophus natalensis	First phalanx	Right hind	Bd - 6.55
Cephalophus natalensis	First phalanx	Left	GL - 22.00; Bp - 7.20; SD - 6.10; Bd - 6.60
Cephalophus natalensis	First phalanx	Right	Bd - 6.90

Cephalophus natalensis/Raphicerus sharpei	Third phalanx	Right	DLS - 15.05; HP - 7.91; Ld - 14.30; MBS - 4.50; BFp - 4.77
cf. Cephalophus natalensis	Calcaneum	Right	GL - 40.35; Bp - 6.45; SD - 12.70; Dd - 14.40
Sylvicapra grimmia	Patella	N/A	GL - 24.55
Oreotragus oreotragus	Metatarsal	Right	Bd - 21.00; SD - 11.80; DD - 9.10; Dd - 14.30
Raphicerus sp.	Third phalanx	Right	BFp - 5.30
Aepycerus melampus	Metatarsal	Right	Bd -22.60; Dd - 17.25
cf. Aepycerus melampus	2nd and 3rd carpal	Right	GB - 18.6; GD - 13.30; HMD - 10.60
Syncerus caffer	First phalanx	Right front	Bd - 37.10
Syncerus caffer	Second phalanx	Left	GL - 50.58; Bp - 35.77; SD - 32.20; Bd - 29.45 est.; Dp - 37.42
cf. Syncerus caffer	First phalanx	Right	SD - 23.00
Bos taurus	First phalanx	Right	Glpe - 51.80; Bp - 25.00; SD - 25.02; Bd - 24.00
Bos/Syncerus	Second phalanx	Left	GL - 45.72; Bp - 33.20; SD - 26.30; Bd - 27.05
Bos/Syncerus	Second phalanx	Right	SD - 26.47; Bd - 25.87
cf. Tragelaphus oryx	Second phalanx	Right	GL - 48.42; Est. (estimate) of DP - 40.30. Buffalo - AZ 524 Female (Dp - 38.36 GL 42.98) Eland AZ 1457 Male (Dp - 36.90 GL - 43.35
Redunca arundinum	2nd and 3rd carpal	N/A	GB -15.05; GD -13.60; HMD - 8.05
Redunca arundinum	Second phalanx	Right	BP - 8.55
Redunca arundinum	Third phalanx	Left	DLS - 33.25; HP - 20.20; Ld - 31.65 MBS - 7.28; BFp - 9.36
cf. Redunca arundinum	Femur	Left	DC - 23.00
cf. Redunca arundinum	Ulna	Left	LO - 43.40; DPA - 33.40; BIT - 10.10
Bov II	2nd and 3rd tarsal	Right	GB -27.20; GD - 35.00

Bov II	Second phalanx	Right	Bp - 15.45; Dp - 18.90
Bov II non-domestic	First phalanx	Left	Bd - 11.72
Bov II-III	Third phalanx	Left	HP - 21.35
Bov IV	2nd and 3rd tarsal	Right	GB - 21.50
Lagomorpha indet.	Humerus	Left	Bd - 10.37

6.8 Breakage

The breakage patterns for identified long bones were recorded during analysis of the BSV and BSS layers (Table 6.18). Spiral, transverse, irregular, splintered, carnivore, eroded and fresh breaks were recorded. Spiral fractures (47%) were largely identified from both the BSV and BSS layers followed by irregular fractures (27%) and transverse fractures (24%). Long bones which were splintered, eroded, broken during excavation or chewed by carnivores were substantially less than spiral, irregular and transverse fractures.

Table 6-18: Breakage pattern recorded for BSV and BSS layers. Note only long bones were recorded

Breakage	**BSV**	**BSS**	**Total**	**Percentage**
Spiral	44	177	**221**	47%
Transverse	20	95	**115**	24%
Irregular	18	110	**128**	27%
Splintered		1	**1**	<1%
Chewed by carnivores		2	**2**	<1%
Eroded		5	**5**	1%
Broken during excavation		3	**3**	1%
Total	**82**	**393**	**475**	

In this chapter, I have discussed the faunal specimens analysed from the BSV and BSS layers from Sibudu Cave. The sample consists of 47 721 specimens and a total of 7% of the sample was identified to taxa. The taxa identified include primates, carnivores, ungulates, rodents, birds, reptiles, amphibians,

freshwater and marine specimens. Blue duiker, indeterminate Bov II, indeterminate Bov III, indeterminate Bov III-IV, vlei rat, small rodent, small mammal, medium mammal, large mammal and marine bivalve dominates the sample. Only one domestic specimen was identified from the top layer (BSV) from Sibudu Cave, namely cattle.

A high degree of burning was noted for both layers in the sample with less dominance observed in other taphonomic modifications and more specimens were cut than chopped. A wide variety of taxa were burnt, including a high frequency of ungulates and to a lesser extent birds, rodents, frogs/toads, crabs, fishes, possible marine bivalves and barnacles. The specimens in the sample are mostly lightly and slightly burned with localised and black burning common. Burning occurs in all the squares and layers with slight variation between the squares and a higher percentage of burning observed in square E (southern most excavated area). Fresh specimens in the sample are mostly small carnivores, rodents, reptiles and amphibians which would suggest natural intrusions through non-human predators or natural deaths.

Taxa which showed signs of age range were predominantly adults including carnivore, small rodent, small and medium bird, reptile, frog/toad, fish and crab. The only exception was with blue duiker, rock hyrax and a freshwater gastropod which had more juvenile specimens. Neonate taxa include hare and large bird. The predominance of adult specimens in all the taxa except for ungulates, marine and freshwater specimens suggest that the taxa were natural intrusions. The skeletal part representation for the BSV layer shows a predominance of Bov I and Bov III-IV specimens with parts of the entire skeleton represented for Bov I

taxa. Skeletal parts of most of the indeterminate bovid category for the BSS layer are represented with a higher predominance for Bov III and IV specimens and higher percentage of skeletal parts from the lower legs of the skeleton for Bov I and II specimens. The highest percentage of identified and unidentified specimens was recorded in the less than 30 mm length category. Spiral fractures were predominantly identified for the breakage pattern followed by irregular fractures and transverse fractures.

CHAPTER 7: DISCUSSION AND CONCLUSION

In this chapter, I will interpret the results of the faunal specimens identified from the BSV and BSS layers from Sibudu Cave. I will start with a discussion of the presence of taxa, agents of accumulation, taphonomy and change over time. I will then compare the identified taxa from this sample with the taxa from previous studies conducted in Sibudu Cave in order to determine whether any similarities or differences occur. I will revisit the reasons why people occupy cave sites in order to investigate whether Sibudu Cave was used for shelter, refuge or religious purposes. Finally, I will provide recommendations and shortfalls experienced during analysis and a conclusion.

7.1 Discussion

7.1.1 Presence of taxa

Below, I will discuss taxa which were identified as either accumulated by humans or non-human predators as well as taxa which were natural intrusions to the cave. Where possible, I will indicate if and why hunter-gatherers, specifically Later Stone Age hunter-gatherers, or Iron Age farmers, specifically Bantu-speaking societies, accumulated the taxa. These groups are included as either group may have been present during the period identified in the BSV and BSS layers from Sibudu Cave (dating between AD 450 and 1660). Ethnographic data is used to evaluate the importance of the taxa present, but it may be possible that the

occupants of Sibudu Cave were not directly linked to the ethnographic information provided. Some taxa, discussed below, were identified as possibly present (for example *cf*. honey badger) and it may be likely that they were not present in the sample analysed, but may have been accumulated by the occupants of the cave. As such, ethnographic literature related to the taxa will still be discussed in order determine possible occupants of the cave. Larger samples from Sibudu Cave would possibly reveal whether these taxa were present during this occupation of Sibudu Cave.

Shrews (Insectivora indet.)

Shrew elements were identified in both the BSS and BSV layers from Sibudu Cave. Shrews are typically associated with moist and well-vegetated areas (Smithers 1983: 142; Skinner & Chimimba 2005: 22). One shrew mandible fragment, identified in the lower layer (BSS), showed signs of being black/lightly burnt suggesting either natural burning or human produced fire (Nicholson 1993: 411-412; Henshilwood 1997: 661). The construction of fires among hunter-gatherer societies is sporadic and no specific locations are designated for fire in the campsite. When new hearths are constructed they are made a few feet away from the old ones resulting in several hearths made on top of each other (Schapera 1930: 95-96). Farming communities, on the other hand, cook their meat in designated areas such as the centre of the kitchen in the hut (Hammond-Tooke 1974: 99). It is unclear whether the shrew elements identified from Sibudu Cave were accumulated naturally or through human activities.

Primates

Two primate taxa were identified in the BSV and BSS layers from Sibudu Cave namely Chacma baboon (*Papio hamadryas*) and vervet monkey (*Cercopithecus pygerythrus*). Baboons typically occur in woodland savannahs, montane uplands (such as the Drakensberg) or riverine belts and require access to water and refuge from predators (Smithers 1983: 156; Skinner & Chimimba 2005: 230). Vervet monkeys typically occur in and near riparian vegetation similar to those noted for baboons (Smithers 1983: 152; Skinner & Chimimba 2005: 226). Non-human predators which hunt baboons and vervet monkey include black-backed jackal (*Canis mesomelas*), hyenas and leopards (*Panthera pardus*) (Brain 1981: 77-83; Grobler *et al*. 1984: 20-117; Plug & Badenhorst 2001: 26-29). Baboons utilise cave sites in order to regulate their response to the local climate, collect water, collect nutrients and for security (Brain 1981: 271; McGrew *et al*. 2003: 521-522; Barret *et al*. 2004: 215 and 219).

Later Stone Age sites in KwaZulu-Natal which have baboon and vervet monkey remains include Maqonqo Shelter, Mzinyashana and KwaThwaleyakhe Shelter (Plug 1993b, 1996a, 2002). Primates are of ritual importance to hunter-gatherers (Plug 1996a: 49; Orpen 1874; Bleek & Lloyd 1911). Primate remains identified in Maqonqo Shelter, for example, were associated with ritual practices among the Later Stone Age hunter-gatherers (Plug 1996a: 49; Plug & Badenhorst 2001: 26). Tales are told among hunter-gatherers about baboons which are punished either while dancing, playing or being mocked for having a crooked tail

(Bleek & Lloyd 1911: 17-37; Orpen 1874; McGranaghan *et al.* 2013: 158). In these tales the baboons, who were humans before being cursed with crooked tails, are blamed for killing the Mantis' son and are sent back to the mountains to live of roots, beetles and scorpions 'as baboons should' (Bleek & Lloyd 1911: 17-37; Orpen 1874; McGranaghan *et al.* 2013: 159). The Mantis was the most prominent figure in the mythology of hunter-gatherer society and was often featured in hunter-gatherer tales (Schapera 1930: 178). Baboons were not eaten by hunter-gatherer societies based on taboos ... "on account of its being so like a man" (Schapera 1930: 93).

The same taboo about eating monkeys applied to Zulu farmers (Krige 1936: 388); however monkeys are eaten by boys and men among Pedi farmers (Quin 1959: 125). Baboon elements were used among Zulu, Pedi and Xhosa farmers for divining purposes (Hammond-Tooke 1974: 338; Quin 1959: 125; Le Roux *et al.* 2013). The Zulu used the pelt of vervet monkeys as girdles and baboons were used as familiars for sorcery (Krige 1936: 338; Hammond-Tooke 1974: 338; Schapera 1937: 245). The sorcerer would ride on the back of the baboon at night and bring injury or death to his neighbours or harm their cattle (Schapera 1937: 245). Early Iron Age sites from KwaZulu-Natal with primate remains include Msluzi confluence and KwaGandaganda (Beukes 2000: 95).

The baboon remains identified in Sibudu Cave show no signs of modification and were juveniles, which suggest that they may have been accumulated by either humans or non-human predators such as hyenas or leopards. The vervet monkey remains from Sibudu Cave were adult specimens and showed no signs of

modification which suggest that they may have died naturally in the cave or were accumulated by hyenas or leopards.

Dogs/jackals (Canidae indet.)

The only canid taxon identified in the Sibudu Cave sample was a possible African wild dog (*cf. Lycaon pictus*) which was found in the BSV layer. African wild dogs are typically found in open plains, woodland, savannah woodland and broken woodland habitats. African wild dogs avoid woodland with thick underbrush or tall grass cover and these wild dogs were last recorded in the KwaZulu-Natal region in 1930 (Smithers 1983: 410; Skinner & Chimimba 2005: 476-477; Grobler *et al.* 1984: 29). African wild dogs have been identified in Maqonqo Shelter and Mzinyashana and are not typically identified in Later Stone Age sites, but are linked to religious aspects (Plug 1996a: 44; Plug 2002: 59). Other elements identified as Canidae indet. were also found in the BSS layer. One worn premolar from an adult canine closely resemble side-striped jackal (*Canis adustus*), while one permanent lower third molar fragment identified as indeterminate *Canis* sp. and one adult third phalanx which closely resembled either black-backed jackal, side-striped jackal or domestic dog (*Canis familiaris*) was identified. Side-striped jackals typically occur in thickly wooded habitats which have to be well-watered (Smithers 1983: 418; Skinner & Chimimba 2005: 485). The black-backed jackal has a wide habitat tolerance and is more common in drier more open terrain. In KwaZulu-Natal, they occur from sea-level to the summit of Drakensberg (more than 3 000 m above sea-level) (Smithers 1983: 421; Skinner &

Chimimba 2005: 488; Grobler *et al*. 1984: 20; Plug & Badenhorst 2001: 39). The earliest arrival of domestic dogs in southern Africa was recorded at Diamant in Limpopo (AD 570) and Bosutswe in Botswana (AD 700) (Plug 1996b: 515; Plug 1997: 749). Domestic dog elements are not typically found with other faunal taxa and are usually fragmented (Plug 1996b: 515). One reason may be that leopards have been known to catch domestic dogs and take them to their lairs, which are often in caves (Brain 1981: 83 and 94). In hunter-gatherer societies, carnivores are of ritual importance and domestic dogs accompany hunters on their hunt (Schapera 1930: 135; Yellen 1976: 39; Orpen 1874; Bleek & Lloyd 1911). Domestic dogs were procured from European settlers in order to hunt jackals, caracals and other animals whose skins were valued as karosses or eaten (Schapera 1930: 136; Tanaka 1976: 110).

In farming communities, dogs played a role in procuring meat (hunting) and no economic value was placed on the ownership of a dog. They were never eaten, except by Sotho and Nguni boys and men, or sacrificed for ritualistic purposes (Hammond-Tooke 1974: 97; Schapera 1937: 141; Quin 1959: 106; Krige 1936: 338; Beukes 2000: 36). The skins of black-backed jackals were used in ornamental dresses for caps (Quin 1959: 125). The Early Iron Age site of Ndondwane has jackals identified (Beukes 2000: 94). Due to uncertainty and lack of modification present on the elements, it is possible that either human involvement or non-human predators, such as leopards, can be attributed to the wild dog and other canid taxa being present in Sibudu Cave.

Possible honey badgers (*cf. Mellivora capensis*)

Honey badgers are found in various biomes and are able to tolerate various environmental conditions. They use crevices in rocky areas and disused holes as refuge or shelter. Honey badgers do not occur in dune desert (Smithers 1983: 436; Skinner & Chimimba 2005: 503; Grobler *et al.* 1984: 36; Plug & Badenhorst 2001: 43). Hyaenas may have hunted honey badgers and introduced them to the Sibudu Cave system (Brain 1981: 78; Grobler *et al.* 1984: 87). Among the Pedi, honey badgers are used by witchdoctors in divining kits (Quin 1959: 125). It is likely that the honey badger identified in the Sibudu Cave sample was either accumulated by non-human predators or used for divining by a witchdoctor.

Mongooses (Vivirridea sp.)

Various taxa of mongoose are present in southern Africa and taxa which are common in KwaZulu-Natal include the large-spotted genet (*Genetta tigrina*), yellow mongoose (*Cynictis penicillata*), white-tailed mongoose (*Ichneumia albicauda*) water mongoose (*Atilax paludinosus*), slender mongoose (*Galerella sanguine*a) and banded mongoose (*Mungos mungo*) (Grobler *et al.* 1984: 54-75; Plug & Badenhorst 2001: 51-6). Mongoose typically occurs in open woodland, bushveld and grassland (Smithers 1983: 305-320; Skinner & Chimimba 2005: 419-435). It is difficult to distinguish between mongoose taxa based on post-cranial elements. Non-human predators such as black-backed jackals, honey badgers, hyenas, caracals and leopards feed on small prey which may include mongooses (Grobler *et al.* 1984; Brain 1981:

95). Among Later Stone Age hunter-gatherers, mongooses are often hunted or trapped for their pelts and eaten (Plug & Badenhorst 2001: 55; Tanaka 1976: 112; Silberbauer 1965: 32). Among Pedi farmers, the skins of mongooses are used for ceremonial dresses, by witchdoctors as containers for divining kits and as medicine bags (Quin 1959: 125). Elements or meat of mongooses are also utilised in medicines for coughs and eaten as a delicacy (Quin 1959: 125). It is likely that the mongooses from Sibudu Cave were hunted by hyenas and leopards or accumulated by humans for use as food, dresses, healing and divining.

Possible spotted hyenas (*cf. Crocuta crocuta*)

One possible spotted hyaena ulna fragment with a cut mark was identified in the BSS layer from Sibudu Cave. Spotted hyenas are typically found in savannah, open woodland and semi-desert scrub. They occur in bushveld regions in north-eastern KwaZulu-Natal (Smithers 1983: 357; Skinner & Chimimba 2005: 373; Grobler *et al*. 1984: 86). Hyenas use caves as dens for their young and do not necessarily accumulate many faunal fragments inside caves. They do leave bones in front of their dens and are known to store meat in caches of still standing water (Brain 1981: 63-66). The cut mark present on the spotted hyaena from Sibudu Cave suggests that human occupants accumulated the carnivore remains. Based on the habitat, the occupants would have had to travel to an open section of the forested area around Sibudu Cave to bring the upper leg to the cave.

Hyenas were not eaten by hunter-gatherer societies, based on the belief that it ate human corpses (Schapera 1930: 93; Tanaka

1976: 112). Carnivores were used in religious aspects of hunter-gatherer societies (Plug 1996a: 49; Orpen 1874; Bleek & Lloyd 1911). Hunter-gatherer sites such as Mzinyashana have spotted hyenas identified (Plug 2002: 59). The flesh of hyenas was never touched by Zulu or Pedi farmers (Krige 1936: 388; Quin 1959: 125). Hyenas were, however, used by witches as familiars among Sotho and Venda farmers and may be considered a form of black magic (Hammond-Tooke 1974: 338; Beukes 2000: 37). Night-witches tame wild animals such as hyaenas, snakes and polecats, which come to the witch during the night to ask for food and call her their 'mother' (Hammond-Tooke 1974: 338). Spotted hyenas have been identified in Early Iron Age sites such as Nanda and KwaGandaganda (Plug 1993a: 101; Beukes 2000: 95). The aversion of eating hyaena by both hunter-gatherer and farming societies would suggest that the hyaena had to be used for some type of religious ceremony or activity.

Possible African wild cats (*cf. Felis silvestris*)

African wild cats have been identified in various biomes and archaeological sites and it was likely present in Sibudu Cave for the last 18 000 years (Plug & Badenhorst 2001: 85). They require cover of some sort in the form of rocky hillsides, underbrush, reed beds or stands of tall grass (Smithers 1983: 387-388; Skinner & Chimimba 2005: 404; Grobler *et al.* 1984: 99). The only feline taxa known to enter caves are leopards, suggesting that humans may have hunted the African wild cat for their furs or ritual purposes (Brain 1981: 104; Schapera 1937: 244; Quin 1959: 125). Among Pedi farmers for example, wild cats are eaten

by men and boys and hunted for their skin (Quin 1959: 125). It should be noted that wild cats are considered to be familiars of witches among Bantu-speaking farmers and has the power to bewitch various animals (Schapera 1937: 244; Krige 1936: 325).

Equids (zebra/horse)

As the the material from Sibudu Cave predates the arrival of horses (*Equus ferus caballus*) into southern Africa it is highly likely that the equids identified were plains zebra (*Equus quagga*). Plains zebra occur naturally in savannah biomes and prefer open woodland, open scrub and grass where water is readily available (Smithers 1983: 574; Skinner & Chimimba 2005: 543-544). Historically, plains zebras were present across southern Africa wherever vegetation was present and archaeological samples show that they occurred in KwaZulu-Natal between 1500 and 1000 years ago (Plug & Badenhorst 2001: 100-101). Large ungulates such as plains zebra is hunted by spotted hyenas who feed on anything they can scavenge (Grobler *et al*. 1984: 87). Plains zebra would have been hunted by a larger group of hunter-gatherers with bows, arrows and spears to supplement their diet (Deacon & Deacon 1999: 157; Schapera 1930). Bantu-speaking farming communities hunt wild animals to provide meat substitutes to their plant food and it is likely that zebra were hunted to supplement their diets (Schapera 1937; Hammond-Tooke 1974). Many grazers make use of grass in fine-leaved savannah patches, suggesting an open area within the Sibudu Cave biome of grassland where the occupants may have hunted zebra (Wadley 2004: 149; Sievers 2006: 204; *cf*. Wadley

et al. 2008: 43). The distance and difficulty required to carry zebra into the cave would suggest that humans hunted and introduced the taxa to Sibudu Cave.

Rock hyraxes (*Procavia capensis*)

Sibudu Cave is easily accessible to rock hyraxes and it is highly likely that it occupies the area naturally as they are typically found in hillsides and koppies and need bushes and trees for browsing (Smithers 1983: 543; Skinner & Chimimba 2005: 44). Several digested hyrax remains were found, suggesting non-human predators such as carnivores or eagles which may have hunted the hyrax and brought them into the cave (Brain 1981: 104; Cruz-Uribe & Klein 1998: 135; Grobler *et al.* 1984: 117). The skeletal parts represented in table 7.1 indicate whether hyraxes were predominantly accumulated by non-human predators or human hunters. Hyrax remains found in eagle roosts typically have more cranial elements than post-cranial elements (Cruz-Uribe & Klein 1998: 139). Archaeological sites in which humans accumulated hyraxes in Middle Stone Age and Later Stone Age sites typically have more post-crania compared to crania, with a predominance of forelimbs (scapula, humerus, radius and ulna fragments) to hind limbs (pelvis, femur and tibia fragments) (Cruz-Uribe & Klein 1998: 139-140). The skeletal parts found in the BSV and BSS layers from Sibudu Cave have a predominance of both post-cranial (75%) over cranial (25%) elements suggesting human consumption; however the small sample provides no clear distinction between forelimb (42%) and hind-limb (58%) ratios. The sample size makes the accumulating agent

difficult to distinguish but it is more likely that humans accumulated the hyrax remains than owls or eagles. This does not mean that the digested remains were not accumulated by owls or eagles; it does suggest that both humans and raptors may have accumulated the hyrax remains.

Table 7-1: Skeletal part representation for hyrax remains from BSV and BSS layers

Element	**BSV**	**BSS**	**Total**	**Percentage**
Maxilla		2	**2**	12%
Mandible	2		**2**	12%
Distal humerus		1	**1**	7%
Proximal radius		2	**2**	12%
Proximal ulna		2	**2**	12%
Pelvis		2	**2**	13%
Proximal femur	1	3	**4**	25%
Distal femur		1	**1**	7%
Total	**3**	**13**	**16**	**100%**

In addition, four rock hyrax specimens show signs of burning (12% of the total hyrax specimens identified) which would suggest that the human occupants of Sibudu Cave may have supplemented their diet with rock hyraxes. Another explanation for the burning of rock hyrax could be that the occupants of Sibudu Cave burned their structures after use or hyrax remains were affected by the heat of the hearths after deposition (Le Roux *et al.* 2013: 103; De Graaff: 1961: 25). The burning occurred in both the BSV (one black burnt element) and BSS layer (one black, one localised and one white/calcined burnt element).

Two young rock hyrax mandible and maxilla specimens were identified from BSV and BSS layers at Sibudu Cave which may provide the time of year the cave was occupied. The two individuals identified in Sibudu Cave were between 8-11 months and 28-34 months of age. Mating in hyraxes is triggered by photoperiods, and is progressively later at lower latitudes and differs geographically during the year (Smithers 1983: 544). In KwaZulu-Natal, the time of parturition (peak of birth) is between August and February (Skinner & Chimimba 2005: 46). The 8-11 month hyrax was found in the top layer (BSV) of Sibudu Cave and had a calculated birth during October and died sometime between June and September. The 28-34 month hyrax was found in the lower layer (BSS) of Sibudu Cave and if the date of birth was October, the hyrax would have died sometime between February and August.

Common warthogs (*Phacochoerus africanus*)

Warthogs are typically found in open woodland, bushland, grassland, floodplains and open areas with waterholes and pans (Smithers 1983: 584; Skinner & Chimimba 2005: 553). Common warthog is typically hunted by wild dogs (Grobler *et al.* 1984: 29). Hunter-gatherers hunt wild animals which are typically found in the area and warthog are occasionally hunted (Schapera 1930: 93; Silberbauer 1965: 35). Bantu-speaking farmers hunt wild animals only to supplement their diet of cultivated plants and livestock (Schapera 1937: 131). KwaGandaganda, an Early Iron Age site in KwaZulu-Natal has warthog remains as well as various hunter-gatherer sites such as Mzinyashana, Maqonqo

shelter and KwaThwaleyakhe (Beukes 2000; Plug 1993a, 1996a, 2002). Many grazers make use of grass in fine-leaved savannah patches suggesting an open area within the Sibudu Cave biome of grassland where the occupants may have hunted warthogs (*cf.* Wadley *et al.* 2008: 43). The accessibility of Sibudu Cave would suggest that wild dogs did not contribute to the accumulation of warthogs, as a result it is very likely that humans hunted warthogs.

Bushpigs (*Potamochoerus larvatus*)

Bushpigs are typically found in forests, thickets, riparian undercover, reed beds and heavy cover of tall grass (Smithers 1983: 581; Skinner & Chimimba 2005: 549). Non-human predators which hunt bushpigs are leopards (Grobler *et al.* 1984: 118). Both hunter-gatherer and Iron Age farmers would have hunted bushpig due to its natural occurrence in the KwaZulu-Natal area between 1500 and 1000 years ago (Plug & Badenhorst 2001: 117). Later Stone Age hunter-gatherers such as the Kalahari !Kung for example, use dogs to hunt bushpigs or they were flushed out of holes in the ground using fire and speared when they tried to escape (Yellen 1976: 39). Hunter-gatherer sites which have presence of bushpig include Collingham Shelter, Maqonqo Shelter, Mzinyashana and KwaThwaleyakhe (Plug 1992: 55, 1993a: 39, 1996: 44, 2002: 60). The Early Iron Age site of Nanda also has bushpigs (Plug 1993b: 101). Among Zulu farmers, who hunt wild animals only during royal hunts, it is often dangerous to hunt bushpigs. If Zulu hunters do not have small shields, bushpigs often charge at unaware hunters wounding them

with their tusks (Krige 1936: 205). Both domestic and wild pig astragali are used in divining kits among Bantu-speaking farmers and may have smoothed surfaces (Plug 1987: 53). It is highly likely that the warthog and bushpig remains identified from Sibudu Cave were accumulated by humans.

Wild bovids

The majority of the BSV and BSS layers from Sibudu Cave comprises of wild bovids. The habitats which the taxa prefer range from open to closed habitats (Table 7.1). Wild bovid taxa identified which prefer open habitats include impala, buffalo and eland. Impala and buffalo do not occur in the area of Sibudu Cave during modern times, but they do have a wider historic distribution in the KwaZulu-Natal area and would have been readily available during the occupation of Sibudu Cave (Plug & Badenhorst 2001: 169 and 196). Wild bovid taxa identified in open and closed habitats include alcelaphine, klipspringer and southern reedbuck which fit the habitat identified for Sibudu Cave. Wild taxa identified in semi-closed to closed habitats include blue duiker, red duiker and grey duiker all of which are taxa which occur in seclusion and are solitary creatures (Schapera 1930: 133). Non-human predators which occur in KwaZulu-Natal and hunt wild bovids include black-backed jackals, honey badgers, spotted hyenas, caracals and leopards (Grobler *et al.* 1984: 20-120; Brain 1981: 77-83). The bovids that these predators typically hunt include duiker, steenbok, impala, blesbok, springbok, buffalo and mountain reedbuck (Grobler *et al.* 1984: 20-120).

Table 7-2: Wild bovid taxa habitat preferences

Taxa	Common name	Layer	Habitat preference	Primary habitats
Philantomba monticola	blue duiker	BSV, BSS	Closed	Forest thicket
Cephalophus natalensis	red duiker	BSS	Closed	Forest thicket
Sylvicapra grimmia	grey duiker	BSS	Semi-closed	Bushland, tall grass
Aepyceros melampus	impala	BSS	Open (w/shade)	Open woodland, woodland savannah
Syncerus caffer	buffalo	BSV, BSS	Open (w/shade)	Open woodland, savannah
Tragelaphus oryx	eland	BSS	Open	Karoo, savannah
Alcelaphini indet.	wildebeest/hartebeest/ blesbok/tsessebe	BSS	Both	Savannah, woodland, grassland
Oreotragus oreotragus	klipspringer	BSV	Both	Rocky outcrops
Redunca arundinum	southern reedbuck	BSS	Both	Tall grass, reed beds, wood elements

Later Stone Age hunter-gatherers prefer to hunt wild ungulates with bows, poisoned-arrows, spears or running them down on foot, depending on the intended prey and season of the year (Schapera 1930: 133; Yellen 1976: 39; Tanaka 1976: 102). Small ungulates such as duiker and steenbok and big game such as gemsbok, eland and buffalo are hunted during the 'big rainy season' (late summer). They are hunted down on foot and dispatched by a 'knobkerrie' or spear when wet ground impedes the animal's progress allowing hunters to catch up. During the dry season, small ungulates are not hunted in this way due to difficulty in finding their spoor. It is likely that they are trapped or snared during the dry season (Schapera 1930: 133; Yellen 1976: 39-40; Tanaka 1976: 102). When the vegetation is particularly dense or forested, Later Stone Age hunter-gatherers prefer to hunt solitary ungulates such as duiker, reedbuck, steenbok, grysbok and bushbuck, which are active during dusk and dawn and do not migrate. Traps and snares are placed along routes which hunter-gatherers know ungulates regularly take (Deacon & Deacon 1999: 157). Larger ungulates such as buffalo, zebra, hartebeest and gemsbok and small ungulates such as springbok and impala are active during the day and easier to catch when groups of hunters go out to hunt (Deacon & Deacon 1999: 157; Schapera 1930: 133).

According to ethnographic sources, Bantu-speaking farmers did not regularly hunt wild animals (see chapter two) (Hammond-Tooke 1974: 133; Schapera 1937: 131; Krige 1936: 203). Wild ungulates' horns and skins were used for many purposes (Hammond-Tooke 1974:133). Archaeological sites such as Nanda and KwaGandaganda has shown that Early Iron Age farmers

typically hunted small and very small wild ungulates (such as blue duiker and common duiker) and large animals such as bushbuck and buffalo (Plug 1993a: 105-106). This suggests that hunting wild taxa may have occurred more regularly in Early Iron Age sites than the ethnographies mention (see discussion on domesticates in chapter two under Early and Late Iron Age farmers).

Among Zulu farmers hunting was considered a royal event and almost the entire group took part in the hunt (Krige 1936: 203). The most common hunting method among the Zulu was to surround the intended game, shouting and sending dogs to draw the animals closer to the circle created (Hammond-Tooke 1974: 98; Krige 1936: 205). Once the startled antelope would seek an escape, the hunters threw their sticks and spears in its direction to kill it (Krige 1936: 205). The most effective method of hunting for various farming communities was digging pit falls. Groups of hunters chased the ungulates to fences which led to pits where the animals fell in and were dispatched by axe or spear (Krige 1936: 205). Bows and arrows were only used by boys for hunting small animals and birds among farmers. Dogs were also used by farmers to track and pursue game (Hammond-Tooke 1974: 98).

The wild bovid taxa which may have been brought into Sibudu Cave by either humans or non-human predators include blue duiker, suni, red duiker, grey duiker, klipspringer and steenbok/grysbok. Figure 7.1 shows the taphonomic modification present on the taxa which may have been accumulated by humans and non-human predators. It is likely that a majority of the wild bovids were hunted by humans (68%) occupying the cave with

some taxa being accumulated by non-human predators (18%) and several damaged post-depositionally through rodent gnawing (14%). The diversity in the abundance of taxa present in the Sibudu Cave sample would suggest that the occupants of Sibudu Cave did not prefer hunting one particular taxon and hunted based on the needs of the group living in the cave and the presence of taxa in the surrounding area or further afield.

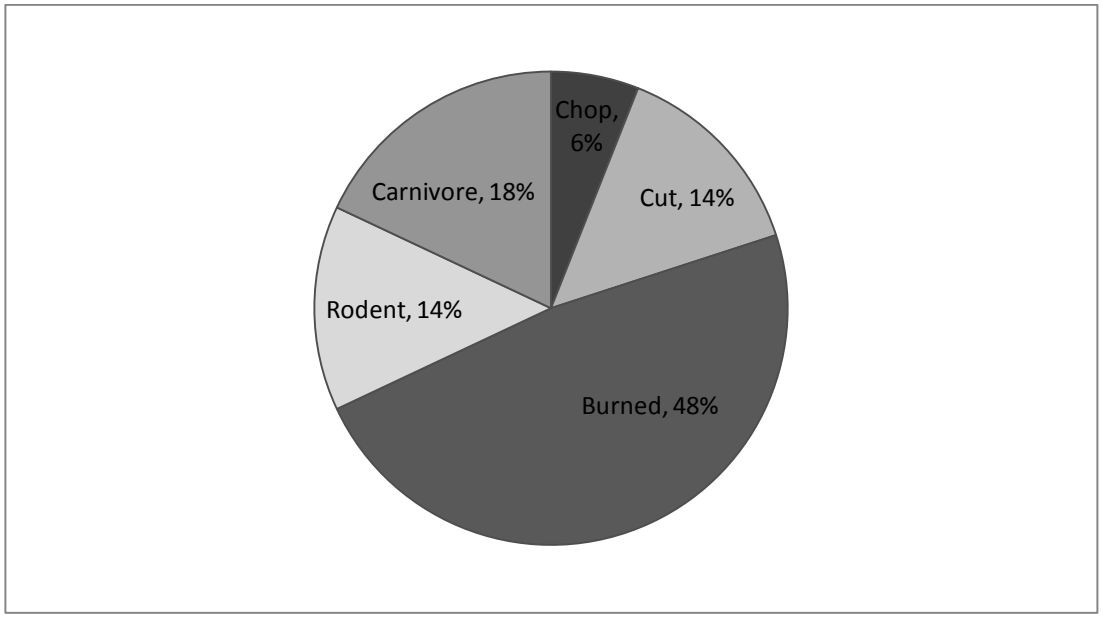


Figure 7-1: Taphomomic modification present on wild bovid taxa accumulated by either human or non-human predators. Note only blue duiker, suni, red duiker, grey duiker, klipspringer and steenbok/grysbok elements included

Cattle (*Bos taurus*)

The significance of cattle is seen across many historic groups across southern Africa especially amongst farming communities. Cattle dominate faunal assemblages dating to the second millennium AD and various rituals and ceremonies are associated

with cattle (Plug 1996b: 516; Huffman 2007: 357-359; Krige 1936: 188-199). Cattle were introduced to KwaZulu-Natal between 1600 and 1500 years ago along with sheep, goats, dogs and domestic fowl. Cattle remains which are found in sites dating before 2 000 years ago may be linked to pits and disturbances within deposits (Plug & Badenhorst 2001: 187). Several Iron Age sites in KwaZulu-Natal have domestic taxa (see chapter two) (Plug 1990a: 49, 1993a: 116; Plug & Brown 1982: 102). Cattle are not only used for meat and milk as they are used for divining, skins, currency, marriage, fuels, transport and entertainment (Hammond-Tooke 1974: 94; Schapera 1937: 132; Krige 1936: 185; Quin 1959: 93). Amongst farming communities, cattle are traditionally slaughtered at events like weddings, upon visitor's arrival, circumcision ceremonies and deaths (Quin 1959: 93). Hunter-gatherers are also known to trade various materials for cattle and at times (such as during the Mfecane) hunter-gatherers stole cattle from farming communities (Plug 1996b: 516; Klatzow 1996: 329).

The cattle element identified in the top layer (BSV) of Sibudu Cave is one first phalanx and as such, is less significantly represented than the wild bovid taxa identified. It is possible that more cattle remains are in the sample not selected for analysis. Lack of clear distinction between buffalo and cattle elements during analysis occurred, even though Peters (1988) was consulted.

Pangolins (*Manis temminckii*)

Pangolins prefer savannah and do not occur in forests, grassland, swamps or desert. They do appear in scrub, areas with low and higher rainfall and savannah woodland. They require shelter to rest during the day, in holes in the ground or ground debris in which they can hide (Smithers 1983: 158; Skinner & Chimimba 2005: 355). Pangolins are historically found in KwaZulu-Natal, but not in abundance (Plug & Badenhorst 2001: 207). Non-human predators which hunt pangolins are pre-dominantly hyenas (Grobler *et al*. 1984: 86). Later Stone Age hunter-gatherers consider pangolins a delicacy, as they are easily obtainable from burrows in the ground and they eat it with relish (Schapera 1930: 93; Yellen 1976: 36). In addition, pangolins are ritualistically important to hunter-gatherers (Plug 1996a: 49). Among Pedi farmers, pangolins are protected and they are traditionally carried to the chief's hut alive, where the person who found the pangolin is rewarded with a beast (Quin 1959: 125). The pangolin is then released into the chief's kraal to 'propagate' calves, after which it is killed and skinned. The skin is then staked to the ground where the heir of the chief has to crawl, on his knees and elbows, over the scaly skin three times without falling or touching the ground with his feet. Once the feat is accomplished, it is taken as an omen that the heir is a worthy successor to the chief (Quin 1959: 126). The skin of the pangolin is used by the chief for private and personal use (Quin 1959: 126). Among the Zulu, pangolins are used in wizardry to exhume corpses known as '*umKhovu*'. umKhovu are reanimated corpses which do the bidding of wizards and are said to look like a cross between a baboon and a human being (Krige 1936: 326; Hammond-Tooke

1974: 338). Pangolins have been identified in Early Iron Age sites such as KwaGandaganda (Beukes 2000: 96). It is likely that the pangolin identified in the BSS layer from Sibudu Cave was accumulated by humans and used in certain aspects of ritualistic importance.

Porcupines (*Hystrix africaeaustralis*)

Porcupines typically occur in most types of vegetation except for a general absence in forests. It is essential for porcupines to have sheltered areas in which to hide during the day, such as in crevices, caves or holes in the ground (Smithers 1983: 187; 91-92). Porcupines often accumulate bones in shelters and use some of the bones to sharpen their teeth (Brain 1981: 116; Smithers 1983: 92). The faunal sample from Sibudu Cave had no evidence of porcupine gnawing, which suggests that the porcupine did not occur naturally in the cave. Non-human predators who hunt porcupines include black-backed jackals, wild dogs, honey badgers, hyenas and leopards (Grobler *et al.* 1984: 20-117). Hunter-gatherers use porcupines for ritualistic purposes or eat it as a delicacy (Schapera 1930: 93). The porcupine also forms part of the hunter-gatherer creation mythologies. In hunter-gatherer mythology, the porcupine was an adopted daughter of the Mantis (Schapera 1930: 178; Bleek & Lloyd 1911: 3-17; McGranaghan *et al.* 2013: 162). Various tales are told about the porcupine in hunter-gatherer mythology, each relating to the theme of marriage, marriage-service and the balance of power between men and women (Biesele 1976: 310). Among the !Kung hunters in the Kalahari desert, porcupines were regularly hunted as it was

easily found in underground burrows. The !Kung lit a fire in the mouth of the burrow and probed the hole with a pole until they hooked the porcupine, after which they excavated the soft sand until they could retrieve the dead animal (Yellen 1976: 39). Among Pedi farmers, porcupines are not eaten, but the quills are used for decoration and in special medicines for the chief or another important person (Quin 1959: 126-127). The sample from Sibudu Cave did not have any modification present and was too small to accurately distinguish between accumulation of non-human predators such as leopards and hyenas and collection through humans as a source of food or use in decoration or religious activities.

Rodents

Rodent taxa namely cane rat (*Thryonomys swinderianus*) and vlei rat (*Otomys* sp.) were identified from the BSV and BSS layers from Sibudu Cave. Cane rat is typically found in areas of dense, tall grass with thick reed- or cane-like stems along rivers, lakes or swamps. Cane rat are never far from water and is absent from desert and semi-arid areas (Smithers 1983: 212; Skinner & Chimimba 2005: 95). Vlei rat typically occurs along streams and river beds in areas of lush grass, sedges and herbaceous vegetation. They are terrestrial and to some extent semi-aquatic (Smithers 1983: 227; Skinner & Chimimba 2005: 173).

The majority of indeterminate rodents identified in the sample were small rodents (NISP = 715). Eighteen percent of the small rodent specimens identified in both layers (BSV and BSS) from Sibudu Cave show signs of being fresh, suggesting that small

rodents were deposited recently, either through non-human predators such as snakes, eagles or owls or through natural intrusion (Brain 1981: 122; Marais 1992). Cane rats may also have been accumulated by non-human predators such as rock pythons (*Python natalensis*) which hunt these rodents (Marais 1992: 131, 2004: 211).

Three percent (NISP = 22) of the small rodent sample from both BSV and BSS layers show signs of burning (lightly/slightly burned specimens and a majority of black burned elements). Farming groups such as people from Malawi are known to consume rodents (Juwayeyi 2008: 91). In southern Africa, the Cape dune mole-rat (*Bathyergus suillus*) may have been eaten in cave sites from the western and southern Cape (Henshilwood 1997: 659). When the mole rats were caught they were cooked on their backs and covered in coals (Henshilwood 1997: 661). Examination of experimentally burnt bone has shown that charring on rodent remains were evident on the mandibular and maxillary incisors, pre-maxilla, distal radius, distal ulna, distal tibia and metapodials (Medina *et al*. 2012: 739; Henshilwood 1997: 661). Axial and proximal portions of the skeleton were not affected by burning (Medina et al. 2012: 739). Archaeological deposits may differ, as rodents may be disarticulated before they are cooked, resulting in burned humerus and pelvis elements in addition to the elements mentioned above (Medina *et al*. 2012: 740). Rodent remains which have a random selection of burnt skeletal parts (including elements such as cranial, axial and mandibular fragments) may have been burnt post-depositionally (Medina *et al*. 2012: 741; Henshilwood 1997: 661). The burned rodent elements from the BSV and BSS layers (Table 7.3) are

predominantly mandibles (24%), proximal femur (13%), and pelvis (13%) fragments. The frequency of burnt elements (such as mandible, rib, vertebra and cranium fragments) which do not represent the experimental samples mentioned above, would suggest that the rodents identified in the BSV and BSS layers were burnt post-depositionally and were not accumulated by humans for food.

Table 7-3: Skeletal part representation for small rodents from the BSV and BSS layers

Element	BSV	BSS	Total	Percentage
Cranium	2		**2**	10%
Mandible		5	**5**	24%
Incisor		1	**1**	5%
Distal humerus	1		**1**	5%
Rib		1	**1**	5%
Vertebra		1	**1**	5%
Proximal ulna	1		**1**	5%
Pelvis	1	2	**3**	13%
Proximal femur		3	**3**	13%
Distal tibia		2	**2**	10%
Metapodium		1	**1**	5%
Total	**5**	**16**	**21**	100%

To summarise, the human occupants from Sibudu Cave may have disturbed the rodent remains post-depositionally with the construction of hearths, *in situ* burning or the maintenance of the site through use of fire (Henshilwood 1997: 661; De Graaff 1961: 25; Schapera 1930: 94-95; Silberbauer 1965: 105; Nicholson 1993: 411; Cain 2005: 874, 2006: 255; Allot 2006: 179; Pickering 2006: 125; Schiegl *et al.* 2004: 192; Medina *et al.* 2012: 742). Small rodents, vlei rats and cane rats identified in

Sibudu Cave may have been accumulated by either non-human predators such as snakes, owls and eagles or burned by humans through hearth construction in the cave (Brain 1981: 133; Marais 1992: 130).

Hares (Lagomorpha)

Hare were identified in both layers. Three taxa could be considered to occur in the Sibudu area namely scrub hare (*Lepus saxatilis*), Cape hare (*Lepus capensis*) and Natal red rock hare (*Pronolagus crassicaudatus*) (Plug & Badenhorst 2001: 222-225; Smithers 1983: 167; Skinner & Chimimba 2005: 68). The presence of Cape hares, which may have occurred in KwaZulu-Natal between 1500 and 1000 years ago (Plug & Badenhorst 2001: 220), are difficult to distinguish as their characteristics are similar to scrub hares and Natal red rock hares (Skinner & Chimimba 2005: 68). Scrub hares are associated with savannah woodland and scrub with grass cover (Smithers 1983: 167; Skinner & Chimimba 2005: 68). Natal red rock hares are typically found in rocky areas on steep, boulder-strewn hillsides that have grass cover. In KwaZulu-Natal they have been recorded between sea level and altitudes of 1 550 metres (Smithers 1983: 170; Skinner & Chimimba 2005: 74). Non-human predators such as owls, eagles and rock pythons catch hares and bring them to their nests, which are often found in caves and crevices (Brain 1981: 124; Cruz-Uribe & Klein 1998: 135; Marais 2004: 212). Eagles feed differently on hares then they do on rock hyraxes. Eagles decapitate hares before transporting them to their roosts resulting in more fore- and hind-limbs elements accumulating

below roosts (Cruz-Uribe & Klein 1998: 140-142). Skeletal part representation also differs between eagle roosts and Middle and Later Stone Age assemblages. Eagle roosts have a higher percentage of hind-limbs compared to front limbs present and a lack of cranial remains compared to post-cranial elements. Middle and Later Stone Age assemblages have higher frequency of cranial and fore-limbs compared to hind-limbs (Cruz-Uribe & Klein 1998: 140-141). The sample from Sibudu Cave (Table 7.4) was small and it showed the presence of cranial elements (20%) as well as an equal predominance of fore-limb (40%) and hind-limb elements (40%) making the hindlimb/fore limb ratio equal. It is highly likely that hares from Sibudu Cave were accumulated by either eagles or humans.

