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THE STERKFONTEIN WESTERN BRECCIAS: STRATIGRAPHY, FAUNA AND ARTEFACTS

By

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A thesis submitted to the Faculty of Science, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Doctor of Philosophy.

Johannesburg, 2009.

Declaration

I declare that this thesis is my own unaided work. It is being submitted for the degree of Doctor of Philosophy in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

_____

(Signature of candidate)

_____day of_____2009

Abstract

The Sterkfontein Caves are one of the dolomite cave systems located in Gauteng Province, South Africa. These caves are important to paleoanthropology because they have yielded a large number of fossils of early hominids, fauna, flora and some of the earliest stone tools in South Africa. The caves contain deposits classified as stratigraphic members within the Sterkfontein Formation. These members are named 1 to 6 in sequence of ascending order and age, and additional infills, the StW 53 Infill and the Post-Member 6 Infill, have also recently been identified. There are in addition deposits in three separate caverns: the Jacovec Cavern and the Name Chamber located underground, and the Lincoln Cave located adjacent to the main cave deposits. Member 1 is a thick sterile deposit lying on the floor of the Silberberg Grotto. Member 2 has produced the first and most complete *Australopithecus* hominid skull in direct association with its skeleton, together with other fossil faunal material, all of which are thought to comprise death trap assemblages. Member 2 is judged to be ca 3.3 mya by palaeomagnetic dating. Member 3 is the largest deposit in the Sterkfontein caves and shows localized concentrations of fossil bones on the exposed wall where lime miners have removed a massive stalagmite boss, but it remains unexcavated due to difficulties of access.

Member 4 is located in the eastern area of the open breccias exposed at the surface through weathering of the dolomite cave roof and is estimated to date to between 2.14 and 2.4 mya. Member 4 has also produced a large collection of *Australopithecus* and other fossil fauna but has no artefacts. The deposit was originally thought to have filled a large underground chamber and the northeastern part of Member 4 was originally named the Type Site by J.T. Robinson because it had yielded the type specimen of *Australopithecus transvaalensis* (TM1511), now classified as *A. africanus*. Member 5 was

previously thought to be a single large underground infill, but it has been sub-divided by Clarke and Kuman into the northern StW 53 Infill, an eastern Oldowan Infill, and Acheulean breccias in Member 5 West and East. This has been the revised stratigraphy to date.

This study is aimed at clarifying the stratigraphy and sequence of the younger archaeological breccias in the western area of the Sterkfontein deposits. The goal is to provide a more complete picture of the contents of these deposits. The westernmost breccias in the main excavation were thus further excavated to reveal a cleaner profile from which the sediments could be observed and to increase the sample sizes of materials from these deposits. Different Member 5 breccia types have now been identified in the western profile. This study argues that younger Member 4 deposits once filled the western area, and Member 5 deposits formed within the space left by collapsed areas of Member 4 breccia. It is likely that Member 4 deposits still exist in the far western parts of the surface excavation area, beyond the current profile exposed in the western face of Member 5. In other words, Member 4 breccia probably once filled the entire ancient chamber, and remnants of it still remain in portions of the western (Member 5) area, while cavities formed through collapse and solution of Member 4 were subsequently filled with Member 5.

The mid-Pleistocene Member 6 breccia was also excavated but did not produce artefacts or additional fauna. The previously excavated faunal assemblage was re-analysed for a more up-to-date taxa composition, adding taxa previously unidentified. It indicates that this deposit contains grassland environment fauna. The Member 6 and Post-Member 6 Infills together contain rich mid- to late-Pleistocene assemblages from diverse environments accumulated and modified by multiple agents. Artefacts from the Post-Member 6 Infill are of Middle Stone Age (MSA) period, but they lack MSA diagnostic pieces and include some early Acheulean core types that appear to derive from older, eroded Member 5 breccia. This assemblage, however, differs from the Sterkfontein early Acheulean in the higher proportion of small flaking debris, use of quartz as opposed to quartzite as the dominant stone tool making raw material, and the relatively fresher condition of artefacts.