Table 7-4: Skeletal part representation for hare remains from BSV and BSS layers

Element	BSV	BSS	Total	Percentage
Mandible		1	**1**	20%
Distal humerus	1	1	**2**	40%
Pelvis		1	**1**	20%
Proximal femur		1	**1**	20%
Total	**1**	**4**	**5**	**100%**

Hares are occasionally caught in snares or traps by hunter-gatherers and their fur is worn during the winter (Yellen 1976: 40-42; Silberbauer 1965: 38). Hares are considered a delicacy among hunter-gatherers and they are hunted whenever the chance arises (Silberbauer 1965: 37). Hunter-gatherer sites with hare remains include Maqonqo shelter, KwaThwaleyakhe Shelter,

Collingham Shelter (Plug 1992: 55, 1993a: 39, 1996: 4). Early Iron Age sites such as Msluzi confluence, Ndondondwane, Ntshekane, Nanda and KwaGandaganda have hare remains which may have been used as sources of food by men and boys (Plug 1993b: 101; Quin 1959: 107; Beukes 2000: 94). The Late Iron Age site of uMgungundlovu also had hare remains which may be linked to the royal enclosure (Plug & Roodt 1990: 51).

Birds

Two identified taxa which were classified as ostrich (*Struthio camelus*) eggshell and Galliformes indet. were identified in the BSV and BSS layers. Ostrich shell has several uses, especially among hunter-gatherer societies, including water storage, making and trading of ostrich eggshell beads and divination (Deacon & Deacon 1999: 140). Among the Pedi, ostrich shells are ground and used in medicines for earache (Quin 1959: 122). The ostrich eggshell from Sibudu Cave was clearly accumulated by the human occupants of the cave. As the shell shows no sign of modification, it could have been used for water storage or as a food resource. The modification of the shell into beads may be discounted, as the primary shell beads located in the BSV and BSS layers have been identified as glass beads (see chapter five) (Wood *et al.* 2009: 241). The oldest secure date for ostrich eggshell in southern Africa is from the Middle Stone Age site of Border Cave in KwaZulu-Natal at around 38 000 BP (Beaumont *et al.* 1978; also see Badenhorst & Plug 2012: 26 for alternative site). Other sites include the Early Iron Age sites of KwaGandaganda and Ndondondwane (Beukes 2000: 94-97).

It is possible that the Galliformes indet. identified in the BSV and BSS layers could be domestic fowl (chicken), Natal francolin, red-necked francolin, crowned guinea-fowl, crested guinea-fowl or Zambezi crested guinea-fowl (Roberts 1942: 74-80). Non-human predators which hunt avian taxa such as Galliformes, include side-striped jackals, black-backed jackals, wild dogs, honey badgers, clawless otters, large spotted genets, mongooses, hyenas, wild cats, servals (*Felis serval*), caracals, rock python and leopards (Grobler *et al.* 1984; Marais 2004: 212). The Natal francolin or spurfowl (*Pternistis natalensis*) is typically found in woodland (especially riparian thickets) and rocky acacia scrub. They are often found along streams and river banks (Roberts 1942: 74; Mclachlan & Liversidge 1978: 130; Sinclair & Ryan 2003: 126; Little & Crowe 2011: 58). In KwaZulu-Natal, Natal francolins commonly occur in lowveld and dry savannah areas and have been known to cross into the foothills of the northern Drakensburg (Little & Crowe 2011: 58). Crowned or helmeted guinea-fowl (*Numida meleagris*) is typically found in thorny scrub, woodland, grassland and savannah veldt. They roost in flocks in large trees and are difficult to catch as they scatter when threatened (Roberts 1942: 79; Mchlachlan & Liversidge 1978: 135; Sinclair & Ryan 2003: 118; Little & Crowe 2011: 92). Crested guinea-fowl (*Guttera edouardi*) is typically found in patches of open forest, woodland and forest-savannah and rarely leave their sheltered nests in bushes or trees for any great distance (Mchlachlan & Liversidge 1978: 136; Sinclair & Ryan 2003: 118; Little & Crowe 2011: 98). In KwaZulu-Natal, crested guinea-fowl occur along the coastal forests around Durban. In the late afternoon, crested guineafowl feed below trees where vervet monkeys are, eating their faeces

and scraps of fruit which may fall (Little & Crowe 2011: 98). They are able to take flight quickly and are effective at hiding in foliage of big trees (Roberts 1942: 79-80; Little & Crowe 2011: 98).

Hunter-gatherers enjoy eating guinea-fowl, partridge, ostrich and other birds' eggs (Schapera 1930: 93). Chicken (*Gallus gallus domesticus*) has been present in southern Africa since the Early Iron Age and it may be possible that the occupants of Sibudu Cave had access to domestic fowl (Plug 1996b: 517). Sites such as Nanda do not have chicken remains present (Plug 1993a: 517). It is likely that the Galliformes indet. identified in the BSV and BSS layers from Sibudu Cave were accumulated by humans, however the presence of carnivores should not be discounted.

The avian taxa identified from the Middle Stone Age at Sibudu Cave may well be present in the BSV and BSS layers. The diversity of avian taxa found in the older deposits include ducks/geese (Anatidae sp.), francolins, guinea-fowls, starlings/terns (Sternidae sp.), pigeons (Columbidae sp.), barn owls (*Tyto alba*), nightjars (*Caprimulgus* sp.), swifts (Apodidae sp.), crows (*Corvus* sp.), kites/goshawks (Acciptridae sp.), as well as seabirds such as petrels (Procellariidae sp.), pied avocets (*Recurvirostra avosetta*) and seagulls (*Larus* sp.) (Plug & Clark 2008: 136-138).

Reptiles

Reptiles which were identified in the BSV and BSS layers include Nile monitor (*Varanus niloticus*), possible rock monitor

(*Varanus* cf. *exanthematicus*), leopard tortoise (*Stygmochelys pardalis*) and snakes. Nile monitors ranges mostly in the eastern rivers of southern Africa and lays their eggs in holes dug in the ground around shallow trees (Rose 1962: 199; Grobler *et al.* 1984: 39). Rock monitors are typically found in koppies and rock outcrops in Karoo, Namibia, KwaZulu-Natal and Zimbabwe. Rock monitors sleep in a hollow tree or bury themselves in sand during winter where they may be dug up and eaten by honey badgers (Rose 1962: 202-203). Lizards are a delicacy among hunter-gatherers and may have been collected as a source of food (Schapera 1930: 93). Among Bantu-speaking farmers, lizard (Varanus sp.) skins are highly prized for use in muti and it is used in medicine kits to protect children from illness (Watt & Van Warmelo 1930: 59; Le Roux *et al*. 2013: 108). It may be possible that the lizard taxa identified in the BSV and BSS layers were hunted by humans for use in muti or medicines.

One leopard tortoise carapace was identified in the BSV layer and four Cryptopodira indet. (terrapin/land tortoise/sea turtle) shells were identified in the BSS layer from Sibudu Cave. Leopard tortoise is typically found over most of southern Africa, except for the Western Cape and in forested areas. It inhabits montane grassland, arid bushveld and tropical coastal plains (Rose 1962: 466; Patterson 1987: 18). In KwaZulu-Natal, they are predominantly found in the north-east and Swaziland (Patterson 1987: 18) and have been identified in iNkolimahashi Shelter and KwaGandaganda (Badenhorst 2003: 47; Beukes 2000: 98). As they are not endemic to the Thukela Basin, it is likely that the tortoise remains were accumulated by humans through interaction and exchange (Plug 1993: 42; Badenhorst 2003: 50).

Distinctions between large raptor roosts and Later Stone Age hunter-gatherer assemblages include variation in skeletal elements found and taphonomic modification. Raptor roosts have high frequencies of cranial and axial elements and accumulations from hunter-gatherer sites are mainly carapace fragments which show signs of heavy burning and breakage (Sampson 2000: 787). Three of the Cryptopodira indet. shells showed signs of localised burning which indicate that the tortoise remains from Sibudu Cave were accumulated by humans. Among hunter-gatherer and farming societies, tortoise carapaces can be used as a source of food, divining and utilised as bowls or containers (Schapera 1930: 93; Hammond-Tooke 1974: 238; Deacon & Deacon 1999: 140). Among the Kalahari !Kung for example, leopard tortoises have been easily collected by men, women and children, where the tortoise is baked in the shell and used as a substantial meal (Yellen 1976: 41). It is clear that the occupants of Sibudu Cave brought in the carapaces as a source of food and nutrition.

Indeterminate snake vertebrae were identified in both layers of Sibudu Cave. A wide variety of snakes occurs in KwaZulu-Natal and they are commonly found in caves, rivers, streams, forests or mountains. Taxa which are predominantly associated with caves, rivers or streams include rock python, brown water snake (*Lycodonomorphus rufulus*), mole snake (*Pseudaspis cana*), common slug-eater (*Duberria lutrix*), Natal black snake (*Macrelaps microlepidotus*), green- and bush snakes (*Philothamnus* sp.), Eastern tiger snake (*Telescopus semiannulatus*), boomslang (*Dispholidus typus*), rinkhals (*Hemachatus haemachatus*), Egyptian cobra (*Naje haje annuifera*), forest cobra (*Naja melanoleuca*), black mamba

(*Dendroaspis polylepis*), green mamba (*Dendroaspis angusticeps*), common night adder (*Causus rhombeatus*), Gaboon adder (*Bitis gabonica*), puff adder (*Bitis arietans*) and berg adder (*Bitis atropos*) (Patterson 1987; Marais 1992, 2004). Snakes found in caves may be natural intrusions (either falling into holes or following rodents into crevices and becoming lodged and subsequently dying) or caught by non-human predators. Vertebrae which are found together may indicate natural intrusions, whereas burnt and smoothed elements may indicate human involvement (eg. De Ruiter *et al*. 2008 for natural accumulation and Badenhorst & Plug 2012: 27; Le Roux *et al*. 2013: 104-105 for human involvement).

Among hunter-gatherers, snake (specifically rock python) is considered a delicacy and it is eaten whole or in the form of soup or porridge, after being pounded in wooden mortars or on stone and mixed in boiled blood (Schapera 1930: 93-94; Yellen 1976: 37). Bantu-speaking farmers on the other hand, do not eat snake, as ancestors sometimes take the form of snakes or other small animals (Eiselen & Schapera 1962: 242). The skins of snakes in particular were not used, whereas diviners used snake elements in their divining kits and the venoms of snakes were used for medicinal purposes or for witchcraft by a sorcerer or witch in the form of familiars (Krige 1936: 388; Hammond-Tooke 1974: 338, 1993: 170; Le Roux *et al.* 2013: 104-105). The snake is considered a familiar of witches (women) and is sent to bite children so they develop various illnesses, depending on where they were bitten (Hammond-Tooke 1974: 244). The snake taxa identified in the Sibudu Cave sample show no sign of modification and may have died naturally in the cave or were

accumulated by humans for use in ritualistic ceremonies or practices or as a source of food.

Frogs/toads

Platannas (*Xenopus* sp.), which was identified in the BSS layer, is typically found in aquatic terrain such as rivers, streams or ponds and occasionally migrate to other bodies of water during heavy downpours (Rose 1962: 29; Passmore & Carruthers 1979: 194). Two taxa are associated with KwaZulu-Natal, namely common platanna (*Xenopus laevis*) and tropical platanna (*Xenopus muelleri*). The two taxa are not generally found in the same ponds or rivers and both breed in permanent bodies of water (Passmore & Carruthers 1979: 198-200). Platannas aestivate in cooler, damp subsoil until summer rain when they start feeding and breeding (Rose 1962: 30). Non-human predators which eat frogs include snakes, striped polecats (*Ictonyx striatus*), clawless otters (*Aonyx capensis*), large spotted genets and mongooses (Grobler *et al*. 1984: 32-84; Marais 1992, 2004). Among hunter-gatherers frogs were eaten in large numbers (Sampson 1999: 125). Twenty-four percent of the amphibians identified from Sibudu Cave are fresh, suggesting natural intrusion to the cave rather than human consumption.

Fishes (Pisces sp.)

The two taxa identified in the BSV and BSS layers from Sibudu Cave were yellowfish (*Labeobarbus* sp.) and Labeo (*Labeo* sp.). Yellowfishes are typically found in rapid water where it feeds on

small fishes (Jubb 1967: 85). Lebeo species migrate up river during flood to spawning sites during early summer months and feed on vegetable matter. Lebeo fishes grow up in shallow and still waters when they are young (Jubb 1967: 119). Other taxa from Sibudu Cave include freshwater catfish/barbel (*Clarias/Synodontus* indet.) and squeaker (*Clarias Cyprinidae* indet.). It is likely that a majority of the fish specimens identified in the sample could be associated with the largemouth yellowfish (*Labeobarbus kimberleyensis*), common Labeo (*Labeo cylindricus*) or the Tugela Labeo (*Labeo rubromaculatus*) as they are common in KwaZulu-Natal or are endemic to the Tugela River systems, which is close to the Tongati River (Jubb 1967: 123). Non-human predators which hunt and eat fishes include hyenas, honey badgers (particularly fish in drying pools), clawless otters, water mongooses, large grey mongooses, owls and eagles (Grobler *et al*. 1984: 36-66; Brain 1981; Erlandson & Moss 2001: 415). Small carnivores such as otters and mongooses would not have been able to gain access to Sibudu Cave. However, owls and eagles may have caught small fishes, which may be indicated through digested specimens (Plug 2006: 294).

Hunter-gatherers employ various methods to catch fishes namely funnel shaped traps of closely woven reeds, lines with grooved stones as sinkers, spearing the fish and driving the fish from above river into reed traps catching them and throwing them on the shore (Schapera 1930: 138; Deacon & Deacon 1999: 153; Inskeep 2001: 65). Fishing, in hunter-gatherer societies constitute a third of primary gathering function (Tanaka 1976: 115). Several rock art sites in southern Africa has fishing scenes depicted with some kind of float or boat present or using the

traps mentioned above (Vinnicombe 1960: 2; Smits 1967: 61; Ouzman 1995: 9). There are several rock art sites depicting fish or fishing scenes in the uKhakhlamba Drakensberg Mountains. These scenes depict freshwater elephant-fish (Mormyridae sp.) being caught by shamans to harness the supernatural potency the fish may possess (Ouzman 1995: 10).

Fishing among Bantu-speaking farmers is considered unclean and is associated with poverty and social immaturity. Fishes were regarded like snakes and were not eaten in Zulu and Pedi groups (Schapera 1937: 133; Hammond-Tooke 1937: 98; Whitelaw 2009: 195). Early Iron Age farmers may have fished on the eastern coast of southern Africa (Whitelaw 2009; Maggs 1994). The Early Iron Age sites of KwaGandaganda, Mpambanyoni and Umdloti, which are all sites close to Durban, have yielded fish and shellfish remains (Whitelaw 2009: 196; Beukes 2000: 98). The sites contain Blackburn pottery and it may be that fishing was practiced when conditions were ideal for institutional fishing (Whitelaw 2009: 196 and 209). The majority of the freshwater fish caught in Early Iron Age sites may only represent children's activities or it could indicate cultural change over time (Whitelaw 2009: 209; Maggs 1994: 171).

The majority of the indeterminate fish vertebra identified from Sibudu Cave were two millimetres in length, suggesting that the fishes were too small to have been caught with spears, bows and arrows and line fishing (Plug & Mitchell 2008: 51; Inskeep 2001: 65). This does not preclude human involvement as factors such as reeds and sedges, which are readily available along the Tongati River, could allow occupants to catch small fish or catching fish by hand, when fishes are trapped in dry pools (Plug & Mitchell

2008: 50-51). The fish taxa identified from Sibudu Cave were freshwater fishes suggesting that the nearby Tongati River was used by humans or non-human predators such as owls and eagles. The lack of modification on the remains from the current study as well as the Middle Stone Age layers makes the agent of accumulation for small fishes difficult to distinguish (Plug 2006: 294). The medium fishes, yellowfish and Labeo fish were clearly brought in by humans and non-human predators such as eagles.

Crabs (Brachyura indet.)

Four crab pinchers were identified in the BSV and BSS layers from Sibudu Cave. Crab is typically found in freshwater and marine areas. However, it is likely that the crab specimens identified in Sibudu Cave were freshwater crab. Freshwater taxa identified in Kwazulu-Natal include Natal river crab (*Potamonautes sidneyi*), flat river crab (*Potamonautes depressus depressus*), bright river crab (*Potamonautes clarus*), blue river crab (*Potamonautes lividus*) and toothed river crab (*Potamonautes dentatus*) (Gouws & Stewart 2001: 86-87; Stewart *et al.* 1995: 558). Non-human predators which hunt and eat crab include clawless otters, water mongooses, leopards, owls and eagles (Grobler *et al.* 1984: 40 and 64; Erlandson & Moss 2001: 418-420). One of the crab specimens from the BSV layer was burnt locally on the tip of the pincher. It may be possible that human activities such as collection or hearth construction led to locally burnt specimens (De Graaff 1961: 25). Among the Zulu, the eyes of freshwater and marine crab are used by wizards to cause the eyes of their victims to protrude and drop out (Krige

1936: 21). The crab taxa identified in Sibudu Cave may have been accumulated by either eagles or human occupants to the cave.

Giant land snails (*Achatina* sp.)

During the dry season, these large terrestrial gastropods aestivate by burrowing into the ground and often dig into archaeological assemblages (Barnard 1951: 149; Plug 1990b). In addition, owls are known to consume land snails (Sinclair & Ryan 2003). Humans use giant land snails as decorative beads or for religious purposes (Plug 1990b; Beukes 2000: 100; Le Roux *et al.* 2013: 108). The giant land snail from Sibudu Cave may have been a natural intrusion to the cave or utilised by humans as a source of food. Based on the small sample in the cave it is highly likely that the land snail was a natural intrusion.

Freshwater shells

Freshwater shells were identified in both layers with a majority identified in the lower layer (BSS). Freshwater taxa include freshwater bivalve, freshwater snail and pulmonate snail. Unionidae is typically found in freshwater sources such as rivers or lakes and are used for food, tools, trade and divining purposes (Appleton 1996: 36; Plug 1987: 50). Freshwater snails are recorded from the Mozambique and southern KwaZulu-Natal rivers and coastal plains (Appleton 1996: 17). Non-human predators which consume freshwater shells include clawless otters and water mongooses (Grobler *et al.* 1984: 40 and 64). No

modification was present on any freshwater specimens from the BSV and BSS layers and the majority of freshwater specimens were bivalves.

Hunter-gatherers have created various freshwater and marine middens along coastlines and shores in southern Africa. The majority of taxa identified in freshwater middens found inland have Unionidae present (Deacon & Deacon 1999: 153). Freshwater mussels such as Unionidae and mussel (*Spathopsis* sp.) occur in sites such as iNkolimahashi (Badenhorst 2003), Simunye a Late Iron Age site in Swaziland (Badenhorst & Plug 2002) and Steinaecker's Horse, a historical period site in the Kruger National Park (Badenhorst *et al.* 2002). The shells may have been utilised for food, tools (smoothing clay objects or working skins), as scoops or in bead production (Badenhorst 2005; Badenhorst *et al*. 2002; Plug 1990b; Ward & Maggs 1988; Voigt 1983). Due to difficult accessibility of Sibudu Cave, it is highly likely that the freshwater shells were accumulated through human activity and not through mongooses and otters (Plug 2006: 295).

Marine shells

Sibudu Cave is fifteen kilometres from the coast, which would suggest that all the marine taxa identified in both BSV and BSS layers were brought in by humans. Taxa identified include brown mussel (*Perna perna*), ark shell (Arcidae sp.), saltwater clam (*Nucula nucleus*), indeterminate marine gastropod and indeterminate marine bivalve. Brown mussel is predominantly found in warm oceans along the southern African coast and on

intertidal coasts, man-made structures, below low-water neap-tide levels and infratidal zones (Killburn & Rippey 1982: 159; Kennelly 1969: 108). In KwaZulu-Natal, brown mussels spawn during winter and spring (Killburn & Rippey 1982: 159). Exposed brown mussels have a darker appearance than the yellow and green shells found in water (Killburn & Rippey 1969: 159; Richards & Thorpe 1988: 42). The brown mussels in the Sibudu Cave sample were all darker in appearance and were clearly collected while they were exposed to the elements. Saltwater clams, which show signs of being worn, are commonly found on beaches and living individuals occur at depths of 35-150m below sea-level on sandy mud (Killburn & Rippey 1982: 159).

The southern African coastline is dotted with shell middens created by hunter-gatherers and is identified through the abundance of, not only marine bivalves, but crustaceans such as crabs, crayfish, seals, turtles, sea birds and their eggs, fish and bones of other animals not associated with the biomes present on ocean fronts (Deacon & Deacon 1999: 150). Various Middle Stone Age coastal sites have an abundance of shells which were collected as sources of food (e.g. Volman 1978; Henshilwood *et al*. 2001; Avery *et al*. 1997; Marean *et al*. 2004; Steel & Klein 2008: 67). Hunter-gatherers collect shell and fish in reed baskets using their bare hands (Deacon & Deacon 1999: 150; Plug & Mitchell 2008: 51). Women may have collected shellfish using digging sticks or a stone tool, after which they carried it in leather bags to the campsite. They were probably placed into the fire until the shells opened and were removed and eaten (Deacon & Deacon 1999: 153). Shellfish taxa collected from middens reflect the taxa in the immediate vicinity. Middens above sandy

shores will be dominated by white sand mussel (*Donax serra*), whereas middens on isolated rocky promontories will have a predominance of mussels (Pteriomorphia sp.) and limpets (*Scuttellastra/Cymbula*) (Deacon & Deacon 1999: 153; Steel & Klein 2008: 66). Shores where rocks alternate with beaches have a wider variety of taxa including perlemoen (abalone) (*Haliotoidae haliotis*), periwinkles (Littorinidae sp.), whelks (Buccinidae sp.) and barnacles (Cirripedia indet.). It is also possible to provide evidence of past environmental conditions through identification of certain mussel taxa. The brown mussel, which was identified in Sibudu Cave, prefers the warmer oceans where the Agulhas current flows, whereas black mussel (*Choromytilus meridionalis*) prefers the colder Benguela current (Deacon & Deacon 1999: 152-153). The most common taxa in Middle Stone Age and Later Stone Age assemblages from the southern and eastern coasts of southern Africa are brown mussel and limpets (Steele & Klein 2008: 67). Later Stone Age societies caught a wider variety of marine shells than Middle Stone Age societies. Later Stone Age hunter-gatherers caught more fishes and flying birds such as cormorants (*Phalacrocorax* sp.), whereas Middle Stone Age hunter-gatherers caught very little fishes and caught several penguins (*Spheniscus demersus*) (Steele & Klein 2008: 73).

Shell middens have also been exploited by Early Iron Age farmers in the KwaZulu-Natal region. The predominant marine shell which has been found in Early Iron Age shell midden sites such as Emberton Way and Mhlanga Lagoon is brown mussel (Horwitz *et al*. 1991: 17). Other shellfish which were found were associated with sandy and rocky shores in KwaZulu-Natal.

Shellfish taxa identified as probably collected as food include variable limpet (*Cellana radiata*), true limpet (*Scutellastra barbara*), bearded limpet (*Helcion concolor*), widow limpet (*Scutellastra granularis*), Natal keyhole limpet (*Fissurella natalensis*), true oyster (*Saccostrea cucullata*), knobbly dogwhelk (*Mancinella capensis*), crowned turban shell (*Lunella coronata*) and sea urchin (Echinoidea sp.) (Horwitz *et al.* 1991: 17).

Bantu-speaking farmers also use marine shells in divining kits, preferring to use mussel shells (brown or black mussel) or cowrie shells (*Cypraeoidae cypreae*) and olive snails (*Olividae olivinae*) due to their distinctive shape. The marine shells are associated with fertility, illness or dysentery and may represent women or Europeans (Eiselen 1932: 8; Krige 1936: 301; Hoernlé 1966: 238-239; Plug 1987: 50; Hammond-Tooke 1993: 194-195; Le Roux *et al.* 2013: 109). Shells identified from KwaGandaganda for example, may have been used as beads, ornaments, currency or in medicines (Beukes 2000: 100). The bivalves from Sibudu Cave showed no signs of modification or indication of being beachworn. It is likely that the majority of the marine taxa from Sibudu Cave were used as a source of food, religious purposes or for decorative purposes by the human occupants of the cave. A majority of the marine taxa identified were marine bivalves suggesting a major source of food rather than use in divining kits.

Barnacles (Cirripedia indet.)

Barnacles identified in the BSV and BSS layers from Sibudu Cave were clearly accumulated by humans. Adult barnacles are attached to inanimate objects such as rocky shores (shore barnacles) or animate sea-creatures such as whales (Perrin *et al*. 2008: 89; Jerardino & Marean 2010: 414). Barnacles occur in polar, tropical and temperate waters and are associated with rocky beaches and mid- and low intertidal zones (Matthews 2007: 74; Steele & Klein 2008: 67). The identification of barnacles in Middle and Later Stone Age sites, especially from the western coast of southern Africa, are largely associated with whale barnacles (*Coronula diadema*) which are attached to the skin of whales (Kandal & Conrad 2003: 91; Marean *et al*. 2007: 906; Jerardino & Marean 2010: 415). Due to the size of whales and the exploitation of blubber and oil from stranded whales, it is difficult to detect the presence of whale elements in archaeological sites (Dusseldorp & Langejans 2013: 114). The identification of barnacles, particularly whale barnacles, in archaeological deposits provides an archaeological signature and may indicate the presence of whales (Kandal & Conrad 2003: 91; Jerardino & Marean 2010: 416; Dusseldorp & Langejans 2013: 114). Other barnacles which may become attached to other intertidal marine taxa such as brown mussel are volcano barnacles (*Tetraclita squamosa rufotincta*) (Lassiak & Dye 1989: 248; Jerardino & Marean 2010: 414). Volcano barnacles are found in similar biomes to whale barnacles (Matthews 2007: 74). The barnacles identified in the BSV and BSS layers from Sibudu Cave may be associated with butchering and processing of stranded whales for fat and blubber off the coast of KwaZulu-

Natal, although it is more likely that taxa such as volcano barnacles were attached to the marine bivalves accumulated by the human occupants of Sibudu Cave.

7.1.2 Agents of accumulation

The identification of agents of accumulation is important, as it provides a separation of natural occupants and non-human predators from accumulations of food and religious paraphernalia by humans (Reitz & Wing 2008: 253-254; De Ruiter: 265). Taxa identified from the BSV and BSS layers may be divided into groups ranging from animals accumulated by humans, non-human predators, natural intrusions or a combination of occupants. Factors such as accesability to the cave, lack of carnivore activity and the behaviour of the possible non-human predators who may have access to the cave, need to be considered. Based on the lack of carnivore, rodent and avian damage present on the sample from Sibudu Cave, it is more likely that humans may have accumulated a majority of the faunal material. The difficulty of entering the cave by docile animals such as antelope make it more likely that other factors played a role in their accumulation. It has to be noted that a majority of the taxa mentioned above may have been accumulated by more than one agent. Based on the taphonomic modification, ethnographic literature and the presence or absence of certain taxa in the area, taxa which may have been accumulated by humans include possible spotted hyena, possible wild cat, felines, equids, common warthog, bushpig, alcelaphines, impala, buffalo, cattle, possible eland, southern reedbuck, southern reedbuck/mountain reedbuck,

pangolin, ostrich eggshell, Galliformes indet., medium bird, Nile monitor, rock monitor, leopard tortoise, Cryptopodira indet., yellowfish, mudfish, freshwater catfish, possible carp, medium fish, freshwater gastropod, squeaker, freshwater mollusc, brown mussel, saltwater clam and barnacle. Taxa identified as natural intrusions or accumulated through owls or eagles include giant land snails. Taxa identified as a combination of accumulators (either human or non-human predators) or natural occupants include shrew, Chacma baboon, vervet monkey, Canidae indet., possible wild dog, possible honey badger, mongoose, rock hyrax, blue duiker, possible suni, red duiker, possible steenbok, grey duiker, klipspringer, steenbok/grysbok, porcupine, small rodent, cane rat, vlei rat, hare, small bird, snake, frog/toad, platanna, small fish and crab.

7.1.3 Taphonomy

The high fragmentation rate (degree of identified and unidentified faunal material being smaller than 20 mm in length) is related to the high degree of burning of the specimens and food preparation (Stiner *et al.* 1995: 225). It is possible that the burnt faunal specimens form part of several hearths or hearth deposits created during occupation (see rodents above), as noted in layers from the Middle Stone Age of Sibudu Cave (see chapter five burning events in the Middle Stone Age) (De Graaff 1961: 25; Allot 2006: 179; Cain 2005: 882, 2006: 255; Pickering 2006: 125; Schiegl *et al.* 2004: 192). The high degree of burning may also be linked to site maintenance in the form of debris being burned after the site was occupied, resulting in several burned

specimens in the sample, and hearths being deposited or burning of plant material to eliminate pests and debris (Nicholson 1993: 411; Goldberg *et al.* 2009; Sievers & Muasya 2011: 78; Wadley et al. 2011: 1390; Wadley 2012: 347). Below (see 7.2.2), I will compare the burned elements from the Middle Stone Age layers with the current study in order to investigate whether the patterns mentioned above occur during the 'Iron Age' period.

With regard to hearths and hearth deposits, it is worth noting that ash preserves faunal material relatively well (Plug 1989: 63). Sites with acidic soil which contain ash have better preservation than acidic soil without ash, allowing for preservation of fish remains, tiny shells, frog specimens, rodent specimens and neonate specimens (Plug 1989: 63). A potential problem which contributes to the high fragmentation noted on the faunal material from Sibudu Cave, would be trampling from human and non-human occupants (Brain 1981: 143; Olsen & Shipman 1988: 537; Marean 1991: 678; Fisher 1995: 34-35). Trampling results in elements with smoothed surfaces and striations. In addition to trampling, faunal elements may be smoothed through regular use. For example, among Bantu-speaking farmers, bones which are found in divining kits are often smoothed and include cattle phalanges (with holes drilled in), sheep/goat astragali, baboon astragali, pig astragali (both domestic and wild pigs), pieces of tortoise carapace, hunting dog astragali and several freshwater and marine shells (Plug 1987: 50; Hammond-Tooke 1993: 194-195; Le Roux *et al.* 2013: 103-104). In Sibudu Cave, several identified and unidentified fragments showed signs of trampling or handling, through smoothed surfaces, but no clear divining paraphernalia was identified.

7.1.4 Change over time

It may be possible that taxa which do not naturally occur in the area of Sibudu Cave such as hyaena, equid, warthog, impala, buffalo, eland, ostrich, leopard tortoise, crab and marine shells, were caught while travelling between the coast and inland. This would suggest that Sibudu Cave was used as a rest-stop between the coastal region and inland campsites or settlements. After the cave was used for a few days or for a season the site may have been burned for hygienic reasons or as part of site maintenance, resulting in fragmented remains less than 20 mm in length which shows signs of light, black and localised burning. Alternatively, when the site was reoccupied new fires may have been created over previously constructed fires, resulting in deposited material becoming burned. The site is located 15 kilometres inland from the coast and would not be difficult to travel to between campsites or settlements and the coast (Wadley & Jacobs 2006: 2).

Neonates identified from wild ungulates may indicate spring to early summer hunting patterns (Plug 2002: 56). The majority of blue duiker specimens in the Sibudu Cave sample have been identified as juvenile, suggesting that the cave was at least occupied in spring and summer. As the majority of blue duiker specimens with signs of modification, show signs of human alteration (see wild bovids above), it is highly likely that the human occupants were in Sibudu Cave during this time. The presence of rodent, amphibian and bird specimens in both layers

suggest sporadic occupations and several natural intrusions between the layers.

7.2 Comparisons to previous studies

Below, I will discuss any variations found between the current study and the initial 'Iron Age' and Middle Stone Age studies conducted in Sibudu Cave. Table 7.5 represents the diversity of taxa compared to the sample sizes of the most recent studies of the Middle Stone Age and 'Iron Age' layers from Sibudu Cave. I excluded the avian (Plug & Clark 2008), rodent (Glenny 2006) and aquatic taxa (Plug 2006) for the comparison between the current study and the Middle Stone Age layers, as it is difficult to distinguish between human and non-human accumulation for these particular taxa. Samples selected were the most recent lists of faunal studies from each layer analysed from Sibudu Cave. The number of taxa was reached by counting the taxa which appeared on the lists provided, irrespective of species or family level classification. Taxa were not counted for class or genera if species level classification was present. For example, if a taxon was classified to species (*Philantomba monticola*), family (*Cephalophus* indet.) and genera (Bov I) during analysis (depending on the degree of fragmentation or experience of analyst) it was counted once, not multiple times. The general trend noted for the faunal studies from Sibudu Cave show that the higher the Number of Identified Specimens results in greater diversity of taxa (Figure 7.2).

Table 7-5: Number of taxa identified from Sibudu Cave

Study/layers associated with Sibudu Cave research	NISP	Number of taxa	Reference
BSV layer	589	29	current study
BSS layer	2760	48	current study
Plug - Iron Age layers	273	17	Plug 2004
Wells - RSp layer	435	30	Wells 2003, 2006
Clark - post-Howieson's Poort	1299	29	Clark 2011
Clark – Howieson's Poort	3380	34	Clark 2009
Wadley *et al*. ~ 37 ka	331	20	Wadley *et al*. 2008
Wadley *et al*. ~ 50 ka	1994	32	Wadley et al. 2008
Wadley *et al*. ~ 60 ka	1438	24	Wadley et al. 2008
Cain ~ 50 ka and ~ 60 ka	504	19	Cain 2006

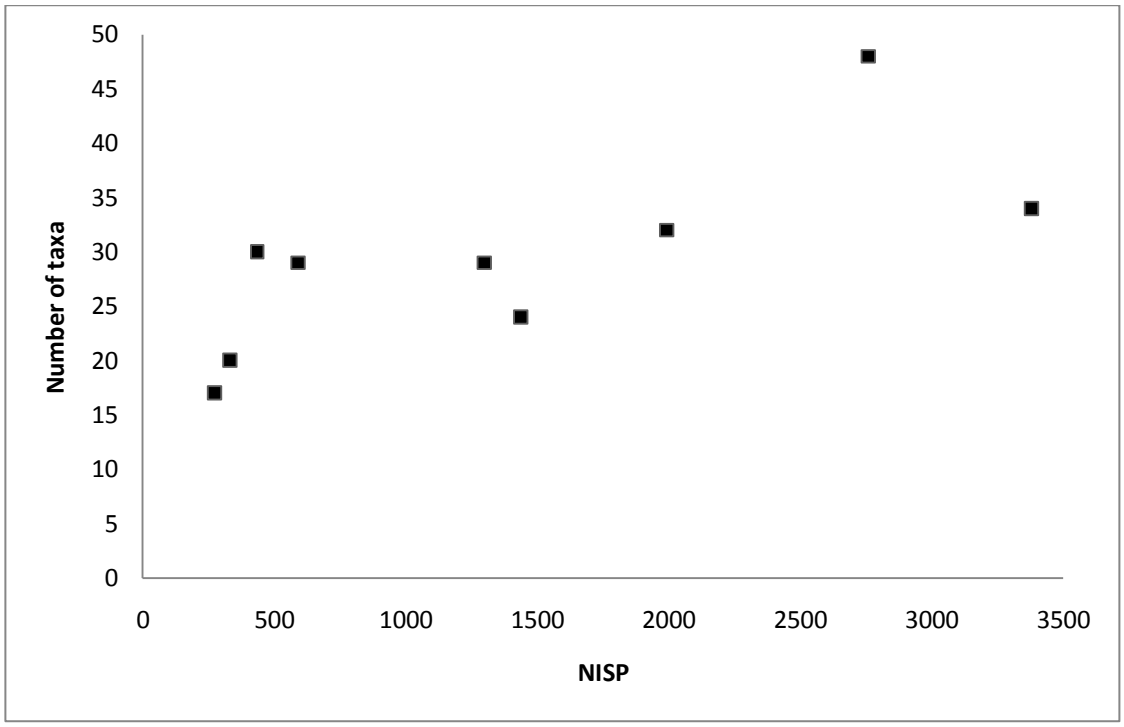


Figure 7-2: Number of taxa identified from Sibudu Cave

7.2.1 Comparing the current study to the previous faunal study from the BSV and BSS layers

The previous study conducted by Plug (2004) for the BSV and BSS was comparatively smaller in sample size and had less taxa diversity (Table 7.6). The taxa identified in the current study include shrew, primate, carnivore, lizard, snake, tortoise, frog/toad and fish remains, all of which were not identified in the previous study. Taxa, which were not identified in the current study and noted in the previous study, include possible human (*cf. Homo sapiens sapiens*), plains zebra (*Equus quagga*), grey rhebuck (*Pelea capreolus*), sheep or goat (Ovis/Capra), a predominance of cattle remains compared to the current study, identification of domestic fowl (*Gallus domesticus*) and different taxa identified for freshwater and marine shells. Differences in taxa may be due to different identification techniques used. In addition, the previous study was a comparative sample taken from the pits identified in the BSV and BSS layers. During the current study, I only identified cattle elements if I was absolutely certain I could make a distinction between buffalo and cattle, based on Peters (1988), which may have led to fewer cattle elements identified than the previous study.

Table 7-6: Taxa identified from current and previous 'Iron Age' studies from Sibudu Cave

Taxa	Common name	BSV	BSS	Plug (2004) 'Iron Age'
Insectivora indet.	shrew	20	14	
Papio hamadryas	Chacma baboon	2		
cf. Papio hamadryas	possible Chacma baboon		2	

Cercopithecus pygerythrus	vervet monkey	1	3	
cf. Homo sapiens sapiens	possible human			2
cf. Lycaon pictus	wild dog	1		
Canidae indet.	dog/jackal		3	
cf. Mellivora capensis	honey badger		1	
Viverridae indet.	mongoose	4	7	18
cf. Crocuta crocuta	spotted hyena		1	
Felis cf. silvestris	possible wild cat	1	2	
cf. Felis silvestris	possible wild cat		1	
Felidae indet.	cat sp.	1		
Equus quagga	plains zebra			4
Equus indet.	zebra/horse	9	10	1
Procavia capensis	rock hyrax	11	20	12
cf. Procavia capensis	possible rock hyrax	1	2	
Phacochoerus africanus	common warthog		2	
Potamochoerus larvatus	bushpig		5	6
cf. Potamochoerus larvatus	possible bushpig		1	
Suidae indet.	pig/bushpig/warthog	2	4	3
cf. Suid*ae* indet.	possible pig/bushpig/warthog	1		
Alcelaphini indet.	wildebeest/hartebeest/ blesbok/tsessebe		1	
Philantomba monticola	blue duiker	19	56	32
cf. Philantomba moniticola	possible blue duiker	3	5	1
Philantomba /Neotragus	blue duiker/suni	8	9	
Cephalopus natalensis	red duiker		3	
cf. Cephalophus natalensis	possible red duiker		4	3
Cephalophus/Raphicerus	red duiker/steenbok		2	
Sylvicapra grimmia	grey duiker		8	
cf. Sylvicapra grimmia	possible grey duiker			2
Oreotragus oreotragus	klipspringer	1		
cf. Oreotragus oreotragus	possible klipspringer		1	
Raphicerus sp.	steenbok/grysbok		1	

Aepyceros melampus	impala		3	
cf. Aepyceros melampus	possible impala		1	
Pelea capreolus	grey rhebuck			3
Ovis/Capra	sheep/goat			6
Syncerus caffer	buffalo	1	2	
cf. Syncerus caffer	possible buffalo		3	
Bos taurus	cattle	1		41
cf. Bos taurus	possible cattle			8
Bos/Syncerus	cattle/buffalo		8	
cf. Bos/Syncerus	possible cattle/buffalo		1	
cf. Tragelaphus oryx	eland		1	
Redunca arundinum	southern reedbuck		5	
cf. Redunca arundinum	possible southern reedbuck		3	
Redunca sp.	southern reedbuck/mountain reedbuck		1	
Pelea/Redunca	rhebuck/reedbuck			6
Manis temminckii	pangolin		1	
Hystrix africaeaustralis	porcupine		1	1
Thryonomys swinderianus	cane rat	1	5	7
Otomys sp.	vlei rat	17	65	
Rodentia indet. small	small rodent	225	490	
Rodentia indet. medium	medium rodent		4	1
Lagomorpha indet.	hare	1	7	
Pronolagus sp.	rock rabbit		1	
Struthio camelus	ostrich		1	
Gallus domesticus	domestic fowl			6
cf. Gallus domesticus	possible domestic fowl			4
Galliformes indet.	chicken/francolin/guinea-fowl	1	1	
Varanus niloticus	Nile monitor		3	
Varanus cf exanthematicus	possible rock monitor		1	
Varanus indet.	Nile/rock monitor		9	
cf. Varanus indet.	possible Nile/rock monitor		1	

Sauria indet.	lizard	1	2	
Serpentis indet.	snake	3	13	
Reptilia indet. small	small reptile	9	41	
Reptilia indet. small-medium	small-medium reptile		2	
Reptilia indet. medium	medium reptile		1	1
Stygmochelys pardalis	leopard tortoise	1		
Cryptopodira indet.	terrapin/tortoise/turtle		4	
Xenopus sp.	platanna		1	
Amphibia indet.	frog/toad	19	34	
Labeobarbus sp.	yellowfish	1	1	
Labeo sp.	Labeo		7	
Clarias/Synodontus indet.	freshwater catfish/barbel		1	
Cyprinidae/Clarias indet.	squeaker		1	
Pisces indet. small	small fish	2	77	
Pisces indet. small-medium	small-medium fish		3	
Pisces indet. medium	medium fish	1	24	
cf. Pisces indet.	possible fish		3	
Brachyura indet.	crab	2	2	
Achatina sp.	giant land snail	1	3	
cf. Nerita natalensis	freshwater snail		1	
cf. Xerocerastus sp.	pulmonate snail		1	
Gastropoda indet. terrestrial	terrestrial gastropod	1	1	
Unionidae sp.	freshwater mussel		2	4
Bivalvia indet. freshwater	freshwater bivalve		21	
Gastropoda indet. marine	marine gastropod		5	1
Perna perna	brown mussel	6	7	2
cf. Perna perna	possible brown mussel		1	5
cf. Nucula nucleus	nut clam		1	
cf. Arcidae sp.	ark clam		2	
Veneridae sp.	venus clam			1
Bivalvia indet. marine	marine bivalve	26	91	13
Cirripedia indet.	barnacle	4	15	
cf. Cirripedia indet.	possible barnacle		2	

7.2.2 Comparing the current study to the Middle Stone Age studies

Below, I will compare the taxa and burned specimens from the Middle Stone Age layers with the taxa and burned specimens from the BSV and BSS layers from the current study.

Comparing taxa

The taxa identified in the Middle Stone Age layers from Sibudu Cave were generally more diverse than those identified in the current study (Table 7.7). The taxa which were not identified in the current study and included in the Middle Stone Age layers include bushbaby (*Otolemur/Galago*), small primate, elephant (*Loxodonta africana*), water mongoose (*Atilax palidunosis*), brown hyaena (*Parahyaena brunnea*), lion (*Panthera leo*), large carnivore, hippo (*Hippopotamus amphibius*), hippo/rhino (Artiodactyla/Perissodactyla), extinct zebra (*Equus capensis*), plains zebra (*Equus quagga*), giraffe (*Giraffa camelopardalis*), extinct hartebeest (*cf. Megalotragus priscus*), blue wildebeest (*Connochaetes taurinus*), red hartebeest (*Alcelaphus buselaphus*), grey rhebuck (*Pelea capreolus*), extinct buffalo (*Pelorovis antiquus*), roan antelope (*Hippotragus equinus*), kudu (*Tragelaphus strepsiceros*), bushbuck (*Tragelaphus scriptus*), mountain reedbuck (*Redunca fulvorufula*) and waterbuck (*Kobus ellipsiprymnus*). The taxa which were identified in the current study and not included in the Middle Stone Age studies include

shrew, wild dog, Canidae indet., honey badger, spotted hyaena, steenbok/grysbok, cattle and southern reedbuck.

Table 7-7: Mammals identified from current BSV and BSS layer study and previous Middle Stone Age studies in Sibudu Cave

Taxa	Common name	BSV	BSS	Wells (2006) ~ 37 ka	Plug (2004) Wadley *et al.* (2008) ~ 37 ka	Clark (2009, 2011) ~ 50 ka	Wadley *et al.* (2008) ~ 50 ka	Wadley *et al.* (2008) ~ 60 ka
Insectivora indet.	shrew	x	x					
Otolemur/Galago sp.	bushbaby						x	
Papio hamadryas	Chacma baboon	x		x	x		x	x
cf. Papio hamadryas	possible Chacma baboon		x					x
Cercopithecus pygerythrus	vervet monkey	x	x			x	x	x
cf. Cercopithecus pygerythrus	possible vervet monkey						x	x
Homo sapiens sapiens	human			x				
Primata sp. small	small primate						x	
cf. Lycaon pictus	wild dog	x						
Aonyx capensis	otter			x				
Canidae indet.	dog/jackal		x					
cf. Mellivora capensis	honey badger		x					
Atilax paludinosus	water mongoose				x			
cf. Atilax paludinosus	possible water mongoose						x	
Viverridae indet.	mongoose	x	x	x		x	x	

Parahyaena brunnea	brown hyaena				x			
cf. Crocuta crocuta	spotted hyaena		x					
Hyaenidae sp.	hyaena						x	
Felis silvestris	wild cat				x			
Felis cf. silvestris	possible wild cat	x	x					
Panthera leo	lion						x	
Carnivora indet. small	small carnivore		x	x			x	x
Carnivora indet. small-medium	small-medium carnivore		x					
Carnivora indet. medium	medium carnivore	x	x	x	x	x	x	x
Carnivora indet. medium-large	medium-large carnivore			x		x	x	x
Carnivora indet. large	large carnivore			x	x	x	x	x
Loxodonta africana	elephant				x			
Equus cf. capensis	possible extinct zebra			x		x	x	x
Equus quagga	plains zebra			x	x	x	x	x
Equus indet.	zebra/horse	x	x	x	x	x	x	x
Procavia capensis	rock hyrax	x	x	x	x	x	x	x
cf. Procavia capensis	possible rock hyrax	x	x					
Phacochoerus africanus	common warthog		x	x	x	x	x	x
Potamochoerus larvatus	bushpig		x	x		x	x	x
cf. Potamochoerus larvatus	possible bushpig		x					
Suidae indet.	pig/bushpig/warthog	x	x	x	x		x	x
Girraffa camelopardalis	giraffe						x	
cf. Giraffa camelopardalis	possible giraffe			x		x	x	x

Hippopotamus amphibius	hippo				x			
Artiodactyla/Perissodactyla sp.	hippo/rhino			x	x		x	
Alcelaphini indet.	wildebeest/hartebeest/blesbok/tsessebe		x	x	x	x	x	x
cf. Megalotragus priscus	extinct hartebeest				x		x	x
Connochaetes taurinus	blue wildebeest			x		x	x	x
Alcelaphus buselaphus	red hartebeest							x
cf. Alcelaphus buselaphus	possible red hartebeest					x		x
Damaliscus pygargus	blesbok					x		
Philantomba monticola	blue duiker	x	x	x	x	x	x	x
cf. Philantomba monticola	possible blue duiker	x	x					
Cephalopus natalensis	red duiker		x			x	x	
cf. Cephalophus natalensis	possible red duiker		x		x			
Sylvicapra grimmia	common duiker		x	x		x	x	
Oreotragus oreotragus	klipspringer	x	x			x		x
Raphicerus sp.	steenbok/grysbok		x					
Aepyceros melampus	impala		x	x		x		
cf. Aepyceros melampus	possible impala		x				x	x
Palea capreolus	grey rhebuck						x	
Hippotragus sp.	roan							x
Hippotragus equinus	roan antelope					x		
Pelorovis antiquus	extinct buffalo			x			x	x
Syncerus caffer	buffalo	x	x			x		
cf. Syncerus caffer	possible buffalo		x					

Bos taurus	cattle	x						
Bos/Syncerus	cattle/buffalo		x					
Tragelaphus strepsiceros	kudu			x		x	x	x
Tragelaphus scriptus	bushbuck					x	x	x
Tragelaphus oryx	eland				x		x	x
cf. Tragelaphus oryx	possible eland		x					
Redunca arundinum	southern reedbuck		x					
cf. Redunca arundinum	possible southern reedbuck		x					
Redunca fulvorufula	mountain reedbuck					x	x	x
Redunca sp.	southern reedbuck/mountain reedbuck		x					
Kobus ellipsiprymnus	waterbuck				x	x		x

Comparing burned specimens

Figure 7.3 shows the burned specimens from layers identified at Sibudu Cave. The layers which were included were those from the current study (BSV/BSS), those from the study conducted by Cain (2006) from the post-Howieson's Poort (~ 60 ka) and those from Clark (2009) from the post-Howieson's Poort and Howieson's Poort layers (~ 60 ka). The burned specimens from the Middle Stone Age layers are more heavily burned than specimens from the BSV and BSS layers. A higher percentage of the specimens from BSV and BSS had no burning (45%) and lightly (43%) burned specimens with a smaller percentage of mildly (7%) and highly (5%) burned specimens. Specimens identified by Clark (2009) for the post-Howieson's Poort and Howieson's Poort showed more specimens which were highly (32%) or mildly burned (32%). Specimens identified by Cain (2006) for the post-Howieson's Poort are similar to those noted for the current study, except for a higher percentage of mildly (20%) burned specimens than the current study. This would suggest that burning activities were more intense during the Middle Stone Age periods of Sibudu Cave than during the current study. It may be possible, that the abundance of hearth deposits and habitual burning of floral material noted in the Middle Stone Age (see chapter five), did not occur in the BSV and BSS layers, suggesting a completely different use of fire (Nicholson 1993: 411; Goldberg *et al.* 2009; Sievers & Muasya 2011: 78; Wadley et al. 2011: 1390; Wadley 2012: 347). It is likely that the faunal material from the BSV and BSS layers was used in food preparation, which resulted in a high degree of lightly burned material over mildly and highly burned material.

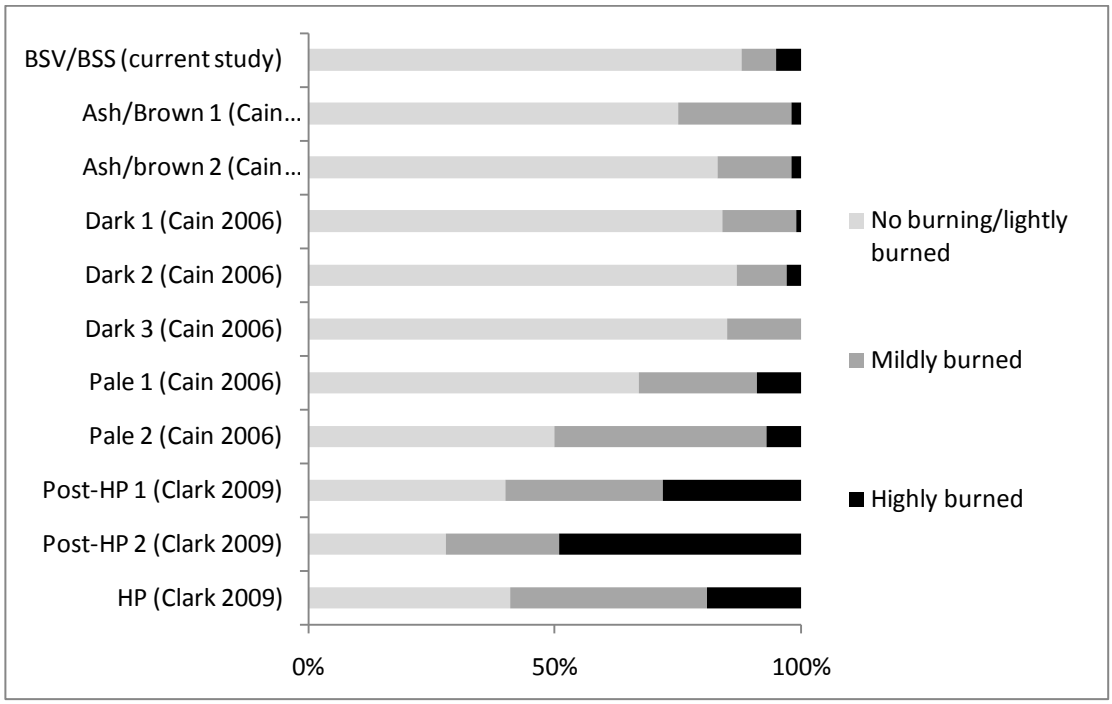


Figure 7-3: Burned specimens from the Middle Stone Age layers (Cain 2006; Clark 2009) and current study. Note layers identified by Cain (2006) were predominantly from the post-Howieson's Poort

7.3 Who occupied Sibudu Cave?

As discussed in chapter two, people occupy cave sites for shelter, refuge and religious purposes. Based on the wide variety of ungulates, freshwater and marine shells found from the BSV and BSS layers, it may possible that the Cave was used as either a shelter or religious site. Taxa which may have been used as sources of food by either hunter-gatherer or farming societies include equid, impala, alcelaphine, buffalo, southern reedbuck, eland, cattle, hyrax, Galliformes indet., leopard tortoise, freshwater and marine shells. Taxa which may have been used for ritual purposes include spotted hyaena, wild cat, pangolin, Nile monitor and rock monitor. Taxa which may have been

accumulated for either food or ritualistic purposes include common warthog, bushpig and ostrich eggshell. Wood *et al.* (2009: 248) has suggested that Sibudu Cave was home to a diviner or herbalist, who practiced his arts in the inaccessible shelter, accepting gifts such as glass beads from perspective clients. Below, I will discuss two scenarios related to wild ungulates and domestic taxa. The first scenario would be based on contact between farmers and hunter-gatherers and the second scenario is based on the unidentified ceramics found in both layers, which may be linked to the diviner or herbalist mentioned above. I will start with how the occupants may have accumulated the wild ungulates, discuss the presence of pits and hearths in the sample and conclude with other cultural material associated with the BSV and BSS layers.

How did they hunt the taxa?

It is likely, that a majority of the wild ungulates hunted by the occupants of Sibudu Cave were accumulated based on the needs of the group or the availability of the taxa (as discussed under presence of taxa). In addition, any livestock which may have been brought along with the occupants may not have been targeted or killed, suggesting that groups such as Iron Age farmers, who may have occupied the site, did not have an abundant supply of livestock to kill. Alternatively, hunter-gatherers may have occupied the site and hunted or traded livestock from famers in the area (Plug 2002: 55). Sites in KwaZulu-Natal which show this interaction include Mzinyashana Shelter and iNkolimahashi Shelter (see chapter two) (Badenhorst

2003: 50-51; Plug 2002: 55). The taxa from the lower BSS layer in Sibudu Cave had no definitive domestic taxa present, suggesting a complete reliance on wild taxa which were readily available. Whereas, the cattle remains identified in the upper BSV layer may suggest farmer occupation or contact (Badenhorst 2003: 50; Plug 2002: 56). The floral samples from these layers are also largely indigenous taxa, suggesting reliance on taxa that are readily available (Scott 2005a: 113). Sites which have similar reliance on wild taxa over domestic taxa in KwaZulu-Natal include Mamba 1 and KwaGandaganda (Voigt & Peters 1994: 147; Beukes 2000: 93-101).

Ungulates which prefer open habitats such as warthog, impala and buffalo may suggest movement across the landscape, such as would be seen when travelling between coastal and inland sites. Exotic taxa such as the hyaena, ostrich eggshell, marine bivalves and barnacles also point to movement across the landscape. The location of Sibudu Cave (15 km from the shore) and the presence of burnt rodent remains point to the use of Sibudu Cave as a resting spot or halfway house between the coast and nearby campsites or settlements.

As discussed in chapter two and this chapter, under presence of taxa, freshwater fishing in Late Iron Age communities seemed to have been avoided, as it was linked to starvation. In KwaZulu-Natal, exceptions have been noted where fish and shellfish remains were identified in both Early and Iron Age sites. The Early Iron Age sites include KwaGandaganda, Mpambanoyoni and Umdloti, and Late Iron Age sites include Mzinyashana Shelter and iNkolimahashi Shelter (Whitelaw 2009: 196; Beukes 2000: 98; Hall, S. 1997: 47; Badenhorst 2003: 50). Ceramics associated

with these sites are Blackburn or Moor Park, which will be discussed below. It is likely that fishing practiced in these sites may be linked to periods where farmers were starving or struggling to find food (Whitelaw 2009: 209). The fish remains identified in Sibudu Cave may follow similar patterns noted in the sites mentioned above or may be linked to farmers struggling to find food and resorting to fish in the Tongati River. Below, I will discuss the material associated with the BSS layer (the layer where the fauna was completely analysed) in order to determine the possible group who occupied Sibudu Cave.

Pits and hearths in the BSS layer

The presence of pits in the BSS layer provide a possible group who may have occupied the site, as pits are associated with Iron Age farmers (see chapter two) (Plug & Badenhorst 2001: 187; Reynolds 1974: 118, Schoeman 2009; Brunton *et al.* 2013; Huffman & Schoeman 2011: 165; Whitelaw 1993: 52). The presence of pits also allowed intermixing of Middle Stone Age material into the BSV and BSS layers including food waste, ashy deposits and charcoal (Scott 2005a: 5; Wood *et al.* 2009: 240). Sites in KwaZulu-Natal with similar pits include Msuluzi Confluence and the Late Iron Age deposit at Blackburn (Maggs 1980b: 119-120 and 134; Davies 1971: 170-172). According to Wood *et al.* (2009: 240), the pits from the BSV and BSS layers were not lined with dung and had no indication of being used for food storage (Wood *et al.* 2009: 240). Figure 7.4 shows the presence of taxa from the pits and hearths identified from the BSS layer. Wild ungulates, medium mammals (such as duikers),

large mammals (such as buffalo/cattle) and avian taxa were largely deposited in the pits found going through the BSS layer, which would suggest that the pits were largely used for refuse (Wood *et al.* 2009: 240; Davies 1971: 171). Fruits found in the pits were largely from edible plants such as marula (*Sclerocarya birrea*) and sour plum (*Harpephyllum caffrum*) and are associated with refuse (Scott 2005a: 47; Wood et al. 2009: 240). The glass beads found in Sibudu Cave was excavated from a small pit (deliberately dug to store the bag with coiled beads) running through the BSS (lower) layers from the BSV (upper) layer (Wood *et al.* 2009: 241). Worked bone such as the bone point found in the BSS layer (E4-d) has a secure connection to Late Iron Age sites and may be found in pits (Davies 1971: 134). With regard to divining paraphernalia only one element (an indeterminate Bov II carpal smoothed on the surface) which showed signs of being worked was found in the BSS pits. The lack of clearly defined worked specimens, other than smoothed elements discussed in chapter six, suggests that the lower BSS layer was not ritualistically significant. There may be divining paraphernalia present in the upper BSV layer, however further investigation is needed. Features such as refuse pits, daga floors (which will be discussed below), ceramics without bases (which may be present in the unanalysed sample from Sibudu Cave), shells in pits and worked bone such as bone points may indicate commoner (lower class) huts (Davies 1971: 177-178; Maggs 1980b: 134).

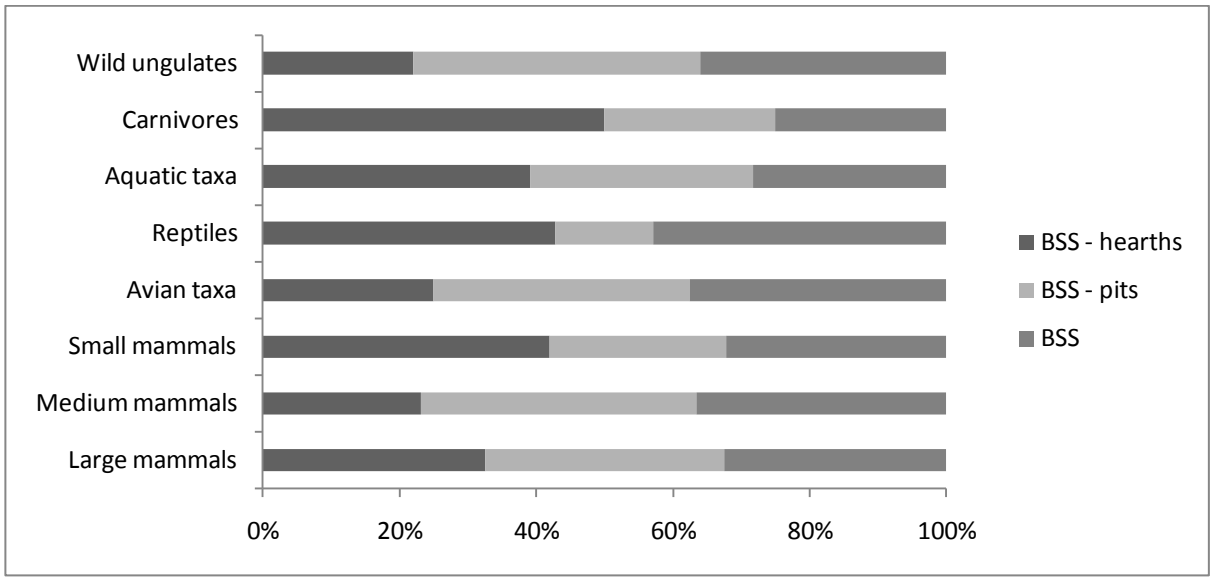


Figure 7-4: Presence of taxa in pits and hearths from the BSS layer

The majority of taxa associated with the hearths identified from the BSS layer include carnivores, reptiles (such as tortoises, lizards and snakes), small mammals (such as hares, hyraxes and rodents), large mammals and aquatic taxa (such as fishes, marine bivalves and frogs/toads). It is interesting to note that the hearths contained a large percentage of taxa such as carnivores, reptiles and marine bivalves, suggesting that these taxa were utilised as sources of food or ritualistic paraphernalia. The exotic taxa such as marine bivalves suggest movement across the landscape as they occur along the coast. The majority of taxa identified throughout the rest of the BSS layer include reptiles, avian taxa, wild ungulates, small-, medium-, large mammals and aquatic taxa. These taxa may represent debris from activities such as food preparation, making clothes, making beads or ritualistic paraphernalia.

Ceramics and Daga floors associated with the BSV and BSS layers

The presence of yet unidentified ceramics, which may be linked to Blackburn or Moor Park (Whitelaw pers. comm.; Wood *et al.* 2009: 252), which may be present in the BSV and BSS layers, and the Daga floor identified between the BSV and BSS layers point to the possibility of Late Iron Age farmers inhabiting the cave (Wood *et al.* 2009: 252; Wadley & Jacobs 2004: 240). Variation between Blackburn and Moor Park ceramics is not well understood and allows for discrepancy for when ceramic styles terminates in Sibudu Cave (Wood *et al.* 2009: 252; Huffman 2007: 443-444). If Moor Park ceramics are a regional development from Blackburn pottery, it may be likely that the ceramics found at Sibudu Cave terminates at around AD 1500, which correlates with the beads found at Sibudu Cave (see chapter five) (Wood *et al.* 2009: 252). Sites with similar ceramic styles include the Blackburn site, 30 km north of Sibudu Cave, and Mpanbanyoni (Scott 2005a: 8).

The clay floor from Sibudu Cave is much like the size (about five metres across) of floors associated with Blackburn sites and is no more than 20 mm thick (Wood *et al.* 2009: 240; Davies 1971: 177). The foundations are based on Nguni-style Beehive huts (Davies 1971: 177). The floor is located between the BSV and BSS layers and has a radiocarbon date of AD 970 ±50 (calibrated AD 1026) (Scott 2005b: 7; Wood *et al.* 2009: 240). Radiocarbon dates provided for the BSS layer is 1030 ± 40 (calibrated 1007), which may indicate occupation consistent with Moor Park (Scott 2005b: 7). The artefacts in the cave suggest more than casual visits to the cave. The presence of hut floors, ceramics, upper

and lower grindstones, burned basketwork, pits with refuse, cached glass beads, wood shavings, worked wood and bone and furnaces in the immediate vicinity, suggest occupation over several years (Scott 2005a: 99; Wood *et al.* 2009: 240).

7.4 Recommendations and shortfalls

Two recommendations, which arose during analysis, will be discussed below. The first recommendation is that samples should be analysed using a standardised identification method (see chapter three). I would recommend that any future studies on fauna from Sibudu Cave should follow the method Driver (2005) has advocated, which I have adopted during this analysis (see chapter four) (Driver 1992, 2005; Gobalet 2001). Advantages for using this method for any future studies include consistency, comparability and making assumptions of taxa present after data has been compiled (Driver 1992: 25-27). A conservative approach is necessary when making identifications, for example I was only able to identify a single cattle specimen, based on morphology, in the BSV layer. Ancient DNA studies on specimens such as cattle/buffalo (*Bos/Syncerus*) and Galliformes indet. could be conducted to provide more precise identification.

The second recommendation regards the identification of possible occupants in cave sites. Despite excavations and ongoing analysis, it has proven difficult to narrow possible group/groups (such as hunter-gatherers, herders or farmers) who may occupy cave sites, such as Sibudu Cave, during the last 2 000 years. More research on shelter sites, movement of people between

settlements and use of caves by farming communities is needed to understand possible occupants of cave sites.

Shortfalls experienced during analysis relate to rodent identification and other taxa not identified to more specific taxonomic levels as well as separation of faunal material from the BSV and BSS layers. The rodents identified in the BSV and BSS layers from Sibudu Cave could be identified, however it must be done by a specialist who could provide more detail regarding climate variation during the last 2 000 years. Secondly, a number of taxa from the BSV and BSS layers from Sibudu Cave including birds, reptiles, frog/toads and fishes could be analysed by experts, however it is questionable whether further analysis of taxa would contribute to an understanding of the economy and ritual use of animals in the cave. The identification of birds, reptiles and fishes may contribute to an understanding of human occupiers to the cave or reflect environmental or climatic changes. During analysis it was not possible to separate between fauna associated to the Middle Stone Age and Iron Age from the BSV and BSS layers. As such, fauna identified from these layers were discussed based on ethnographic and taphonomic modification present on the remains.

7.5 Conclusions

In this dissertation, I have described and analysed the faunal remains excavated from the BSV and BSS layers from Sibudu Cave. Based on ceramics, presence of daga floors and glass beads found within the layers, the BSV and BSS were classified as dating to the Iron Age period (AD 900-1660). It was not clear

who the occupants from the BSV and BSS layers were as either hunter-gatherers or Iron Age farmers may have occupied the site during the period. Middle Stone Age layers were deposited below these two layers and due to pits excavated in mostly the BSS layer intermixing of material occurred. A long sequence of Middle Stone Age research has been conducted over the last two decades, as well as research on the flora and beads from the BSV and BSS layers. The current study focused on the fauna from the BSS layer (lower layer) in order to compare between taxa from the Middle Stone Age. A representative sample was taken from the BSV layer (top layer) in order to investigate whether similar taxa occurred. The general trend of the faunal studies from the Middle Stone Age and initial 'Iron Age' layers show higher Number of Identified Specimens resulting in greater diversity of taxa.

The total faunal sample identified during the current study consists of 47 721 specimes with 7% identified taxa. Based on the presence of taxa, it is obvious that both natural occupants, non-human predators and human occupants accumulated faunal material in Sibudu Cave. The taxa identified in the BSV and BSS layers may indicate that the site was predominantly occupied by Iron Age farmers who largely hunted wild ungulates, such as blue duiker and buffalo, based on the needs of the group or the availability of taxa. Livestock which may have been accumulated by the occupants may not have been targeted or killed for food, suggesting that the occupants did not have an abundant supply of livestock to kill. The occupants may have used the site as a rest-stop between camps or settlements when visiting the coast, as marine bivalves and exotic taxa, not typically associated with the

Sibudu area, were found in the sample. Fishing activities in Sibudu Cave may reflect periods where farmers may be struggling to find food and they may have caught fish to supplement their diet. Taphonomic modification has shown that the site was occupied on various occasions and site maintenance may have been employed in the cave, which resulted in burned rodent remains and pits used as refuse. Two explanations have been put forward for the high degree of burned remains which were less than 20 mm. The first, relates to the use of the cave for a few days or a season, after which the site was burned for hygienic reasons or as part of site maintenance to keep pests away. Secondly, when the site was reoccupied after a season new fires may have been constructed over previous hearths, resulting in deposited material becoming burned. The majority of blue duiker specimens in the Sibudu Cave sample have been identified as juvenile, suggesting that the cave was at least occupied in spring and summer. The hearth deposit from the BSS layer indicates that taxa such as aquatic taxa (marine bivalves, fishes and frog/toads), carnivores (such as dogs/jackals and hyenas) and reptiles (such as tortoises, snakes or lizards) may have been used as sources of food or for ritualistic purposes. Sibudu Cave was predominantly used as a shelter or religious site based on presence of both sources of food and taxa with ritual importance. It may be possible that the daga floor found between the BSV and BSS layers were from an Nguni hut associated with commoner households. The presence of hut floors, Moor Park ceramics, upper and lower grindstones, burned basketwork, pits with refuse, cached glass beads, worked bone points and furnaces in the immediate vicinity, suggest the presence of Late Iron Age farmers in Sibudu Cave.

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APPENDIX A: DRIVER MANUAL 1999

NOTE: This appendix may require additions/changes based on idiosyncrasies inherent in southern African taxa

CROW CANYON ARCHAEOLOGICAL CENTER

MANUAL FOR DESCRIPTION OF VERTEBRATE REMAINS

Jonathan C. Driver, April 1999, 6th edition

(adapted by Shaw Badenhorst, July 2009 and Andreas le Roux, May 2014)

ELEMENT

Bone fragments which cannot be identified to element must be recorded as:

UN UNIDENTIFIED

Mammalian element codes arranged anatomically

AN ANTLER
HC HORN CORE
CR CRANIAL
BO BASIOCCIPITAL
BS BASISPHENOID
BU BULLA
FA FACIAL
FR FRONTAL
LA LACRIMAL
MX MAXILLA
NS NASAL
OC OCCIPITAL CONDYLE
OX OCCIPITAL
PE PETROSA
PO PAROCCIPITAL
PR PARIETAL
PM PREMAXILLA
PS PRESPHENOID
SP SPHENOID
SQ SQUAMOSAL
TE TEMPORAL
ZG ZYGOMATIC
MN MANDIBLE
HY HYOID
VE VERTEBRA
AT ATLAS
AX AXIS
CE CERVICAL
TH THORACIC
RI RIB
OO OSSIFIED COSTAL CARTILAGE
ST STERNUM
LU LUMBAR
SA SACRAL
UR CAUDAL
SC SCAPULA

CL	CLAVICLE
HU	HUMERUS
RA	RADIUS
UL	ULNA
CP	CARPAL
MC	METACARPUS
ML	LATERAL METACARPUS (UNGULATES)
IN	INNOMINATE
FE	FEMUR
PA	PATELLA
FI	FIBULA
TI	TIBIA
AS	ASTRAGALUS
CA	CALCANEUS
TA	OTHER TARSALS
MT	METATARSUS
MV	LATERAL METATARSUS (UNGULATES)
MP	METAPODIAL
1P	PROXIMAL PHALANX (FIRST PHALANX)
2P	MEDIAL PHALANX (SECOND PHALANX)
3P	TERMINAL PHALANX (THIRD PHALANX)
SE	SESAMOID
BA	BACULUM

Mammalian teeth

The only teeth to be coded are loose teeth. Teeth which can be fitted back into mandibles and maxillae should not be coded. Each tooth is assigned a two letter code. The first letter defines the type of tooth (incisor, premolar etc.). The second letter describes the tooth as either deciduous or permanent. Remember that only incisors, canines and premolars have deciduous precursors; there are no deciduous molars.

Tooth name codes (first letter)

Y	INCISOR
K	CANINE
X	PREMOLAR
Z	MOLAR
T	UNKNOWN TOOTH FRAGMENT

Age codes (second letter)

D	DECIDUOUS
P	PERMANENT
N	NOT KNOWN

Examples :
KP is a permanent canine; XD is a deciduous premolar

Avian elements

Birds have a skeleton similar to mammals, with similarly named elements. For bird bones, use all applicable mammalian codes, with the following additions and changes.

Mandible - although bird mandibles are composed of more than one bone, in most cases the portions which survive archaeologically will not be of individual bones but composite pieces. Therefore, bird mandibles will be coded as MN (as in mammals).

It is possible that you will find tracheal rings (TR) preserved.

Vertebral column - same codes, but remember that posterior thoracics, lumbars, sacrals, and anterior caudals are fused to form the synsacrum (SS). The most posterior vertebra is the pygostyle (PY).

Ribs - same codes, but remember birds have separate sternal ribs (SR) which lie between the ribs and the sternum.

Pectoral girdle - same code for scapula; add coracoid (CO) and furculum (FU)

Pelvic girdle - same codes

Wing - same codes for analagous bones. The carpometacarpus is coded as a metacarpus, as in the mammals. See below for phalanx codes.

Leg - same codes for analogous bones. The tibiotarsus is coded as a tibia. The tarsometatarsus is coded as a metatarsus, as in mammals. Remember that birds don't have tarsals. See below for phalanx codes. Ossified tendons (OT) are quite common.

Birds have distinctive vestigial phalanges at the tips of the wings. These are coded simply as one category - wing phalanges (WP). The phalanges of the feet are often difficult to distinguish, with the exception of the terminal phalanx. If you are confident of the position of the individual phalanx, use the following codes : proximal phalanx (P1), second phalanx (P2), third phalanx (P3), terminal phalanx (P4). If you are not confident, use PH (phalanx).

Egg shell is coded EG

Thus, the only new codes you will require for bird bone are as follows:

TR	TRACHEAL RING
SS	SYNSACRUM
PY	PYGOSTYLE
SR	STERNAL RIB
CO	CORACOID
FU	FURCULUM
WP	ANY WING PHALANX
PH	ANY FOOT PHALANX
P1	PROXIMAL PHALANX
P2	SECOND PHALANX
P3	THIRD PHALANX
P4	TERMINAL PHALANX
EG	EGG SHELL
QU	QUADRATE
OT	OSSIFIED TENDON

Amphibians and reptile elements
When possible, the codes for mammals and birds are to be used for amphibian and reptile bones which have the same names. Use the system for bird phalanges to code phalanges of amphibians and reptiles. Notes and additions to the codes are as follows:

For cranium and mandible use CR and MN (as for mammals and birds) for any fragments which are composed of more than one named bone type.

In turtles, you may divide portions of the "shell" into plastron (PL) or carapace (CC). For fragments of shell which cannot be so determined, use SH ("shell").

Vertebrae are not always named in the same way as birds and mammals. For unassigned vertebrae use VE. Some reptiles and amphibians have an urostyle (US).

As radius/ulna and tibia/fibula are fused together in amphibians, use RU for the former and TF for the latter.

All portions of the sternal complex should be coded as ST (same as birds and mammals).

The new codes for amphibians and reptiles are:

PL	PLASTRON
CC	CARAPACE
SH	SHELL (INDETERMINATE TURTLE SHELL)
VE	VERTEBRA
US	UROSTYLE
RU	RADIUS/ULNA
TF	TIBIA/FIBULA

Element codes for fish

As fish remains will be rare on most sites, and as there is controversy about how fish bones should be named, these codes are a minimal list, and more will have to be added if substantial quantities of fish are recovered. Use codes for mammals and birds for similarly named elements. Otherwise use the following codes

BP	BASIPTERIGIUM
CH	CERATOHYAL
CT	CLEITHRUM
DE	DERMETHMOID
EP	ECTOPTERYGOID
HM	HYOMANDIBULAR
IO	INTEROPERCULAR
ME	METAPTERYGOID
OP	OPERCULUM
PC	PREOPERCULAR
PD	PARASPHENOID
PG	PHARYNGEAL PLATES
SB	SUBOPERCULUM
SO	SUPRAOCCIPITAL
SU	SUPRAETHMOID
VO	VOMER
DT	DENTARY
AR	ARTICULAR
BR	BRANCHIOSTEGAL
PT	PTERYGIOPHORES
EC	SCALE

SIDE

A one letter code must be provided for each fragment.

L	Left
R	Right
I	Irrelevant (i.e. for elements which cannot be sided, such as vertebrae)

U Unknown (i.e. for elements which can be sided but are too fragmentary or too difficult to assess; examples of this might be phalanges, rib fragments etc.)

PART

A one or two digit code is used to describe the portion of the element represented.

Mammal Element Part Codes

Antler/ horn core

1 Complete
10 Fragment attached to cranium
2 Fragment

Cranial
The cranium is composed of individually named bones. If the cranial fragment consists only of a single bone, name the element and use the following codes

1 Complete
2 Fragment

If the specimen is a complete cranium, or if it is a fragment made up of more then one cranial bone (e.g. the temporal and the zygomatic) use the following codes.

1 Complete
3 Posterior fragment
4 Anterior fragment
5 Ventral fragment
6 Dorsal fragment
7 Other fragment
20 Complete posterior to nasals
21 Fragment with complete maxilla and premaxilla
22 Fragment with complete maxilla
23 Fragment with partial maxilla
24 Fragment with complete premaxilla
25 Fragment with partial premaxilla
26 Fragment with maxilla and partial premaxilla
27 Fragment with partial maxilla and premaxilla
28 Fragment with partial maxilla andpartial premaxilla

Mandible
1 Complete
30 Molar and premolar toothrow
31 Molar row with partial premolar row
32 Premolar row with partial molar row
33 Fragment of molar row
34 Fragment of premolar row
35 Anterior to premolars
36 Posterior to molars
37 Anterior through molar row
38 Anterior through partial molar row
39 Anterior through partial premolar row
40 Premolar and molar row plus ascending ramus
41 Partial premolar row, molar row, and ascending ramus
42 Partial molar row plus ascending ramus
43 Ventral fragment of horizontal ramus

Loose teeth
1 Complete
2 Fragment

Hyoid
1 Complete
2 Fragment

Vertebrae
1 Complete
50 Complete centrum
51 Centrum fragment
52 Unfused epiphysis of centrum
53 Centrum plus neural arch
54 Neural arch fragment
55 Transverse process, complete or fragment
56 Spinous process, complete or fragment
57 Anterior or posterior zygapophysis
58 Vertebra split along anterior/posterior axis
59 Vertebra split along medio/lateral axis
7 Other fragment

Ribs
1 Complete
70 Ventral fragment
71 Dorsal fragment
72 Shaft fragment

Costal cartilage

1 Complete
2 Fragment

Sternum
1 Complete
2 Fragment

Scapula

1 Complete
80 Glenoid area plus part of blade
81 Blade fragment

Innominate (pelvis)

1 Complete
90 Fragment with ilium, acetabulum, pubis and ischium
91 Ilium fragment
92 Ilium plus acetabulum
93 Ischium and/or pubis fragment
94 Ischium and/or pubis fragment plus acetabulum
95 Acetabulum fragment

Long bones (includes humerus, radius, ulna, metacarpus, femur, fibula, tibia, metatarsus and phalanges)
1 Complete
100 Proximal end complete, plus >50% of shaft
101 Proximal end present but incomplete, plus >50% of shaft
102 Proximal end complete, plus <50% of shaft

103 Proximal end present but incomplete, <50% of shaft
104 Unfused proximal epiphysis
105 Distal end complete, plus >50% of shaft
106 Distal end present but incomplete, plus >50% of shaft
107 Distal end complete, plus <50% of shaft
108 Distal end present but incomplete, plus <50% of shaft
109 Unfused distal epiphysis
110 Diaphysis (Shaft)

Other bones (includes carpals, tarsals, sesamoids, patella, clavicle, baculum)
1 Complete
120 Fragment with more than 50%
121 Fragment with less than 50%

Unidentifiable
1 Complete
2 Fragment

Bird Element Part Codes

As far as possible, bird codes will follow mammal codes. Differences are discussed below:

Mandible

As birds lack teeth, most mammalian codes will be inappropriate. Therefore, the following codes will apply:

1 Complete
2 Fragment
3 Posterior fragment
4 Anterior fragment

Sternal ribs
1 Complete
2 Fragment

Sternum

This bone is more complex in birds, and requires more codes

1 Complete
4 Anterior fragment
7 Other fragment

Furculum
1 Complete
5 Ventral fragment
6 Dorsal fragment
7 Other fragment

Coracoid
1 Complete
4 Fragment with anterior end (end which articulates with scapula)
6 Fragment with posterior end (end which articulates with sternum)
7 Other fragment

Reptile, Amphibian, and Fish Element Part Codes

Use the same system for mammals and birds. For all bones not included in those systems, use the following codes:

1 Complete
2 Fragment

FUSION

Every fragment must receive a two letter code, even if it is not possible to define fusion states. The fusion code is designed to record the state of fusion for the entire element, not simply for the fragment described. The first letter is used to define the state of fusion for the proximal end (in the case of limb bones) or the anterior end (in the case of axial elements). The second letter refers to the distal or posterior end. As many fragments will be incomplete, it will often be necessary to code one or both ends as "unknown".

To avoid confusion, the following rules will be followed:

Fusion codes are always given as "NN" for the following elements, except in the case of fetal/neonatal specimens (see below): cranial, mandible, hyoid, sternum, teeth, carpal, tarsal (except calcaneus), sesamoid, patella, innominate.

Fusion for vertebrae refers to the epiphyses of the centrum.

The glenoid area of the scapula is considered the anterior end.

For ribs, the first letter refers to the dorsal end of the rib (i.e. where it articulates with the thoracic vertebrae).

In mammals the proximal end of the calcaneus has an epiphysis.

For separate, unfused epiphyses (e.g. a complete unfused proximal epiphysis of a deer humerus) remember that the fusion code is referring to the whole element, not just the epiphysis. In the example given above, the deer humerus is unfused at the proximal end and unknown at the distal end (because you don't have the rest of the element that the epiphysis came from). Do not code such a bone as fused at the proximal end and unfused at the distal end.

Any specimens which are clearly from fetal or neonatal specimens can be coded "BB"

Codes:

F Fused. No gap between the epiphysis and diaphysis. A line of fusion may be present.
J Just fused. Fusion has begun, but spaces can still be seen between the epiphysis and diaphysis.
U Unfused. Epiphysis separate from rest of bone. This will be used to describe an isolated epiphysis, or a diaphysis which displays an unfused end, or a separate epiphysis which can be fitted back to a diaphysis.
B Fetal or neonatal. Very small with poor development of cortex. This designation may be applied to fetal elements with no well defined epiphyses, such as carpals, tarsals etc.
N Cannot be coded because the end of the bone is absent.
X Indeterminate. Should only be used rarely, and you should check with the supervisor of the faunal analysis before using this code.

Examples:
Complete cottontail humerus, with an unfused proximal end (epiphysis missing) and a fused distal end: UF

Isolated proximal unfused epiphysis of a jackrabbit tibia: UN

Fetal metapodial of deer, lacking epiphyses: BB

Immature deer femur diaphysis, with unfused epiphyses which can be fitted to proximal and distal ends: UU

BREAKAGE

A two letter code must be provided for each bone fragment. The first letter refers to the proximal or dorsal or anterior end; the second letter refers to the distal or ventral or posterior end. For tooth fragments the first letter refers to the occlusal surface and the second to the root.

I Intact. The end of the bone has suffered no significant damage.

D Eroded break

E Broken during excavation. Break surface should be markedly different in color from the rest of the bone, usually lighter. (NB always glue together bones broken by the excavator if possible)

A Made into an artifact, i.e. this end of the bone was purposefully worked by humans. (This includes offcuts, waste from bone tool manufacture, unfinished artifacts etc.)

C Chewed by carnivores. Look for scoring, furrowing and punctures.

D Eroded. The end of the bone has been worn smooth or rounded by natural processes such as sand abrasion or water. A useful clue for this condition is the exposure of cancellous bone on a smooth surface.

P Splintered. The bone exhibits a series of transverse fractures, terminating at different points. This is the result of weathering, and is often associated with weathering cracks.

R Gnawed by rodents. Look for many shallow parallel grooves.

S Spiral fracture. As well as exhibiting a spiral morphology, the break surfaces should be fairly smooth.

T A transverse fracture, essentially a simple snap break running perpendicular to the long axis of the bone. Typical of fragments which have been heavily weathered or broken when dry. Often seen on burnt bone.

V Irregular fractures, not perpendicular to or parallel with the long axis of the bone. "zig-zag" appearance at the end of the bone fragment.

Examples :

(a) a deer humerus is complete at the proximal end, and broken with a spiral fracture on the shaft. This would be coded: IS.

(b) a shaft fragment of a cottontail tibia is gnawed by rodents at the proximal end and is snapped transversely at the distal end. This would be coded: RT.

(c) a fox ulna is formed into an awl at the distal end, and the proximal end was broken during excavation. This would be coded: EA.

MODIFICATION

These codes apply to any alterations defined below which can be observed on the specimen. In some cases the alteration will have already been described in the

breakage code because the alteration affects an end of the bone fragment. In such cases, the alteration will also be coded in this field. However, there will be many cases in which the alteration does not affect the end of a fragment, which is why this field exists.

A Modified as an artifact. Include in this category finished artifacts and waste material such as grooved and snapped offcuts from making bird bone tubes. Also include any bone which exhibits polish, abrasion etc. caused by humans.

B Burnt black.

C Carnivore damage, including scoring, grooving, furrowing, punctures.

K Humanly produced cutmarks.

L Localised burning. One good indicator that small mammals and birds were cooked is localised burning on bones. (Burning over the entire specimen is not a good indicator of cooking). Localised burning seems to occur when a bone is partially exposed during roasting. The exposed part is charred black but the remainder of the bone, which is covered by the meat, is unburnt. Localised buring is defined by a black area of burning, usually quite sharply defined, and often surrounded by a dark brown zone grading into the normal color of unburnt bone. Such areas are seen most often on mandibles and long bones, but can occur elsewhere.

P Pathological condition present.

R Rodent gnawing.

W Burnt white, grey or blue/grey.