To my children for the sacrifices they made when I was away for studies.

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List of Abbreviations.

Table 1: Abbreviations of cranial and post-cranial skeletal elements

Element	**Abbreviations**
Horncore	HORN
Cranial	CRAN
Occipital	OCC
Zygomatic Arch	ZYGM
Mastoid process	MAST
Temporal Bone	TEMP
Orbit	ORB
Os petrosum	OS PET
Maxilla	MAX
Pre-maxilla	PRE-MAX
Upper Lateral Incisor	I^2
Upper Canine	UC
Upper Third Premolar	P^3
Upper Fourth Premolar	P^4
Upper First Molar	M^1
Upper Second Molar	M^2
Upper Third Molar	M^3
Hemimandible	1/2MAND
Lower Medial Incisor	I_1
Lower Lateral Incisor	I_2
Lower Canine	LC
Lower Fourth Premolar	P_4
Lower Third Premolar	P_3
Lower Second Premolar	P_2
Lower First Premolar	P1
Lower First Molar	M_1
Lower Second Molar	M_2
Lower Third Molar	M_3
Upper premolar	UPm
Incisor	I
Premolar	PM
Upper molar	UM
Deciduous molar	dM
Indeterminate Lower First or Second Molar	M1/2
Indeterminate Molar	M
Atlas	Atlas
Axis	Axis
Cervical Vertebra	CERV
Thoracic Vertebra	THOR
Lumbar Vertebra	LUMB
Sacrum	SACR
Caudal Vertebra	CAUD
Vertebra	VERT
Clavicle	CLAV
Rib	RIB
Sternum	STERN

Table 2: Abbreviations of cranial and post-cranial skeletal elements continued

Element	**Abbreviations**
Scapula	SCAP
Humerus	HUM
Ulna	ULNA
Radius	RAD
Radio-Ulna	RAD-ULNA
Carpal	CARP
Magnum	MAG
Scaphoid	SCAPH
Cuneiform	CUN
Lunate	LUN
Unciform	UNCI
Metacarpal	MTC
Proximal Phalanx	PHAL I
Intermediate Phalanx	PHAL II
Distal Phalanx	PHAL III
Sesamoid	SES
Innominate	1/2PEL
Ischium	ISCH
Ilium	ILI
Pubis	PUB
Femur	FEM
Tibia	TIB
Fibula	FIB
Tarsal	TAR
Astragalus	ASTRAG
Calcaneum	CALC
External Cuneiform	EXCUN
Navicular Cuboid	NAVCUB
Metatarsal	MTT
Metapodial	MTP
Unidentified Bone Fragment	FRAG
Cuboid	CUB
Ulna Carpal	ULNACAP
Intermediate cuneiform	INT CUN
Long Bone Shaft	LBSF
Acetabulum	ACET
Lateral cuneiform	LAT CUN
Medial cuneiform	MED CUN
Coronoid process	CORO
Patella	PAT
Capitate	CAPT
Trapezoid	TRAP
Navicular	NAVCL
Internal cuneiform	INTR CUN
Pisiform	PISI

Table 3: Artefact raw materials

Raw Material	**Abbreviations**
Quartz	Q
Quartzite	QZE
Chert	C
Dolomite	D
Diabase	DIAB
Indeterminate Igneous	IG?
Mudstone	Mstone
Sandstone	Sstone

Table 4: Artefact weathering condition

Weathering condition	**Abbreviations**
Fresh	F
Slightly weathered	SW
Weathered	W
Very weathered	VW