LENGTH

The length of each fragment should be measured on a simple scale (you could use graph paper). Exact lengths are not required, and the following coding system should be used:

1 less than 1 cm
2 1 to 1.99 cm
3 2 to 2.99 cm
4 3 to 3.99 cm

CORTICAL THICKNESS

This is to be used only for long bones, including identified and unidentified specimens. As cortical thickness varies, use the thickest portion of cortex to define the thickness. The measurement is taken perpendicularly from the outside to the inside (marrow cavity) of the fragment. The following codes should be used:

1 less than 2 mm
2 2 to 3.99 mm
3 4 to 5.99 mm
4 6 to 7.99 mm
5 8 to 9.99 mm
6 10 to 11.99 mm
7 12 to 13.99 mm
8 14 to 15.99 mm
9 16 to 17.99 mm
10 18 to 19.99 mm

APPENDIX B – SPREEDSHEET FOR FAUNAL MATERIAL FROM BSV AND BSS LAYERS AT SIBUDU CAVE

IDENTIFIED MATERIAL - BSV

Date	Square + Quad	Layer	No.	Taxa	Element	Part	Side	Fusion	Breakage pattern	Modification	Length (mm)	Comments
04/02/00	B4	BSV	1	Medium mammal	RI	72	U	NN			59	
04/02/00	B4	BSV	1	Small mammal	TI	110	U	NN	SS		21	
04/02/00	B4	BSV	1	Bov III-IV	TN	2	U	NN		B(2)	35	
04/02/00	B4	BSV	1	Medium bird	SS	51	I	NN		C	22	
04/02/00	B4	BSV	1	Medium mammal	VE	55	I	UN			26	
04/02/00	B4	BSV	1	Large mammal	RI	71	U	NN		L(2)	25	
04/02/00	B4	BSV	1	*Perna perna*	SH	2	U	NN			31	
04/02/00	B4	BSV	6	Marine bivalve	SH	2	U	NN			15-38	
04/02/00	B4	BSV	1	Medium bird	1P	110	U	NN			28	
02/08/00	B4-c	BSV	1	Medium mammal	TN	2	U	NN			8	
02/08/00	B4-c	BSV	1	Small rodent	MX	23	I	NN			9	
04/02/00	B4-d	BSV pit	1	Medium mammal	CE	53	I	FU			59	
04/02/00	B4-d	BSV pit	1	Large mammal	VE	55	I	UN			61	
04/02/00	B4-d	BSV pit	4	Medium mammal	RI	72	U	NN		1=K 1=Chop	31-99	
04/02/00	B4-d	BSV pit	1	Medium mammal	RI	70	R	NF		K	80	
04/02/00	B4-d	BSV pit	2	Small mammal	RI	72	U	NN			25-32	
04/02/00	B4-d	BSV pit	1	Philantomba/Neotragus	IN	94	L	NN		R	47	
04/02/00	B4-d	BSV pit	1	*cf. Philantomba monticola*	CA	1	L	NU			27	
04/02/00	B4-d	BSV pit	1	Mongoose (Viverridae)	UL	101	L	FN	VS		42	
04/02/00	B4-d	BSV pit	1	Small mammal	HU	110	L	NN	SS		36	
04/02/00	B4-d	BSV pit	1	*Philantomba monticola*	HC	10	R	NN			37	
04/02/00	B4-d	BSV pit	1	Large mammal	FE	110	R	NN	VS	CHOP	68	
04/02/00	B4-d	BSV pit	1	Philantomba/Neotragus	IN	121	R	FN		CHOP	50	DPm2; DPm3; Dpm4
04/02/00	B4-d	BSV pit	6	*Philantomba monticola*	MN	30	R	NN			47	M1 + M2 intact (Young individual)
04/02/00	B4-d	BSV pit	1	*Philantomba monticola*	AS	1	L	FF			15	Dm - 8.42; Bd - 9.75; Gli - 15.10; GLm - 9.55; DI - 8.75
04/02/00	B4-d	BSV	1	*Thryonomos*	IN	91	R	NN			42	

		pit		*swinderianus*								
04/02/00	B4-d	BSV pit	1	Suid sp.	3P	1	L	FF			20	DLS - 19.60; MBS - 10.60; Ld - 21.90; HP - 13.70; BFp - 10.85
04/02/00	B4-d	BSV pit	1	Labeobarbus sp.	CR	2	U	NN			20	Operculum (Os operculare)
04/02/00	B4-d	BSV pit	1	Crab	PINCHER	2	U	NN		L(1)	25	Burnt tip of crab pincher
04/02/00	B4-d	BSV pit	5	*Perna perna*	SH	2	L/R	NN			23-34	1=sand still attached to lobe
04/02/00	B4-d	BSV pit	13	Marine bivalve	SH	2	U	NN			7-60	
04/02/00	B4-d	BSV pit	1	Bov III-IV	CA	103	R	UN		R K	50	
04/02/00	B4-d	BSV pit	7	Medium-large mammal	CR	2	U	NN			30-44	
15/10/98	B5-a	Orange MOD	1	Medium mammal	UR	51	I	UU			34	OMOD Layer
04/06/99	C2	BSV	8	Equus sp.	TN	2	U	NN			13-29mm	
04/06/99	C2	BSV	6	Medium mammal	TN	2	U	NN			3-16mm	
04/06/99	C2	BSV	1	cf. Suid sp.	MC	108	LF	NF	SS		41	
04/06/99	C2	BSV	1	Small mammal	RI	72	U	NN			22	
04/06/99	C2	BSV	1	*Procavia capensis*	HU	110	L	NN	ST		18	
04/06/99	C2	BSV	8	Small rodent	MX	33	R	NN			9-11mm	3 maxilla + 5 molars intact (MNI - 3)
04/06/99	C2	BSV	3	Small rodent	HU	106	L/L/R	UF/NF	SI		8-21mm	1=Fresher (MNI - 2)
04/06/99	C2	BSV	1	Medium fish	VE	51	I	FF			8	Length of centrum - 4.65
04/06/99	C2	BSV	3	Small rodent	VE	53	I	FU/FF			5	2=Fresher
04/06/99	C2	BSV	1	Small rodent	UL	100	R	FU			13	
04/06/99	C2	BSV	1	Small mammal	RI	72	U	NN			31	
04/06/99	C2	BSV	1	*Sauria sp.*	MN	30	L	NN			18	Fresher
04/06/99	C2	BSV	1	*Otomys sp.*	TN	2	U	NN			7	
04/06/99	C2	BSV	2	Small mammal	PE	2	U	NN			5-7mm	
04/06/99	C2	BSV	1	*Felis cf. silvestris*	YP	2	R	NN			13	
04/06/99	C2	BSV	8	Small rodent	CR	2	U/I	NN			8-34	
04/06/99	C2	BSV	1	Small rodent	YP	2	U	NN			13	
04/06/99	C2	BSV	3	Otomys sp.	ZP	2	U	NN			6-8mm	Mandible frag attached
04/06/99	C2	BSV	1	Small rodent	FE	100	L	FU			11	
04/06/99	C2	BSV	1	Small rodent	TI	105	R	UF			24	
04/06/99	C2	BSV	1	Small rodent	CR	2	U	NN		B(2)	10	
04/06/99	C2	BSV	1	Small rodent	CL	120	R	NN			13	

04/06/99	C2	BSV	1	Small rodent	IN	1	U	NN			8	
04/06/99	C2	BSV	1	*Achatina sp.*	SH	2	U	NN			19	
04/06/99	C2	BSV	1	Barnacle	SH	2	U	NN			5	
04/06/99	C2	BSV	1	Small rodent	AX	1	I	FF			10	
04/06/99	C2	BSV	1	Small rodent	SA	51	I	FF			7	
04/06/99	C2	BSV	1	Small rodent	SC	80	L	FN			8	
04/06/99	C2	BSV	1	Bivalve/Gasteropod	SH	2	U	NN			10	
04/06/99	C2	BSV	1	Small mammal	RI	72	U	NN			16	
09/08/99	C3	BSV	1	Medium mammal	HU	110	U	NN			15	
09/08/99	C3	BSV	3	Small-medium mammal	CR	2	U	NN			12-28mm	
09/08/99	C3	BSV	1	Large mammal	TN	2	U	NN			19	
09/08/99	C3	BSV	1	Marine bivalve	SH	2	U	NN			19	
09/08/99	C3	BSV	1	Small mammal	RI	72	U	NN			10	
09/08/99	C3	BSV	1	Small rodent	FE	109	U	NU			6	
09/08/99	C3	BSV	4	Small rodent	SC	80	L/R	FN			6-13mm	1=Fresher
09/08/99	C3	BSV	11	Small rodent	MN	33	L/R	NN			5-13mm	2=Fresher 6 molars; 1 incisor + 4 mandible (MNI - 3)
09/08/99	C3	BSV	1	Small rodent	YP	2	U	NN			8	
09/08/99	C3	BSV	1	Small rodent	TN	2	U	NN			4	
09/08/99	C3	BSV	1	Small rodent	FE	110	U	NN	SS		16	
09/08/99	C3	BSV	3	Small rodent	TI	105/110	R/U	NF/NN/NU			9-19mm	1=Fresher
09/08/99	C3	BSV	1	Small rodent	IN	90	L	NN			18	
09/08/99	C3	BSV	1	Small rodent	AT	1	I	FF			5	
09/08/99	C3	BSV	1	Small rodent	FE	110	L	NN	TS		20	
09/08/99	C3	BSV	1	Small bird	TI	106	L	NF	SI		13	
09/08/99	C3	BSV	1	Small bird	TI	110	U	NN			29	
10/10/98	C4	BSV Fire pit	1	Small mammal	HU	110	R	NN	SS		32	
10/10/98	C4	BSV Fire pit	1	*cf. Philantomba monticola*	CA	120	R	UN		B(4)	20	
10/10/98	C4	BSV Fire pit	1	Medium carnivore	ZP	120	U	FF			11	Upper molar frag
10/10/98	C4	BSV Fire pit	1	Medium mammal	UL	102	U	NN	VV	L(1)	18	
10/10/98	C4	BSV Fire pit	1	Small mammal	CR	2	U	NN			21	
10/10/98	C4	BSV Fire pit	2	Medium mammal	RI	72	U	NN		1=B(2)	17-22mm	
10/10/98	C4	BSV Fire pit	1	*Philantomba monticola*	MP	110	U	NN	TS	B(2)	16	
10/10/98	C4	BSV Fire pit	1	Small mammal	VE	55	I	NN		L(2)	15	
10/10/98	C4	BSV Fire pit	1	Small rodent	LU	53	I	UF			6	Fresher
10/10/98	C4	BSV Fire pit	1	Small rodent	TI	105	R	NF	SI		20	

10/10/98	C4	BSV Fire pit	1	Medium carnivore	TN	2	U	NN			11	
10/10/98	C4	BSV Fire pit	1	Medium bird	FE	110	U	NN			18	
18/04/99	C4-a	BSV	1	Small mammal	RI	72	U	NN		K	49	
18/04/99	C4-a	BSV	1	Small rodent	FE	100	R	FU			25	
18/04/99	C4-a	BSV	1	Small rodent	HU	107	L	NF			10	
18/04/99	C4-a	BSV	1	Small bird	UL	106	R	NN		W(5)	19	
18/04/99	C4-a	BSV	1	Small mammal	PE	2	U	NN			15	
03/08/99	D2	BSV	1	Marine bivalve	SH	2	U	NN			13	
03/08/99	D2	BSV	1	Small rodent	PE	2	U	NN			8	
03/08/99	D2	BSV	2	Small rodent	TI	107	L/R	NN			7-9mm	1=Fresher
03/08/99	D2	BSV	5	Insectivore (Shrew)	MN	30	R	NN			12	Fresher
03/08/99	D2	BSV	1	Felid sp.	ZP	2	L	NN			8	Lower M2
05/08/99	D2	BSV	1	Medium mammal	UR	51	I	NN		L(2) K	34	
05/08/99	D2	BSV	1	Medium mammal	HU	110	U	NN	TV	K L(2)	42	
05/08/99	D2	BSV	1	Gasteropod	SH	2	I	NN			17	
05/08/99	D2	BSV	1	Small rodent	FE	110	U	UN	IT		16	
05/08/99	D2	BSV	1	Small rodent	YP	2	U	NN			19	
05/08/99	D2	BSV	1	Small mammal	CR	2	U	NN			28	
05/08/99	D2	BSV	1	*Oreotragus oreotragus (Klipspringer)*	MT	105	R	NF	SI		78	Bd - 21.00; SD - 11.80; DD - 9.10; Dd - 14.30
05/08/99	D2	BSV	1	Frog/toad	IN	92		NN			26	
05/08/99	D2	BSV	1	Large mammal	RI	72	U	NN		K Chopped	73	
04/08/99	D2	BSV	1	*Bos taurus*	1P	1	R	FF	II	C L(2)	51	Glpe - 51.80; BP - 25.00; Bd - 24.00; SD - 25.02
04/08/99	D2	BSV	1	Bov II-III	IN	95	R	NN			40	
04/08/99	D2	BSV	1	Medium mammal	LU	55	I	NN			26	
04/08/99	D2	BSV	5	*Procavia capensis*	MN	31	L	NN			44	Mandible refitted Dp2; Dp3; Dp4 and M1 intact. Young individual. Age class III (8-10 months). October birth, winter death.
04/08/99	D2	BSV	1	Medium mammal	RI	72	U	NN			59	
04/08/99	D2	BSV	1	Bov I	UL	110	R	NN			46	Fresher
04/08/99	D2	BSV	1	Medium bird	HU	101	R	FN	IS		49	
04/08/99	D2	BSV	1	Large mammal	MN	2	U	NN			71	
04/08/99	D2	BSV	1	Medium mammal	VE	55	I	NN		K	33	
04/08/99	D2	BSV	1	Medium mammal	CR	2	U	NN			20-32	
04/08/99	D2	BSV	1	Large mammal	TN	2	U	NN			22	
04/08/99	D2	BSV	1	Large mammal	TN	2	U	NN			9	
04/08/99	D2	BSV	3	Medium mammal	TN	2	U	NN		1=B(2)	8-11mm	
04/08/99	D2	BSV	2	Bov I	IN	92/94	R	NN			17-29	
04/08/99	D2	BSV	2	Small rodent	IN	92/90	R	NN			20-30	1=Fresher
04/08/99	D2	BSV	1	Marine bivalve	SH	2	U	NN			10	
04/08/99	D2	BSV	1	Bivalve	SH	2	U	NN			15	
04/08/99	D2	BSV	1	Small bird	SS	2	I	NN			18	Fresher
04/08/99	D2	BSV	7	*Otomys sp.*	MX	23	L/R	NN			11-14mm	1=Fresher 2 = Maxilla

04/08/99	D2	BSV	1	*Otomys sp.*	ZP	2	U	NN			4	
04/08/99	D2	BSV	1	*Serpentis sp.*	VE	1	I	FF			6	
04/08/99	D2	BSV	1	Small rodent	VE	1	I	FU			4	
04/08/99	D2	BSV	8	Small rodent	MN	32	L/R	NN			11-14mm	1=Incisor 5 - teeth 2 - mandibles
04/08/99	D2	BSV	2	Small rodent	TI	105/102	L/R	UF/NF	II/TI		16-30	
04/08/99	D2	BSV	1	Small rodent	HU	105	R	UF	II		16	Fresher
04/08/99	D2	BSV	1	Small rodent	SC	80	R	FF	II		25	
04/08/99	D2	BSV	1	Small mammal	PE	2	U	NN			7	
04/08/99	D2	BSV	1	Small rodent	UL	110	L	NN	VS		12	
04/08/99	D2	BSV	1	Small mammal	RI	72	U	NN			18	
04/08/99	D2	BSV	1	Small rodent	MP	110	U	NN			7	
04/08/99	D2	BSV	1	Small mammal	CR	2	U	NN			12-18mm	
04/08/99	D2	BSV hearth A	1	Large bird	HU	100	R	BB			92	2 refitted pieces from - one from BSV (D2) and one from BSV hearth
04/08/99	D2	BSV hearth A	1	*Syncerus caffer*	1P	107	RF	NF	SI	L(1)	30	BD - 37.10
04/08/99	D2	BSV hearth A	1	Medium mammal	OO	2	U	NN		B(2)	13	
04/08/99	D2	BSV hearth A	1	Medium mammal	VE	56	I	NN			19	
04/08/99	D2	BSV hearth A	1	Otomys sp.	ZP	2	U	NN			7	
04/08/99	D2	BSV hearth A	1	Small rodent	PR	1	I	NN			16	
04/08/99	D2	BSV hearth A	1	Bov I	ZP	2	R	NN		R?	11	M3
06/08/99	D3	BSV	1	*Stygmochelys pardalis*	CC	2	I	NN			66	
06/08/99	D3	BSV	1	Medium mammal	MN	43	U	NN		W(5)	40	
06/08/99	D3	BSV	6	*Philantomba monticola*	MN	33	R	NN			82	Young individual. Dp3; Dp4; M1; M2; M3 intact
06/08/99	D3	BSV	1	Small mammal	RI	72	U	NN			42	
06/08/99	D3	BSV	1	Large mammal	RI	71	R	FN			47	
06/08/99	D3	BSV	2	Medium mammal	TN	2	U	NN		1=B(2)	18-20	
06/08/99	D3	BSV	1	*Papio hamadryas*	YD	1	L	NN			8	2 fragments refitted, young individual, upper 2nd deciduous tooth
06/08/99	D3	BSV	1	Bov II	AS	108	R	NF		B(2)	18	
06/08/99	D3	BSV	1	Medium bird	UR	1	I	FF		W(6)	11	
06/08/99	D3	BSV	1	*Philantomba/Neotragus*	SC	80	L	NN			8	
06/08/99	D3	BSV	1	Mongoose	1P	1	U	FF			9	
06/08/99	D3	BSV	4	Small rodent	HU	100	L/R	FN/FU	IT		8-14mm	3=Fresher

06/08/99	D3	BSV	7	Small rodent	IN	90	L/R	NN			6-23mm	2=Fresher
06/08/99	D3	BSV	4	Small rodent	FE	102/100	L/R	NN/FN/ FU	IS		5-24mm	
06/08/99	D3	BSV	3	Small rodent	FE	109/107	L/R	NU/NF			4-6mm	
06/08/99	D3	BSV	2	Small reptile	VE	1	I	FF			4-7mm	
06/08/99	D3	BSV	14	Small rodent	VE	1/55	I	NN/FF/ UF			4-5mm	
06/08/99	D3	BSV	2	Otomys sp.	YP	2	U	NN			12-14mm	
06/08/99	D3	BSV	1	Small rodent	UR	50	I	UF			4	
06/08/99	D3	BSV	1	Small rodent	YP	2	U	NN			11	
06/08/99	D3	BSV	8	Small rodent	CR	2	U	NN			6-12mm	
06/08/99	D3	BSV	6	Small rodent	MN	30	L/R	NN			6-11mm	2 Mandibles; 3 teeth; 1 incisor
06/08/99	D3	BSV	1	Small rodent	MX	23	R	NN			10	
06/08/99	D3	BSV	3	Small rodent	PE	2	U	NN			4-5mm	
06/08/99	D3	BSV	1	Small bird	FE	110	U	NN			26	
06/08/99	D3	BSV	2	Frog/toad	FE	102/110	U	FN/NN			4-17mm	
06/08/99	D3	BSV	2	Frog/toad	HU	100/110	U	NN/FN			14-17mm	1=Fresher
06/08/99	D3	BSV	4	Frog/toad	IN	95/92	L/R	NN			6-11mm	
06/08/99	D3	BSV	3	Small rodent	SC	80	L/R	FN			7-16mm	
06/08/99	D3	BSV	1	Small rodent	CA	1	R	FF			7	
06/08/99	D3	BSV	1	Terrestrial gasteropod	SH	2	U	NN			10	
06/08/99	D3	BSV	2	Small fish	VE	1	I	FF			3-7mm	Length of centrum - 3.25; 2.80
06/08/99	D3	BSV	1	Small rodent	MP	1	U	FF			10	
06/08/99	D3	BSV	1	Small rodent	3P	1	U	FN			6	
06/08/99	D3	BSV hearth	1	Bov III-IV	MP	108	U	NF	ST	L(1) insect Chopped	27	
06/08/99	D3	BSV hearth	1	Lagomorph	HU	107	R	NF	SI	B(2)	16	
06/08/99	D3	BSV hearth	6	Insectivore (Shrew)	MN	30	L	NN			9	Incisor Pm1; Pm2; M1+ M2 intact
06/08/99	D3	BSV hearth	1	Small rodent	UR	50	I	UF			5	
06/08/99	D3	BSV hearth	1	*Serpentis sp.*	VE	1	I	FF			4	
06/08/99	D3	BSV hearth	1	Small rodent	MX	22	L	NN			9	Fresher
06/08/99	D3	BSV hearth	1	Small rodent	UL?	101	U	FN	TS	B(2)	10	
06/08/99	D3	BSV hearth	1	Small rodent	IN	90	L	NN		W(6) copper stain	21	Green staining - result of copper in close proximity
06/08/99	D3	BSV hearth	1	Small reptile	VE	1	I	FF			10	
06/08/99	D3	BSV hearth	2	Small rodent	VE	50	I	FF/UN			6-7mm	
06/08/99	D3	BSV hearth	1	Small rodent	FE	100	L	FU			10	

06/08/99	D3	BSV hearth	2	Small rodent	MN	34	L	NN			8	Fresher
10/10/98	D4	BSV fire pit	2	Medium mammal	TI	110	U	NN	TS		44-92	
10/10/98	D4	BSV fire pit	1	Bov II	MT	102	R	FN	TS		43	
10/10/98	D4	BSV fire pit	1	Large mammal	FE	108	U	NN		R	39	
10/10/98	D4	BSV fire pit	1	Bov II	RA	102	L	FN	IS		29	
10/10/98	D4	BSV fire pit	1	Medium mammal	CR	2	U	NN			19	
10/10/98	D4	BSV fire pit	1	Small rodent	VE	50	I	UU			4	
10/10/98	D4	BSV fire pit	1	Bivalve	SH	2	U	NN			16	
10/10/98	D4	BSV fire pit	1	Medium mammal	RI	72	U	NN		1=L(2)	28	
11/10/98	D4	BSV hearth 2	5	Small rodent	MN	30	R	NN			16	1=insicor + 3 teeth intact
11/10/98	D4	BSV hearth 2	1	Small rodent	PH	1	U	FF	II	Digested	13	Fresher
05/08/99	E2	BSV	4	*Philantomba monticola*	MN	32	R	NN			49	Dp3; Dp4; M1 intact Young individual
05/08/99	E2	BSV	1	*Equus sp.*	YP	2	L	NN			59	
05/08/99	E2	BSV	3	*Procavia capensis*	MN	32	L	NN			21	Broken tooth fragments intact
05/08/99	E2	BSV	1	Small mammal	ZG	2	L	NN			25	
05/08/99	E2	BSV	1	Large mammal	TN	2	U	NN			15	
05/08/99	E2	BSV	6	Medium mammal	TN	2	U	NN		1(B2)	8-9mm	
05/08/99	E2	BSV	1	Medium mammal	CE	2	I	NN			36	
05/08/99	E2	BSV	1	Bov II	RA	108	R	NF	VV	R	26	
05/08/99	E2	BSV	1	Bov III-IV	ZP	2	U	NN			21	
05/08/99	E2	BSV	1	Medium mammal	VE	55	I	NN			30	
05/08/99	E2	BSV	1	Medium mammal	PE	2	L	NN			46	
05/08/99	E2	BSV	1	Small - medium mammal	RI	71	R	FN			47	
05/08/99	E2	BSV	1	*Papio hamadryas*	YP	1	L	NN			9	Young individual, deciduous tooth
05/08/99	E2	BSV	1	*Philantomba/Neotragus*	CP	120	R	NN			9	
05/08/99	E2	BSV	1	Small rodent	IN	90	R	NN			17	Fresher
05/08/99	E2	BSV	5	Small rodent	VE	51/55	I	UU/NN			4-6mm	
05/08/99	E2	BSV	4	Small reptile	VE	1	I	FF			4-5mm	
05/08/99	E2	BSV	1	*Serpentis sp.*	VE	1	I	FF			8	
05/08/99	E2	BSV	1	Small rodent	UR	50	I	FF			6	
05/08/99	E2	BSV	1	Small - medium bird	RI	2	U	NN			31	
05/08/99	E2	BSV	1	Small mammal	PE	2	U	NN			5	
05/08/99	E2	BSV	4	Small rodent	MX	23	L/R	NN			4-5mm	2 teeth intact
05/08/99	E2	BSV	2	Small rodent	FE	100	L/R	FU			14-	

											22mm	
05/08/99	E2	BSV	1	Small rodent	FE	107	R	NF	SI		8	
05/08/99	E2	BSV	1	Small rodent	UL	102	R	FN	IT		9	
05/08/99	E2	BSV	1	Small bird	FE	102	R	FN			12	
05/08/99	E2	BSV	1	Marine bivalve	SH	2	U	NN			17	
05/08/99	E2	BSV	2	Frog/toad	HU	110	U	NN/NF			10-20mm	
05/08/99	E2	BSV	1	Frog/toad	RA	110	U	NN			10	
05/08/99	E2	BSV	1	Frog/toad	IN	92	L	NN			19	
05/08/99	E2	BSV	1	Small rodent	FE	110	U	NN			11	
05/08/99	E2	BSV	2	Small rodent	CR	2	U	NN			6-10mm	
05/08/99	E2	BSV	1	Bov III	SE	121	U	NN			19	
05/08/99	E2	BSV	1	Small rodent	HU	100	R	FN			10	
05/08/99	E2	BSV	1	Bov III-IV	UL	110	U	NN			81	
04/08/99	E2	BSV	1	Large mammal	OO	2	U	NN			75	
04/08/99	E2	BSV	2	Medium mammal	OO	2	U	NN			6-11mm	
04/08/99	E2	BSV	3	Medium mammal	CR	2	U	NN			22-29	
04/08/99	E2	BSV	1	*cf. Philantomba monticola*	MT	103	R	FN	TS		18	
04/08/99	E2	BSV	1	*Galliformes sp.*	ST	4	I	NN			11	Need to check in reference collection
04/08/99	E2	BSV	1	Medium bird	FI	100	L	UN	IS		24	
04/08/99	E2	BSV	1	Small bird	CO	110	R	NN	VS		21	
04/08/99	E2	BSV	2	Small rodent	UR	50	I	UU/FF			4-5mm	1=Fresher
04/08/99	E2	BSV	1	Small rodent	FE	100	L	FU			17	Fresher
04/08/99	E2	BSV	2	Small rodent	HU	110	U	NU/NN			11-15mm	
04/08/99	E2	BSV	1	Small rodent	IN	90	L	NN			15	
04/08/99	E2	BSV	1	Small mammal	RI	72	U	NN			14	
04/08/99	E2	BSV	2	Medium mammal	VE	55	I	NN		L(4)	13-22	
04/08/99	E2	BSV	1	Small mammal	PE	2	U	NN			7	
04/08/99	E2	BSV	3	Small rodent	MN	1	R	NN			17	1=incisor 1=tooth
04/08/99	E2	BSV	1	Worked frag (Mandy)		110/2	U	NN			6	
04/08/99	E2	BSV	1	Small reptile	VE	1	I	FF		B(2)?	3	
04/08/99	E2	BSV	1	*Vivirridae (Mongoose)*	HU	107	R	NF	SI		7	
04/08/99	E2	BSV	1	Otomys sp.	YP	2	U	NN			13	
04/08/99	E2	BSV	1	Small rodent	VE	51	I	NN			6	
04/08/99	E2	BSV	3	Small rodent	VE	50	I	UU/FU/FN			4-7mm	1=Fresher
04/08/99	E2	BSV	3	Medium mammal	TN	2	U	NN		1=B(2)	8-12mm	
04/08/99	E2	BSV	2	Small rodent	CR	2	U	NN		1=B(2)	10-11mm	
05/08/99	E3	BSV	1	Medium mammal	TN	2	U	NN			11	
05/08/99	E3	BSV	1	Small rodent	IN	92	R	NN			18	Fresher
05/08/99	E3	BSV	1	Small rodent	VE	53	I	UU			5	Fresher
05/08/99	E3	BSV	1	Large mammal	TN	2	U	NN			18	
03/08/99	E3	BSV	2	Small rodent	VE	1	I	FF/UU			3-6mm	Fresher
03/08/99	E3	BSV	1	Small rodent	SC	80	R	FN			9	
03/08/99	E3	BSV	1	Small mammal	FE	110	L	NN	VV	L(5)	16	

04/08/99	E3	BSV	1	Suid sp.	UL	110	R	NN	VT	K	69	BPC - 18.50
04/08/99	E3	BSV	1	Medium mammal	RI	72	U	NN			62	
04/08/99	E3	BSV	1	Medium mammal	MN	43	R	NN		K	37	
04/08/99	E3	BSV	1	Small mammal	CR	2	U	NN			16	
04/08/99	E3	BSV	1	Bov III-IV	AS	108	U	NN		K L(1)?	20	
04/08/99	E3	BSV	2	Medium bird	VE	51	I	FN			16	2 vertebrae still fused together
04/08/99	E3	BSV	1	Bov III-IV	TN	2	U	NN			25	
04/08/99	E3	BSV	2	Medium mammal	TN	2	U	NN			10	
04/08/99	E3	BSV	1	Small mammal	RI	72	U	NN		R	46	
04/08/99	E3	BSV	1	Medium mammal	VE	55	I	NN		L(4)	21	
04/08/99	E3	BSV	1	*cf. Procavia capensis*	FE	110	U	NN	VS		15	
04/08/99	E3	BSV	2	Small mammal	RI	72	U	UF/NN			21-26	
04/08/99	E3	BSV	1	*Philantomba/Neotragus*	ZD	2	L	NN			8	Young individual
04/08/99	E3	BSV	1	*Procavia capensis*	ZP	2	U	NN		B(2)	9	
04/08/99	E3	BSV	1	*cf. Chlorocebus aethiops (verver monkey)*	ZP	2	U	NN			7	
04/08/99	E3	BSV	3	Barnacle	SH	2	U	NN			4-6mm	
04/08/99	E3	BSV	1	Small rodent	FE	101	R	FN	IS		8	Fresher
04/08/99	E3	BSV	2	Small rodent	IN	90	L	NN			8-11mm	
04/08/99	E3	BSV	7	Insectivore	MX	1	I	NN			10	6 teeth intact
04/08/99	E3	BSV	2	Insectivore	MN	33	R	NN			7	1 molar intact
04/08/99	E3	BSV	4	Small rodent	MN	33	R	NN			11	3 teeth intact
04/08/99	E3	BSV	4	Small rodent	MN	1	L	NN			9	1-incisor 2 teeth intact - fresher
04/08/99	E3	BSV	1	Small rodent	2P	1	U	FF			5	
04/08/99	E3	BSV	1	Small rodent	FE	107	R	NF	VI		6	
04/08/99	E3	BSV	1	Small reptile	VE	1	I	FF			6	
04/08/99	E3	BSV	1	Small rodent	1P	1	U	FF			9	
04/08/99	E3	BSV	1	*Otomys sp.*	ZP	2	U	NN			5	
04/08/99	E3	BSV	3	Small rodent	VE	1	I	FF/FU/ UU			6	1=Fresher
04/08/99	E3	BSV	1	Small rodent	TI	105	R	NF	TI		13	
04/08/99	E3	BSV	1	Small rodent	PE	2	U	NN			6	
04/08/99	E3	BSV	1	Small rodent	SC	1	R	FN			14	Fresher
04/08/99	E3	BSV	1	Small rodent	HU	107	R	NF	SI	B(2)	6	
04/08/99	E3	BSV	1	Small rodent	RI	71	U	NN			11	
04/08/99	E3	BSV	1	Small rodent	UR	51	I	UU			5	
04/08/99	E3	BSV	2	Frog/toad	VE	1	I	FU			11-13mm	
04/08/99	E3	BSV	1	Frog/toad	FE	110	U	NN			20	
04/08/99	E3	BSV	2	Frog/toad	RA	110	U	NN/UF			7-12mm	
04/08/99	E3	BSV	1	Frog/toad	HU	110	U	NN			10	
04/08/99	E3	BSV	1	Small bird	VE	51	I	FN			8	
04/08/99	E3	BSV	1	*Crab*	Pincher	121	R	NF			8	
10/10/98	E4	BSV hearth 1	4	Bov III-IV	TN	2	U	NN			13-19	
10/10/98	E4	BSV	4	Large mammal	TN	2	U	NN		3=B(2)	14-23	

		hearth 1										
10/10/98	E4	BSV hearth 1	1	*Vivirridae*	ZP	2	U	NN			6	Lower M1
17/10/98	E4	BSV hearth 2	1	Bov II	MP	110	NN	VS	K		67	
17/10/98	E4	BSV hearth 2	1	Medium-large mammal	VE	51	FN		L(1)		30	
17/10/98	E4	BSV hearth 2	2	Small mammal	RI	72/71	NN/FN				13-25	
18/04/99	E4-b	BSV	1	*cf. Lycoan pictus*	XP	1	R	NN			17	UPM2 - Broken during identification, Wild dog was historically found in KZN but became extinct during the '60s.
18/04/99	E4-b	BSV	1	*Procavia capensis*	FE	110	R	UN	VV	R	60	
18/04/99	E4-b	BSV	1	*Bov II*	RA	101	U	FN	VS	L(1)	40	
18/04/99	E4-b	BSV	1	Small rodent	CR	24	R	NN			36	
18/04/99	E4-b	BSV	3	Marine bivalve	SH	2	U	NN			6-18mm	
18/04/99	E4-b	BSV	6	Large mammal	TN	2	U	NN		2=B(2)	10-18mm	
18/04/99	E4-b	BSV	1	Small rodent	FE	101	R	FN			16	
18/04/99	E4-b	BSV	2	Small rodent	MX	26	R	NN			8	Fresher
10/10/98	E5	BSV	1	*Philantomba/Neotragus*	AX	51	I	FN			22	
10/10/98	E5	BSV	1	*Philantomba/Neotragus*	FE	108	L	NF	IV		22	
10/10/98	E5	BSV	1	*Philantomba/Neotragus*	IN	94	L	NN			40	
10/10/98	E5	BSV	1	Small mammal	IN	95	U	NN			9	
10/10/98	E5	BSV	2	Medium mammal	TN	2	U	NN			16-20	
10/10/98	E5	BSV	1	Medium mammal	TN	2	U	NN			10	

UNIDENTIFIED MATERIAL - BSV

Date	**Square**	**Layer**	**Number**	**≤ 20 mm**	**≥ 20 mm**	0	1	2	3	4	5	6	**K**	**CH**	**C**	**R**	**RE**	**G**	**Other**	**Comments**
04/02/2000	B4	BSV	47	13	34	13	12	1		11	4	6	3	1		1				
02/08/2000	B4-c	BSV	99	94	5	37	33	17	1	1	8	2	2			1				
04/02/2000	B4-d	BSV pit	113	43	70	56	31	9		6	5	6	3	2	2	2				5 fresher
04/06/1999	C2	BSV	138	72	66	79	39	7		6	7	0	2	1	2	2	0	0		
09/08/1999	C3	BSV	5	5	0	5														2 fresher
10/10/1998	C4	BSV firepit	147	65	82	47	73	14	1	5	5	2	6	1	6	6	1			1 fresher
18/04/1999	C4-a	BSV	15	13	2	8	6				1					1				3 fresher
05/08/1999	D2	BSV	9	2	7	5	2	1		1					1					
03/08/1999	D2	BSV	13	8	5	11	2									1				
05/08/1999	D2	BSV	81	64	17	46	21	6		6	2			1	1					

04/08/1999	D2	BSV	190	134	56	102	44	14	1	12	12	5	4	2	1		3			1 fresher
04/08/1999	D2	BSV Hearth A	20	15	5	7	1	3	2	2	5		1		1	1				2 fresher
06/08/1999	D3	BSV hearth	6	4	2		3	2				1	1							1 fresher
10/10/1998	D4	BSV firepit	98	77	21	33	28	11		9	12	5				1	1	1		
11/10/1998	D4	BSV hearth 2	321	311	10	120	107	35	4	22	23	10	1				1			
04/08/1999	E2	BSV	202	189	13	104	59	16	2	14	5	2	1	1	3					6 fresher
05/08/1999	E2	BSV	544	491	53	363	134	11	4	21	8	4	2	2	3	3				1 fresher
04/08/1999	E3	BSV	260	244	16	122	69	25	7	19	13	5	2	2	1					
03/08/1999	E3	BSV	35	31	4	19	8	4	1	1	2		1							
05/08/1999	E3	BSV	45	40	5	22	11	3	1	4	4		1							2 fresher
10/10/1998	E4	BSV hearth 1	142	92	50	72	58	8	1	2		1	4	2						
17/10/1998	E4	BSV hearth 2	15	5	10	6	6	1		2			2		1					
18/04/1999	E4-b	BSV	49	34	15	28	13	3		2	3		2		1	1				1 fresher
10/10/1998	E5	BSV	53	39	14	41	5	1		2	4		1							1 fresher

IDENTIFIED MATERIAL - BSS

Date	Square + Quad	Layer	No.	Taxa	Element	Part	Side	Fusion	Breakage pattern	Modification	Length (mm)	Comments
31/08/98	B5-a	BSS	1	Medium mammal	LU	55	I	NN	IS		33	
31/08/98	B5-a	BSS	2	Large mammal	TN	2	U	NN		B(2)	15	1 burnt 1 no burn
31/08/98	B5-a	BSS	1	Bov II non-domestic	HY	2		NN			20	
31/08/98	B5-a	BSS	1	Small mammal	CR	2	U	NN			10	
01/09/98	B5-a	BSS	2	Medium mammal	TN	2	U	NN		B(2)	18	
01/09/98	B5-a	BSS	2	Large mammal	TN	2	U	NN		B(2)	18	1 burnt black 1 no burn
01/09/98	B5-a	BSS II	2	Large mammal	TN	2	I	NN			20	
01/09/98	B5-a	BSS II	1	Bov II	SC	81	R	NN	PV		73	
31/01/98	B5-b	BSS	1	Medium mammal	CR	7	I	NN			35	
31/01/98	B5-b	BSS	1	Frog/Toad	FE	110	U	NN	VV		16	Fresh
31/01/98	B5-b	BSS	1	Bov III	ST	2	I	NN		K R	73	Deep cut marks Photograph needed
31/01/98	B5-b	BSS	1	Medium mammal	RI	72	U	NN	TT	B(2)	22	
31/01/98	B5-b	BSS	1	Bov III	SE	1	I	NN	II	B(4)	22	
31/01/98	B5-b	BSS	1	Medium mammal	VE	55	U	NN	IT	L(3)	21	
31/08/98	B5-b	BSS	1	Small - medium bird	MT	110	U	NN	ST	-1		
31/08/98	B5-b	BSS	1	Small rodent	MN	1	R	FF		-2		
01/09/98	B5-b	BSS	1	Bov III	YP	2	U	NN			14	
01/09/98	B5-b	BSS	1	Marine shell	SH	2	I	NN			18	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			11	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			7	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			6	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			14	2 pieces refitted
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			8	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			15	

01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			13	
01/09/98	B5-b	BSS	1	Marine shell	SH	2	I	NN			10	
01/09/98	B5-b	BSS	1	Marine bivalve	SH	2	I	NN			12	
01/09/98	B5-b	BSS II	1	Large mammal	RI	72	I	NN	VV	L(1)	63	
01/09/98	B5-b	BSS II	1	Small bird	NID	110	LB				16	Unidentifiable bird shaft Check honours on how to discuss this
02/09/98	B5-b	BSS II pit	2	Medium mammal	TN	2	I	NN		1 = L(2)	12mm-15mm	
02/09/98	B5-b	BSS II pit	1	Bov III	HU	108	R	NN		C K	37	Chopped
02/09/98	B5-b	BSS II pit	1	Medium carnivore	CA	120	L	FF		R	19	
02/09/98	B5-b	BSS II pit	1	Small mammal	CR	2	U	NN			17	
02/09/98	B5-b	BSS II pit	1	Medium fish?	Spine/		L?	FF			19	double check when I have proper diagrams and skeleton of fish
02/09/98	B5-b	BSS II pit	1	Medium fish	CR	2	I	NN			8	
01/09/98	B5-b	BSS II pit	1	*Chlorocebus aethiops (Vervet monkey)*	HU	110	R	NN	ST		60	
01/09/98	B5-b	BSS II pit	1	Medium mammal	VE	54	I	NN		W(4)	20	
02/09/98	B5-c	BSS	1	Large mammal	CE	55	I	NN		B(3)	21	
02/09/98	B5-c	BSS	1	Medium mammal	VE	51	I	UN		L(2) RE	29	
02/09/98	B5-c	BSS	1	Small mammal	CR	2	U	NN		B(3)	18	
02/09/98	B5-c	BSS	1	*cf. Papio hamadryas (Baboon)*	PH	105	I	NN			18	
02/09/98	B5-c	BSS	2	Large mammal	TN	2	I	NN			20mm-29mm	
02/09/98	B5-c	BSS	1	Large mammal	VE	51	I	UN			21	
02/09/98	B5-c	BSS	1	Bov III	TN	2	I	NN			20	
02/09/98	B5-c	BSS	1	Medium mammal	OO	2	I	NN			13	
02/09/98	B5-c	BSS	1	Bov III-IV	HC	2	U	NN			25	
02/09/98	B5-c	BSS	1	Small mammal	IN?	91	U	NN		L(1) C?	30	
31/08/98	B5-c	BSS	3	Large mammal	TN	2	U	NN		B(2)	12-14mm	
31/08/98	B5-c	BSS	1	Medium mammal	TN	2	U	NN			9	Root fragment
31/08/98	B5-c	BSS	1	Medium mammal	VE	55	I	NN		B(2)	14-17mm	
31/08/98	B5-c	BSS	1	Large mammal	LU	55	I	NN		W(6)	34	
31/08/98	B5-c	BSS	1	Small rodent	HU	105	R	UF	II		14	
31/08/98	B5-c	BSS	1	Large mammal	RI	72	U	NN		B(2)	24	
31/08/98	B5-c	BSS	1	Large mammal	MN	34	L	NN		L(2)	60	
31/08/98	B5-c	BSS	1	Small rodent	FE	103	L	FN	VS	B(2)	11	
01/09/98	B5-c	BSS II	1	Medium mammal	CR	7	I	NN		B(2)	16	
01/09/98	B5-c	BSS II	1	medium mammal	CR	7	I	NN			16	
01/09/98	B5-c	BSS II	1	*Philantomba monticola*	MT	103	L	FN	IS	-1	15	
01/09/98	B5-c	BSS II	1	Small mammal	RI	72	U	NN			18	
01/09/98	B5-c	BSS II	1	Medium mammal	TN	2	I	NN			7	
01/09/98	B5-c	BSS II	1	Large mammal	TN	2	I	NN			15	Young individual
31/08/98	B5-d	BSS	1	Bov III	MT	103	L	FN	VS	RE L(1)	50	
31/08/98	B5-d	BSS	1	Medium mammal	TH	55	I	NN			76	
31/08/98	B5-d	BSS	1	Bov III	OC	2	I	NN		L(1) R	24	
31/08/98	B5-d	BSS	1	Bov III	TI	109	R	NU			41	
31/08/98	B5-d	BSS	1	Small mammal	CR	2	I	NN			10	
31/08/98	B5-d	BSS	1	Small mammal	RI	72	U	NN			50	
31/08/98	B5-d	BSS	1	Small bird check species	UL	1	L	FF			44	Fresher Take to bird collection and go through with other samples need to get to family at least
31/08/98	B5-d	BSS	1	Medium mammal	RI	72	U	NN		R	22	
31/08/98	B5-d	BSS	1	Small rodent	TI	110	R	UN			21	
31/08/98	B5-d	BSS	1	Small - medium bird	TI	108	R	NF			32	

31/08/98	B5-d	BSS	1	Bov II	TN	2	I	NN			20	
31/08/98	B5-d	BSS	1	Bov III	TN	2	I	NN			20	
31/08/98	B5-d	BSS	1	Freshwater mollusc	SH	2	I	NN			21	
31/08/98	B5-d	BSS	1	*cf. Varannus sp.*	RA	100	L	NN		L(1)	20	
31/08/98	B5-d	BSS	1	Medium mammal	VE	55	I	NN			19	
31/08/98	B5-d	BSS	1	Bov I	MN	42	R	NN		B(2)	18	
31/08/98	B5-d	BSS	2	Small mammal	CR	2	U	NN			12	
31/08/98	B5-d	BSS	1	Small mammal	VE	55	I	NN		B(4)	10	
31/08/98	B5-d	BSS	1	*cf. Procavia capensis*	PM	25	R	NN		B(4)		
31/08/98	B5-d	BSS	1	Small rodent	IN	92	L	NN			10	Fresh
01/09/98	B5-d	BSS II	1	Bov III non-domestic	2P	104	I	UN	DD	L(1) G	15	
01/09/98	B5-d	BSS II	1	*Aepycerus melampus (Impala)*	MT	105	R	NF	IT	L(1) G R	28	Bd -22.60 Dd - 17.25
01/09/98	B5-d	BSS II	2	*Aepycerus melampus*	MT	110	R	NF	TT	L(1)	36+15	Part of previous species (refitted) (Impala)
01/09/98	B5-d	BSS II	1	Marine Bivalve	SH	2	I	NN			18.95	
01/09/98	B5-d	BSS II	1	Marine Bivalve	SH	1	I	FF		Beach worn	9.5	
01/09/98	B5-d	BSS II	1	Marine Bivalve	SH	2	I	NN			14	
01/09/98	B5-d	BSS II	3	*Cephalopus monticola*	MN	31	R	NN			10	P2+P3 intact
01/09/98	B5-d	BSS II	3	*Cephalopus monticola*	MN	32	R	NN			14	P4 + M1 intact
01/09/98	B5-d	BSS II	1	Small rodent	UL	103	R	NN			20	
01/09/98	B5-d	BSS II	3	Medium mammal	TN	2	I	NN			11mm-13mm	
01/09/98	B5-d	BSS II	1	Small mammal	RI	72	U	NN			22	
01/09/98	B5-d	BSS II	1	Small rodent	TI	105	R	NF			26	Fresher
01/09/98	B5-d	BSS II	2	Marine bivalve	SH	2	I	NN			15-24	
01/09/98	B5-d	BSS II	1	Medium mammal	VE	54	I	NU		B(2)	16	Young individual
01/09/98	B5-d	BSS II	1	Medium mammal	TH	56	R	NN		K	35	
01/09/98	B5-d	BSS II	2	Medium mammal	OO	2	I	NN			58	
02/09/98	B6-a	BSS	1	Medium mammal	TN	2	U	NN			14	
02/09/98	B6-a	BSS	1	Bov III	TI	110	L	NN	TT	L(2)	57	
02/09/98	B6-a	BSS	1	Bov III	TN	2	U	NN	TT	B(3)		
02/09/98	B6-a	BSS	1	*Procavia capensis*	YP	2						
03/09/98	B6-b	BSS	2	Small rodent	MN	1	R	NN		L(1)	12	Incisor present
02/09/98	B6-b	BSS	1	*cf. Taurotragus oryx (eland)*	2P	101	R	FF	TT	K R	48	GL - 48.42 . Est. (estimate) of DP - 40.30. Buffalo - AZ 524 Female (Dp - 38.36 GL 42.98) Eland AZ 1457 Male (Dp - 36.90 GL - 43.35), Cut vertically in half through proximal and distal ends. Needs photograph and discussion. In discussion mention: Lateral proximal articulation not as wide as buffulo, proximal articulation similar in shape to eland however it cannot be excluded that it could be a large domestic cow.
02/09/98	B6-b	BSS	1	Medium mammal	LU	57	I	NN			17	
02/09/98	B6-b	BSS	2	Medium mammal	CR	2	I	NN		B(2)	20	
02/09/98	B6-b	BSS	1	Small fish	VE	51	I	FF			8	Length of centrum 2.10mm
02/09/98	B6-b	BSS	1	Bov II	XD	2	R	NN			19	Upper DP2 Juvenile
02/09/98	B6-b	BSS	2	Bov II	TN	2	I	NN		B(2)	14	
02/09/98	B6-b	BSS	2	Bov III	TN	2	I	NN			14	
02/09/98	B6-b	BSS	1	cf. Barnicle	SH	2	I	NN			6	Check if it can be proparly id Ina had a cirripodia barnicle
02/09/98	B6-b	BSS	1	Bov III	HC	2	U	NN			45	
02/09/98	B6-b	BSS	1	Large mammal	HU	110	U	NN	TT	L(1) R C	33	
02/09/98	B6-b	BSS	1	*Syncerus caffer (Buffalo)*	2P	1	L	FF		K	51	GL - 50.58 SD - 32.20 Bd - 29.45 est. Dp - 37.42 Bp - 35.77 Chopped
02/09/98	B6-b	BSS	1	Medium mammal	LU	51	I	FF		K L(1)	31	

02/09/98	B6-b	BSS	1	Bov III	SE	120	I	NN		L(1) K	24	
02/09/98	B6-b	BSS	1	Bov III	SE	1	U	NN		L(1)	20	
02/09/98	B6-b	BSS	1	Large mammal	VE	52	I	UN		B(4)	24	
02/09/98	B6-b	BSS	1	Bov III	HU	110	L	NN		L(1) C	58	
02/09/98	B6-b	BSS	1	Suid	FI	108	L	NF		L(1) R C?	30	
02/09/98	B6-b	BSS	1	Bov III	2P	108	U	NF		B(2)	20	
02/09/98	B6-b	BSS	1	Medium mammal	CR	2	U	NN		W(4) RE	18	
02/09/98	B6-b	BSS	1	Medium mammal	TH	54	I	NN			20	
02/09/98	B6-b	BSS	1	Medium mammal	VE	55	I	NN		B(4)	19	
02/09/98	B6-b	BSS	1	Small bird	HU	1	R	FF			21	cf. Swift (apodidae) check if genus/sp.
02/09/98	B6-b	BSS	1	Small fish	VE	51	I	NN			6	Length of centrum - 2.65
02/09/98	B6-b	BSS	1	Bov II	TN	2					17	
02/09/98	B6-b	BSS	2	Medium mammal	TN	2	I	NN			10mm-19mm	
02/09/98	B6-b	BSS	2	*cf. Arcidae sp. (Ark shell)*	SH	2	I	NN			9mm-11mm	
02/09/98	B6-b	BSS	1	Large mammal	ZD	1	U	NN		L(1)	20	
02/09/98	B6-b	BSS	1	Bov II	2P	108	U	NN		L(1) C	15	
02/09/98	B6-b	BSS	1	Medium mammal	CR	2	U	NN		L(1)	15	
02/09/98	B6-b	BSS	1	Bov II	RA	103	L	NN		L(1)	18	
02/09/98	B6-c	BSS	1	Medium mammal	TN	2	I	NN			20	
02/09/98	B6-c	BSS	1	Bov III	MP	110	U	NN	TT	B(2)	20	
02/09/98	B6-c	BSS	2	*Chelonea (Terrapin/Land Tortoise/Sea turtle*	SH	2	I	NN		1=L(1)	11mm-15mm	
02/09/98	B6-c	BSS	2	Bov III	HU	110	U	NN	SS		40-47	
02/09/98	B6-d	BSS	1	Bov III-IV	SC	80	R	FN	IV	L(1)	51	
02/09/98	B6-d	BSS	1	Large mammal	RI	72	U	NN		L(1) R	93	
02/09/98	B6-d	BSS	1	Bov III	TN	2	I	NN		W(4)	26	
02/09/98	B6-d	BSS	1	Bov III	XD	2	U	NN		B(2)	22	Young individual
02/09/98	B6-d	BSS	1	Bov III	TN	2	I	NN		L(1)	20	
02/09/98	B6-d	BSS	1	Bov II	MT	110	U	NN	SS		41	
02/09/98	B6-d	BSS	1	Bov III	3P	103	I	NN	VV	W(6)	28	
02/09/98	B6-d	BSS	1	Bov III	XD	1	U	NN		C	24	Unerupted young indiv
02/09/98	B6-d	BSS	1	Bov II	2P	103	L	NN	VV	L(1)	18	
02/09/98	B6-d	BSS	1	Small mammal	CR	2	I	NN		W(4)?	18	
02/09/98	B6-d	BSS	1	Small rodent	LU	1	I	UU			6	
02/09/98	B6-d	BSS	1	Small rodent	HU	107	R	UF			12	fresher
02/09/98	B6-d	BSS	1	Bov III	ZP	2	I	NN			26	Young individual
02/09/98	B6-d	BSS	1	Medium mammal	XD	2	I	NN		B(3)	18	
02/09/98	B6-d	BSS	2	Bov II	TN	2	I	NN			21-31	
02/09/98	B6-d	BSS	13	Medium mammal	TN	2	I	NN			16-21	
02/09/98	B6-d	BSS	1	Bov III	TA	121	U	NN	TT	W(4)	20	
06/08/99	C2	BSS	1	Medium mammal	TN	2	I	NN			10	
06/08/99	C2	BSS	1	Large mammal	TN	2	I	NN			10	
06/08/99	C2	BSS	1	Large mammal	TN	2	I	NN			18	
06/08/99	C2	BSS	1	Small mammal	RI	72	U	NN			20	
06/08/99	C2	BSS	1	Large mammal	MN	33	U	NN		B(2)	29	
10/08/99	C2	BSS	12	Large mammal	TN	2	U	NN			4-27mm	
10/08/99	C2	BSS	1	*Equus sp.*	ZP	2	U	NN			28	
10/08/99	C2	BSS	3	*Equus sp.*	TN	2	U	NN			22-29	
10/08/99	C2	BSS	1	Bov IV	SE	121	U	NN		R	15	
05/08/99	C2	BSS	1	Large mammal	VE	57	I	NN			13-30mm	
05/08/99	C2	BSS	1	Medium mammal	RI	72	U	NN		B(3)	28	
05/08/99	C2	BSS	2	Medium mammal	RI	72	U	NN		1=W(4)	12-18mm	
05/08/99	C2	BSS	1	Medium fish	VE	51	I	NN			12	

05/08/99	C2	BSS	1	*Otomys sp.*	YP	1	U	NN			18	
05/08/99	C2	BSS	1	Insectivore (Shrew)	UL	100	R	FN			22	
05/08/99	C2	BSS	1	Frog/Toad	HU	102	U	FN			12	
05/08/99	C2	BSS	1	Bov I	FE	108	U	NN		B(2)	22	
06/08/99	C2	BSS	2	Bov III	TN	2	U	NN				
06/08/99	C2	BSS	7	Large mammal	TN	2	U	NN		3=B(2)	15-44	
06/08/99	C2	BSS	5	Medium mammal	TN	2	U	NN		1=B(2)	8-14mm	
06/08/99	C2	BSS	1	Medium mammal	MX	23	U					
06/08/99	C2	BSS	4	Medium mammal	VE	55	I	NN			22-26	
06/08/99	C2	BSS	3	Medium mammal	RI	72	U	NN			13-32	
06/08/99	C2	BSS	3	Small mammal	RI	72	U	NN			11-14mm	
06/08/99	C2	BSS	1	Bov II	2P	102	R	FN	IV		20	Bp - 15.45 Dp - 18.90
06/08/99	C2	BSS	1	Bov III	1P	108	U	NF	TS	B(4)	25	
06/08/99	C2	BSS	1	Bov II	FE	109	U	NU	VV		30	
06/08/99	C2	BSS	1	Medium mammal	CR	2	U	NN		B(4)	22	
06/08/99	C2	BSS	1	Bov III	UL	110	U	NN	TT		23	
06/08/99	C2	BSS	1	Large mammal	SC	81	U	NN			29	
06/08/99	C2	BSS	1	Small rodent	SA	1	I	FF			14	
06/08/99	C2	BSS	1	Small mammal	MX	23	U	NN				
06/08/99	C2	BSS	3	Small rodent	VE	55	I	NN			4-10mm	
06/08/99	C2	BSS	1	Medium rodent	TI	110	U	NU	TI		18	
06/08/99	C2	BSS	1	Small rodent	HU	1	R	FF			26	
06/08/99	C2	BSS	1	Small rodent	FE	107	R	NJ	ST		11	
06/08/99	C2	BSS	3	Small mammal	CR	2	U	NN			5-15mm	
06/08/99	C2	BSS	1	Small mammal	PE	2	U	NN			10	
06/08/99	C2	BSS	3	Insectivore (Shrew)	MN	1	R	NN			8	2 Teeth intact fresh
06/08/99	C2	BSS	1	Procavia capensis	FE	101	R	UN		Digested	8	Digested
06/08/99	C2	BSS	1	Small rodent	AT	1	I	FF			8	
06/08/99	C2	BSS	1	Frog/Toad	HU	102	U	FN			10	Fresh
06/08/99	C2	BSS	1	Frog/Toad	UL	110	U	NN			10	
06/08/99	C2	BSS	1	Small rodent	UR	1	I	UF			4	
06/08/99	C2	BSS	1	Small rodent	IN	92	L	NN			13	
06/08/99	C2	BSS	2	Small rodent	UR	1	I	UU/UF			8	
06/08/99	C2	BSS	1	Small rodent	FE	110	U	NU			10	
06/08/99	C2	BSS	1	Bov I-II	2P	108	U	NF			18	
06/08/99	C2	BSS	1	Bov III	MP	103	U	FN	TV	B(4)	20	
06/08/99	C2	BSS	1	Large mammal	OO	2	U	NN			34	
06/08/99	C2	BSS	1	Medium mammal	CE	57	I	NN			15	
06/08/99	C2	BSS	1	Bov I-II	HU	110	L	NN	SV		18	
06/08/99	C2	BSS	1	Philantomba/Neotragus	3P	102	U	FN	IT	B(2)	11	HP - 6.75 Bfp - 3.55 MBS - 3.10 (With the terminal edge gone it is difficult to say which.)
06/08/99	C2	BSS	1	Papio hamadryas	YP	2		NN			20	Cf. Chacma but does not have groove and chacma tooth is bigger, could also be Hyena (spotted?) (UI2)
06/08/99	C2	BSS	1	Shell/Ivory	TN	2	U	NN			15	Small ivory fragment (Have not seen Elephant)
08/08/99	C2	BSS	1	Large mammal	CR	2	U	NN			43	
08/08/99	C2	BSS	1	Bov IV	TA	120	R	NN		B(4)	29	2nd and 3rd tarsal GB - 21.50
08/08/99	C2	BSS	1	Large mammal	RI	72	U	NN		1=B(2)	40+25	
08/08/99	C2	BSS	6	Medium mammal	RI	72	U	NN		1=R? 1=K 1=W(5) 1=L(2)	11-15mm	

08/08/99	C2	BSS	1	Bov III-IV	MP	110	U	NN	VV	K	47	
08/08/99	C2	BSS	1	Large mammal	TH	56	I	NN			41	
08/08/99	C2	BSS	1	Medium mammal	TH	56	I	NN			32	
08/08/99	C2	BSS	3	Bov III	ZP	2	R	NN			18	UM2
08/08/99	C2	BSS	7	Large mammal	TN	2	U	NN		3=B(2) 2=L(1)	12-20mm	
08/08/99	C2	BSS	7	Medium mammal	TN	2	U	NN		4=B(4)	8-13mm	
08/08/99	C2	BSS	1	Suid	2P	107	R	NF	IV	K	15	
08/08/99	C2	BSS	3	Medium mammal	PE	2	U	NN		1=W(4)	18-23mm	
08/08/99	C2	BSS	1	Small mammal	PE	2	U	NN			8	
08/08/99	C2	BSS	2	Small rodent	SA	1	I	NN			10	
08/08/99	C2	BSS	1	Medium mammal	RI	71	U	FN		L(1)	21	
08/08/99	C2	BSS	1	Bov III non-domestic	UL	101	R	NN		L(2)	29	
08/08/99	C2	BSS	1	Bov III-IV	MC	103	U	FN	IS		46	Chopped
08/08/99	C2	BSS	1	Medium mammal	VE	51	I	FN			13	
08/08/99	C2	BSS	1	Medium mammal	CR	2	U	NN		L(2)	18	
08/08/99	C2	BSS	1	Bov I-II	IN	91	L	NN			25	
08/08/99	C2	BSS	1	Large mammal	CR	2	U	NN			23	
08/08/99	C2	BSS	1	Small reptile	VE	1	I	FF			8-10mm	
08/08/99	C2	BSS	5	Small rodent	VE	1	I	FF				
08/08/99	C2	BSS	1	Small rodent	UL	102	L	FN			14	
08/08/99	C2	BSS	4	Small rodent	TH	1/56	I	FF/NN			6-7mm	
08/08/99	C2	BSS	2	Small rodent	VE	55/51	I	NN/FF			6-7mm	
08/08/99	C2	BSS	1	Medium fish	VE	1	I	FF			16	Length of centrum - 4.70
08/08/99	C2	BSS	2	Small rodent	FE	102	L/R	FN			11+13	
08/08/99	C2	BSS	1	Small rodent	FE	108	R	NF			10	
08/08/99	C2	BSS	1	Small rodent	HU	105	L	UF			27	
08/08/99	C2	BSS	1	Small rodent	RA	110	U	NN			18	
08/08/99	C2	BSS	2	Frog/toad	IN	90	L/R	FF			11	
08/08/99	C2	BSS	1	Small reptile	VE	56	I	NN		W(5)	7	
08/08/99	C2	BSS	2	Small reptile	VE	1	I	FF			5	
08/08/99	C2	BSS	1	Small rodent	VE	1	I	FF			5	
08/08/99	C2	BSS	1	*Otomys sp.*	YP	1	U	NN			15	
08/08/99	C2	BSS	1	Otomys sp.	ZP	1	U	NN			6	
08/08/99	C2	BSS	1	Frog/toad	HU	110	U	NN			9	
08/08/99	C2	BSS	1	Small rodent	MP	1	U	FF			10	
08/08/99	C2	BSS	2	Large mammal	OO	2	U	NN			25	
08/08/99	C2	BSS	2	Bov III	TN	2	U	NN			10-11mm	
08/08/99	C2	BSS	1	Bov II	PM	25	L	NN			39	
08/08/99	C2	BSS	1	Bov III-IV	SE	121	U	NN			15	
09/08/99	C3	BSS	1	*Procavia capensis*	RA	100	R	FN	IS	R	18	BP - 8.7
09/08/99	C3	BSS	1	Small rodent	CR	2	U	NN			8	
09/08/99	C3	BSS	2	Otomys sp.	MX	23	R	NN			11	Intact molar Fresh
09/08/99	C3	BSS	1	Otomys sp.	YP	1	U	NN			13	Fresher
09/08/99	C3	BSS	1	Small rodent	HU	1	R	FF			25	Fresher
09/08/99	C3	BSS	2	Small rodent	TI	110	L/R	NN/UN	TI		20	Fresher
09/08/99	C3	BSS	1	Small rodent	MP	1	U	FF			12	Fresher
09/08/99	C3	BSS	1	Small - medium reptile	VE	1	I	FF			7	
09/08/99	C3	BSS	1	Small rodent	VE	1	I	UF			4	Fresher
09/08/99	C3	BSS	1	Small bird	MC	100	L	FN			12	cf.apodidae Very fresh
09/08/99	C3	BSS	1	Small fish	CR	72	U	NN			16	

21/07/99	C4	BSS pit	1	Bov III/IV	ZD	1	U	NN			31	UM2
21/07/99	C4	BSS pit	1	Small fish	RI	72	I	NN			20	
21/07/99	C4	BSS pit	1	Small mammal	RI	72	I	NN		L(1)	20	
21/07/99	C4	BSS pit	1	Bov II-III	AS	121	U	NN	VV	C	25	
21/07/99	C4	BSS pit	1	Large mammal	CR	2	U	NN		B(2)	33	
21/07/99	C4	BSS pit	7	Large mammal	TN	2	I	NN		2=B(2)	10mm-23mm	Maak nota in thesis dat groter NID bene gevind in van die Nid Sake (Check of groter bene in die pits)
21/07/99	C4	BSS pit	1	Bov III non-domestic	TI	110	U	NN	ST	B(1)	20mm	
21/07/99	C4	BSS pit	1	Bov III	HU	110	U	NN	VS		20mm	
21/07/99	C4	BSS pit	1	Bov II	HU	110	R	NN	TS	L(4)	31mm	
19/04/99	C4-a	BSS	1	*Philantomba monticola*	SC	80	L	FF			35	GLP - 13.20 SLC - 8.00 BG - 9.05
19/04/99	C4-a	BSS	1	*Philantomba monticola*	2P	1	R	FF			10	Dp - 6.00 SD - 3.49 Bd - 3.60 Bp - 4.90 GL - 12.44(EST.) Digested
19/04/99	C4-a	BSS	1	Bov II	CP	1	R	NN		L(2)	14	
19/04/99	C4-a	BSS	1	Small mammal	RI	72	U	NN			23	
19/04/99	C4-a	BSS	2	*Varanus niloticus*	MN	34	R	NN			28	
19/04/99	C4-a	BSS	1	*Varanus niloticus*	CR	2	U	NN		K?	26	
19/04/99	C4-a	BSS	1	Medium mammal	ZG	2	U	NN			23	
19/04/99	C4-a	BSS	1	Large mammal	PE	2	U	NN		B(2)	26	
19/04/99	C4-a	BSS	1	Bivalve	SH	2	U	NN			23	
19/04/99	C4-a	BSS	1	Small - medium mammal	MX	23	U	NN			18	
19/04/99	C4-a	BSS	1	Bov I	MP	110	U	NN	SS		37	Fresher
23/04/99	C4-a	BSS small pit	1	Bov II	TI	110	R	NU	IS	R	23	
23/04/99	C4-a	BSS small pit	1	Medium mammal	VE	56	I	NN		L(1)	18	
23/04/99	C4-a	BSS small pit	1	Small mammal	TH	55	I	NN			18	Fresher
23/04/99	C4-a	BSS small pit	1	Bov III	SE	120	L	NN		W(4)	15	
23/04/99	C4-a	BSS small pit	2	Medium mammal	TN	2	U	NN			5-12mm	
23/04/99	C4-a	BSS small pit	1	Small rodent	AT	1	I	FF			10	Fresher
23/04/99	C4-a	BSS small pit	1	Small fish	RI	72	U	NN			13	
23/04/99	C4-a	BSS small pit	1	Small mammal	CR	2	I	NN			10	
23/04/99	C4-a	BSS small pit	1	Small rodent	IN	92	L	NN		B(2)	10	Bespreek brand van rodent
22/04/99	C4-a+b	BSS	1	*Cephalophus/Raphicerus (red duiker/steenbok)*	1P	106	U	NF	SI		15	
22/04/99	C4-a+b	BSS	1	Small fish	RI	72	U	NN			20	
22/04/99	C4-a+b	BSS	1	Small rodent	RI	72	U	NN			11	
22/04/99	C4-a+b	BSS	3	Large mammal	TN	2	I	NN			12mm-19mm	
22/04/99	C4-a+b	BSS	2	Small - medium fish	CR	2	I	NN			12+17	
22/04/99	C4-a+b	BSS	1	Bivalve	SH	2	I	NN		W(5)	10	
22/04/99	C4-a+b	BSS	1	Medium mammal	OO	2	U	NN		K	12	
21/04/99	C4-b+d	BSS Sweepings	1	Small fish	SC	81	R	NN		L(1)	9	
21/04/99	C4-b+d	BSS Sweepings	1	Small rodent	MN	43	L	NN			5	Very fresh

22/04/99	C4-c	Pit & Final BSS	1	Medium mammal	LU	51	I	UU		C L(1)	22	
22/04/99	C4-c	Pit & Final BSS	1	Medium mammal	VE	55	I	NN		L(1)	18	
22/04/99	C4-c	Pit & Final BSS	1	Small mammal	SC	81	R	NN		G	24	
22/04/99	C4-c	Pit & Final BSS	1	Bov II	2P	108	U	NF			16	
22/04/99	C4-c	Pit & Final BSS	1	Small mammal	PE	2	U	NN			18	
22/04/99	C4-c	Pit & Final BSS	1	Bov II	MP	110	U	NN	SS		98	
22/04/99	C4-c	Pit + final BSS	1	Small mammal	VE	56	I	NN			9	
22/04/99	C4-c	Pit + final BSS	1	Medium fish	VE	51	I	FU			14	Length of centrum - 3.90
22/04/99	C4-c	Pit + final BSS	1	Otomys sp.	ZP	1	U	NN			5	
20/04/99	C4-c W	BSS	1	Bov II	MC	103	U	FN		L(1)	28	
20/04/99	C4-c W	BSS	1	*cf. Crocuta crocuta (Spotted Hyena)*	UL	72	U	NN		K	95	
20/04/99	C4-c W	BSS	1	Large mammal	TN	2	I	NN			23	
20/04/99	C4-c W	BSS	1	Small mammal	RI	72	U	NN			19	
20/04/99	C4-c W	BSS	2	*Philantomba monticola*	HU	105	R	NF	SI		44	Dmd - 11.95 2 refitted pieces Fresh break
20/04/99	C4-c W	BSS	1	Small rodent	TI	110	U	NN			12	
20/04/99	C4-c W	BSS	1	Small mammal	CR	7	I	NN			12	
20/04/99	C4-c W	BSS	1	Small mammal	RI	72	U	NN		-1	20	
20/04/99	C4-c W	BSS	1	Medium mammal	CR	2	I	NN			14	
21/04/99	C4-c W	BSS	1	Bov III	SE	1	I	NN		W(5)	15	
21/04/99	C4-c W	BSS	1	Small mammal	RI	72	U	NN			24	
21/04/99	C4-c W	BSS	1	Large mammal	TN	2	U	NN			10	
21/04/99	C4-c W	BSS	3	Medium mammal	TN	2	I	NN		2=B(2)	9mm-11mm	
21/04/99	C4-c W	BSS	1	Bov I	TN	2	I	NN			7	
21/04/99	C4-c W	BSS	1	Bov II-III	2P	108	U	NN		B(2)	13	
21/04/99	C4-c W	BSS	2	Marine bivalve	SH	2	U	NN			7+14	
21/04/99	C4-c W	BSS	1	Small fish	VE	51	I	NN			5	Length of centrum - 4.31
21/04/99	C4-c W	BSS	1	Small - medium bird	VE	1	I	FF			15	
21/04/99	C4-c W	BSS	1	Small mammal	RI	72	U	NN			11	
21/04/99	C4-c W	BSS	1	Small rodent	TI	107	R	NF	TI		10	
21/04/99	C4-c W	BSS	1	Crustacean (Crab)	Pincher	2	U	NN			13	Check crab sp in sibudu area
21/04/99	C4-c W	BSS	1	Small rodent	IN	92	L	NN		B(2)	12	
21/04/99	C4-c W	BSS	1	Medium mammal	VE	54	I	NN		L(1)	11	
21/04/99	C4-c W	BSS	1	Medium mammal	VE	55	I	NN			13	
21/04/99	C4-c W	BSS	1	Medium mammal	CR	2	I	NN		L(2) RE	11	
21/04/99	C4-c W	BSS	1	Small mammal	SC	81	U	NN			11	
21/04/99	C4-c W	BSS	1	Small mammal	TH	56	I	NN		B(2)	8	
21/04/99	C4-c W	BSS	1	*Philantomba monticola*	UL	103	L	NN		B(3)	14	
02/09/98	C5-a	BSS	1	Bov II non-domestic	MN	42	R	NF		K L(1)	61	
02/09/98	C5-a	BSS	1	Medium mammal	RI	72	U	NN	VV	K	53	
02/09/98	C5-a	BSS	1	Large mammal	VE	55	I	NN	IV		30	
02/09/98	C5-a	BSS	1	Large mammal	CE	55	I	NN	IV		33	

02/09/98	C5-a	BSS	1	Bov III	FE	109	R	NU	II	R	30	
02/09/98	C5-a	BSS	1	Bov III	FE	109	R	NU	II	R	38	Part of previous species (Bov III)
02/09/98	C5-a	BSS	1	*Cephalopus monticola (Blue duiker)*	3P	1	I	FF			13	DLS - 13.30 Ld - 12.11 MBS - 2.86 HP 6.81 BFp 3.92
02/09/98	C5-a	BSS	1	*Cephalopus monticola*	2P	1	I	FF			11	Part of previous species Bp 5.06 GL 12.39 Bd 4.28 SD 3.85 Dp 7.51
02/09/98	C5-a	BSS	1	Small mammal	VE	51	I	NN	VI		8	
02/09/98	C5-a	BSS	1	Small mammal	LU	51	I	NN	VV		15	
02/09/98	C5-a	BSS	1	Small mammal	RI	72	I	NN	VT		30	
02/09/98	C5-a	BSS	2	Small mammal	RI	72	I	NN	SE	1= L (1)	35 + 14	
01/09/98	C5-a	BSS	1	Medium mammal	RI	72	U	NN			126	
01/09/98	C5-a	BSS	3	*Procavia capensis*	MX	23	R	NN			20	UM1 + UM2 intact - Class VIII Age 28-34 Months
01/09/98	C5-a	BSS	1	Bivalve	SH	2	I	NN			21	
13/08/99	C5-a	BSS pit	1	Large mammal	LU	56	I	NN		B(2)	35	
13/08/99	C5-a	BSS pit	3	Bov III	TN	2	U	NN			23	Refitted pieces
13/08/99	C5-a	BSS pit	1	Medium mammal	TN	2	U	NN			10	
13/08/99	C5-a	BSS pit	2	Bov II	IN	95	U	NN			25	Refitted pieces - recent damage
02/09/98	C5-b	BSS	1	*Thryonomys swinderianus (Cane rat)*	RA	102	L	FN	IV		49	
02/09/98	C5-b	BSS	1	Bov III	TN	2	I	NN			19	
02/09/98	C5-b	BSS	1	Small mammal	HU	104	U	UN		R	11	Young individual
02/09/98	C5-b	BSS	1	Medium mammal	TH	55	I	NN			18	
02/09/98	C5-b	BSS	1	Medium mammal	VE	55	I	NN			10	
02/09/98	C5-c	BSS	1	Small rodent	IN	1	L	NN			22	
02/09/98	C5-c	BSS	1	Medium mammal	AX	53	I	NN			20	
02/09/98	C5-c	BSS	1	Small mammal	LU	55	I	NN			18	
04/09/98	C5-c	BSS Hearth under rocks	1	Medium mammal	RI	71	R	FN		L(1)	43	
04/09/98	C5-c	BSS Hearth under rocks	1	Bov III non-domestic	TI	110	R	NN	VT	W(5)	72	
04/09/98	C5-c	BSS Hearth under rocks	1	Small mammal	LU	56	I	NN			10	
04/09/98	C5-c	BSS Hearth under rocks	1	Bov II	ZP	2	I	NN			14mm-15mm	
04/09/98	C5-c	BSS Hearth under rocks	1	Large mammal	TN	2						
04/09/98	C5-c	BSS Hearth under rocks	1	Bov III	SE	1	L	NN		L(1)	20	
04/09/98	C5-c	BSS Hearth under rocks	1	Large mammal	FE	108	U	NN		L(1)	18	
03/09/98	C6	BSS	1	Bov IV	UR	1	I	FF			50	
03/09/98	C6	BSS	1	Bov III	ZP	2	U	NN			32	cf. Bos taurus
03/09/98	C6	BSS	1	Small mammal	RI	72	U	NN			15	
03/09/98	C6	BSS	1	Medium mammal	TN	2	I	NN		B(2)	10	
03/09/98	C6	BSS	1	Large mammal	TN	2	I	NN		B(2)	18	
03/09/98	C6	BSS	1	Small rodent	PX	2	I	NN			9	
03/09/98	C6	BSS	1	Bov II non-domestic	MC	110	U	NN	SS		85	
04/09/98	C6	BSS	1	Bov III	RA	103	U	FN	TS	R	33	
04/09/98	C6	BSS	1	Medium mammal	PE	2	U	NN			10	
04/09/98	C6	BSS	5	*Otomys sp.*	MN	30	R	NN			20	Fresh
04/09/98	C6	BSS	1	Medium mammal	VE	56	I	NN		B(2)	15	
04/09/98	C6	BSS	1	*Galliformes sp.*	MT	110	U	NN			20	Guinea fowl/chicken/francolin/Turkey spur

												present ie. Male
04/09/98	C6	BSS	2	Bivlave	SH	2	U	NN			15+10	
04/09/98	C6	BSS	2	Medium mammal	TN	2	U	NN			11	
19/07/99	C6	BSS pit	1	Small bird	MT	105	L	NF		W(5)	36	
19/07/99	C6	BSS pit	7	Large mammal	TN	2	I	NN		3=L(1)	14mm-23mm	
19/07/99	C6	BSS pit	1	Medium mammal	VE	51	I	UN		L(1)	18	
19/07/99	C6	BSS pit	1	Medium-large mammal	FA	2	U	NN		R	33	
19/07/99	C6	BSS pit	1	Bov III	MP	110	U	NN	TS	L(1)	65	
05/09/98	C6	BSS pit	1	Bov III	FE	110	U	UN	SV		55	
05/09/98	C6	BSS pit	1	*Bos/Syncerus*	MC	103	R	FN	VV	B(2)	44	
05/09/98	C6	BSS pit	1	Bov III	IN	91	U	NN			71	
05/09/98	C6	BSS pit	1	Bov III-IV	MC	110	U	NN	SS	A	67	Insect bore hole on shaft of element needs photograph
05/09/98	C6	BSS pit	1	Large mammal	MX	2	L	NN			50	
05/09/98	C6	BSS pit	1	Bov II	CP	1	R	FF		A	32	
05/09/98	C6	BSS pit	1	Bov IV	SE	1	L	FF			33	
05/09/98	C6	BSS pit	4	Medium mammal	RI	72	U	NN		1=R 1=C	16mm-36mm	
05/09/98	C6	BSS pit	1	Bov IV	CA	1	U	NU		K	46	
05/09/98	C6	BSS pit	1	Large mammal	PE	2	U	NN			15	
05/09/98	C6	BSS pit	2	Small - Medium mammal	RI	72	U	NN			15	
05/09/98	C6	BSS pit	1	Small bird Check if Apodidae (Swift)	HU	1		FF			14	
05/09/98	C6	BSS pit	2	Medium mammal	CR?	2	U	NN		1=B(2)	20+28	
05/09/98	C6	BSS pit	2	Medium mammal	VE	54	I	NN			18	
05/09/98	C6	BSS pit	1	Medium mammal	UR	1	I	FF			14	
05/09/98	C6	BSS pit	5	Large mammal	TN	2	I	NN				
05/09/98	C6	BSS pit	15	Medium mammal	TN	2	U	NN		11=B(1)	8mm-19mm	
05/09/98	C6	BSS pit	1	Philantomba moniticola	SC	80	R	FN		B(2)	13	
05/09/98	C6	BSS pit	1	cf. Philantomba moniticola	SC	81	U	NN		L(2)	30	
05/09/98	C6	BSS pit	2	Small mammal	PE	2	I	NN		B(2)	7	
05/09/98	C6	BSS pit	1	Small reptile	VE	1	I	NN			9	
05/09/98	C6	BSS pit	1	Small rodent	VE	1	I	NN			5	
05/09/98	C6	BSS pit	1	Small rodent	RI	72	U	NN		B(1)	10	
05/09/98	C6	BSS pit	1	Small rodent	UR	1	I	FF			6	
05/09/98	C6	BSS pit	1	*Labeo sp.*	MN	34	L	NN			9	
05/09/98	C6	BSS pit	1	Small fish	RI	72	U	NN			15	
05/09/98	C6	BSS pit	8	Marine bivalve	SH	2	I	NN			6mm-10mm	
05/09/98	C6	BSS pit	1	Bov I-II	TI	109	U	NB			11	
05/09/98	C6	BSS pit	1	Bov II	MP	108	U	NN		L(1)	12	
05/09/98	C6	BSS pit	1	Bov III	MP	110	U	NN	SV		38	
05/09/98	C6	BSS pit	1	Medium mammal	LU	56	I	NN			20	
05/09/98	C6	BSS pit	1	Medium mammal	VE	56	I	NN			22	
05/09/98	C6	BSS pit	1	Bov III-IV	TI	110	U	NN	EV		65	
05/09/98	C6	BSS pit	1	Medium mammal	VE	52	I	UN			18	
05/09/98	C6	BSS pit	1	Bov II	CP	1	U	NN			20	
06/09/98	C6	BSS pit	1	Bov III	SE	1	R	NN		L(2)	21	
07/09/98	C6	BSS pit	1	Crustacean (Crab)	Pincher	2	R	NN			13	
07/08/99	C6	BSS pit	9	Medium-large mammal	TN	2	U	NN		3=L(2)	14-21mm	
07/08/99	C6	BSS pit	9	Medium mammal	TN	2	U	NN		7=L(2)	7-11mm	
07/08/99	C6	BSS pit	1	Medium mammal	RI	72	U	NN		W(5)	35	
07/08/99	C6	BSS pit	1	Small mammal	TI	110	R	NN	VV		17	Fresh
07/08/99	C6	BSS pit	1	Bov II	RA	108	R	NF		B(4)	20	
07/08/99	C6	BSS pit	1	Small rodent	IN	90	L	NN			18	

07/08/99	C6	BSS pit	1	Small bird	SC	80	R	FN			13	Fresh Check sp.
07/08/99	C6	BSS pit	1	Medium fish	VE	51	I	NN		B(2)	6	Lentgh of centrum - 6.10 (accidentally broke during measurement
07/08/99	C6	BSS pit	1	Small rodent	UR	1	I	UN			5	Fresh
07/08/99	C6	BSS pit	1	Small mammal	RI	71	U	FN		B(2)	12	
07/08/99	C6	BSS pit	8	Bivalve	SH	2	U	NN			5-11mm	
07/08/99	C6	BSS pit	1	*Otomys sp.*	ZP	1	U	NN			8	
07/08/99	C6	BSS pit	1	*Otomys sp.*	YP	1	U	NN			15	
07/08/99	C6	BSS pit	1	Small rodent	AT	1	I	FF			5-8mm	Fresher
07/08/99	C6	BSS pit	1	Small rodent	CE	1	I	FF				
07/08/99	C6	BSS pit	3	Labeo sp.	MN	30	L	NN			12	
07/08/99	C6	BSS pit	1	Small rodent	MN	34	R	NN			10	Fresh
07/08/99	C6	BSS pit	1	Small rodent	SC	80	R	FF			11	Fresh
07/08/99	C6	BSS pit	1	Small bird	FE	107	L	NF		L(1)	6	
07/08/99	C6	BSS pit	1	Medium fish	VE	50	I	NN			6	Length of centrum - 4.80
07/08/99	C6	BSS pit	1	Small fish	VE	50	I	NN			4	Length of centrum - 2.80
07/08/99	C6	BSS pit	1	Small rodent	TI	106	R	NN		L(1)	8	
07/08/99	C6	BSS pit	4	Marine bivalve	SH	2	U	NN				
07/08/99	C6	BSS pit	1	Otomys sp.	YP	2	U	NN				
04/09/98	C6-a	BSS	1	Medium mammal	RI	70	U	NN		B(3)	20+25	
04/09/98	C6-a	BSS	1	Medium mammal	VE	56	I	NN			23	
04/09/98	C6-a	BSS	1	Small mammal	RI	72	U	NN		K	49	
04/09/98	C6-a	BSS	1	Bov II	IN	95	R	NN		R L(1)	34	
04/09/98	C6-a	BSS	2	Medium mammal	TN	2	U	NN			10-15mm	
04/09/98	C6-a	BSS	1	*Syncerus caffer*	2P	108	L	NF	TI		42	Chopped
04/09/98	C6-a	BSS	1	Suid	MC	102	R	FN	IS		40	
04/09/98	C6-a	BSS	1	*Philantomba monticola/Neotragus moschatus*	FE	102	L	FN	IS		25	Bp - 20.75 DC - 9.50
04/09/98	C6-a	BSS	1	Clarius/Synadontus	CR	1	U	NN			24	Barber/Catfish
04/09/98	C6-a	BSS	1	Sauria (Lizard sp)	MN	30	L	NN			8	
04/09/98	C6-a	BSS	13	Bivalve	SH	2	U	NN			2-30mm	Could use to ID species
04/09/98	C6-a	BSS	1	*Achatina sp.*	SH	2	U	NN			15	
04/09/98	C6-b	BSS	1	*Potamochoerus porcus (Bushpig)*	HU	107	R	NF	SI	K	63	BT- 32.55 Bd - 44.90
04/09/98	C6-b	BSS	3	*Equus sp.*	TN	2	U	NN				4 refitted pieces (Check if all four fits)
04/09/98	C6-b	BSS	1	*Large mammal*	TN	2	U	NN				
04/09/98	C6-b	BSS	4	Medium mammal	TN	2	I	NN			10mm-12mm	
04/09/98	C6-b	BSS	1	Small mammal	VE	55	I	NN		L(2)	9	
04/09/98	C6-b	BSS	1	Medium fish	CR	2	I	NN			15	
04/09/98	C6-b	BSS	1	Small rodent	FE	100	R	FU			13	Fresher
04/09/98	C6-b	BSS	5	Bivalve	SH	2	I	NN			10	
04/09/98	C6-b	BSS	1	Marine bivalve	SH	2	I	NN			10mm-25mm	
04/09/98	C6-b	BSS	1	Bov II	HU	108	U	NN		L(2)	14	
04/09/98	C6-b	BSS pit	1	Medium mammal	LU	58	I	UN		Chop mark	52	
04/09/98	C6-b	BSS pit	1	Large mammal	RI	72	U	NN			46	
04/09/98	C6-b	BSS pit	1	Medium bird	ST	4	I	NN			18	Fresher - Get species
04/09/98	C6-b	BSS pit	5	Freshwater bivalve	SH	2	U	NN			6-15mm	
04/09/98	C6-b	BSS pit	16	Large mammal	TN	2	U	NN			10-24mm	
04/09/98	C6-b	BSS pit	1	Medium mammal	RI	72	U	NN			23	
04/09/98	C6-b	BSS pit	3	Small mammal	CR	2	U	NN			13-24mm	Fresher
04/09/98	C6-b	BSS pit	1	Medium mammal	VE	55	I	NN			15	
04/09/98	C6-b	BSS pit	1	Small rodent	VE	56	I	NU			6	Fresher
04/09/98	C6-b	BSS pit	1	Small rodent	UR	1	I	UU			6	Freher

04/09/98	C6-b	BSS pit	1	Insectivore	MN	31	R	NN		B(2)	10	
04/09/98	C6-b	BSS pit	1	Small rodent	IN	94	L	NN			11	
04/09/98	C6-b	BSS pit	1	Medium bird	CO	121	L	FN			12	Fresher get species and check element for HU
04/09/98	C6-b	BSS pit	1	Small rodent	MP	100	U	FN	IT	B(2)	15	
04/09/98	C6-b	BSS pit	1	Bov II	CP	1	U	NN		B(2)	12	
04/09/98	C6-b	BSS pit	1	Small mammal	RI	71	U	FN		L(2)	10	
04/09/98	C6-b	BSS pit	1	Small rodent	RA	100	L	FU			20	Fresher
04/09/98	C6-b	BSS pit	1	Small rodent	YP	2	U	NN			10	
04/09/98	C6-c	BSS	1	Large mammal	MN	33	U	NN		W(5)	20	
04/09/98	C6-c	BSS	1	Bov II	3P	121	U	FN			20	
04/09/98	C6-c	BSS	1	Medium mammal	LU	56	I	NN		L(1)	14	
04/09/98	C6-c	BSS	1	Medium mammal	CR	2	U	NN			20	
04/09/98	C6-c	BSS	1	Bov III	MP	110	U	NN	ST	W(5)	18	
04/09/98	C6-c	BSS	2	Medium mammal	TN	2	I	NN		3=L(3) 2=L(2)	10mm-15mm	
04/09/98	C6-c	BSS	4	Large mammal	TN	2	I	NN				
04/09/98	C6-c	BSS	1	Bivalve	SH	2	I	NN		W(5)	8	
09/08/99	D2	BSS	1	Medium mammal	CR	2	U	NN			15mm-19mm	
09/08/99	D2	BSS	1	Bov II	TN	2	I					
09/08/99	D2	BSS	4	Medium mammal	TN	2	I	NN			11mm-18mm	
09/08/99	D2	BSS	2	Large mammal	TN	2	I	NN			25	
09/08/99	D2	BSS	1	Large mammal	SE	2	U	NN		W(5)	21	
09/08/99	D2	BSS	1	*Procavia capensis*	IN	95	L	FF			11	
09/08/99	D2	BSS	1	*Procavia capensis*	RA	107	L	NU?			9	
09/08/99	D2	BSS	1	Bov III	AS	120	U	NN		L(2)	25	
09/08/99	D2	BSS	1	Medium mammal	RI	72	U	NN		L(1) G	24	Very large gypsum nodule attached
09/08/99	D2	BSS	1	Bov II	SA	55	I	NN		L(1)	36	
09/08/99	D2	BSS	1	Bov II	SA	54	I	FN			35	Fresher
09/08/99	D2	BSS	1	Large mammal	TI	110	U	NN	SV	L(1) C	96	
09/08/99	D2	BSS	2	Serpentis sp.	VE	1	I	FF			7	Length of vertebrae -
09/08/99	D2	BSS	1	Medium mammal	CR	2	U	NN			16	
09/08/99	D2	BSS	1	Small rodent	MP	1	U	FF			9	
09/08/99	D2	BSS	1	*Procavia capensis*	UL	110	U	NN			22	
09/08/99	D2	BSS	1	Medium mammal	TN	2	U	NN			15	
09/08/99	D2	BSS	1	Small rodent	HU	102	R	FN			10	
09/08/99	D2	BSS	1	Medium bird	TI	101		FN			15	Check if can find genus/sp.
09/08/99	D2	BSS	1	Bov II	MN	36	L	NN			14	
09/08/99	D2	BSS	1	Bov II-III	HC	2	U	NN		L(1)	38	
09/08/99	D2	BSS	1	Medium mammal	OO	2	U	NN		L(1)	16	
05/08/99	D2	BSS	1	Medium mammal	PE	2	U	NN			18	
05/08/99	D2	BSS	4	Large mammal	TN	2	U	NN		1=L(1)	18-20mm	
05/08/99	D2	BSS	1	Medium mammal	LU	56	I	NN		B(2)	28	
05/08/99	D2	BSS	1	Small mammal	RI	72	U	NN			18	
05/08/99	D2	BSS	1	Small rodent	VE	50	I	UU			8	
05/08/99	D2	BSS	1	Bivalve	SH	2	U	NN			10	
05/08/99	D2	BSS	1	Frog/Toad	FE	100	R	NN			10	
08/08/99	D2	BSS	2	Medium mammal	PE	2	U	NN		1=W(6)	12-21mm	
08/08/99	D2	BSS	7	Bov III-IV	TN	2	U	NN		1=L(1)	15-21mm	
08/08/99	D2	BSS	3	Medium mammal	TN	2	U	NN			10-12mm	
08/08/99	D2	BSS	1	Medium mammal	MX	2	U	NN			10-16mm	
08/08/99	D2	BSS	1	Bov I	FE	101	U	FN	TS		23	
08/08/99	D2	BSS	1	Large mammal	CP	121	L	NN		Chopped	18	

08/08/99	D2	BSS	2	Large mammal	RI	72	U	NN			33-36mm	
08/08/99	D2	BSS	1	*Philantomba monticola*	1P	1	RF	FF	ISI	C	14	Bp - 5.00 GL - 13.80 SD - 4.65 Bd - 4.40
08/08/99	D2	BSS	1	*Thryonomys swinderianus*	YP	2	U	NN			11	
08/08/99	D2	BSS	3	Bivalve	SH	2	U	NN			10-13mm	
08/08/99	D2	BSS	1	Small rodent	FE	101	R	JN	IS		14	
08/08/99	D2	BSS	1	Small bird	TI	107	L	NF	TI		18	
08/08/99	D2	BSS	1	Small rodent	IN	90	L	NN			18	Fresher
08/08/99	D2	BSS	1	Small rodent	IN	95	L	NN			8	
08/08/99	D2	BSS	1	Small rodent	CE	50	I	UF			6	
08/08/99	D2	BSS	1	Small bird	HU	110	U	NN			21	
08/08/99	D2	BSS	1	Medium mammal	TN	2	U	NN			11	
08/08/99	D2	BSS	1	Small mammal	LU	55	I	NN			18	
08/08/99	D2	BSS	1	Medium bird	QU	1	U	NN			16	
08/08/99	D2	BSS	1	Bov I	MP	110	U	NN		L(1)	33	
06/08/99	D2	BSS	1	Bov III	2P	101	L	FN		L(1)	20	
06/08/99	D2	BSS	1	Bov II	2P	100	L	FN		L(1)	13	
06/08/99	D2	BSS	14	Large mammal	TN	2	U	NN		6=L(1) 2=W(5)	11-24mm	
06/08/99	D2	BSS	1	Bov III	XP	2	L	NN			12	
06/08/99	D2	BSS	1	Medium mammal	VE	55	I	NN		C L(1)	21	
06/08/99	D2	BSS	1	*Procavia capensis*	UL	101	L	NN			18	
06/08/99	D2	BSS	1	Lagomorph	IN	95	L	NN		K?	13	
06/08/99	D2	BSS	1	Small mammal	RI	72	U	NN			22	
06/08/99	D2	BSS	2	Barnicle	SH	2	U	NN			6-9mm	
06/08/99	D2	BSS	1	Marine bivalve	SH	2	U	NN			11	
06/08/99	D2	BSS	1	Small rodent	YP	2	U	NN			12	
06/08/99	D2	BSS	1	Small rodent	2P	1	U	FF			4	
06/08/99	D2	BSS	2	Small reptile	VE	1	I	FF			5-7mm	
06/08/99	D2	BSS	1	Thryonomys swinderianus	YP	2	U	NN			9	
06/08/99	D2	BSS	1	Small rodent	IN	95	R	NN			9	
06/08/99	D2	BSS	1	Small-Medium mammal	LU	55	I	NN			8	
06/08/99	D2	BSS	1	Philantomba/Neotragus	ZP	2	L	NN			7	
06/08/99	D2	BSS	1	Small rodent	TI	107	L	NF			15	
06/08/99	D2	BSS	1	Small rodent	TH	50	I	UU			10	
06/08/99	D2	BSS	1	Small rodent	1P	1	U	FF			11	
06/08/99	D2	BSS	1	*Procavia capensis*	ZP	2	U	NN			8	
06/08/99	D2	BSS	1	Small rodent	AX	1	I	FF			7	Fresher
06/08/99	D2	BSS	2	Small rodent	TI	110	L	NN			15	
06/08/99	D2	BSS	1	Small-medium bird	CO	101	L	FN			8	Fits well with chicken
06/08/99	D2	BSS	1	Bov I	MN	34	U	NN			14	
08/08/99	D2	BSS	2	Medium mammal	PE	2	U	NN		L(1)	13-20mm	
08/08/99	D2	BSS	1	Bov III	TN	2	U	NN		B(4)	28	
08/08/99	D2	BSS	1	Large mammal	TN	2	U	NN			15	
08/08/99	D2	BSS	1	Medium mammal	VE	55	I	BB			15	Neonate
08/08/99	D2	BSS	1	Bov III	2P	108	R	NF	ST	B(4) C?	18	
08/08/99	D2	BSS	1	*Philantomba monticola*	ZP	1	L	NN			10	
08/08/99	D2	BSS	8	Medium mammal	TN	2	U	NN			8-12mm	
08/08/99	D2	BSS	1	*Otomys sp.*	YP	2	U	NN			10	
08/08/99	D2	BSS	1	Medium fish	VE	50	I	FF			5	Length of centrum - 4.40
08/08/99	D2	BSS	1	Small rodent	SA	1	I	FU			10	
08/08/99	D2	BSS	1	Small rodent	FE	101	R	UN			9	
08/08/99	D2	BSS	1	Small mammal	RI	72	U	NN			13	
08/08/99	D2	BSS	1	Small rodent	TI	110	L	NN	TS		13	

08/08/99	D2	BSS	1	Small mammal	VE	51	I	NN		L(2)	15	
06/08/99	D2	BSS	1	Medium mammal	TN	2	U	NN			26	
06/08/99	D2	BSS	1	Small rodent	AX	1	I	FU			6	
06/08/99	D2	BSS	3	Medium mammal	RI	72	U	NN		2=L(1)	8-31mm	
06/08/99	D2	BSS	1	Bov III	TN	2	U	NN			45	
06/08/99	D2	BSS	5	Large mammal	TN	2	U	NN			7-45mm	
06/08/99	D2	BSS	1	Small mammal	CR	2	U	NN			20-26mm	
06/08/99	D2	BSS	1	Small reptile	VE	1	I	FF			5	
06/08/99	D2	BSS	1	*Procavia capensis*	HU	108	R	NF	TI	R	16	BD - 10.70
06/08/99	D2	BSS	1	Medium mammal	RI	72	U	NN			25	
06/08/99	D2	BSS	1	Small rodent	HU	107	R	UF			25	
06/08/99	D2	BSS	1	Small rodent	HU	110	U	NN			17	Fresher
06/08/99	D2	BSS	1	Small rodent	TI	107	L	NF			23	Fresher
06/08/99	D2	BSS	1	Small rodent	TI	107	L	NF	SI		23	
06/08/99	D2	BSS	1	Small rodent	TI	105	L	NF	SI		11	Fresher
06/08/99	D2	BSS	1	Frog/toad	TI	110	U	NN			23	Fresher
06/08/99	D2	BSS	1	Marine bivalve	SH	2	U	NN			9	
06/08/99	D2	BSS	1	Bov II	MP	110	U	NN	TV		49	Fresher
05/08/99	D2	BSS	1	Bov III-IV	2P	106	U	NF	VV	Chopped	21	
05/08/99	D2	BSS	1	Bov II-III	3P	107	L	NF	VI	L(1)?	34	HP - 21.35 Alcelaphus caama?
05/08/99	D2	BSS	3	Medium mammal	CR	2	U	NN		1=L(1)	17-29mm	
05/08/99	D2	BSS	2	Bov III	TN	2	U	NN			10-37mm	
05/08/99	D2	BSS	4	Large mammal	TN	2	U	NN		2=B(2)	10-37mm	
05/08/99	D2	BSS	1	Medium mammal	TN	2	U	NN			8	
05/08/99	D2	BSS	1	*Procavia capensis*	HU	105	L	NF	SI		18	Bd - 11.90 BT - 9.20
05/08/99	D2	BSS	1	*Cephalophus natalensis*	1P	107	RH	NF	SI	L(1)	7	Bd - 6.55
05/08/99	D2	BSS	1	Small rodent	FE	105	R	NF	SI		20	Fresher
05/08/99	D2	BSS	1	Small mammal	CR	2	U	NN			11	
05/08/99	D2	BSS	1	Small reptile	SA	1	I	FU			9	
05/08/99	D2	BSS	1	Small rodent	TI	105	L	UF			17	
05/08/99	D2	BSS	2	Small rodent	IN	90	L/R	NN			14	
05/08/99	D2	BSS	1	Frog/toad	IN	90	U	NN			10	Fresher
05/08/99	D2	BSS	2	Small rodent	MX	31	L/R	NN			9-10mm	Fresher 1 tooth intact
05/08/99	D2	BSS	1	Small mammal	MX	2	U	NN			12	
05/08/99	D2	BSS	1	Small mammal	CR	2	U	NN			12	
05/08/99	D2	BSS	1	*Struthio camelus (OES)*	SH	2	U	NN			21	Lentght - 20.10 Breadth - 8.80
08/08/99	D3	BSS	1	*Redunca arundinum*	3P	1	L	FF		B(4)	31	HP - 20.20 BFp - 9.36 Ld - 31.65 DLS - 33.25 MBS - 7.28
08/08/99	D3	BSS	1	Medium mammal	VE	51	I	FF		-1	28	
08/08/99	D3	BSS	1	Medium mammal	SC	81	U	NN		R K	44	
08/08/99	D3	BSS	1	Medium mammal	ZG	2	R	NN			25	
08/08/99	D3	BSS	1	Small - medium bird	CO	1	L	FF			35	Check if can get sp. Along with other bird bones
08/08/99	D3	BSS	1	Medium bird	CR	2	I	NN			22	
08/08/99	D3	BSS	1	Bov II	ZG	2	L	NN		B(2)	20	
08/08/99	D3	BSS	1	Small mammal	RI	72	U	NN			18	
08/08/99	D3	BSS	1	Small bird	CR	2	U	NN			11mm-17mm	
08/08/99	D3	BSS	1	Small rodent	MP	1	U	FF			10	
08/08/99	D3	BSS	1	Small bird	3P	1	U	NN			8	
08/08/99	D3	BSS	1	Otomys sp.	ZP	1	U	NN			3	
08/08/99	D3	BSS	4	Small rodent	MX	23	R	NN			9	
08/08/99	D3	BSS	1	Small bird	SS	2	I	NN			20	
08/08/99	D3	BSS	1	Small bird	MT	1	R	FF			10	Fresher