Chapter 1

Introduction

1.1 Background

The Sterkfontein Cave system is one of the dolomite cave systems in Gauteng Province, South Africa. This cave system is important for palaeoanthropological studies because it has preserved abundant early hominid fossils (Broom, 1936; Broom and Schepers, 1946; Broom *et al.*, 1950; Clarke, 1988, 1989, 1994, 1998, 1999; Clarke and Tobias, 1995), (Pickering and Moggi-Cecchi, 2004), Oldowan and Early Acheulean stone tools (Stiles and Partridge, 1979; Kuman, 1994a,b, 1996, 1998; Field, 1999), as well as environmental and ecological indicators in the form of fossil fauna and flora (Vrba, 1975, 1980; Stiles and Partridge, 1979; McKee, 1991; Bamford, 1999; Pickering, 1999). The cave is composed of a number of caverns that opened to the environment for sediment deposition at different times during the Pliocene and Pleistocene. Studies have shown that the caves were not occupied by hominids (*Australopithecus* or even *Homo*), but at times acted as traps for *Australopithecus* and animals living on the landscape (Pickering, 1999; Pickering *et al.*, 2004). The caves may also have acted as receptacles for organic and inorganic material from run-off, flooding and gravitation in their catchment areas or may have been used by carnivores for denning during later stages. However, the sheltered entrances to these caverns were perhaps later utilized as a refuge by early *Homo*, leading to the accumulation of the Oldowan and Acheulean stone tools, and shade trees growing at the cave entrances could also have been used by hominids (Kuman,

1994a,b, 1996, 1998; Pickering, 1999; Kuman and Clarke, 2000).

Stratigraphic studies of the deposits at Sterkfontein Caves have revealed distinct deposits with different sedimentological properties, fauna, artefacts and ages (Robinson, 1962; Partridge, 1978; Wilkinson, 1983, 1985; Partridge and Watt, 1991; Kuman, 1994b; Clarke, 1994, 2006), while others have been named infills within some of these members (Kuman and Clarke, 2000). The bulk of these deposits has been classified as Members 1-6 within the Sterkfontein Formation (Partridge, 1978). Members 1, 2 and 3 are the oldest deposits and are confined to an underground cavern beneath the main excavation in the Silberberg Grotto (Partridge, 1978; Tobias, 1979; Partridge and Watt, 1991) Partridge *et al.*1999, (Partridge, 2000; Kuman and Clarke, 2000; Clarke, 2006); see Figures 1.1 and 1.2. The subsequent deposits, Members 4, 5, and 6, also follow in age in that order, and are found in the exposed area of the site where the dolomite roof has weathered away (Partridge, 1978; Partridge and Watt, 1991; Partridge *et al.*, 1999; Partridge, 2000; Kuman and Clarke, 2000). A separate cavern, the Jacovec Cavern (see Figure 1.1), is located underground but is apparently unconnected to the six stratified members and contains *Australopithecus* fossils among other fossil faunal remains (Wilkinson, 1983, 1985; Partridge and Watt, 1991; Partridge *et al.*, 1999, 2000, 2003; Kibii, 2000, 2004), Partridge *et al.* (2000). Most recently, the StW 53 Infill, the Post-Member 6 Infill, the Lincoln Cave deposits (North and South) and the Name Chamber deposits have been identified (Reynolds, 1998; Kuman and Clarke, 2000; Reynolds *et al.*, 2003, 2007).