08/08/99	D3	BSS	2	Frog/toad	FE	110	U	NN			11	Fresher
08/08/99	D3	BSS	1	Small rodent	MP	100	U	FU			9	Fresher
08/08/99	D3	BSS	1	Marine bivalve	SH	2	U	NN			4	
08/08/99	D3	BSS	1	*cf. Nucula nucleus*	SH	2	U	NN			9	pg 199
08/08/99	D3	BSS	1	*cf. Xerocerastus sp.*	SH	2	U	NN			4	
08/08/99	D3	BSS	2	Barnicle	SH	2	U	NN			4	
08/08/99	D3	BSS	1	Small fish	VE	56	I	NN			9	
08/08/99	D3	BSS	1	Small fish	VE	51	I	NN			4	Length of centrum - 3.66
08/08/99	D3	BSS	1	Marine gasteropod	SH	2	I	NN			8	
08/08/99	D3	BSS	8	Small rodent	YP	1+2	U	NN			average - 13	
08/08/99	D3	BSS	2	Otomys sp.	YP							
08/08/99	D3	BSS	2	Small rodent	YP	1	U	NN			7	
08/08/99	D3	BSS	6	Small reptile	VE	1	I	NN			Av - 6	
08/08/99	D3	BSS	7	Small rodent	UR	1	I	NN			Av -5	
08/08/99	D3	BSS	12	Small rodent	VE	1	I	NN			Av - 3	
08/08/99	D3	BSS	14	Small rodent	VE	1	I	NN			Av - 9	
08/08/99	D3	BSS	10	Small rodent	CE	1	I	NN			Av - 4	
08/08/99	D3	BSS	2	Small rodent	RI	72	U	NN			11	
08/08/99	D3	BSS	7	Small rodent	IN	90	LR	FF			Av - 11	
08/08/99	D3	BSS	3	Small rodent	IN	91	U	NN			8	
08/08/99	D3	BSS	4	Small rodent	SC	1	LR	FF			10	
08/08/99	D3	BSS	2	Small rodent	SC	80	LR	FF			6	
08/08/99	D3	BSS	1	Small rodent	SC	81	U	NN			15	
08/08/99	D3	BSS	6	Small rodent	FE	2	LR	FN			Av - 10	1 fresher
08/08/99	D3	BSS	3	Small rodent	FE	105	LR	NU			Av - 4	
08/08/99	D3	BSS	1	Small rodent	TI	105	I	NN				
08/08/99	D3	BSS	1	Small rodent	HU	105						
08/08/99	D3	BSS	3	Small bird	UL	102	LR	FN			21	
08/08/99	D3	BSS	1	Small rodent	RA	1	L	FF			13	
08/08/99	D3	BSS	2	Small rodent	TI	105	U	UN			18	
08/08/99	D3	BSS	1	Small bird	IN	2	U	NN			19	
08/08/99	D3	BSS	3	Insectivore (Shrew)	MN	30	U	NN				
08/08/99	D3	BSS	19	Small rodent	MN	32	LR	NN			13	1 - Incisor 12 - Premolars 8- Mandibles
08/08/99	D3	BSS	3	Small rodent	TN	2	U	NN			4	
08/08/99	D3	BSS	3	Small rodent	PE	2	U	NN			Av - 6	
08/08/99	D3	BSS	4	Small rodent	MP	1	I	NN			8	
08/08/99	D3	BSS	1	Small rodent	HU	107	R	NF			6	
08/08/99	D3	BSS	1	Small rodent	IN	1	U	NN			12	
08/08/99	D3	BSS	1	Small bird	MT	103	U	FN			13	
09/08/99	D3	BSS	1	Frog/Toad	LU	1	I	FF			7	
09/08/99	D3	BSS	1	Frog/Toad	IN	1	R	FF			9	
09/08/99	D3	BSS	1	Small rodent	IN	92	L	NN				
09/08/99	D3	BSS	1	Small bird	CO	100	L	FN			9	
09/08/99	D3	BSS	1	Small rodent	HU	102	R	FN			5	Fresher
09/08/99	D3	BSS	1	Small bird	HU	1	R	FF			9	Fresher
09/08/99	D3	BSS	1	Small rodent	VE	1	I	UU			4	
09/08/99	D3	BSS	1	Small rodent	MP	110	U	NU			11	Fresher
09/08/99	D3	BSS	1	Small bird	UL	100	R	FN			14	Fresher
09/08/99	D3	BSS	1	Small rodent	RI	71	U	NN			14	Fresher
09/08/99	D3	BSS	2	Small rodent	UR	1	I	FF			3-6mm	2=Fresher
09/08/99	D3	BSS	1	Small reptile	VE	1	I	FF				
09/08/99	D3	BSS	1	Small rodent	VE	55	I	NN			5	Fresher

09/08/99	D3	BSS	1	Small rodent	MC	1	U	FF			9	Fresher
09/08/99	D3	BSS	1	Small rodent	SC	80	L	FN			4	Fresher
09/08/99	D3	BSS	1	Small rodent	TI	108	L	NF				
09/08/99	D3	BSS	1	Small carnivore	MP	100	R	FN			10	
09/08/99	D3	BSS	1	Small rodent	RI	72	U	NN			8	
09/08/99	D3	BSS	1	Otomys sp.	YP	2	U	NN			3	
09/08/99	D3	BSS	2	Small rodent	MN	33	L	NN			5	Fresher
09/08/99	D3	BSS	1	Small rodent	AT	1	I	NN			5	Fresher
09/08/99	D3	BSS	1	Small mammal	IN	91	U	NN			15	Fresher
06/08/99	D3	BSS	1	Medium bird	CO	102	R	FN			33	
06/08/99	D3	BSS	1	Small bird	FE	110	U	NN			23	Fresher
06/08/99	D3	BSS	1	Pronolagus	UL	100	L	FN		digested	17	
06/08/99	D3	BSS	1	Medium reptile	VE	1	I	NN			8	Fresher
06/08/99	D3	BSS	1	Small carnivore	YP	1	U	NN			8	
06/08/99	D3	BSS	1	Small rodent	SC	80	L	FF			8	Fresher
06/08/99	D3	BSS	1	Small rodent	SC	80	R	FN			9	Fresher
06/08/99	D3	BSS	1	Vivveridae	ZP	1	U	NN			6	
09/08/99	D3	BSS hearth	5	*Sylvicapra grimmia (grey duiker)*	MN	31	R	NN		C K	62	Dp2, Dp3, DP4, M1, M2, M3 erupting Sub-adult
09/08/99	D3	BSS hearth	2	*Sylvicapra grimmia*	XP	1	R	NN			11-13mm	
09/08/99	D3	BSS hearth	1	Medium mammal	PE	2	U	NN		L(1)	18	
09/08/99	D3	BSS hearth	3	Medium mammal	CR	2	U	NN		1=L(1)	17-23mm	
09/08/99	D3	BSS hearth	1	Bov III	1P	101	U	FN	VV		28	
09/08/99	D3	BSS hearth	3	Large mammal	TN	2	U	NN			13-15mm	
09/08/99	D3	BSS hearth	3	*Otomys sp.*	MN	30	L	NN			13	LM1+LM2 present
09/08/99	D3	BSS hearth	1	Small bird	HU	110	L	UU			15	Fresher young bird
09/08/99	D3	BSS hearth	1	Small rodent	FE	101	L	FN			9	
09/08/99	D3	BSS hearth	1	Small rodent	LU	50	I	UU			4	Otomys sized vertebrae - fresher
09/08/99	D3	BSS hearth	1	Small carnivore	ZP	1	R	NN			6	Fresher
09/08/99	D3	BSS hearth	1	*Otomys sp.*	YP	1	U	NN			19	
09/08/99	D3	BSS hearth	2	Small rodent	YP	2	U	NN			7-12mm	
09/08/99	D3	BSS hearth	1	Small rodent	1P	110	U	UU			6	Fresher
09/08/99	D3	BSS hearth	1	Lagomorph	AT	51	I	FN			10	
09/08/99	D3	BSS hearth	1	Frog/toad	HU	110	U	NN			11	Fresher
09/08/99	D3	BSS hearth	1	Small rodent	VE	55	I	NN			6	
10/08/99	D3-c	BSS hearth	3	Large mammal	TN	2	U	NN			12+22	
10/08/99	D3-c	BSS hearth	1	Medium mammal	RI	72	U	NN			20	
10/08/99	D3-c	BSS hearth	1	Medium mammal	CR	2	U	NN			19	
10/08/99	D3-d	BSS hearth	1	Large mammal	PE	2	U	NN		L(1)	20	
10/08/99	D3-d	BSS hearth	10	Large mammal	TN	2	U	NN		5=B(2)	14-26mm	
10/08/99	D3-d	BSS hearth	2	Medium mammal	TN	2	U	NN		1=B(2)	7-10mm	
10/08/99	D3-d	BSS hearth	3	Medium mammal	CR	2	U	NN			16-32mm	Fresher
10/08/99	D3-d	BSS hearth	1	Lagomorph	MN	43	R	NN		K	34	Fresher
10/08/99	D3-d	BSS hearth	1	Small mammal	RI	72	U	NN		W(5)	10	
10/08/99	D3-d	BSS hearth	1	Small fish	RI	72	U	NN			16	
10/08/99	D3-d	BSS hearth	1	Small rodent	SA	51	I	FF			5	
10/08/99	D3-d	BSS hearth	2	Small reptile	VE	55	I	NN		B(2)	6	
15/07/99	D4	BSS pit	4	*Perna perna (mussel)*	SH	2	R/L	NN			12-67mm	
15/07/99	D4	BSS pit	1	Bov II	MN	35	R	NN		B(2)	54	
15/07/99	D4	BSS pit	1	*cf. Nerita natalensis*	SH	2	I	NN			10	Juvenile
15/07/99	D4	BSS pit	2	Large mammal	TN	2	U	NN		1=B(2)	17-25mm	
15/07/99	D4	BSS pit	1	Large mammal	RI	72	U	NN		1=L(1)	25-29mm	

19/04/99	D4-a	BSS	1	Bov III	AS	121	L	NN			33	
19/04/99	D4-a	BSS	1	Medium mammal	TN	2	U	NN			8	
19/04/99	D4-a	BSS	1	Small mammal	2P	105	U	NF			6	
19/04/99	D4-a	BSS	1	Bivalve	SH	2	U	NN			5	
19/04/99	D4-a	BSS	1	Labeo sp.	MN	31	U	NN			8	
19/04/99	D4-a	BSS	1	Small rodent	VE	1	I	UF			5	Fresher
19/04/99	D4-a	BSS	3	Small rodent	MN	34	L	NN			7	Fresher
26/04/99	D4-a	BSS	1	Medium mammal	PE	2	U	NN			12	
20/04/99	D4-b	BSS	13	Medium mammal	TN	2	I	NN			10-20 mm	
20/04/99	D4-b	BSS	1	Marine bivalve	SH	2	I	NN			8	
20/04/99	D4-b	BSS	1	Medium mammal	CR	2	I	NN			18	
20/04/99	D4-b	BSS	1	Otomys sp. (vlei rat)	ZP	1	U	NN			7	
20/04/99	D4-b	BSS	1	Bov I	SC	81	L	NN			13	
19/04/99	D4-b	BSS	9	Medium mammal	TN	2	U	NN		5=B(2)	12-17mm	
19/04/99	D4-b	BSS	1	Medium mammal	TH	56	I	NN			23	Fresher
22/04/99	D4-b	BSS	5	Medium mammal	RI	72	U	NN		1=L(2) 1=B(2)	15-30mm	
22/04/99	D4-b	BSS	5	Medium mammal	TN	2	U	NN		3=B(2)	4-13mm	
22/04/99	D4-b	BSS	1	Small rodent	FI	100	R	FN	IT		14	
23/04/99	D4-b	BSS hearth	1	Barnicle								
23/04/99	D4-b	BSS hearth	3	Bivalve	SH	2	U	NN			4-6mm	
23/04/99	D4-b	BSS hearth	1	Small mammal	PE	2	U	NN			8	Fresher
23/04/99	D4-b	BSS hearth	1	Small rodent	HU	102	L	FN			11	Fresher
23/04/99	D4-b	BSS hearth	1	Small rodent	PM	25	R	NN			10	
22/04/99	D4-b	BSS hearth	1	Medium-large mammal	CR	2	U	NN		W(5)	23	
22/04/99	D4-b	BSS hearth	1	Large mammal	TI	110	U	NN			25	
20/04/99	D4-c	BSS	1	Large mammal	TN	2	U	NN			28	
20/04/99	D4-c	BSS	6	Medium mammal	TN	2	U	NN		3=B(4)	5-7mm	
20/04/99	D4-c	BSS	1	Small rodent	FE	102	R	JN			10	
20/04/99	D4-c	BSS	1	Small rodent	YN	2	U	NN			8	
20/04/99	D4-c	BSS	1	Small mammal	RI	72	U	NN			5	
20/04/99	D4-c	BSS	1	Medium mammal	RI	72	U	NN		B(2)	15	
20/04/99	D4-c	BSS	1	Bivalve	SH	2	U	NN			5	
20/04/99	D4-c	BSS	1	Otomys Sp.	YP	2	U	NN			6	
20/04/99	D4-c	BSS	1	Marine bivalve	SH	2	U	NN			10	
20/04/99	D4-c	BSS	1	Barnicle	SH	2	U	NN			7	
20/04/99	D4-c	BSS	1	*Philantomba monticola*	3P	1	U	FF			13	GL - 13.30 SD - 4.28 Bp - 6.73
20/04/99	D4-c	BSS	1	Small bird	UL	102	R	FN			20	Can id species
14/07/99	D5	BSS pit	1	*Perna perna*	SH	2	L	NN			22	
14/07/99	D5	BSS pit	2	*Perna perna*	SH	2	R	NF			15-26mm	
14/07/99	D5	BSS pit	1	Marine bivalve	SH	2	U	NN			25	
14/07/99	D5	BSS pit	2	Large mammal	TN	2	U	NN			16-22mm	
14/07/99	D5	BSS pit	2	Medium mammal	RI	70	U	NN			20-35mm	
14/07/99	D5	BSS pit	1	*Philantomba monticola*	TI	105	R	NF	SI		45	Dd - 9.70 Bd - 13.30
14/07/99	D5	BSS pit	1	Medium mammal	VE	51	I	NU		L(1)	18	
14/07/99	D5	BSS pit	1	Chelonea	SH	2	U	NN		L(1)	31	
19/04/99	D5-b	BSS/LFA	1	Medium mammal	RI	72	U	NN		K	28	
19/04/99	D5-b	BSS/LFA	1	Small reptile	VE	1	I	FF			6	
19/04/99	D5-c	BSS/LFA	3	Barnicle	SH	2	U	NN			5-10mm	
19/04/99	D5-c	BSS/LFA	1	*Philantomba monticola*	TA	121	R	NU		B(2)	11	GD - 10.60 GB - 12.20
19/04/99	D5-c	BSS/LFA	1	Large mammal	TN	2	U	NN			14	
19/04/99	D5-c	BSS/LFA	1	Medium mammal	VE	55	I	NN			15	
19/04/99	D5-c	BSS/LFA	1	Medium-large mammal	PE	2	U	NN			11	

19/04/99	D5-c	BSS/LFA	1	Small mammal	CR	2	U	NN			10	
19/04/99	D5-c	BSS/LFA	1	Small rodent	RI	72	U	NN			12	
22/04/99	D5-c	BSS/LFA pit infill	1	*Redunca sp.*	TI	104	R	UN	VI		39	
22/04/99	D5-c	BSS/LFA pit infill	2	Large mammal	TN	2	U	NN			11-17mm	
23/04/99	D5-c	BSS/LFA pit infill	1	Bov III-IV	SC	80	R	FN		R	55	
23/04/99	D5-c	BSS/LFA pit infill	1	*Cephalophus natalensis*	1P	1	L	FF			22	Bp - 7.20 SD - 6.10 Bd - 6.60 GL - 22.00
23/04/99	D5-c	BSS/LFA pit infill	1	*cf. Syncerus caffer*	1P	108	R	NF	TT	L(1)	43	SD - 23.00
23/04/99	D5-c	BSS/LFA pit infill	1	Medium-large mammal	CR	2	U	NN		L(1)	29	
23/04/99	D5-c	BSS/LFA pit infill	2	Medium mammal	RI	72	U	NN			33-40	
23/04/99	D5-c	BSS/LFA pit infill	1	Medium-large mammal	VE	55	I	NN			20	
23/04/99	D5-c	BSS/LFA pit infill	1	Bov II	PH	106	U	NN			13	
23/04/99	D5-c	BSS/LFA pit infill	6	Large mammal	TN	2	U	NN		4=B(2)	10-21mm	
23/04/99	D5-c	BSS/LFA pit infill	3	Medium mammal	TN	2	U	NN		1=B(2)	6-7mm	
23/04/99	D5-c	BSS/LFA pit infill	2	Medium rodent	CE	50	I	UU/UF			6-9mm	
23/04/99	D5-c	BSS/LFA pit infill	1	Labeo sp.	MN	34	L	NN			10	
23/04/99	D5-c	BSS/LFA pit infill	1	Medium fish	VE	53	I	NN			37	
23/04/99	D5-c	BSS/LFA pit infill	1	Marine bivalve	SH	2	U	NN			12	
21/04/99	D5-c+d	BSS pit infill	1	Small-medium mammal	CR	2	U	NN			18	Fresher
21/04/99	D5-c+d	BSS pit infill	1	Bov II	3P	107	U	NN			19	
21/04/99	D5-c+d	BSS pit infill	5	Large mammal	TN	2	U	NN			5-15mm	
21/04/99	D5-c+d	BSS pit infill	1	Small mammal	RI	72	U	NN		B(2)	15	
21/04/99	D5-c+d	BSS pit infill	7	Marine bivalve	SH	2	U	NN			10-24mm	
21/04/99	D5-c+d	BSS pit infill	1	Small rodent	TI	110	L	UN			20	
22/04/99	D5-c+d	BSS/LFA pit infill	2	*Equus sp.*	ZP	2	U	NN			29	
19/04/99	D5-d	BSS/LFA	1	*Philantomba monticola*	ZP	1	L	NN			12	UM3
19/04/99	D5-d	BSS/LFA	1	*Philantomba monticola*	ZP	1	R	NN			9+14	LM1
19/04/99	D5-d	BSS/LFA	1	Philantomba/Neotragus	MT	105	L	NN			10	Dd - 7.75 Bd - 10.60
19/04/99	D5-d	BSS/LFA	1	Bov IV	SE	1	R	NN		B(2)	21	
19/04/99	D5-d	BSS/LFA	2	Cephalophus monticola	MX	23	R	NN			11	LM2 present
19/04/99	D5-d	BSS/LFA	1	Small fish	RI	72	U	NN			17	
19/04/99	D5-d	BSS/LFA	1	Small mammal	LU	56	I	NN			11	
19/04/99	D5-d	BSS/LFA	1	Large mammal	MN	43	U	NN			53	
19/04/99	D5-d	BSS/LFA	1	Large mammal	VE	55	I	NN			20	

22/04/99	D5-d	BSS/LFA pit infill	1	Medium mammal	MN	34	U	NN		W(5)	15	
22/04/99	D5-d	BSS/LFA pit infill	1	*Procavia capensis*	FE	101	R	JN	VS		15	
22/04/99	D5-d	BSS/LFA pit infill	4	Large mammal	TN	2	U	NN		1=B(2)	15-18mm	
22/04/99	D5-d	BSS/LFA pit infill	1	Large mammal	TN	2	U	NN			32	
23/04/99	D5-d	BSS/LFA pit infill	1	*Cephalophus natalensis*	1P	105	R	NF	SI		16	Bd - 6.90
23/04/99	D5-d	BSS/LFA pit infill	1	Small mammal	RI	72	U	NN		K	13+37	
23/04/99	D5-d	BSS/LFA pit infill	1	Lagomorph	FE	110	L	BN	VS		16	Very young individual
23/04/99	D5-d	BSS/LFA pit infill	4	Bivalve	SH	2	U	NN			5-14mm	
23/04/99	D5-d	BSS/LFA pit infill	1	Gasterpod	SH	2	U	NN			7	
23/04/99	D5-d	BSS/LFA pit infill	7	Medium mammal	TN	2	U	NN			6-14mm	
23/04/99	D5-d	BSS/LFA pit infill	1	Medium mammal	RI	72	U	NN			40	
22/04/99	D5-d	BSS/LFA pit infill	1	Medium mammal	VE	55	I	NN			25	
22/04/99	D5-d	BSS/LFA pit infill	1	Small rodent	IN	90	L	NN			28	
22/04/99	D5-d	BSS/LFA pit infill	1	Small rodent	FE	101	L	JN	IS		11	Part of previous sp.
22/04/99	D5-d	BSS/LFA pit infill	1	Small mammal	TN	2	U	NN			13	
22/04/99	D5-d	BSS/LFA pit infill	1	Small rodent	VE	50	I	UU			8	
22/04/99	D5-d	BSS/LFA pit infill	6	Small mammal	CR	2	U	NN			13-21mm	
22/04/99	D5-d	BSS/LFA pit infill	1	Small fish	RI	72	U	NN			22	
22/04/99	D5-d	BSS/LFA pit infill	1	Bov II	MC	110	U	NN	TS	L(1)	47	
20/04/99	D6-a	BSS	1	*Hystrix africaeaustralis(Porcupine)*	ZP	1	R	NN			15	UM3
20/04/99	D6-a	BSS	1	Canis sp.	XP	2	R	NN			8	Worn tooth fits with canis adustus
20/04/99	D6-a	BSS	4	Insectivore (Shrew)	MN	30	R	NN			14	
20/04/99	D6-a	BSS	1	*Philantomba monticola*	2P	103	R	NF		Digested	9	Digested
20/04/99	D6-a	BSS	1	Small reptile	VE	1	I	FF			4	
20/04/99	D6-a	BSS	4	Medium- large mammal	TN	2	U	NN			11-22mm	
20/04/99	D6-a	BSS	1	Small rodent	YP	2	U	NN			7	
20/04/99	D6-a	BSS	1	Bov II	2P	101	U	NN		B(3) K	12	
20/04/99	D6-a	BSS	1	Large mammal	OO	2	U	NN			24	
20/04/99	D6-a	BSS pit/hearth	1	Bov III-IV	2P	106	R	NF	SI		30	Could be Bos but does not have enough morphological charachters to id prefectly
20/04/99	D6-a	BSS pit/hearth	1	Large mammal	RI	72	U	NN			37	
20/04/99	D6-a	BSS pit/hearth	4	Medium-large mammal	TN	2	U	NN			14-22mm	

20/04/99	D6-a	BSS pit/hearth	1	Medium mammal	RI	72	U	NN		K Insect damage	24	
20/04/99	D6-a	BSS pit/hearth	1	Medium bird	FE	105	L	FN	IS		21	
20/04/99	D6-a	BSS pit/hearth	1	Medium bird	CO	110	L	NN	VS		13	
19/04/99	D6-b	BSS	1	Small mammal	RI	72	U	NN			20	
16/07/99	D6-b	BSS	1	Small mammal	PE	2	U	NN			17	
16/07/99	D6-b	BSS	1	*Procavia capensis*	FE	102	R	JN	IS		41	Bp 14.55 SD - 5.70 BTr - 10.60
16/07/99	D6-b	BSS	1	Otomys sp.	YP	2	U	NN			11	
16/07/99	D6-b	BSS	1	Medium mammal	VE	52	I	UN			18	
16/07/99	D6-b	BSS	1	Small rodent	PE	2	U	NN			8	
19/04/99	D6-c	BSS	4	Medium-large mammal	TN	2	U	NN		2=B(2) 1=W(4)	10-19mm	
19/04/99	D6-c	BSS	1	Bov II	2P	101	U	FN		W(4)	15	
19/04/99	D6-c	BSS	1	Small mammal	CR	2	I	NN			9	
19/04/99	D6-c	BSS	1	*Manis temminckii* (Pangolin)	3P	102	R	FN			23	
19/04/99	D6-d	BSS	2	Large mammal	TN	2	I	NN			25mm-29mm	
19/04/99	D6-d	BSS	1	Bov II-III	2P	103	U	NN		L(1)	20	
19/04/99	D6-d	BSS	1	Large mammal	PE	2	U	NN			31	
19/04/99	D6-d	BSS	1	Medium mammal	CR	2	I	NN			21	
19/04/99	D6-d	BSS	1	Medium mammal	VE	56	I	NN			16	
19/04/99	D6-d	BSS	1	Bivalve	SH	2	U	NN			20	
19/04/99	D6-d	BSS	1	Medium mammal	VE	52	I	UN			22	
10/08/99	E2	BSS	1	Large mammal	HU	110	U	NN	SS		75	
10/08/99	E2	BSS	1	*cf. Syncerus/Bos*	YP	2	L	NN			25	
10/08/99	E2	BSS	1	Lagomorph	TN	2	U	NN			9	
10/08/99	E2	BSS	4	Medium mammal	TN	2	U	NN			10mm - 15mm	
10/08/99	E2	BSS	2	Medium mammal	VE	56	I	NN		L(1)	18	
10/08/99	E2	BSS	1	Large mammal	VE	56	I	NN			30	
10/08/99	E2	BSS	1	Bov II	1P	108	U	NF			15	
10/08/99	E2	BSS	1	Serpentis sp.	VE	1	I	FF			7	Fresher
10/08/99	E2	BSS	1	Frog/Toad	HU	110	U	NN			18	
10/08/99	E2	BSS	3	Marine bivalve	SH	2	U	NN			4mm-14mm	
10/08/99	E2	BSS	1	Marine gasteropod	SH	2	U	NN			8	
10/08/99	E2	BSS	1	Small rodent	MN	33	L	NN		L(1)	5	
10/08/99	E2	BSS	2	Insectivore (Shrew)	MN	33	U	NN			17	
10/08/99	E2	BSS	1	Small rodent	FE	103	R	FN			11	Fresher
10/08/99	E2	BSS	1	Large mammal	VE	54	I	NN			20	
10/08/99	E2	BSS	1	Bov III-IV	HC	2	U	NN			42	
08/08/99	E2	BSS	1	Medium mammal	PE	2	U	NN			29	
08/08/99	E2	BSS	1	Bov II	MP	110	U	UN	US		26	
08/08/99	E2	BSS	1	*Philantomba monticola*	RA	100	L	FN	IS		18	Dp - 6.60 Bp - 12.15
08/08/99	E2	BSS	1	Lagomorpha	HU	107	L	NF	VI		12	Bd - 10.37
08/08/99	E2	BSS	1	Bov II-III	2P	108	U	NN		L(2)	20	
08/08/99	E2	BSS	1	Bov III	TI	108	U	NN		L(2)	17	
08/08/99	E2	BSS	5	Large mammal	TN	2	U	NN		3=B(2)	13-18mm	
08/08/99	E2	BSS	2	Medium mammal	TN	2	U	NN			9	
08/08/99	E2	BSS	1	Small mammal	VE	55	I	NN		W(6)	10	
08/08/99	E2	BSS	2	Bivalve	SH	2	U	NN			4-13mm	
08/08/99	E2	BSS	1	Barnicle	SH	2	U	NN			7	
08/08/99	E2	BSS	1	Medium mammal	VE?	54	I	NN			18	

08/08/99	E2	BSS	1	Small mammal	2P	1	U	FF			7	
08/08/99	E2	BSS	1	Large mammal	MX	2	U	NN			24	
09/08/99	E2	BSS	1	Bos/Syncerus	YP	2	R	NN			46	2 refitted pieces
09/08/99	E2	BSS	10	Large mammal	TN	2	U	NN		2=B(2)	6-35mm	
09/08/99	E2	BSS	1	*Achatina sp.*	SH	2	U	NN			40	
09/08/99	E2	BSS	1	Medium mammal	TH	55	I	NN			30	
09/08/99	E2	BSS	1	Bov II	MC	101	U	FN	VT	L(1)	31	
09/08/99	E2	BSS	1	Bov II	1P	101	U	FN		W(5)	18	
09/08/99	E2	BSS	1	Bov I	ZG	2	L	NN			30	Orbital lobe
09/08/99	E2	BSS	2	Bov III	TA	120	U	NN			13	Neonate 2nd + 3rd tarsal
09/08/99	E2	BSS	1	Large mammal	MN	34	U	NN			48	
09/08/99	E2	BSS	1	Large mammal	RI	72	U	NN			37	
09/08/99	E2	BSS	1	Small reptile	VE	1	I	FF		L(1)	8	
09/08/99	E2	BSS	1	Raphicerus sp.	3P	102	R	FN	IV		12	BFp - 5.30
09/08/99	E2	BSS	1	Small rodent	IN	95	R	NN			18	
09/08/99	E2	BSS	1	Small rodent	FE	102	R	FN	IS		11	
09/08/99	E2	BSS	1	Bov II	MN	34	R	NN			26	
10/08/99	E2	BSS	2	Large mammal	TN	2	U	NN		1=B(4)	13-14	
10/08/99	E2	BSS	1	Bov III-IV	TN	2	U	NN			23	
10/08/99	E2	BSS	6	Medium mammal	TN	2	U	NN		3=B(2)	4-8mm	
10/08/99	E2	BSS	1	Bov II-III	1P	106	L	NF	TS	L(1)	12	
10/08/99	E2	BSS	1	*Otomys sp.*	ZP	2	U	NN			6	
10/08/99	E2	BSS	1	Frog/toad	VE	1	I	UF			6	Fresher
10/08/99	E2	BSS	2	Frog/toad	RA	1/110	U	FF/NN		1=W(4)	5-7mm	
10/08/99	E2	BSS	1	Frog/toad	FE	100	U	FN	IS		11	
10/08/99	E2	BSS	1	Frog/toad	HU	101	U	FN	IT		4	
10/08/99	E2	BSS	1	Small mammal	RI	70	U	FN			4	
10/08/99	E2	BSS	1	Large mammal	TI	110	U	NN	SV		96	2 refitted pieces
08/08/99	E2	BSS	6	Small reptile	VE	1	I	FF			5-7mm	5=Fresher
08/08/99	E2	BSS	1	Small mammal	RI	72	U	NN			14	
08/08/99	E2	BSS	1	Small rodent	FE	100	R	FU			15	Fresher
08/08/99	E2	BSS	1	Small rodent	HU	105	R	UF			11	Fresher
08/08/99	E2	BSS	1	Small rodent	HU	107	L	NF	TI		8	
08/08/99	E2	BSS	1	Small rodent	TI	107	R	NF	SI		19	
08/08/99	E2	BSS	1	Small mammal	FE	110	L	UU	II		24	Fresher
08/08/99	E2	BSS	1	Small fish	VE	56	I	NN			14	
08/08/99	E2	BSS	1	Small rodent	UL	102	R	FN	IT		8	
08/08/99	E2	BSS	2	Small rodent	IN	90	R	NN			10-20mm	Fresher
08/08/99	E2	BSS	4	Small-medium bird	UR	51	I	FF			6-8mm	Fresher
08/08/99	E2	BSS	1	Small rodent	IN	93	U	BN			7	Fresher
08/08/99	E2	BSS	1	Small rodent	CE	1	I	UU			5	Fresher
08/08/99	E2	BSS	1	Small rodent	LU	1	I	UU			7	Fresher
08/08/99	E2	BSS	1	Small-medium bird	3P	1	U	FN			9	
08/08/99	E2	BSS	1	*Xenopus sp.*(freshwater frog)	UR	53	I	FF			5	Freshwater frog
08/08/99	E2	BSS	1	Small fish	VE	56	I	NN		B(2)	5	
08/08/99	E2	BSS	1	Small rodent	ST	2	I	NN			10	Fresher
09/08/99	E2	BSS	3	Bov III	TN	2	U	NN			11-21mm	
09/08/99	E2	BSS	1	Large mammal	TN	2	U	NN			8	
09/08/99	E2	BSS	1	*Philantomba monticola*	ZP	1	L	NN		L(2)	9	
09/08/99	E2	BSS	1	*Otomys sp.*	ZP	2	U	NN			6	
09/08/99	E2	BSS	1	*Philantomba monticola*	HU	108	L	NN	VI	W(6)	12	
09/08/99	E2	BSS	1	Small bird	ST	7	I	NN			11	

09/08/99	E2	BSS	1	Small rodent	HU	1	L	FF	II		21	
09/08/99	E2	BSS	1	Small rodent	FE	108	R	NJ	SI		13	
09/08/99	E2	BSS	1	*cf. Procavia capensis*	UL	103	R	FN	VS	Digested	20	
09/08/99	E2	BSS	1	Marine bivalve	SH	2	U	NN			10	
09/08/99	E2	BSS	1	Chelonea	SH	2	U	NN			14	
09/08/99	E2	BSS	1	*cf. Procavia capensis*	RA	110	R	NN			11	
09/08/99	E2	BSS	1	Small mammal	CA	121	L	NN			14	
09/08/99	E2	BSS	1	Frog/toad	IN	94	U	NN			21	Fresher
09/08/99	E2	BSS	1	Small mammal	RI	72/71	U	NN		W(5)	17	
09/08/99	E2	BSS	1	Small mammal	RI	72	U	NN			12	
09/08/99	E2	BSS	1	Small rodent	VE	51	I	UU			5	
09/08/99	E2	BSS	1	Medium bird	HU	102	R	FN	IS	C	21	Galiformes? Check species
09/08/99	E2	BSS	1	Frog/toad	TI	110	L	FN	IS		21	Fresher
09/08/99	E2	BSS	4	Large mammal	TN	2	U	NN		1=B(2)	11-13mm	
09/08/99	E2	BSS	1	Achatina sp.	SH	2	I	NN			23	Collamella present
09/08/99	E2	BSS	1	Small rodent	UR	1	U	UU			6	
09/08/99	E2	BSS	1	Bivalve	SH	2	U	NN			8	
09/08/99	E2	BSS	1	Small mammal	1P	105	R	NF		Digested	11	
06/08/99	E2	BSS	1	Small-medium bird	HU	1	L	FF		C	41	Fresher Francolin size check sp.
06/08/99	E2	BSS	4	Small rodent	MX	23	R	NN			10	M1,M2+M3 intact
06/08/99	E2	BSS	4	Small rodent	MX	23	L	NN			9	M1,M2+M3 intact
06/08/99	E2	BSS	1	Small rodent	SC	80	L	FN			17	
06/08/99	E2	BSS	1	Small rodent	FE	101	L	UU			18	
06/08/99	E2	BSS	1	Small rodent	HU	105	R	UF			16	
06/08/99	E2	BSS	1	Small rodent	TI	105	L	NF	SI		29	cf. Otomys
06/08/99	E2	BSS	1	Small rodent	TI	105	R	UF			14	
06/08/99	E2	BSS	1	Small bird	RI	72	U	NN			27	
06/08/99	E2	BSS	1	Small rodent	IN	94	L	NN			15	
06/08/99	E2	BSS	1	Small reptile	VE	1	I	FF			6	
06/08/99	E2	BSS	1	Small rodent	LU	1	I	UU			6	Fresher
06/08/99	E2	BSS	2	Frog/toad	HU	100/110	U/U	FN/NN			14-16mm	
06/08/99	E2	BSS	1	Small rodent	FE	110	U	NN			15	
06/08/99	E2	BSS	1	Frog/toad	RA	105	U	NU			14	
06/08/99	E2	BSS	1	Medium mammal	TN	2	U	NN			14	
06/08/99	E2	BSS	2	Small mammal	VE	51	I	NN			4-7mm	
06/08/99	E2	BSS	1	Large mammal	HU	110	U	NN	SS	K R	62	Broke into 2 during excavation
06/08/99	E2	BSS	1	Large mammal	TN	2	U	NN			26	
06/08/99	E2	BSS	1	Large mammal	TN	2	U	NN			40	
06/08/99	E2	BSS	1	Bos/Syncerus	2P	1	L	FF		R	45	Bd - 27.05; SD - 26.30; GL - 45.72; BP - 33.20
06/08/99	E2	BSS	1	Bov II-III	MP	110	U	NN	TV	W(4)	38	
06/08/99	E2	BSS	1	Medium bird	FE	110	U	NN	SS		39	
06/08/99	E2	BSS	2	Large mammal	TN	2	U	NN			16-19	
06/08/99	E2	BSS	1	Medium mammal	TN	2	U	NN			8	
06/08/99	E2	BSS	1	Small rodent	YP	2	U	NN		L(1)?	11	
06/08/99	E2	BSS	1	Small mammal	RI	72	U	NN		W(6)	23	
06/08/99	E2	BSS	1	Medium mammal	VE	52	I	NU			19	
06/08/99	E2	BSS	1	Marine bivalve	SH	2	U	NN			12	
06/08/99	E2	BSS	1	Medium mammal	TN	2	U	NN			14	
06/08/99	E2	BSS	1	Small mammal	PE	2	U	NN		B(2)	7	
06/08/99	E2	BSS	1	Small rodent	VE	51	I	FF			4	

09/08/99	E2	BSS hearth	2	Bov III	ZD	2	U	NN			26	
09/08/99	E2	BSS hearth	1	*Procavia capensis*	YP	2	U	NN		W(4)	21	
14/08/99	E2-a	BSS pit	1	Bov II	3P	105	L	NN			26	
14/08/99	E2-a	BSS pit	1	*Phacochoerus aethiopicus*	ZP	2	U	NN			10	Warthog
14/08/99	E2-a	BSS pit	3	Large mammal	TN	2	U	NN			11-13mm	
14/08/99	E2-a	BSS pit	2	Medium mammal	TN	2	U	NN		1=W(5)	8-9mm	
14/08/99	E2-a	BSS pit	1	Small rodent	IN	95	R	NN			13	
14/08/99	E2-a	BSS pit	1	Small rodent	PE	2	U	NN			6	
14/08/99	E2-a	BSS pit	1	Small-medium bird	1P	102	U	FN			3	
14/08/99	E2-a	BSS pit	1	Small rodent	TI	103	L	UN	IS		10	
14/08/99	E2-a	BSS pit	1	Small rodent	RI	72	U	NN			9	
14/08/99	E2-a	BSS pit	1	Small rodent	VE	55	I	NN			5	
13/08/99	E2-b	BSS	1	*Chlorocebus aethiops*	YP	2	R	NN			8	Worn incisor Upper YP
13/08/99	E2-b	BSS pit	1	Suid	MC	108	RF	NF	SV	L(2)	36	
13/08/99	E2-b	BSS pit	1	Bov II	SE	1	R	NN			19	
13/08/99	E2-b	BSS pit	1	*cf. Cephalophus natelensis*	RA	109	L	NU			15	
13/08/99	E2-b	BSS pit	1	Medium mammal	UR	1	I	FF			19	
13/08/99	E2-b	BSS pit	1	Bov II-III	2P	103	R	NN		W(6)	15	
13/08/99	E2-b	BSS pit	1	Large mammal	TN	2	U	NN			16	
13/08/99	E2-b	BSS pit	5	Medium mammal	TN	2	U	NN		3=W(5)	8-10mm	
13/08/99	E2-b	BSS pit	3	*Otomys sp.*	MX	23	L	NN			12	2 Molars intact
13/08/99	E2-b	BSS pit	1	*Otomys sp.*	YP	2	U	NN			6	
13/08/99	E2-b	BSS pit	2	*Otomys sp.*	ZP	2	U	NN			3-5mm	
13/08/99	E2-b	BSS pit	1	Small reptile	VE	1	I	FF			7	
13/08/99	E2-b	BSS pit	3	Small rodent	VE	51	I	UU			5-6mm	
13/08/99	E2-b	BSS pit	1	Small rodent	SA	1	I	UU			8	
13/08/99	E2-b	BSS pit	1	Small rodent	MP	1	U	FF			11	
13/08/99	E2-b	BSS pit	1	Frog/Toad	RA	1	R	FF			10	
13/08/99	E2-b	BSS pit	2	Small mammal	CR	2	U	NN			6-11mm	
13/08/99	E2-b	BSS pit	1	Small bird	TI	107	L	NF	SI		4	
13/08/99	E2-b	BSS pit	1	Small rodent	FE	110	L	NN	TT		13	
13/08/99	E2-b	BSS pit	1	Small mammal	LU	56	I	NN			9	
13/08/99	E2-b	BSS pit	1	Small rodent	RI	72	U	NN			12	
13/08/99	E2-d	BSS	1	Small rodent	HU	1	R	FF			19	Fresh
13/08/99	E2-d	BSS	3	*Varannus sp.*	MN	31	R	NN			10	
13/08/99	E2-d	BSS	1	Small rodent	YP	2	I	NN	SS		11	
12/08/99	E2-d	BSS	3	Large mammal	TN	2	U	NN			11-24mm	
12/08/99	E2-d	BSS	1	*cf. Philantomba monticola*	AX	51	I	FN		W(5)	12	
12/08/99	E2-d	BSS	1	Small rodent	LU	51	I	UU			7	
12/08/99	E2-d	BSS	1	Small reptile	VE	1	I	FN			5	
12/08/99	E2-d	BSS	1	Small rodent	PM	25	I	NN			10	Fresher
12/08/99	E2-d	BSS	1	Small rodent	ZP	1	U	NN			5	
12/08/99	E2-d	BSS	1	Small rodent	PE	2	U	NN			5	
12/08/99	E2-d	BSS	1	Small fish	FIN	1	U	NN			9	
11/08/99	E2-d	BSS	1	Bov I	RA	101	R	FN	TS		36	
11/08/99	E2-d	BSS	3	Medium mammal	TN	2	U	NN		1=W(4)	10	
11/08/99	E2-d	BSS	4	Medium mammal	CR	2	U	NN			16-25	
11/08/99	E2-d	BSS	1	Small mammal	VE	51	I	UN		Brown (1)	15	
11/08/99	E2-d	BSS	1	*Philantomba monticola*	2P	105	L	NF	SI		8	Bd - 4.80
11/08/99	E2-d	BSS	2	Otomys sp.	ZP	2	U	NN			5	
11/08/99	E2-d	BSS	1	Small rodent	MN	33	L	NN			9	Fresher
11/08/99	E2-d	BSS	1	Small rodent	MX	25	R	NN			9	Fresher

11/08/99	E2-d	BSS	1	Small rodent	FE	101	L	FN	IS		7	Fresher
11/08/99	E2-d	BSS	1	Small rodent	UL	100	R	FN	IS		10	
11/08/99	E2-d	BSS	1	Small rodent	RI	72	U	NN			10	
11/08/99	E2-d	BSS	1	Small rodent	LU	1	I	UU			5	
11/08/99	E2-d	BSS	1	*cf. Perna perna*	SH	2	L	NN			14	
11/08/99	E2-d	BSS	1	Small rodent	FE	110	U	NU	SI		24	
11/08/99	E2-d	BSS	1	Small rodent	MP	1	U	FF			10	
17/08/99	E2-d	BSS hearth	2	Small rodent	PE	2	U	NN			5-8mm	
17/08/99	E2-d	BSS hearth	1	Small mammal	VE	55	I	NN		L(1)	9	
17/08/99	E2-d	BSS hearth	1	Canis sp.	3P	1	U	FF			14	Mesomalus; familiaris and aardwolf fits HP - 7.6 Ld - 12.10 MBS - 2.65 DLS - 15.00
17/08/99	E2-d	BSS hearth	1	Worked bone - take to Mandy	YP	2	U	NN		K?	12	
17/08/99	E2-d	BSS hearth	1	Small rodent	IN	92	L	NN			6	
16/08/99	E2-d	BSS hearth	1	Small mammal	PE	2	U	NN		W(5)	7	
16/08/99	E2-d	BSS hearth	1	Large mammal	TN	2	U	NN			4-15mm	
16/08/99	E2-d	BSS hearth	1	Bov II	TN	2	U	NN			10	
16/08/99	E2-d	BSS hearth	1	*Raphicerus sharpei/Cephalophus natalensis*	3P	1	R	FN			14	Rooi duiker/Sharpe's grysbok HP - 7.91; BFp - 4.77; Ld - 14.30; MBS - 4.50; DLS - 15.05
16/08/99	E2-d	BSS hearth	1	Small rodent	MP	1	U	FF			11	
16/08/99	E2-d	BSS hearth	1	Small rodent	SC	80	L	FN			8	
16/08/99	E2-d	BSS hearth	2	Small rodent	MN	34	R	NN			16	1 Premolar intact
16/08/99	E2-d	BSS hearth	2	Small rodent	MX	23	U	NN			7	Tooth fragment intact
16/08/99	E2-d	BSS hearth	1	Small rodent	RI	72	U	NN			13	
16/08/99	E2-d	BSS hearth	1	Small rodent	UR	51	I	FU			6	
16/08/99	E2-d	BSS hearth	1	*Otomys sp.*	ZP	1	U	NN			6	
16/08/99	E2-d	BSS hearth	2	*Serpentis sp.*	VE	1	I	FF			4-8mm	
16/08/99	E2-d	BSS hearth	1	Small rodent	RI	72	U	NN			13	
16/08/99	E2-d	BSS hearth	2	Small mammal	RI	72/71	U	NN/FN		1=W(6) 1=L(2)	13-20mm	
16/08/99	E2-d	BSS hearth	2	Medium fish	VE	51	I	FN			5	Length of centrum - 4.25; 3.80
16/08/99	E2-d	BSS hearth	1	Medium fish	SC	81	U	NN			15	
16/08/99	E2-d	BSS hearth	1	Small rodent	CR	2	U	NN			10	
16/08/99	E2-d	BSS hearth	1	Small fish	CR	2	U	NN			8	
16/08/99	E2-d	BSS hearth	1	Bivalve	SH	2	U	NN			18	
16/08/99	E2-d	BSS hearth	1	Small frog/toad	FE	110	U	NN			7	
16/08/99	E2-d	BSS hearth	1	Bov II	MP	109	U	NU			18	
17/08/99	E2-d	BSS pit	1	*Philantomba monticola*	RA	107	R	NF	TI	W(6)	29	Bd - 10.80 Bfd - 9.30
17/08/99	E2-d	BSS pit	1	Bov II	HY	2	U	NN			35	
17/08/99	E2-d	BSS pit	1	Bov II	TA	121	U	NN			20	
17/08/99	E2-d	BSS pit	1	Procavia capensis	RA	100	L	NN			17	BP - 7.55
17/08/99	E2-d	BSS pit	3	Small mammal	RI	72	U	NN		1=W(4)	12mm-26mm	
17/08/99	E2-d	BSS pit	1	Small mammal	RI	71	U	NN			33	Fresher
17/08/99	E2-d	BSS pit	2	Medium mammal	CR	2	U	NN			25	
17/08/99	E2-d	BSS pit	1	Mongoose	CR	2	U	NN			21	Mandible articulation area
17/08/99	E2-d	BSS pit	1	Medium mammal	PE	2	U	NN			12	
17/08/99	E2-d	BSS pit	2	Small mammal	FE	110	U	NN	SS	W(6)	22+27	Refitted pieces
17/08/99	E2-d	BSS pit	1	Small rodent	FE	109	R	NU			6	
17/08/99	E2-d	BSS pit	1	Small mammal	CR	2	R	NN		B(2)	15	
17/08/99	E2-d	BSS pit	1	Serpentis sp.	VE	1	I	FF			7	
17/08/99	E2-d	BSS pit	1	Small mammal	TH	56	U	NN		W(6)	12	
17/08/99	E2-d	BSS pit	1	Bov II non-domestic	YP	1	L	NN			15	Lower incisor
17/08/99	E2-d	BSS pit	3	Small fish	VE	1	I	NN			4mm-9mm	Length of centrum - 3.0, 2.0, 2.65

17/08/99	E2-d	BSS pit	1	Medium fish	VE	51	I	NN			5	Length of centrum -4.40
17/08/99	E2-d	BSS pit	1	Small rodent	UR	1	I	NN			8	Very fresh
17/08/99	E2-d	BSS pit	1	Small rodent	UL	100	L	FN			15	
17/08/99	E2-d	BSS pit	1	Small rodent	MP	100	U	FU			10	
17/08/99	E2-d	BSS pit	3	Bov I	TN	2	U	NN			8mm-10mm	
17/08/99	E2-d	BSS pit	1	Small fish	VE	56	I	NN			11	
17/08/99	E2-d	BSS pit	7	Small fish	RI	72	U	NN			9mm-22mm	
17/08/99	E2-d	BSS pit	1	*Labeo sp.*	MN	2	L/R	NN			7mm-11mm	
17/08/99	E2-d	BSS pit	2	*Small rodent*	MX	23	R	NN			7mm-11mm	
17/08/99	E2-d	BSS pit	1	Small rodent	IN	92	L	NN			15	
17/08/99	E2-d	BSS pit	1	Medium-large rodent	3P	2	U	NN			5mm-10mm	
17/08/99	E2-d	BSS pit	1	Small bird	CO	100		FN			12	
17/08/99	E2-d	BSS pit	1	Small mammal	TN	2	U	NN		B(4)	8	
17/08/99	E2-d	BSS pit	1	Medium fish	VE	51	I	NN			6	
17/08/99	E2-d	BSS pit	2	Small rodent	YP	2	U	NN			6mm-10mm	
17/08/99	E2-d	BSS pit	1	Small rodent	PH	1	U	NN			8	
17/08/99	E2-d	BSS pit	1	Small mammal	VE	55	I	NN			10	
16/08/99	E2-d	BSS pit	1	Medium mammal	RI	72	U	NN		W(6)	26	
16/08/99	E2-d	BSS pit	1	*cf. Cephalophus natalensis*	CA	1	R	FF		R	40	GL - 40.35 Bp - 6.45 Dd - 14.40 DS - 12.70
16/08/99	E2-d	BSS pit	1	Medium mammal	UR	1	U	FU			17	
16/08/99	E2-d	BSS pit	1	Small mammal	ZG	2	U	NN			38	
16/08/99	E2-d	BSS pit	1	Bov II	AS	121	U	NN		B(2)	10	
16/08/99	E2-d	BSS pit	1	Bov III	PH	101	U	NN		L(1)	17	
16/08/99	E2-d	BSS pit	1	Medium mammal	CR	2	U	NN			15-32mm	
16/08/99	E2-d	BSS pit	2	Small mammal	CR	2	U	NN			10-13mm	
16/08/99	E2-d	BSS pit	1	Bov III	TN	2	U	NN		L(1)	14	
16/08/99	E2-d	BSS pit	2	Medium mammal	TN	2	U	NN			5-11mm	
16/08/99	E2-d	BSS pit	1	*Philantomba monticola*	1P	1	L	FF		Chopped	13	SD - 6.05 GL - 13.25
16/08/99	E2-d	BSS pit	1	Small rodent	MN	34	R	NN			15	
16/08/99	E2-d	BSS pit	1	Small mammal	VE	51	I	NF			9	
16/08/99	E2-d	BSS pit	1	Small-medium carnivore	ZP	2	R	NN			13	Broke during identification
16/08/99	E2-d	BSS pit	1	*cf. Felis silvestris*	YP	1	L	NN			17	Lower incisor
16/08/99	E2-d	BSS pit	1	Small rodent	TH	1	I	UU			8	
16/08/99	E2-d	BSS pit	1	Small rodent	YP	2	U	NN			14	
17/08/99	E2-d	BSS pit	1	Large mammal	TN	2	U	NN			12-22mm	
17/08/99	E2-d	BSS pit	1	Medium mammal	TN	2	U	NN			7-11mm	
17/08/99	E2-d	BSS pit	1	Bov III-IV	2P	108	L	NF	VT		20	
17/08/99	E2-d	BSS pit	1	Small mammal	HU	110	L	NF	SV	W(5)	30	
17/08/99	E2-d	BSS pit	1	Bov II	SC	80	U	NN			18	
17/08/99	E2-d	BSS pit	1	Small mammal	PE	2	U	NN			21	
17/08/99	E2-d	BSS pit	1	Small mammal	AX	56	I	NF			21	
17/08/99	E2-d	BSS pit	1	Small mammal	RI	72	R	NN			16	
17/08/99	E2-d	BSS pit	1	Small rodent	CR	2	I	NN			16	
17/08/99	E2-d	BSS pit	1	Small fish	CR	2	U	NN			9	
17/08/99	E2-d	BSS pit	1	Small fish	RI	72	U	NN			13	
17/08/99	E2-d	BSS pit	1	Small fish	VE	1	I	FF			8	Length of centrum - 3.15
17/08/99	E2-d	BSS pit	1	Small fish	CR	2	U	NN			9	
17/08/99	E2-d	BSS pit	1	Small rodent	CR	2	L	NN			8	
17/08/99	E2-d	BSS pit	1	Small fish	CR	2	U	NN			11	
17/08/99	E2-d	BSS pit	1	Small bird	HU	100	L	FN	IT		10	
17/08/99	E2-d	BSS pit	5	*Otomys sp.*	MN	31	L	NN			17	
17/08/99	E2-d	BSS pit	1	Terrestrial gasteropod	SH	2	I	NN			12	

17/08/99	E2-d	BSS pit	1	Frog/toad	PH	1	U	FF			7	
17/08/99	E2-d	BSS pit	1	Small mammal	VE	56	I	NN		W(5)	8	
17/08/99	E2-d	BSS pit	1	Medium mammal	UR	1	I	FF			19	
17/08/99	E2-d	BSS pit	1	Small mammal	CR	2	U	NN			21	
17/08/99	E2-d	BSS pit	1	Small rodent	IN	94	L	NN			4	
06/08/99	E3	BSS	1	Medium mammal	RI	72	U	NN		K	108	
06/08/99	E3	BSS	1	Small rodent	HU	105	R	UF			18	Fresher
06/08/99	E3	BSS	1	Small mammal	MP	110	U	BB		C	42	
06/08/99	E3	BSS	1	*Philantomba monticola*	TI	100	L	FN	IS		21	Dd - 9.61 Bd - 13.95
06/08/99	E3	BSS	2	Large mammal	TN	2	I	NN			19-23	
06/08/99	E3	BSS	3	Small rodent	MN	1	L	NN			15	Fresher 2 molars intact
06/08/99	E3	BSS	2	Small mammal	CR	2	R/U	NN			17-25	
06/08/99	E3	BSS	1	*cf. Mellivora capensis*	ZP	2	R	NN			10	Lower P3 adult
06/08/99	E3	BSS	1	*Chlorocebus aethiops*	YP	2	L	NN			11	Fresher upper YP
06/08/99	E3	BSS	1	Small mammal	PE	2	U	NN			10	
06/08/99	E3	BSS	1	*Philantomba monticola*	MN	43	R	NN			36	
06/08/99	E3	BSS	1	*Bov II*	IN	91	R	NN			65	
05/08/99	E3	BSS	1	Medium mammal	LU	55	I	NN		K R chopped	48	Fresher
05/08/99	E3	BSS	1	Medium mammal	VE	55	I	NN		-1	29	
05/08/99	E3	BSS	2	Medium mammal	CR	2	U	NN		1=K?	19-30mm	6=Fresher
05/08/99	E3	BSS	1	*Philantomba monticola*	HU	107	L	NF	SI	L(1)	30	BD - 13.85 BT - 12.92 Dmd - 11.40
05/08/99	E3	BSS	1	Bov II-III	IN	95	U	NN		R	23	
05/08/99	E3	BSS	1	Small mammal	RI	72	U	NN			13	
05/08/99	E3	BSS	1	Bov III-IV	TN	2	U	NN			24-29	1 = Unerupted tooth frag (molar?)
05/08/99	E3	BSS	5	Large mammal	TN	2	U	NN			12-20mm	
05/08/99	E3	BSS	1	Medium mammal	TN	2	U	NN			6	
05/08/99	E3	BSS	1	Mongoose	XP	1	L	NN			9	UPM2 Fresher
05/08/99	E3	BSS	1	Small fish	AX	1	I	FF			14	Length of centrum - 4.68
05/08/99	E3	BSS	1	Small fish	VE	1	I	FF			8	Length of centrum - 2.83
05/08/99	E3	BSS	1	Labeobarbus sp.	CR	4	U	NN			14	
05/08/99	E3	BSS	1	Small rodent	HU	105	R	NF	TI		11	Very fresh
05/08/99	E3	BSS	1	Small rodent	FE	100	L	FN	IS		13	Fresher
05/08/99	E3	BSS	1	Small rodent	SA	1	I	UU			17	Fresher
05/08/99	E3	BSS	1	Small rodent	TI	1	L	UF			21	Very fresh
05/08/99	E3	BSS	1	Small rodent	FE	110	U	NN	SS		19	Very fresh
05/08/99	E3	BSS	4	Bivalve	SH	2	U	NN			#####	
05/08/99	E3	BSS	2	Small rodent	TI	107	R	NF	SI		15	Fresher - Fibula present
05/08/99	E3	BSS	1	Small rodent	UR	1	I	UU			4	
05/08/99	E3	BSS	1	Small rodent	CE	53	I	UU			4	Very fresh
05/08/99	E3	BSS	1	Small rodent	CA	1	R	FF			6	
05/08/99	E3	BSS	1	Small rodent	CE	53	I	FU			6	Fresher
05/08/99	E3	BSS	1	Small bird	CO	105	L	NF	TI		15	
05/08/99	E3	BSS	1	Small mammal	FE	109	R	NU			8	
05/08/99	E3	BSS	1	Small - medium reptile	VE	1	I	FF			8	
05/08/99	E3	BSS	1	Small rodent	PE	2	U	NN			4	Very fresh
05/08/99	E3	BSS	1	Small rodent	UR	1	I	FU			4	
05/08/99	E3	BSS	1	Small mammal	CR	2	U	NN			11	
09/08/99	E3	BSS	1	Bov III	ZP	2	R	NN			28	Lower M2 3 pieces refitted
09/08/99	E3	BSS	8	Bov III	TN	2	U	NN			7-16mm	
09/08/99	E3	BSS	1	Small rodent	FE	107	L	NJ	SI		8	
09/08/99	E3	BSS	1	Small rodent	FE	109	R	NU			6	
09/08/99	E3	BSS	1	Suricate	UL	102	L	FN	IT		13	

09/08/99	E3	BSS	1	Small rodent	IN	92	R	NN			11	
09/08/99	E3	BSS	1	Small rodent	IN	92	L	NN			9	
09/08/99	E3	BSS	4	*Otomys sp.*	MN	34	R	NN			15	Incisor and 2 teeth present
09/08/99	E3	BSS	1	Small rodent	UL	100	L	UN	IS		8	
09/08/99	E3	BSS	1	Small rodent	HU	107	L	NF	SI		10	
09/08/99	E3	BSS	1	*Viverridae sp.*	FR	1	L	NN			39	
09/08/99	E3	BSS	1	Bov II	MN	43	U	NN			18	
09/08/99	E3	BSS	1	Small mammal	RI	72	U	NN			17	
09/08/99	E3	BSS	1	Frog/toad	FE	110	U	NN			17	Fresher
09/08/99	E3	BSS	1	Small rodent	FE	101	L	NN			8	
08/08/99	E3	BSS	1	Medium bird	VE	1	I	FF			15	
08/08/99	E3	BSS	1	Small-medium bird	FE	1	L	UF			31	
08/08/99	E3	BSS	1	Small bird	UL	105	R	FF			20	Species with short wings check sp.
08/08/99	E3	BSS	1	Medium mammal	CR	2	U	NN			14	
08/08/99	E3	BSS	1	Small rodent	FE	103	R	FN	IS		12	
08/08/99	E3	BSS	1	Small rodent	SA	53	I	NF			4	
06/08/99	E3	BSS pit	1	Medium mammal	LU	51	I	UN		K	22	
06/08/99	E3	BSS pit	1	Medium mammal	VE	55	I	NN			23	
06/08/99	E3	BSS pit	1	Bov III-IV	PA	120	L	NN		K	50	
06/08/99	E3	BSS pit	1	Marine bivalve	SH	2	U	NN			23	
06/08/99	E3	BSS pit	1	Medium mammal	TN	2	U	NN			6	
06/08/99	E3	BSS pit	1	Large mammal	TN	2	U	NN			11	
06/08/99	E3	BSS pit	1	Small rodent	RA	101	U	UN	IS		9	
06/08/99	E3	BSS pit	1	Small rodent	MC	107	R	FN	IT		8	
06/08/99	E3	BSS pit	1	Small rodent	SC	80	R	FN			13	
06/08/99	E3	BSS pit	1	Small fish	CR	2	U	NN			6	
06/08/99	E3	BSS pit	1	Medium bird	QU	1	U	NN		B(2)	10	
06/08/99	E3	BSS pit	1	Small mammal	TN	2	U	NN			5	
10/08/99	E3-b	BSS hearth	1	Bov II-III	HC	2	U	NN			31	
10/08/99	E3-b	BSS hearth	1	Small reptile	VE	1	I	FF			8	Fresher
10/08/99	E3-b	BSS hearth	1	Small rodent	IN	95	U	NN			5	
10/08/99	E3-b	BSS hearth	1	Medium mammal	LU	55	I	NN			63	
17/08/99	E3-b	BSS hearth in brown MOD	1	Medium mammal	HU	110	U	NN	VV	R CH	48	
17/08/99	E3-b	BSS hearth in brown MOD	1	Bov III	FE	101	R	BN	IS	B(2)	48	
17/08/99	E3-b	BSS hearth in brown MOD	1	*cf. Philantomba monticola*	HC	10	R	NN		W(5)	33	
17/08/99	E3-b	BSS hearth in brown MOD	1	Bov III	2P	106	R	NF	VT		34	
17/08/99	E3-b	BSS hearth in brown MOD	1	*Philantomba monticola*	YP	1	L	NN			10	
17/08/99	E3-b	BSS hearth in brown MOD	3	Large mammal	TN	2	U	NN		1=B(2)	14-29	
17/08/99	E3-b	BSS hearth in brown MOD	4	Medium mammal	TN	2	U	NN		2=B(2)	6-8mm	
17/08/99	E3-b	BSS hearth	1	Small rodent	PM	25	R	NN			15	

		in brown MOD										
17/08/99	E3-b	BSS hearth in brown MOD	1	Small mammal	FR	2	L	NN			15	
17/08/99	E3-b	BSS hearth in brown MOD	1	Medium mammal	UR	51	I	NN			13	
17/08/99	E3-b	BSS hearth in brown MOD	1	Medium mammal	VE	55	I	NN			20	
17/08/99	E3-b	BSS hearth in brown MOD	3	*Otomys sp.*	MN	37	R	NN			16	Fresher Incisor and tooth intact
17/08/99	E3-b	BSS hearth in brown MOD	3	*Otomys sp.*	YP	2	U	NN			6-13mm	
17/08/99	E3-b	BSS hearth in brown MOD	2	*Otomys sp.*	ZP	2	U	NN			6	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	YP	2	U	NN			7	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small rodent	MN	37	R	NN			9	Fresher
17/08/99	E3-b	BSS hearth in brown MOD	2	Small mammal	RI	72	U	NN			8-34	1=Fresher
17/08/99	E3-b	BSS hearth in brown MOD	1	*Viverridae*	ZP	1	L	NN			5	Fresher M1
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	IN	94	R	NN			22	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small rodent	UR	51	I	UU/UF			4-5mm	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	PE	2	U	NN			6	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small rodent	FE	109	L/R	NU			6	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	TI	104	L	UN			6	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small rodent	FE	101	L/R	FF	IS	1=L(1)	7	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	UL	101	R	FN	VS		8	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	UL	101	L	FN			11	

17/08/99	E3-b	BSS hearth in brown MOD	1	Small bird	MP	100	U	FU			8	Fresher
17/08/99	E3-b	BSS hearth in brown MOD	4	Marine bivalve	SH	2	U	NN			5-18mm	
17/08/99	E3-b	BSS hearth in brown MOD	1	Gasteropod	SH	2	U	NN			5	
17/08/99	E3-b	BSS hearth in brown MOD	1	Medium fish	MX	22	L	NN			15	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small fish	CR	2	U	NN			9	
17/08/99	E3-b	BSS hearth in brown MOD	2	Medium fish	VE	51	I	FF			4-11mm	Length of centrum - 4.42; 3.00
17/08/99	E3-b	BSS hearth in brown MOD	3	Small fish	VE	51	I	FF			2-10mm	Length of centrum - 2.35; 2.39; 1.70
17/08/99	E3-b	BSS hearth in brown MOD	1	Small fish	VE	55	I	NN			14	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small fish	Spine	55	I	FF			11-16mm	
17/08/99	E3-b	BSS hearth in brown MOD	2	Small fish	RI	72	U	NN			9-14mm	
17/08/99	E3-b	BSS hearth in brown MOD	2	Frog/toad	UL	1	U	FF			9-10mm	
17/08/99	E3-b	BSS hearth in brown MOD	1	Small rodent	AT	59	I	NN			5	
10/08/99	E3-d	BSS pit	1	*cf. Redunca arundinum*	FE	100	L	FN	IS		47	DC - 23.00
10/08/99	E3-d	BSS pit	1	Bov II	MN	39	I	NN		B(3) Chopped	18	Incisor section of the mandible
10/08/99	E3-d	BSS pit	1	Small mammal	FE	101	U	NN			8	
10/08/99	E3-d	BSS pit	1	Very small fish	VE	1	I	FF			9	Length of centrum - 1.50
10/08/99	E3-d	BSS pit	1	Small bird	CO	101	R	FN	IS		6	
10/08/99	E3-d	BSS pit	1	Bov I	FE	110	U	NN		L(1)	13	
12/08/99	E3-d	BSS pit IA	2	Medium mammal	VE	55	I	NN		1=L(1)	11mm-18mm	
12/08/99	E3-d	BSS pit IA	1	Large mammal	YP	2	U	NN			23	
12/08/99	E3-d	BSS pit IA	1	Small mammal	RI	72	U	NN			9	
12/08/99	E3-d	BSS pit IA	1	Large mammal	TN	2	I	NN			25	
20/04/99	E4-a	BSS	1	Small rodent	TI	100	R	UN	IT		25	
20/04/99	E4-a	BSS	2	Medium mammal	TN	2	U	NN		1=L(1)	9-11mm	
19/04/99	E4-a	BSS	1	Bov III-IV	1P	108	LH	NF	VT	Chopped K	42	
20/04/99	E4-b	BSS	2	Large mammal	TN	2	U	NN			10-14mm	
20/04/99	E4-b	BSS	1	Small mammal	VE	55	I	NN			9	
20/04/99	E4-b	BSS	1	*Philantomba monticola*	ZP	1	R	NN			8	UP2
25/04/99	E4-b	BSS	1	Large mammal	TI	110	U	NN	VV	L(1) K	61	
25/04/99	E4-b	BSS	1	Bov II	TN	2	U	NN		L(2)?	17	
25/04/99	E4-b	BSS	2	Small mammal	CR	2	U	NN		1=L(1)	12-14mm	

25/04/99	E4-b	BSS	3	Medium mammal	CR	2	U	NN		L(2)	25-33	
25/04/99	E4-b	BSS	1	Marine bivalve	SH	2	U	NN			9	
25/04/99	E4-b	BSS	1	Small rodent	VE	54	I	NN			6	
26/04/99	E4-b	BSS	1	Medium mammal	OO	2	U	NN			36	
26/04/99	E4-b	BSS	1	Large mammal	HU	110	U	NN	SS	R	55	
26/04/99	E4-b	BSS	1	Bov II	HU	108	R	NF	TT	L(2) K Chopped	33	
26/04/99	E4-b	BSS	1	Bov III non-domestic	1P	103	U	FN		L(2) R	20	
26/04/99	E4-b	BSS	4	Bov II-III	TN	2	U	NN		1=B(4) 1=W(5)	12-21mm	
26/04/99	E4-b	BSS	6	Medium mammal	TN	2	U	NN		3=B(2)	5-11mm	
26/04/99	E4-b	BSS	1	Bov II	YP	2	U	NN			10	
26/04/99	E4-b	BSS	1	Medium fish	RI	71	U	FN			21	
26/04/99	E4-b	BSS	4	Small reptile	VE	1	I	FF			3-6mm	
26/04/99	E4-b	BSS	1	Marine bivalve	SH	2	R	NN			14	
26/04/99	E4-b	BSS	1	Marine bivalve	SH	2	U	NN			13	
26/04/99	E4-b	BSS	1	Small mammal	LU	55	I	NN			13	
24/04/99	E4-b	BSS	1	Bov IV	HU	110	U	NN	SV	K Chopped	108	
19/04/99	E4-c	BSS	1	Large mammal	TN	2	U	NN		L(1)	15	
19/04/99	E4-c	BSS	1	Medium mammal	TN	2	U	NN			13	
19/04/99	E4-c	BSS	1	Small rodent	UL	110	U	NN			28	
20/04/99	E4-d	BSS	1	Medium mammal	VE	56	I	NN	DV		37	
20/04/99	E4-d	BSS	1	Medium mammal	VE	56	I	NN	DD	K?	27	
20/04/99	E4-d	BSS	1	Bov III	RA	103	U	FN	TV	K L(1)	21	
20/04/99	E4-d	BSS	1	Bov II	SE	1	I	NN		L(1)	9	
20/04/99	E4-d	BSS	1	Large mammal	TN	2	U	NN	TT		16	
20/04/99	E4-d	BSS	1	Small mammal	CR	6	I	NN			31	
20/04/99	E4-d	BSS	1	Bov II	IN	91	R	NN		R	35	
20/04/99	E4-d	BSS	2	Bov III	ZP	2	U	NN			25	2 refitted pieces
20/04/99	E4-d	BSS	1	Bov II	TN	2	U	NN			24	
20/04/99	E4-d	BSS	1	Bov II	TN	2	U	NN			20	
20/04/99	E4-d	BSS	1	Bov II	TP	2	U	NN		B(2)	15	
20/04/99	E4-d	BSS	1	Medium mammal	TN	2	U	NN			16	
20/04/99	E4-d	BSS	1	Medium mammal	TN	2	U	NN		B(2)	15	
20/04/99	E4-d	BSS	1	Small mammal	RI	72	U	NN	VV		38	
20/04/99	E4-d	BSS	1	Medium fish	VE	50	I	FF			19	Length of centrum 8 mm
20/04/99	E4-d	BSS	1	Bov III non-domestic	CA	121	L	NN	IV	R	27	
20/04/99	E4-d	BSS	1	Bov III non-domestic	CA	121	L	NN			21	Part of previous species (Bov III non-dom)
20/04/99	E4-d	BSS	1	Bov II	SC	81	U	NN	TT	B(2)	33	
20/04/99	E4-d	BSS	1	Bov III	SE	1	I	NN			11	
20/04/99	E4-d	BSS	1	Bov I	2P	103	U	FN		W(5)	11	
20/04/99	E4-d	BSS	2	Medium mammal	TN	2	U	NN			12	
20/04/99	E4-d	BSS	1	Bov III non-domestic	TI	110	U	NN	VT		68	
20/04/99	E4-d	BSS	1	Bov II	MT	103	R	FN	VS		41	
20/04/99	E4-d	BSS	1	Bov III	HU	104	U	UN	CC	C	36	
20/04/99	E4-d	BSS	1	Medium mammal	TN	2	U	NN		L(1)	11	
20/04/99	E4-d	BSS	1	Small rodent	FE	100	L	FN	IS		15	
20/04/99	E4-d	BSS	1	Small rodent	HU	102	R	NN	IS		5	
20/04/99	E4-d	BSS	1	Small rodent	CR	2	I	NN			7	
20/04/99	E4-d	BSS	1	Small rodent	HU	105	L	UF			11	
20/04/99	E4-d	BSS	1	Small rodent	MP	1	L	FF			11	
20/04/99	E4-d	BSS	1	Small rodent	CA	1	L	FN			7	
20/04/99	E4-d	BSS	1	Small rodent	TI	105	R	NF			12	

20/04/99	E4-d	BSS	1	Small rodent	FE	110	U	NN	VV	-1	16	
20/04/99	E4-d	BSS	1	Small reptile	VE	53	I	NN	IV	B(4)	8	
20/04/99	E4-d	BSS	1	*Varannus cf exanthenaticus*	MN	34	L	NN			10	Mountain monitor lizard
20/04/99	E4-d	BSS	1	Bov I	AS	121	R	NN		W(6)	8	
20/04/99	E4-d	BSS	1	Small mammal	RI	72	U	NN		L(1)	13	
20/04/99	E4-d	BSS	1	Small mammal	TN	2	U	NN			7	
20/04/99	E4-d	BSS	1	Small fish	VE	51	I	NN			4	Length of centrum 2.20 mm
20/04/99	E4-d	BSS	1	Small mammal	RI	72	U	NN			20	
20/04/99	E4-d	BSS	1	Small bird	UL	102	R	FN	IS		12	
20/04/99	E4-d	BSS	1	Small mammal	HU	104	U	UN			9	
20/04/99	E4-d	BSS	1	cf fish	CR	2	I	NN			9	
20/04/99	E4-d	BSS	1	cf marine bivalve	SH	2	U	NN		L(2)	13	
20/04/99	E4-d	BSS	1	Marine gastropod	SH	2	U	NN			15	
20/04/99	E4-d	BSS	1	cf. Barnicle	SH	2	U	NN			11	
20/04/99	E4-d	BSS	1	Marine gastropod	SH	2	U	NN			7	Check if it can be proparly id (Small white with parallel lines)
20/04/99	E4-d	BSS	1	Marine shell	SH	2	U				5	
20/04/99	E4-d	BSS	1	Marine bivalve	SH	2	U			Beach worn	10	
20/04/99	E4-d	BSS	1	Marine gastropod	SH						4	
20/04/99	E4-d	BSS	2	*Unionidae*	SH						8	
21/04/99	E4-d	BSS	1	Bov II	TI	109	L	NU		G	22	Young indiv
21/04/99	E4-d	BSS	6	Medium mammal	TN	2	I	NN		1=B(2)	10mm-17mm	
21/04/99	E4-d	BSS	1	Large mammal	TN	2	I	NN			13	
12/07/99	E4-d	BSS	1	*Phacochoerus aethiopicus*	ZP	2	I	NN			25	2 refitted pieces
12/07/99	E4-d	BSS	2	Medium mammal	RI	72	I	NN		B(2)	11mm+16mm	
12/07/99	E4-d	BSS	1	Marine bivalve	SH	2	I	NN			9	
12/07/99	E4-d	BSS	1	Bov III-IV	HC	2	U	NN			51	
23/04/99	E4-d	BSS	1	Bov II	TH	56	I	NN			72	
23/04/99	E4-d	BSS	1	Medium mammal	RI	71	U	FN			23	
23/04/99	E4-d	BSS	28	Bov III	TN	2	I	NN		2=B(2)	11mm-36mm	
23/04/99	E4-d	BSS	1	Small rodent	HU	105	R	UF			24	
23/04/99	E4-d	BSS	2	*Otomys sp.*	MX	2	U	NN			9	1=Molar intact
23/04/99	E4-d	BSS	1	Small bird	UL	102	L	FN			14	
23/04/99	E4-d	BSS	1	Marine bivalve	SH	2	U	NN			13	
23/04/99	E4-d	BSS	1	Large mammal	MN	33	U	NN		B(2)	22	
23/04/99	E4-d	BSS	1	Medium mammal	RI	71	U	NN			15	
19/04/99	E4-d	BSS	1	Bov III-IV	ZP	2	U	NN			46	
19/04/99	E4-d	BSS	1	Large mammal	CR	23	U	NN		K	62	
19/04/99	E4-d	BSS	1	Bov II	MP	110	U	NN	SS		46	
19/04/99	E4-d	BSS	1	*Procavia capensis*	FE	104	U	UN			9	
19/04/99	E4-d	BSS	3	Large mammal	TN	2	U	NN		1=B(1)	9-27mm	
19/04/99	E4-d	BSS	3	Medium mammal	TN	2	U	NN		2=B(2)	9-11mm	
19/04/99	E4-d	BSS	1	Medium mammal	CR	2	U	NN			23	
19/04/99	E4-d	BSS	1	*Felis cf. silvestris*	XP	1	R	NN			12	LPM2 Felis negripis does not appear in area and only other felid that fits
19/04/99	E4-d	BSS	1	Small fish	RI	71	U	FN			22	
19/04/99	E4-d	BSS	1	Small reptile	VE	1	I	FF			8	
19/04/99	E4-d	BSS	1	Medium mammal	VE	52	I	UN			16	
19/04/99	E4-d	BSS	1	Bov I-II	HU	101	R	NN			12	
19/04/99	E4-d	BSS	1	Bov III-IV	HC	2	U	NN			50	
19/04/99	E4-d	BSS	1	Medium mammal	RI	70	U	NF		K	28	
24/04/99	E4-d	BSS	1	Bov I	IN	93	L	NN			37	Fresher
24/04/99	E4-d	BSS	3	Bov III	TN	2	U	NN			9-21mm	

24/04/99	E4-d	BSS	6	Large mammal	TN	2	U	NN			9-21mm	
24/04/99	E4-d	BSS	1	Small mammal	CR	2	U	NN			9	
23/04/99	E4-d	BSS	6	Medium mammal	TN	2	U	NN		2=B(2)	6-11mm	
23/04/99	E4-d	BSS	1	Small rodent	FE	102	L	FN	IS		7	
23/04/99	E4-d	BSS	1	Small rodent	MP	100	U	FN	IT		10	
23/04/99	E4-d	BSS	1	Barnicle	SH	2	U	NN			6	
21/04/99	E4-d	BSS	8	Medium mammal	TN	2	U	NN		4=B(2) 1=B(4)	9-14mm	
21/04/99	E4-d	BSS	1	Small rodent	UR	1	I	NF			6	
21/04/99	E4-d	BSS	2	Marine Bivalve	SH	2	U	NN			6-7mm	
21/04/99	E4-d	BSS	1	*Otomys sp.*	ZP	1	U	NN			7	
21/04/99	E4-d	BSS	1	Small rodent	HU	105	L	UF	II		8	
22/04/99	E4-d	BSS	8	Large mammal	TN	2	U	NN		2=L(2)	8-20mm	
22/04/99	E4-d	BSS	1	Small mammal	PE	2	U	NN		L(1)	16	
22/04/99	E4-d	BSS	1	Bov I-II	MP	110	U	NN	VS	L(2)	40	
22/04/99	E4-d	BSS	1	Medium bird	UL	102	L	FN	IS		15	
22/04/99	E4-d	BSS	1	Small rodent	HU	105	R	NF	SI		16	
22/04/99	E4-d	BSS	1	Medium fish	VE	55	I	NN			13	
22/04/99	E4-d	BSS	1	Small rodent	2P	1	U	FF			6	
22/04/99	E4-d	BSS	1	Small rodent?	VE	55	I	NN			6	
22/04/99	E4-d	BSS	1	Bov I	TA	121	U	NN			14	
13/07/99	E5	BSS pit	1	Bov II	UL	100	R	FN	IV		83	Felt safer to id to Bov II as ulna is not as diagnostic
13/07/99	E5	BSS pit	1	Medium mammal	CE	59	I	UU		Chopped	40	
13/07/99	E5	BSS pit	1	Bov II non-domestic	1P	105	L	NF	SI		21	Bd - 11.72
13/07/99	E5	BSS pit	1	Small mammal	VE	55	I	NN		L(1)	16	
13/07/99	E5	BSS pit	2	Marine bivalve	SH	2	U	NN			7-27mm	
13/07/99	E5	BSS pit	1	Large mammal	TN	2	U	NN		L(1)	11	
14/07/99	E5	BSS pit	1	*Syncerus/Bos*	MC	108	L	NF	IV		41	
14/07/99	E5	BSS pit	1	*cf. Redunca arundinum*	TI	104	L	UN			32	
14/07/99	E5	BSS pit	2	Bov IV	SE	1	L/R	NN		R	28	
14/07/99	E5	BSS pit	2	*Redunca arundinum*	MN	33	R	NN			18-28	Lower M1 intact
14/07/99	E5	BSS pit	7	Bov III-IV	TN	2	U	NN			19-28	
14/07/99	E5	BSS pit	1	*Potomachoerus porcus*	ZD	2	U	NN			16	Unerupted cap
14/07/99	E5	BSS pit	3	Large mammal	TN	2	U	NN			11-34	
14/07/99	E5	BSS pit	2	Medium mammal	RI	72	U	NN			53	
14/07/99	E5	BSS pit	1	Small mammal	HU	110	R	NN	ST		37	
14/07/99	E5	BSS pit	1	*Philantomba/Neotragus*	TI	110	L	NN	SS		87	
14/07/99	E5	BSS pit	4	Small mammal	CR	2	U	NN			16-28	
14/07/99	E5	BSS pit	1	Medium mammal	VE	55	I	NN		C	23	
14/07/99	E5	BSS pit	1	Marine bivalve	SH	2	U	NN			14	
14/07/99	E5	BSS pit	1	Bov III-IV	CP	121	U	NN		W(5)	21	
14/07/99	E5	BSS pit	1	Large mammal	SA	2	I	NN			36	
14/07/99	E5	BSS pit	1	Bov II	MN	34	U	NN		B (2)?	20	Premolar 2 hole present
22/04/99	E5-a	BSS	1	Small rodent	RI	72	U	NN			9	
22/04/99	E5-a	BSS	1	Small fish	FIN	2	U	NN			13	
22/04/99	E5-a	BSS	1	Small bird	RA	101	L	FN	IT		11	
21/04/99	E5-a	BSS	1	Marine bivalve	SH	2	U	NN			31	
21/04/99	E5-a	BSS	1	Small rodent	FE	109	R	NU			7	
21/04/99	E5-a	BSS	1	Small mammal	CR	2	U	NN		R	23	
21/04/99	E5-a	BSS	1	Small rodent	RI	71	U	NF			15	
21/04/99	E5-a	BSS	1	Small mammal	LU	56	I	NN			15	
21/04/99	E5-a	BSS	1	Small rodent	IN	92	R	NN			7	

23/04/99	E5-a	BSS	3	Medium mammal	TN	2	U	NN		1=B(2)	8-12mm	
23/04/99	E5-a	BSS	1	Medium fish	CR	1	L	FF			52	
23/04/99	E5-a	BSS	1	Medium fish	VE	1	I	FF			18	Length of centrum - 4.00
23/04/99	E5-a	BSS	1	Small fish	VE	1	I	FF			4	Length of centrum 3.50
23/04/99	E5-a	BSS	1	Small mammal	PE	2	U	NN			13	
23/04/99	E5-a	BSS	1	Small-medium fish	VE	51	I	FF			6	
23/04/99	E5-a	BSS	2	Small rodent	MN	33	L	NN		1=B(2)	5-10mm	
23/04/99	E5-a	BSS	1	Marine bivalve	SH	2	U	NN			15	
23/04/99	E5-a	BSS	1	Small reptile	VE	1	I	FF			4	
23/04/99	E5-a	BSS	1	Small rodent	VE	51	I	UU			6	
23/04/99	E5-a	BSS	1	Small reptile	VE	1	I	FF			4	
23/04/99	E5-a	BSS	1	Small rodent	FE	103	L	FN			7	Fresher
23/04/99	E5-a	BSS	2	Small rodent	RI	72	U	NN			11	
21/04/99	E5-b	BSS	1	Large mammal	RI	72	U	NN		K	154	
21/04/99	E5-b	BSS	1	Medium - Large mammal	LU	55	I	NN		K	97	Chop and cut marks
21/04/99	E5-b	BSS	1	Bov II	SC	81	R	NN			75	
21/04/99	E5-b	BSS	1	Bov II	MT	103	U	FN	IV	B(2)	20	
21/04/99	E5-b	BSS	1	Bov II-III	FE	110	U	NN	TS		45	
21/04/99	E5-b	BSS	5	Large mammal	TN	2	U	NN			10mm - 20mm	
21/04/99	E5-b	BSS	4	Medium mammal	TN	2	U	NN			7mm - 11mm	
21/04/99	E5-b	BSS	1	Small mammal	ZG	2	L	NN		L(1)	14	
21/04/99	E5-b	BSS	1	Small bird	UL	1	U	FF			20	Fresher - species with very short wings
21/04/99	E5-b	BSS	1	Small mammal	RI	72	U	NN			34	Fresher
21/04/99	E5-b	BSS	1	cf. Fish	CR	91	L	NN			21	Check if id
21/04/99	E5-b	BSS	2	Small rodent	MP	1	I	FF			11	
21/04/99	E5-b	BSS	1	Small rodent	FE	102	L	FN	IS		17	
21/04/99	E5-b	BSS	1	*Small serpentis sp.*	VE	1	I	FF			9	
21/04/99	E5-b	BSS	1	Small rodent	LU	1	I	UU		L(1)	8	
21/04/99	E5-b	BSS	1	Small reptile	VE	1	I	FF			4	
21/04/99	E5-b	BSS	1	Small mammal	VE	51	I	UN			10	
21/04/99	E5-b	BSS	1	*Canis sp.*	ZP	1	L?	NN			5	Lower M3
21/04/99	E5-b	BSS	6	*Varannus sp.*	MN	1	R?	FF			12	
21/04/99	E5-b	BSS	1	*Small rodent*	RI	70	U	FN			10	
21/04/99	E5-b	BSS	3	Small fish	VE	51	I	FF			8mm - 14mm	Length of centrum - 2.70 + 3.62 + 1.89
21/04/99	E5-b	BSS	4	Small fish	RI	72	I	NN			15-18	
21/04/99	E5-b	BSS	1	Otomys sp.	ZP	1	U	NN			6	
21/04/99	E5-b	BSS	1	Freshwater bivalve	SH	2	I	NN			21	
21/04/99	E5-b	BSS	9	Freshwater bivalve	SH	2	I	NN			4mm - 13mm	
21/04/99	E5-b	BSS	1	Freshwater bivalve	SH	2	I	NN			8	
21/04/99	E5-b	BSS	1	Shell/keratin frag	?						6	Check if it isn't scale
26/04/99	E5-b	BSS	1	*Philantomba monticola*	IN	94	R	NN			42	White specks on element
26/04/99	E5-b	BSS	1	Bov III	SE	121	U	NN		C	17	
26/04/99	E5-b	BSS	1	Medium mammal	TN	2	U	NN		B(2)	12	
26/04/99	E5-b	BSS	1	Small mammal	RI	71	L	UN			18	
26/04/99	E5-b	BSS	1	Small rodent	YP	2	U	NN			12	
26/04/99	E5-b	BSS	2	Marine bivalve	SH	2	U	NN			4-14mm	
26/04/99	E5-b	BSS	3	Small rodent	MX	27	R	NN			9	2 teeth intact
12/07/99	E5-b	BSS/LFA	1	Small mammal	PE	2	U	NN		B(2)	16	
12/07/99	E5-b	BSS/LFA	1	Medium mammal	TN	2	U	NN		B(2)	11	
12/07/99	E5-b	BSS/LFA	1	Large mammal	TN	2	U	NN			18	
20/04/99	E5-b W	BSS	1	*cf. Cephalopus natalensis*	OX	6	I	NN			48	
20/04/99	E5-b W	BSS	1	Bov II	TA	1	L	NN			30	

20/04/99	E5-b W	BSS	1	Bov II	CR	2	U	NN		L(1)	20	
20/04/99	E5-b W	BSS	1	Medium mammal	VE	55	I	NN			21	
20/04/99	E5-b W	BSS	1	Small mammal	VE	56	I	NN			11	
20/04/99	E5-b W	BSS	1	Small mammal	RI	71	U	FN		-1	10	
20/04/99	E5-b W	BSS	1	Frog/Toad	FE	110	U	NN			18	Fresh
20/04/99	E5-b W	BSS	1	Small bird	PH	120	U	FN		L(1)	8	
20/04/99	E5-b W	BSS	3	Freshwater bivalve	SH	2	I	NN			4mm-10mm	
21/04/99	E5-b W	BSS	1	Medium-Large mammal	RI	72	U	NN			109	
21/04/99	E5-b W	BSS	1	Small mammal	RI	72	U	NN			42	
21/04/99	E5-b W	BSS	1	Large mammal	VE	55	I	NN			32	
21/04/99	E5-b W	BSS	1	Small rodent	CR	2	I	NN			9	
21/04/99	E5-b W	BSS	1	*Otomys sp.*	ZP	1	U	NN			3	
21/04/99	E5-b W	BSS	6	Bivalve	SH	2	I	NN			11mm-15mm	
21/04/99	E5-b W	BSS	2	Bivalve	SH	2	I	NN			8mm + 30mm	
21/04/99	E5-b W	BSS	4	Medium mammal	TN	2	I	NN		1 = L(1)	9mm-14mm	
21/04/99	E5-b W	BSS	1	Large mammal	TN	2	I	NN		L(1)	19	
24/04/99	E5-c	BSS	1	Bov II	FE	103	R	UN	IV	K	35	Chopped
24/04/99	E5-c	BSS	1	*Philantomba monticola*	SC	80	L	FN			13	GLp-14.34 BG - 10.15
24/04/99	E5-c	BSS	1	Bov I-II	IN	91	U	NN			43	
24/04/99	E5-c	BSS	1	Large mammal	RI	70	R	NF			39	
24/04/99	E5-c	BSS	1	Medium mammal	RI	72	U	NN		R	30	
24/04/99	E5-c	BSS	1	*cf. Aepycerus melampus*	CP	1	R	FF			16	2 and 3 carpal GD - 13.30 HMD - 10.60 GB - 18.6
24/04/99	E5-c	BSS	1	Bov II	MC	106	L	FN	SI	R	51	
24/04/99	E5-c	BSS	1	Small fish	VE	50	I	FF				Length of centrum - 3.05
24/04/99	E5-c	BSS	1	Bov III	IN	95	U	NN	TT		44	
24/04/99	E5-c	BSS	1	Medium mammal	VE	51	I	UN		C	23	
24/04/99	E5-c	BSS	2	Medium mammal	VE	55	I	NN			20+25	
24/04/99	E5-c	BSS	10	Marine bivalve	SH	2	I	NN			8mm-26mm	
24/04/99	E5-c	BSS	1	Medium mammal	TN	2	I	NN			7	
24/04/99	E5-c	BSS	1	Bov I	TH	56	I	NN			29	
24/04/99	E5-c	BSS	1	Small mammal	TH	56	I	NN			17	
24/04/99	E5-c	BSS	1	Medium mammal	UR	51	I	NN			21	
24/04/99	E5-c	BSS	1	Medium mammal	VE	55	I	NN			18	
24/04/99	E5-c	BSS	2	Small rodent	VE	1	I	NN			4	
24/04/99	E5-c	BSS	1	Small lizard	MN	1	L	FF			6	
24/04/99	E5-c	BSS	3	Small fish	RI	72	U	NN			18	
24/04/99	E5-c	BSS	1	Small fish	CR	2	U	NN			8	
24/04/99	E5-c	BSS	1	Small mammal	VE	51	I	UU		C L(1)	15	
24/04/99	E5-c	BSS	1	Small rodent	FE	100	L	FN			11	
24/04/99	E5-c	BSS	2	Large mammal	TN	2	I	NN			25	
24/04/99	E5-c	BSS	10	Medium mammal	TN	2	I	NN		2=L(1) 2=B(2)	8mm-17mm	
24/04/99	E5-c	BSS	1	Small mammal	RI	72	U	NN			26	
24/04/66	E5-c	BSS	1	Bov III-IV	HC	2	U	NN			35	
21/04/99	E5-C	BSS	1	Large mammal	RI	72	U	NN		K	54	
21/04/99	E5-C	BSS	1	Medium mammal	TN	2	U	NN			13	
21/04/99	E5-C	BSS	1	Small fish	VE	50	I	NN			6	Length of centrum - 2.50
21/04/99	E5-C	BSS	1	Small mammal	RI	72	U	NN		W(6)	18	
21/04/99	E5-C	BSS	2	Barnicle	SH	2	U	NN			5	
21/04/99	E5-C	BSS	1	Small rodent	VE	56	I	NN			5	Fresher
21/04/99	E5-C	BSS	1	Small rodent	UR	1	I	NN			5	
21/04/99	E5-C	BSS	2	Small mammal	MN	35	R	NN			15	Broken incisor present lagomorph/Giant rat