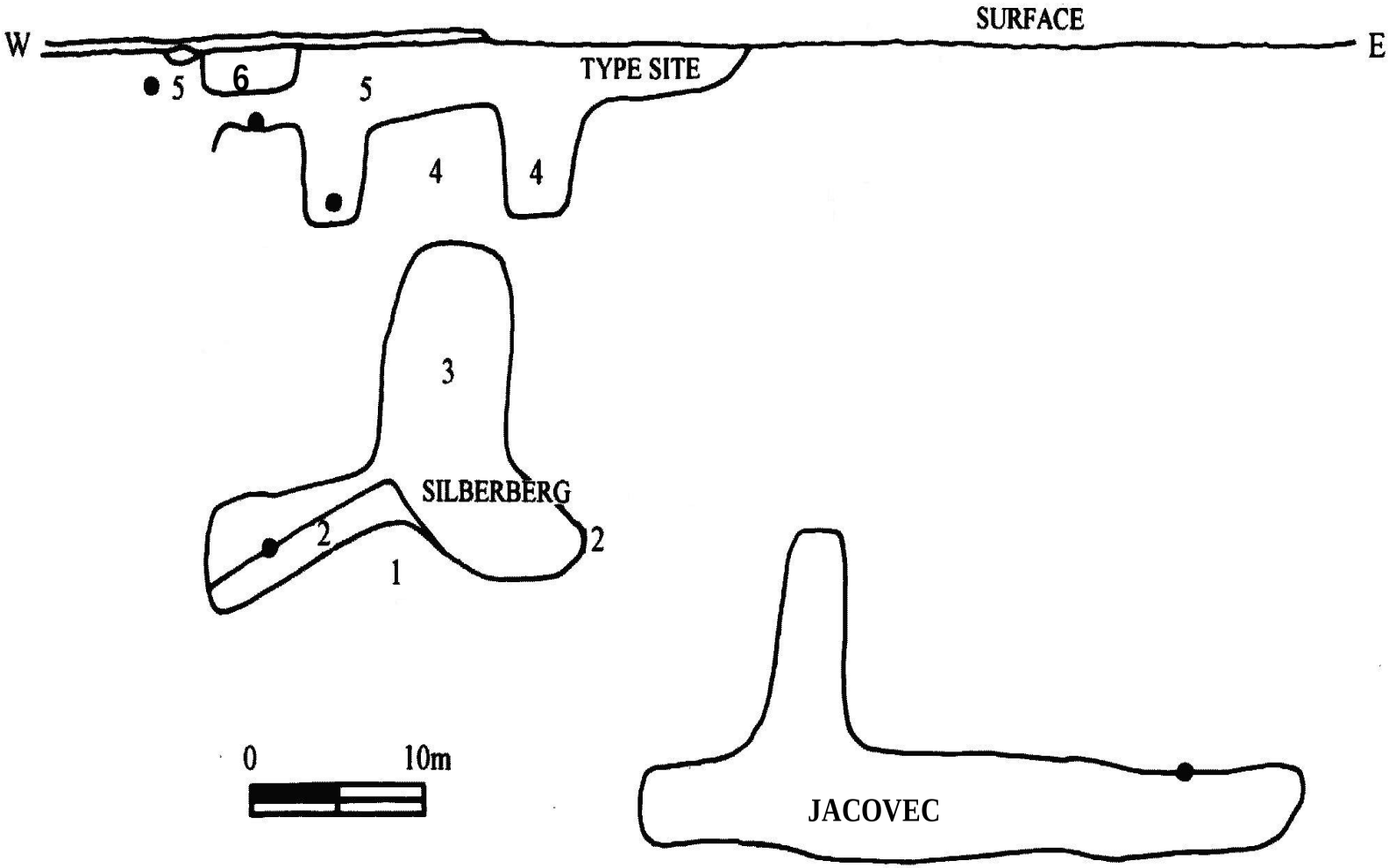


Figure 1.1: Stratigraphic profile of Sterkfontein caves. The numbers indicate the location of the various Members of the Sterkfontein Formation. The black dots are some of the hominid localities (courtesy of R. J. Clarke).