14/04/99	E5-c	BSS/LFA pit	1	Bov III-IV	TA	120	R	NN			37	
14/04/99	E5-c	BSS/LFA pit	1	Small rodent	FE	100	R	FN	IS	Brown (2)	13	Burnt brown
14/04/99	E5-c	BSS/LFA pit	1	Bov II	MP	110	U	NN	SS		83	
14/04/99	E5-c	BSS/LFA pit	1	Small bird	ST	2	I	NN		K	22	Fresher can id species. Not guinea fowl/chicken/ibis/crow cf. Spoonbill check for other species in similar vein and remember to check predory birds and owls.
14/04/99	E5-c	BSS/LFA pit	1	Bov II-III	1P	106	U	FN	TV	Chopped	35	
14/04/99	E5-c	BSS/LFA pit	1	Philantomba/Neotragus	TI	101	R	FN	VV	C	20	
14/04/99	E5-c	BSS/LFA pit	1	Philantomba/Neotragus	TI	101	U	NN	VV		11	
14/04/99	E5-c	BSS/LFA pit	1	Medium mammal	RI	72	U	NN		L(1)	42	
14/04/99	E5-c	BSS/LFA pit	1	*cf. Potamochoerus porcus*	TN	2	U	NN		W(6)	21	Unerupted tooth fragment
13/07/99	E5-c+d	BSS/LFA pit	7	*Philantomba monticola*	MN	30	L	NN			80	PM2, PM3, PM4, M1, M2, M3 intact
13/07/99	E5-c+d	BSS/LFA pit	1	*Philantomba monticola*	MC	1	L	FF	II		58	GL - 57.30; Bd - 9.45; SD - 5.84; Bp - 10.48; Dd - 6.28; DP - 7.19; BFpn - 6.09; DD - 4.37
13/07/99	E5-c+d	BSS/LFA pit	1	*Philantomba monticola*	HU	107	R	NF	SI		66	Bd - 14.16; SD - 6.54; Dmd - 11.49
13/07/99	E5-c+d	BSS/LFA pit	1	Medium mammal	LU	53	I	UU			35	
13/07/99	E5-c+d	BSS/LFA pit	1	Small mammal	LU	53	I	UU			19	
13/07/99	E5-c+d	BSS/LFA pit	1	Bos/Syncerus	ZP	1	L	NN			45	Too many similarities between sp.
13/07/99	E5-c+d	BSS/LFA pit	2	Medium mammal	RI	72	U	NN			33-36	
13/07/99	E5-c+d	BSS/LFA pit	1	cf. Cephalophus monticola	TI	104	R	UN		R	18	
13/07/99	E5-c+d	BSS/LFA pit	1	Bov I-II non-domestic	MP	110	U	NN	SS		26	Not blue duiker size
13/07/99	E5-c+d	BSS/LFA pit	1	Large mammal	TN	2	U	NN		B(2)	15	
13/07/99	E5-c+d	BSS/LFA pit	1	Medium mammal	LU	55	I	NN			30	
13/07/99	E5-c+d	BSS/LFA pit	1	Medium mammal	LU	54	I	NN			33	
13/07/99	E5-c+d	BSS/LFA pit	1	Marine bivalve	SH	2	R	NN			22	
13/07/99	E5-c+d	BSS/LFA pit	1	Bov II	MN	43	L	NN		L(1)	28	
13/07/99	E5-c+d	BSS/LFA pit	1	Bov III-IV	1P	105	L	NN			26	
13/07/99	E5-c+d	BSS/LFA pit	1	Small mammal	HU	110	U	NN	SS		29	
13/07/99	E5-c+d	BSS/LFA pit	1	*Sylvicapra grimmia*	PA	2	U	NN			23	GL - 24.55
13/07/99	E5-c+d	BSS/LFA	3	Small mammal	RI	72	U	NN			29-32	

		pit										
13/07/99	E5-c+d	BSS/LFA pit	1	Small mammal	RI	71	L	FN			24	
13/07/99	E5-c+d	BSS/LFA pit	1	Small-medium mammal	CR	2	U	NN		K	30	
13/07/99	E5-c+d	BSS/LFA pit	1	Bov II	IN	91	U	NN			37	
22/04/99	E5-d	BSS	1	Medium mammal	VE	55	I	NN			26	
22/04/99	E5-d	BSS	3	Large mammal	TN	2	U	NN		1=B(2) 1=W(5)	13-16	
22/04/99	E5-d	BSS	2	Small mammal	RI	72	U	NN			24-34	
22/04/99	E5-d	BSS	2	Small - medium mammal	TI	110	U	NN	SS/ST		16-50	
22/04/99	E5-d	BSS	4	Small rodent	MN	39	L	NN			12	Incisor, PM1 and PM2 intact
22/04/99	E5-d	BSS	1	Cephalophus monticola	ZP	2	R	NN			8	LM1
22/04/99	E5-d	BSS	1	Bov III-IV	ZP	2	U	NN			8	Unerupted fragment - young individual
22/04/99	E5-d	BSS	1	Small rodent	MN	35	L	NN			8	Fresher
22/04/99	E5-d	BSS	1	cf. small fish	MN	43	U	NN			11	
22/04/99	E5-d	BSS	1	Small fish	VE	53	I	FN			10	
22/04/99	E5-d	BSS	1	Labeo/Clarius	MN	43	R	NN			11	
22/04/99	E5-d	BSS	1	Bov II	RA	110	L	NN	TS	L(1)	53	Ulnar notch present
22/04/99	E5-d	BSS	1	Bov II	HU	110	R	NN			60	
22/04/99	E5-d	BSS	1	Bov II	UL	110	U	NN			92	2 refitted pieces
13/07/99	E5-d	BSS/LFA pit	1	*cf. Redunca arundinum*	UL	102	L	FN	IT	K R	85	LO - 43.40 DPA - 33.40 BIT - 10.10
13/07/99	E5-d	BSS/LFA pit	1	Medium mammal	RI	71	R	FN		R	49	
13/07/99	E5-d	BSS/LFA pit	1	Small mammal	RI	72	U	NN			60	
13/07/99	E5-d	BSS/LFA pit	1	Large mammal	RI	72	U	NN		1=C 1=R	45+85	
13/07/99	E5-d	BSS/LFA pit	1	Bov III	RA	110	L	NN	VV		85	
13/07/99	E5-d	BSS/LFA pit	1	Medium mammal	VE	56	I	NN			16	
13/07/99	E5-d	BSS/LFA pit	1	Medium mammal	RI	72	U	NN		W(4)	25	
13/07/99	E5-d	BSS/LFA pit	1	Small rodent	FE	110	L	NN			21	
13/07/99	E5-d	BSS/LFA pit	2	Large mammal	TN	2	U	NN			19+24	
13/07/99	E5-d	BSS/LFA pit	1	Medium mammal	VE	56	I	NN		R	22	
13/07/99	E5-d	BSS/LFA pit	1	Bov IV	FE	103	R	FN	VS		64	Chop mark
13/07/99	E5-d	BSS/LFA pit	1	Medium bird	TI	110	U	NN	SS		43	Fresher
13/07/99	E5-d	BSS/LFA pit	1	Medium mammal	PE	2	U	NN			20	Fresher
13/07/99	E5-d	BSS/LFA pit	1	Lagomorph	MT	1	R	FF			37	
13/07/99	E5-d	BSS/LFA pit	1	Suid sp.	MC	109	U	NU		K R	18	Dd - 16.25 Bd - 17.05
13/07/99	E5-d	BSS/LFA pit	2	Marine bivalve	SH	2	U	NN			6+11	

13/07/99	E5-d	BSS/LFA pit	1	Large mammal	TH	56	I	NN			83	
20/04/99	E5-d W	BSS	1	Large mammal	RI	70	R	NF	SS		53	
20/04/99	E5-d W	BSS	1	Medium-large mammal	MN	43	L	NN	VV	K	60	
20/04/99	E5-d W	BSS	1	Small mammal	RI	71	U	FN		K	43	
20/04/99	E5-d W	BSS	1	Medium mammal	PE	2	R	NN			18	
20/04/99	E5-d W	BSS	1	Bov II	YP	2	R	NN		L(2)	15	
20/04/99	E5-d W	BSS	2	*Cephalopus monticola*	MN	33	R	NN			11	UM2 intact
20/04/99	E5-d W	BSS	1	*Procavia capensis*	YP	2	U	NN		L(1)	18	NB! Human involvement
20/04/99	E5-d W	BSS	1	Small mammal	CR	2	U	NN			20	
20/04/99	E5-d W	BSS	1	*Philantomba monticola*	3P	1	I	NN		L(1)	14	DLS - 14.11 Ld - 12.11 MBS - 2.86 HP - 6.81 BFp - 4.25
20/04/99	E5-d W	BSS	1	Bov I	2P	108	U	NN			8	larger than blue duiker
20/04/99	E5-d W	BSS	1	Bov I	AS	121	R	NN		B(4)	8	Size of blue duiker
20/04/99	E5-d W	BSS	1	Bov I	IN	91	U	NN			20	
20/04/99	E5-d W	BSS	2	Medium mammal	TN	2	I	NN		-1	11mm-14mm	
20/04/99	E5-d W	BSS	1	Small mammal	TN	2	I	NN		-2	7	
20/04/99	E5-d W	BSS	1	Small mammal	VE	55	I	NN		L(1)	15	
20/04/99	E5-d W	BSS	1	Marine bivalve	SH	2	I	NN			6	
20/04/99	E5-d W	BSS	1	Otomys sp.	ZP	1	U	NN			4	
20/04/99	E5-d W	BSS	2	Small rodent	MN	30	R	NN			9	fresher
20/04/99	E5-d W	BSS	1	Small bird	IN	94	U	FN			16	fresher
20/04/99	E5-d W	BSS	2	Small rodent	YP	2	U	NN			6+14	fresher
20/04/99	E5-d W	BSS	1	Small rodent	TI	110	L	UN			14	fresher
20/04/99	E5-d W	BSS	1	Small rodent	MX	23	L	NN			9	fresher
20/04/99	E5-d W	BSS	1	Small rodent	TI	110	U	NN			11	fresher
20/04/99	E5-d W	BSS	1	Small rodent	MN	1	L	NN			13	fresher
20/04/99	E5-d W	BSS	1	Small rodent	XP	1	U	NN			4	
20/04/99	E5-d W	BSS	1	Small rodent	VE	56	I	NN			7	
20/04/99	E5-d W	BSS	3	Small fish	VE	56	I	NN			4mm-7mm	Length of centrum - 2.00 + 2.70 + 3.06
20/04/99	E5-d W	BSS	1	Small fish	Dorsal fin/ neural spine	57	I	NN			10	
20/04/99	E5-d W	BSS	6	Small rodent	VE	1	I	NN			7	fresher
20/04/99	E5-d W	BSS	1	Small rodent	MN	42	R	NF			6	fresher
20/04/99	E5-d W	BSS	1	Small mammal	FE	110	U	NN	TS		15	
20/04/99	E5-d W	BSS	1	Small rodent	MN	43	U	NN			3	
12/07/99	E5-d W	BSS/LFA pit	1	Bov III	TE	2	L	NN		R	65	Chopped
12/07/99	E5-d W	BSS/LFA pit	3	Bov II	FR	2	R	NN			32-66	
12/07/99	E5-d W	BSS/LFA pit	1	Large mammal	RI	1	R	NN			39	
12/17/99	E5-d W	BSS/LFA pit	1	Large mammal	TI	110	U	NN	SV	R	79	
12/17/99	E5-d W	BSS/LFA pit	1	Small mammal	RI	72	U	NN			47	
12/17/99	E5-d W	BSS/LFA pit	1	*Redunca arundinum*	CP	1	U	NN			15	HMD - 8.05 GD -13.60 GB -15.05 2nd + 3rd carpal
12/17/99	E5-d W	BSS/LFA pit	1	Bov II-III	TN	2	U	NN			14	
12/17/99	E5-d W	BSS/LFA pit	2	Bov II	TN	2	I	NN			11mm-20mm	

26/04/99	E6-a	BSS	1	Bos/Syncerus	2P	105	R	JF	VI		47	Bd - 25.87 SD - 26.47
26/04/99	E6-a	BSS	1	Bov III-IV	CA	121	R	UN			42	
26/04/99	E6-a	BSS	1	Bov II	TA	1	R	NN		K	23	2nd + 3rd tarsal GD - 35.00 GB -27.20
26/04/99	E6-a	BSS	3	Medium mammal	CR	2	U	NN			18-32mm	
26/04/99	E6-a	BSS	1	Medium mammal	RI	72	U	NN			61	
26/04/99	E6-a	BSS	1	Small mammal	RI	72	U	NN			49	
26/04/99	E6-a	BSS	2	Small rodent	FE	100	L/R	FU			26	
26/04/99	E6-a	BSS	1	Bov III	SE	120	U	NN		B(2)	20	
26/04/99	E6-a	BSS	5	Large mammal	TN	2	U	NN		3=B(2)	16-18mm	
26/04/99	E6-a	BSS	1	Medium mammal	PE	2	U	NN			16	
26/04/99	E6-a	BSS	7	Medium mammal	TN	2	U	NN		4=B(2)	6-10mm	
26/04/99	E6-a	BSS	1	Bov II - III	1P	110	U	NN			20	
26/04/99	E6-a	BSS	2	Medium mammal	VE	55	I	NN			11-24mm	
26/04/99	E6-a	BSS	1	Large mammal	CR	2	U	NN		L(1)	28	
26/04/99	E6-a	BSS	1	*Procavia capensis*	IN	91	L	NN			29	
26/04/99	E6-a	BSS	1	Small mammal	SC	81	U	NN			28	
26/04/99	E6-a	BSS	4	Bivalve	SH	2	U	NN			9-13mm	
26/04/99	E6-a	BSS	1	Small fish	VE	1	I	NN			7	Length of centrum - 3.97
26/04/99	E6-a	BSS	1	Small fish	RI	72	U	NN			16	
26/04/99	E6-a	BSS	1	Small mammal	RI	72	U	NN			18	
26/04/99	E6-a	BSS	1	*Otomys sp.*	YP	2	U	NN			8	
26/04/99	E6-a	BSS	1	Frog/Toad	IN?	92	U	NN			10	
26/04/99	E6-a	BSS	1	Small rodent	UL	110	U	UN			18	
26/04/99	E6-a	BSS	1	Small bird	CO	1	R	FF			15	
26/04/99	E6-a	BSS	1	Small mammal	UR	51	I	NF		W(5)	5	
26/04/99	E6-a	BSS	1	Bov III	HU	110	U	NN	SV	B(2)	46	
26/04/99	E6-a	BSS	1	Bov III	TA	121	U	NN		W(5)	22	
14/07/99	E6-a	BSS	1	Large mammal	TN	2	U	NN			23	Root present
24/04/99	E6-a	BSS	1	Bov III-IV	AX	55	I	NN		C Chopped	83	
13/07/99	E6-a	BSS	1	Medium mammal	HU	110	U	NN	TT	R	43	
13/07/99	E6-a	BSS	1	Bov III	FE	110	U	NN	SS		65	
13/07/99	E6-a	BSS	1	Large mammal	HU	110	L	NN	TS	C	79	
13/07/99	E6-a	BSS	1	Bov II	SC	80	L	FN		L(1)	57	2 refitted pieces
13/07/99	E6-a	BSS	1	Medium mammal	SC	81	U	NN		L(1)	56	part of previous species
13/07/99	E6-a	BSS	1	Bov III-IV	XD	2	U	NN			23	
13/07/99	E6-a	BSS	1	*Alcelaphine sp.*	ZP	2	L	NN		L(2)	30	UM2 Old individual
13/07/99	E6-a	BSS	1	Bos/Syncerus	3P	101	R	FN	IV	B(2)	35	
13/07/99	E6-a	BSS	1	Medium mammal	MN	33	L	NN		L(2)	33	
13/07/99	E6-a	BSS	1	Bov II-III	AS	120	L	NN		Chopped	32	
13/07/99	E6-a	BSS	2	Medium mammal	CR	2	U	NN		1=R 1=C	35-41	
13/07/99	E6-a	BSS	1	Medium mammal	VE	55	I	NN			21	
13/07/99	E6-a	BSS	1	Medium mammal	VE	55	I	NN			21	
13/07/99	E6-a	BSS	1	Medium mammal	LU	53	I	NN			16	
13/07/99	E6-a	BSS	3	Small mammal	RI	72	U	NN			38-44	
13/07/99	E6-a	BSS	1	*Serpentis sp.*	VE	1	I	FF			15	
13/07/99	E6-a	BSS	1	Bov I	MN	39	L	NN			30	
13/07/99	E6-a	BSS	1	Small mammal	RI	72	U	NN		B(2)	19	
13/07/99	E6-a	BSS	2	Bov III	ZP	2	U	NN			27	
13/07/99	E6-a	BSS	1	Medium bird	VE	53	I	NN		B(2)	10	
13/07/99	E6-a	BSS	3	Large mammal	TN	2	U	NN		1=B(4) 1=W(5)	11-15mm	
13/07/99	E6-a	BSS	1	Viverridae	MP	107	R	FF			32	

13/07/99	E6-a	BSS	1	Medium bird	FI	100	R	FN	IS		18	
13/07/99	E6-a	BSS	1	Bov I	MP	110	U	NN	SS		38	
13/07/99	E6-a	BSS	1	Small mammal	PE	2	U	NN			9	
13/07/99	E6-a	BSS	1	Bov III-IV	MP	103	U	FN	TS		11	
24/04/99	E6-a	BSS II pit	1	Bov III-IV	CA	120	R	FU		K	119	5 refitted pieces, extremely fragile
24/04/99	E6-a	BSS II pit	1	Small mammal	TN	2	U	NN			5	
12/07/99	E6-b	BSS	1	Equus sp.	MP	109	U	NU	IT	K cf.chopped	41	
12/07/99	E6-b	BSS	1	*cf. Oreotragus oreotragus*	ZP	2	R	NN			11	UM2
12/07/99	E6-b	BSS	1	*Philantomba monticola*	1P	1	LF	FF			14	Bd - 4.70 SD - 4.50 Bp - 4.85 GL - 13.15
12/07/99	E6-b	BSS	1	Small rodent	TI	105	R	UF	II	L(1)	29	
12/07/99	E6-b	BSS	1	Medium bird	TI	108	R	NF	SI		11	Could be galliformes check collection
12/07/99	E6-b	BSS	1	Bov III-IV	1P	104	R	UN		K	25	
12/07/99	E6-b	BSS	2	Large mammal	TN	2	U	NN			12-29mm	
12/07/99	E6-b	BSS	1	Medium mammal	VE	55	I	NN			15-17mm	
12/07/99	E6-b	BSS	2	Medium mammal	CR	2	U	NN			15-24mm	
12/07/99	E6-b	BSS	1	Bov II	MN	43	U	NN		L(1)	23	
12/07/99	E6-b	BSS	1	Medium bird	UL	110	L	NN	SS		90	Ibis sized bird check dom + non-dom for diff betw muscle attachment
12/07/99	E6-b	BSS	1	Bov II-III	FE	110	U	NN	SS		44	
25/04/99	E6-b	BSS	1	Bos/Syncerus	2P	108	R	NF	SV	K Chopped C	39	
25/04/99	E6-b	BSS	1	Bos/Syncerus	1P	108	R	NF	VV	C Chopped	47	
25/04/99	E6-b	BSS	1	*Philantomba monticola*	IN	94	R	NN			52	White specks on element LA - 16.04
25/04/99	E6-b	BSS	1	*Potamachoerus porcus*	1P	1	L	FF	II	R	34	(Bushpig) Bd - 14.05; SD - 13.63; GL - 34.15; BP - 15.20. White specks on element and manganes staining
25/04/99	E6-b	BSS	1	*Redunca arundinum*	2P	108	R	FF	VV	K Chopped?	26	BP - 8.55
25/04/99	E6-b	BSS	1	*Philantomba monticola*	AS	1	R	FF		R K	13	GLI - 14.32; GLm - 13.26; Bd - 9.10; Dm - 8.00; DI - 7.92
25/04/99	E6-b	BSS	1	*cf. Cephalophus natalensis*	RA	109	R	NU			15	
25/04/99	E6-b	BSS	1	Bov III	2P	108	U	NF	SV	B(3)	28	
25/04/99	E6-b	BSS	1	Medium mammal	LU	51	I	UN			35	
25/04/99	E6-b	BSS	1	Small mammal	TH	53	I	UU		L(1)	18	Fits blue duiker size
25/04/99	E6-b	BSS	1	Small-medium mammal	RI	72	U	NN			82	
25/04/99	E6-b	BSS	1	Bov I	IN	93	U	NN			24	
25/04/99	E6-b	BSS	1	Bov III	TI	110	U	NN	SV		74	
25/04/99	E6-b	BSS	1	Bov II	TI	110	U	NU	SI	R K	27	
25/04/99	E6-b	BSS	1	Bov II	MP	110	U	NN	ST	B(2)	65	
25/04/99	E6-b	BSS	1	Bov III	TI	110	L	NU	SV		39	
25/04/99	E6-b	BSS	1	Medium mammal	VE	51	I	FN			22	
25/04/99	E6-b	BSS	2	Medium mammal	CR	2	U	NN		1=R	27-58	
25/04/99	E6-b	BSS	1	Bov II non-domestic	ZD	2	R	NN			10	Lower decidious
25/04/99	E6-b	BSS	5	Serpentis sp.	VE	1	I	FF			8-11mm	
25/04/99	E6-b	BSS	1	Bov III	TN	2	U	NN			9	
25/04/99	E6-b	BSS	3	Large mammal	TN	2	U	NN		2=B(2) 1=B(4)	11-21mm	
25/04/99	E6-b	BSS	2	Medium mammal	TN	2	U	NN		1=L(1) 1=B(2)	6-8mm	
25/04/99	E6-b	BSS	1	Small bird	CO	102	L	FN	IS		22	
25/04/99	E6-b	BSS	1	Small bird	MC	105	L	NF	SI		11	
25/04/99	E6-b	BSS	1	Bov I	YP	1	R	NN			10	
25/04/99	E6-b	BSS	1	Small carnivore	YP	1	U	NN			15	
25/04/99	E6-b	BSS	3	Otomys sp.	MN	1	R	NN			20	Incisor and teeth intact

25/04/99	E6-b	BSS	1	Small fish	VE	51	I	FF			10	Length of centrum - 3.85
25/04/99	E6-b	BSS	1	Medium fish	VE	51	I	FF			13	Length of centrum - 5.49
25/04/99	E6-b	BSS	1	Barnicle	SH	2	U	NN			10	
25/04/99	E6-b	BSS	1	Marine bivalve	SH	2	U	NN			8	
25/04/99	E6-b	BSS	3	Small rodent	MN	34	L	NN			7	
25/04/99	E6-b	BSS	1	Small rodent	CE	1	I	FF			6	
25/04/99	E6-b	BSS	1	Small mammal	RI	72	U	NN			20	
25/04/99	E6-b	BSS	1	Medium bird	FE	110	U	NN			23	
25/04/99	E6-b	BSS	1	Bov II	FE	110	U	NN			51	
25/04/99	E6-b	BSS	1	Large mammal	MN	33	U	NN			41	
24/04/99	E6-b	BSS	1	*cf. Syncerus caffer*	YP	1	L	NN			50	
13/07/99	E6-b	BSS	3	Large mammal	TN	2	U	NN		1=B(2)	12-42	
13/07/99	E6-b	BSS	1	*Potamachoerus porcus*	1P	1	LF	FF	II	K	25	(Bushpig) GL - 25.46; Bd - 8.55; SD - 8.30; Bp - 12.80
13/07/99	E6-b	BSS	1	*Philantomba/Neotragus*	FE	101	L	NN	SS	R?	18	DC - 10.00
13/07/99	E6-b	BSS	2	Small mammal	UR	51	I	UU			12	
13/07/99	E6-b	BSS	1	Large mammal	VE	55	I	NN			36	
13/07/99	E6-b	BSS	1	Medium mammal	CR	2	U	NN			22	
26/04/99	E6-c	BSS	1	Small mammal	LU	53	I	UU			8	
26/04/99	E6-c	BSS	1	Small rodent	UR	53	I	UU			8	
26/04/99	E6-c	BSS	3	Marine bivalve	SH	2	U	NN			6-8mm	
26/04/99	E6-c	BSS	1	Small barnicle	SH	2	U	NN		W(6)?	7	
26/04/99	E6-c	BSS	1	Medium mammal	TN	2	U	NN		B(2)	10	
26/04/99	E6-c	BSS	1	Medium mammal	MN	30	U	NN			34	
04/09/98	E6-d	BSS	1	*cf. Philantomba monticola*	SC	81	R	NN	VV		51	
04/09/98	E6-d	BSS	1	Bov I	SC	81	R	NN	VV		26	Part of previous specimen (Bl. Duiker)
04/09/98	E6-d	BSS	1	*Philantomba monticola*	ZP	1	U	NN		L(1)	10	UM3
04/09/98	E6-d	BSS	1	Medium mammal	TN	2	I	NN			11	
04/09/98	E6-d	BSS	2	Large mammal	TN	2	I	NN		L(1)	16	
04/09/98	E6-d	BSS	1	Medium mammal	TN	2	I	NN			10	
04/09/98	E6-d	BSS	1	Medium mammal	PE	2	L	NN		K	20	
04/09/98	E6-d	BSS	1	Small - medium bird	1P	1	U	FN			13	
04/09/98	E6-d	BSS	1	Small fish	VE	51	I	FF			4	Length of centrum - 3.00
04/09/98	E6-d	BSS	2	Small fish	RI	72	U	NN			9mm + 18mm	
04/09/98	E6-d	BSS	3	Bivalve	SH	2	I	NN			7mm-16mm	
26/04/99	E6-d	BSS	5	Large mammal	TN	2	U	NN		2=B(2)	13-19mm	
26/04/99	E6-d	BSS	4	Medium mammal	TN	2	U	NN		1=B(2)	9-10mm	
26/04/99	E6-d	BSS	1	*Philantomba monticola*	IN	92	L	NN			38	
26/04/99	E6-d	BSS	1	Philantomba/Neotragus	MT	101	L	FN	IS	R	13	
26/04/99	E6-d	BSS	1	Bov III	1P	103	U	FN			20	
26/04/99	E6-d	BSS	2	Medium mammal	CR	2	U	NN		L(1)	19-25	
26/04/99	E6-d	BSS	1	Small rodent	MN	33	R	NN			10	
26/04/99	E6-d	BSS	1	Small rodent	IN	92	R	NN			11	
26/04/99	E6-d	BSS	3	Marine bivalve	SH	2	U	NN			6-9mm	
26/04/99	E6-d	BSS	1	Gasteropod	SH	2	U	NN			5	
26/04/99	E6-d	BSS	2	Small rodent	VE	51	I	UN/NN			5-6mm	
26/04/99	E6-d	BSS	1	Small fish	VE	51	I	FN			4	Length of centrum - 3..50
26/04/99	E6-d	BSS	1	Small rodent	SA	1	I	UU			7	
26/04/99	E6-d	BSS	1	Small reptile	VE	1	I	FF			4	
26/04/99	E6-d	BSS	1	Small rodent	IN	91	U	NN			10	
26/04/99	E6-d	BSS	1	Small bird	RA	107	L	NF	SI		9	

UNIDENTIFIED MATERIAL - BSS

Date	Square	Layer	Num	≤ 20 mm	≥ 20 mm	0	1	2	3	4	5	6	K	CH	C	R	RE	G	Other	Comments
15/07/1999	B4-a	Grey MOD	53			14	20	15	1	3		1			1			9		
01/09/1998	B5-a	BSS	100	87	13	3	23	29	9	13	4	10	1			3				
31/08/1998	B5-a	BSS	215	185	30	0	31	14	6	57	11	93								Several White fragments less than 5mm
01/09/1998	B5-a	BSS II	25	23	2	3	9	5	6		1				1					
01/09/1998	B5-b	BSS	53	46	7	2	19	9	5	15	2	1				2				
31/01/1998	B5-b	BSS	152	123	28	9	45	54	11	24	6	1	2	4	5		1			
01/09/1998	B5-b	BSS II	46	24	23	5	18	13	0	3	5	0	2		2	1	1			
01/09/1998	B5-b	BSS II	90	90	0	7	24	20	2	6	23	7	1					1		
02/09/1998	B5-b	BSS II Pit	31	26	5	8	7	10	3	4						1				
01/09/1998	B5-b	BSS II Pit	41	27	14	6	12	12	3	8			1			2				
02/09/1998	B5-c	BSS	532	458	70	37	182	257	4	26	13	6	4		7	5	4	4	1 ochre blotch	
31/08/1998	B5-c	BSS	286	240	46	109	81	11	1	18	16	4	3	2		2	1			3 fresher
01/09/1998	B5-c	BSS II	160	115	45	14	56	74	4	6	6		3		6	4	1		Tool (1 flaked frag) 1 insect damage	
31/08/1998	B5-d	BSS	89	70	19	12	9	28	6	29	6	2	1							
03/09/1998	B5-d	BSS	14	11	3	4	6	4	0	0	0	0				2		1		
01/09/1998	B5-d	BSS II	31	12	19	5	12	6	0	8	0	2		2	1			2		
01/09/1998	B5-d	BSS II	86	66	20	6	42	37		1					4					
01/09/1998	B5-d	BSS II	110	110	0	7	26	58	6	8	2	1			1					Refuse bone
02/09/1998	B6 -d	BSS	88	67	21	4	13	14	7	10	13	27			1			1		
02/09/1998	B6-a	BSS	149	132	17	14	80	38	12	3	2	1			2		1			
03/09/1998	B6-b	BSS	21	13	8	0	9	8	4	0	0	0								
02/09/1998	B6-b	BSS	219	174	45	23	64	80	11	24	11	7	1		2	1	1	3	Tool (1 flaked 1 smooth) flaked in id bag	
02/09/1998	B6-b	BSS	336	275	61	19	108	148	1	25	28	5	3		8	5		5		
02/09/1998	B6-c	BSS	312	251	61	1	73	106	17	69	19	27	7		5	7		1	Tool (2 flaked)	
02/09/1998	B6-d	BSS	792	677	115	62	224	260	71	105	69	24	6		4	5	3	2		
06/08/1999	C2	BSS	1		1		1									1				-
06/08/1999	C2	BSS	76	55	21	23	26	22		2	3	2			2	2	1			
05/08/1999	C2	BSS	233	136	97	113	46	41		14	12	7	2		2	5				
05/08/1999	C2	BSS	235	133	102	139	37	20	6	6	18	7	7		2	2	1			
10/08/1999	C2	BSS	247	191	56	138	17	55	2	12	16	7	1	1	1	3			2=insect damage	
06/08/1999	C2	BSS	1002	702	300	569	280	78	8	32	24	11	1		2	2				
21/07/1999	C4	BSS pit	215	106	110	42	82	63	4	5	17	3	6	1	6	3	1	2	1-weathered	
19/04/1999	C4-a	BSS	97	74	23	45	10	30		1	9	2								
23/04/1999	C4-a	BSS small pit	362	320	42	238	14	82	4	10	13	1	1	1	1			4	1=insect damage	
22/04/1999	C4-a+b	BSS	263	247	17	91	63	85	6	7	6	4			1	3				W
21/04/1999	C4-b+d	BSS	54	46	8	26	3	22			3		1							

		sweepings																		
20/04/1999	C4-c	BSS	28	15	13	8	6	12		3			1							W
21/04/1999	C4-c	BSS	641	544	97	100	102	191	12	88	65	82	7		13	10	4	6	1 Insect damage	W
22/04/1999	C4-c	BSS pit + final	129	129	0	70	25	22	3	3	5	1								
22/04/1999	C4-c	Pit & Final BSS	47	34	13	1	16	19		8	2	1			1					
13/08/1999	C5a	BSS pit	5	0	5	3				2								1		
02/09/1998	C5-a	BSS	13	2	11	4	0	3	3	3	2	0								
01/09/1998	C5-a	BSS	13	8	5	4	2	1			3	3	1							-
13/08/1999	C5-a	BSS pit	4	1	3	2	2									1				
02/09/1998	C5-b	BSS	85	72	13	6	24	45	3	5	2				2	2				
01/09/1998	C5-c	BSS	14	8	6	2	3	2			3	4								
02/09/1998	C5-c	BSS	10	5	5	2	3	2			2		1		1	1	1			
04/09/1998	C5-c	BSS Hearth under rocks	303	248	55		90	133	32	31	17	8	1		15	11	2	9		
19/07/1999	C6	BBS pit	128	56	72	28	32	36	6	11	12	3	1	1	12	4				
03/09/1998	C6	BSS	198	157	42	53	67	46	15	8	5	5	2		6	1	3		LB shaft smoothed on perpendicular edge	
04/09/1998	C6	BSS	275	237	38	123	116	11	4	11	5	5	2							
05/09/1998	C6	BSS pit	1269	1176	110	400	344	316	11	59	118	32	5	1	9	5	4			
07/09/1998	C6	BSS pit	1	0	0	1													Worked bone?	
07/09/1998	C6	BSS pit	1947	1837	110	1219	391	251	7	25	43	12	8	2	3	13	4			
04/09/1998	C6-a	BSS	344	283	61	23	17	12	2	2		5								
04/09/1998	C6-a	BSS	342	280	62	102	180	22	7	15	14	2	6		2				1=TOOL	Picture and sketch needed
04/09/1998	C6-b	BSS	392	342	45	33	124	174	10	20	24		2		11	2	3			
04/09/1998	C6-b	BSS pit	2008	1697	311	975	501	311	26	116	59	18	14	5	4	12	2	1		
04/09/1998	C6-c	BSS	55	0	55	35	5	15					1		2	2	1	2		
09/08/1999	D2	BSS	637	522	115	86	284	170	32	29	22	9	4		15	10	6	3	3 insect damage	large gypsum nodules
06/08/1999	D2	BSS	428	315	113	252	84	61	3	11	13	4	3	3		2	2			
05/08/1999	D2	BSS	117	83	34	64	25	19		2	6	1								
08/08/1999	D2	BSS	461	350	111	196	67	47	4	16	11	9	2	6		1				
06/08/1999	D2	BSS	234	181	53	146	52	25	4	6	7		1	10	1	1	1		1 worked bone	
06/08/1999	D2	BSS	747	612	135	523	89	97		16	15	7		6		1	2			2 fresher
08/08/1999	D2	BSS	796	664	132	537	112	75	7	32	27	6	3	2	1	1	2			
05/08/1999	D2	BSS	315	225	90	209	76	10	1	5	10	4	3	3	1	2	1			3 fresher
08/08/1999	D3	BSS	40	32	9	23	6	4	4	1		1					1	1		
09/08/1999	D3	BSS	12	12	0	11		1												7 fresher
09/08/1999	D3	BSS hearth	37	12	25	33	4								13					
10/08/1999	D3-c	BSS hearth	95	65	30	52	18	19	1	1	2	2				1				
10/08/1999	D3-d	BSS hearth	150	108	42	96	30	14	4	5	1				1				1 insect damage	5 fresher
15/07/1999	D4	BSS pit	231	158	73	87	69	16	21	22	14	2	3	2	8	1	2		1 insect damage	
26/04/1999	D4-a	BSS	21	20	1	8	7	2			2	2								
19/04/1999	D4-a	BSS W	734	707	27	538	44	88	10	15	19	21	1		2					

20/04/1999	D4-b	BSS	134	124	10	46	39	29	8	8	2	0			1	1				W
19/04/1999	D4-b	BSS	261	221	40	164	5	86		4	1	1								
23/04/1999	D4-b	BSS hearth	44	21	23	13	6	16	3	6					2					All burnt bones show localised burning (Travis)
22/04/1999	D4-b	BSS hearth	228	228	0	150	32	41		1	3	1								
23/04/1999	D4-b	BSS hearth	163	163	0	100	23	28	3		4	5								
22/04/1999	D4-b	BSS hearth	125	63	62	47	51	16	1	5	5				1		1		1	
18/04/1999	D4-c	BSS	21	18	3	2	4	5		1	3	4								
20/04/1999	D4-c	BSS W	665	658	7	495	66	54	5	7	17	21								
19/04/1999	D4-d	BSS	186	186	0	134	15	29			3	5								
14/07/1999	D5	BSS pit	20	0	20	10	5	3			2		2	2						
19/04/1999	D5-a	BSS - LFA	8	8	0	2	3	3												W
20/04/1999	D5-a	BSS LFA	12	12	0	0	3	5	4							1				W
20/04/1999	D5-a	LFA	1			1	0	0	0	0	0	0			1				1	No: 989
20/04/1999	D5-b	BSS/LFA	17	17	0	11	1	5												
19/04/1999	D5-b	BSS/LFA	37	32	5	31	2	4						2						
19/04/1999	D5-c	BSS/LFA	75	61	14	42	13	13		3	2	2	1							1 fresher
23/04/1999	D5-c	BSS/LFA pit infill	284	243	41	195	29	44	5	6	3	2				1			4	
22/04/1999	D5-c	BSS/LFA pit infill	31	30	1	20	3	6		2										
21/04/1999	D5-c+d	BSS pit infill	75	61	14	44	13	9	2	2	2	2	1							
19/04/1999	D5-d	BSS/LFA	31	21	10	22	5	3				1							1 insect damage	1 fresher
22/04/1999	D5-d	BSS/LFA pit infill	155	118	37	104	29	18		3	1		1	1		2		2		
23/04/1999	D5-d	BSS/LFA pit infill	311	265	46	189	60	29	2	9	21	1	3					1		
22/04/1999	D5-d	BSS/LFA Pit infill W	79	44	35	47	21	11							3					
20/04/1999	D6-a	BSS	151	122	29	100	14	20	5	7	3	2			2	1				3 fresher
20/04/1999	D6-a	BSS pit/hearth	117	67	49	79	22	8	4	1	3				3	2				
16/07/1999	D6-b	BSS pit	160	99	61	82	35	19	1	13	5	2	1		4	1				
19/04/1999	D6-b	BSS W	7	5	2	5			2				1							
19/04/1999	D6-c	BSS	118	77	41	69	27	18		3	1				1					
19/04/1999	D6-d	BSS	25	6	19	8	8	4	1	4	0	0				2				W S B-J
19/04/1999	D6-d	BSS	18	8	10	10	5	1			2									2 fresher
10/08/1999	E2	BSS	771	711	60	79	311	272	15	33	14	13	2	1	21	7	4	3	5 insect damage 2 polish made into artefacts	3 deeply grooved carn marks
09/08/1999	E2	BSS	138	131	7	72	38	12	1	3	12									
06/08/1999	E2	BSS	10	10	0	10														
10/08/1999	E2	BSS	706	669	37	352	153	20		21	36	25	1					1		4 fresher
08/08/1999	E2	BSS	712	662	50	513	117	28	12	26	16		5	2		2				7 fresher
09/08/1999	E2	BSS	540	471	69	390	84	10	7	23	21	5	1	1			1			1 fresher
09/08/1999	E2	BSS	321	228	93	198	79	17	1	11	11	4	3		1					1 fresher

06/08/1999	E2	BSS	527	466	61	295	150	24	8	26	15	9	3		1	3	1			2 fresher
09/08/1999	E2	BSS hearth	118	111	7	3	1	5		14	34	17		2						
14/08/1999	E2-a	BSS pit	374	340	34	289	42	15		9	15	4	3	1		2				14 fresher
13/08/1999	E2-b	BSS pit		873	36	15	15	4			2		3			1	1			
13/08/1999	E2-d	BSS	258	252	6	36	106	50	11	22	25	8			2			7		
11/08/1999	E2-d	BSS	1	1		1														
11/08/1999	E2-d	BSS	96	83	13	62	7	10	3	6	6	2	1							1 fresher
12/08/1999	E2-d	BSS	269	238	31	119	69	20		22	30	9			1			2		4 fresher
17/08/1999	E2-d	BSS pit	237	194	43	48	88	58	1	20	12	10	1		11			1		5 fresher bone frags
16/08/1999	E2-d	BSS pit	118	104	14	74	26	7	3	4	2	2								1 fresher
06/08/1999	E3	BSS	110			8	29	39	6	6	8	6				1	1			
08/08/1999	E3	BSS	159	137	22	61	56	14		21	7		1	2		1				7 fresher
09/08/1999	E3	BSS	92	86	6	39	38	4	4	4	3						1			1 fresher
05/08/1999	E3	BSS	231	200	31	147	52	17	4	9		2								13 fresher
06/08/1999	E3	BSS pit	99	90	9	52	23	7	3	6	2	6								
10/08/1999	E3-b	BSS hearth	88	49	39	66	18	3		1			1					1		
10/08/1999	E3-d	BSS pit	49	44	5	16	14	10	6		1	2			1					
12/08/1999	E3-d	BSS Pit IA	110	100	10	11	44	34	6	4	1									
20/04/1999	E4-a	BSS	174	148	26	101	54	13	3	2	1		2		2	1		1		
19/04/1999	E4-a	BSS	5	0	5	2	3								1					
20/04/1999	E4-b	BSS	236	204	32	112	75	13	19	14	3			3		1		1		1 fresher
19/04/1999	E4-c	BSS	75	54	21	25	26	18	3	2	1									
20/04/1999	E4-d	BSS	871	717	155	214	330	151	100	39	18	10	13		7	8	9	9	Tool (5 flaked bone 1 bone point) + 1 insect damage	* Bone point found
12/04/1999	E4-d	BSS	155	75	80	18	59	45	3	23	0	0			3		1	7	Tool (flaked bone 2 refits) 2 = insect damage	
23/04/1999	E4-d	BSS	143	81	62	28	52	59		3	1				14	8		1		
12/07/1999	E4-d	BSS	590	489	101	48	215	204	33	39	27	21	3		23	9	1	1	5 cf chipped/flaked pieces	W 5 chipped or flaked bone pieces?
24/04/1999	E4-d	BSS	403	370	33	251	82	16	19	15	1				3			1		7 fresher
19/04/1999	E4-d	BSS	97	64	33	43	37	8	1	7	1				1	1				
23/04/1999	E4-d	BSS	617	617	0	349	183	29	20	28	6	2						1		
21/04/1999	E4-d	BSS	448	448	0	268	137	14	8	12	9									3 fresher
13/07/1999	E5	BSS pit	34	5	29	19	12			2	1			2						
23/04/1999	E5-a	BSS	122	98	24	59	46	11		1	5				2	1				
23/04/1999	E5-a	BSS	191	171	20	109	59	13	1	4	5					1				1 fresher
21/04/1999	E5-a	BSS	32	26	6	6	17	5		2	1						1			
22/04/1999	E5-a	BSS	35	31	4	16	13	4		2										
20/04/1999	E5-b	BSS	708	639	69	175	231	193	63	43	54	3	3		3	5	20	5	Tool (2 Flaked bone) + 2 insect damage	
21/04/1999	E5-b	BSS	425	394	31	101	135	134	25	20	6	3	5		2	1	6	11		W Lots of bone chips
20/04/1999	E5-b	BSS	168	151	17	9	63	34	9	41	8	2	3		5	4			Tool (3 cf flaked bone) 1 insect	W

																			damage	
12/07/1999	E5-b	BSS/LFA	42	38	4	20	15	7							1	1	1			
12/07/1999	E5-c	BSS	775	718	57	46	325	272	38	16	42	22	9		14	11			1 insect damage	
21/04/1999	E5-c	BSS	16	13	3	4	6	5		1										
21/04/1999	E5-c	BSS W	18	15	3	5	5	5		1		2								
14/04/1999	E5-c	BSS/LFA pit	52	9	43	33	13	1		3	2				2					3 fresher
20/04/1999	E5-d	BSS	190	166	24	59	54	31	9	12	16	8	6	1	4	2	6	8		W Several White fragments less than 5mm
22/04/1999	E5-d	BSS	99	82	17	36	42	7		9	5									1 fresher
12/07/1999	E5-d	BSS/LFA Pit	74			14	32	21	4	3	0	0	2		2	2	2	1		W
13/07/1999	E5-d	BSS/LFA Pit	80			25	26	20	5	4	0	0	2	2	2	2	4	1		
26/04/1999	E6-a	BSS	1279	1146	133	795	336	104	15	15	14		14	3	4	4			1 insect damage	
14/07/1999	E6-a	BSS	13	1	12	5	5	2			1	1		1		1	1			
23/04/1999	E6-b	BSS	1231	1137	94	712	336	110	36	11	34	2	1	1		2			1 insect damage	
12/07/1999	E6-b	BSS	77	40	37	36	22	8	1	8	2		4	2	2		1			
13/07/1999	E6-b	BSS	29	13	16	12	10	6		1					2		1			1 fresher
04/09/1998	E6-d	BSS	558	482	78	93	168	126	94	29	21	30	8	2	4	8	13	11	Tool (1 flaked bone) + 2 insect damage	