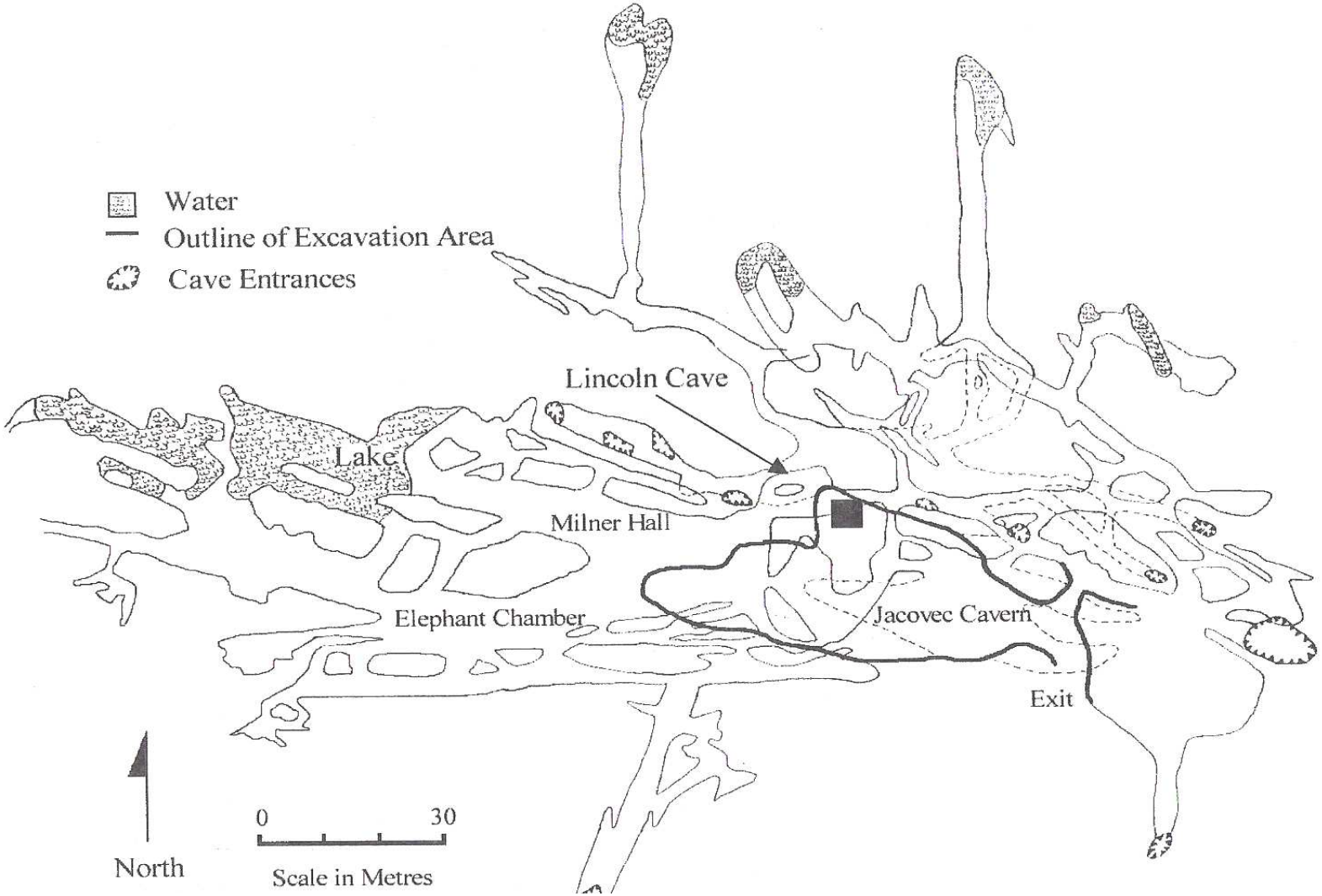


Figure 1.2: Sterkfontein Cave plan view showing the relationship of Lincoln Cave (shown by the arrow) and Post-Member 6 Infill (shown by the black square) from Reynolds *et al.* (2003)

1.2 Research goals

The western extent of the Member 5 West early Acheulean deposit, the stratigraphy of the western area (Member 6 and Post-Member 6 Infill deposits), and the faunal and artefactual contents of the Member 6 and Post-Member 6 Infills have not been analysed in detail and thus have not been well understood. This study is aimed at clarifying the stratigraphy of the younger western breccias through excavations in the western profile and to establish the western extent of Member 5 West. Fauna and artefacts from new and previous excavations are analysed for a better understanding of the taxonomy, the taphonomy and the archaeology of the Member 6 and the Post-Member 6 Infill deposits.

1.3 Thesis outline

Sections 1.1 and 1.2 of this chapter have given the background and goals of this research, and the structure of this thesis is outlined in the rest of the chapter. Chapter two outlines the materials and discusses the methods used to achieve the research goals. The fauna from Member 6 and the Post-Member 6 Infill have been taxonomically identified and taphonomically analysed. Also outlined are the comparative samples consisting of skeletons of extant mammalian taxa and fossil extinct taxa where available, modified bones of known agents, experimental modifications and published descriptions and illustrations of modification marks that have aided these analyses.

Chapter three is devoted to the stratigraphy of the western breccias. During excavations at Sterkfontein Caves in the 1950s, Robinson (1962) identified the Lower Breccia (now Member 4) in the Type Site, the Middle Breccia (now Member 5), and the Upper Breccia (now Member 6) in the western part of the cave in what was then called the Extension Site. Different coloured, more calcified breccia blocks similar to those identified as Lower Breccia were observed in the Extension Site. This led Robinson to suggest that Member 4 may have completely filled the original cavern before collapse in the central area

left a void in which the deposition of the subsequent deposits later occurred. Clarke (1994) and Kuman and Clarke (2000) have identified interfingering of portions of Member 4 and Member 5 in the western area, confirming Robinson's suggestion that Member 4 may have extended further west than previously thought (Figure 1.3). The deposition sequence suggested by Robinson and Clarke implies that additional components of Member 4 may still lie to the west of the surface excavation in the unexcavated area westward of Member 5 West. Excavations have therefore been conducted in the western area during the current study to establish the western extent of the Member 5 West, revealing part of Member 4 that still remains in the western end of the surface excavation. Stratigraphic details of Members 5 West were recorded before excavations, and Member 5 West and Member 6 stratigraphy was drawn during excavation, in an attempt to get accurate positions for these deposits to refine our understanding of the various deposits. The results of these excavations and the more up-to-date stratigraphic interpretation of the western profile and the stratigraphy of the western area are discussed in Chapter three.



Figure 1.3: Sterkfontein Cave plan view showing the surface distribution of different breccia types in the Sterkfontein formation (from Kuman and Clarke 2000)

Chapter four presents the results and interpretation of the analysis of the fauna from Member 6. Member 6 breccia filled only a limited space between the dolomite roof and the underlying Member 5 breccia, prior to erosion of the northern area (Robinson, 1962; Partridge, 1978; Brain, 1981; Partridge and Watt, 1991; Clarke, 1994; Kuman and Clarke, 2000); see Figures 1.4, 1.2. It is now preserved as a small remnant of the original deposit overlying a flowstone capping Member 5 West. Robinson's excavation of Member 6 (his Upper Breccia) produced no stone tools apart from one manuport which was later stolen, and the faunal assemblage from the deposit was said to be too small to be informative (Brain, 1981). Apart from the above study by Brain of the Member 6 fauna, this deposit is not well understood due to its small faunal assemblage and the lack of stone tools from previous excavations (Robinson, 1962; Brain, 1981). Current excavations in the western area were expected to produce more Member 6 fauna and artefacts to expand the Member 6 faunal sample from which more conclusive interpretations on the contents and age estimates for the deposit could be based. However, no artefacts or more fauna were recovered from the new excavations of Member 6 breccia. Thus, fauna from previous excavations were systematically analysed for an up-to-date determination of taxa representation, modes of accumulation and the modification agents responsible for their current state, and for the clarification of the possible age estimate for the deposit.

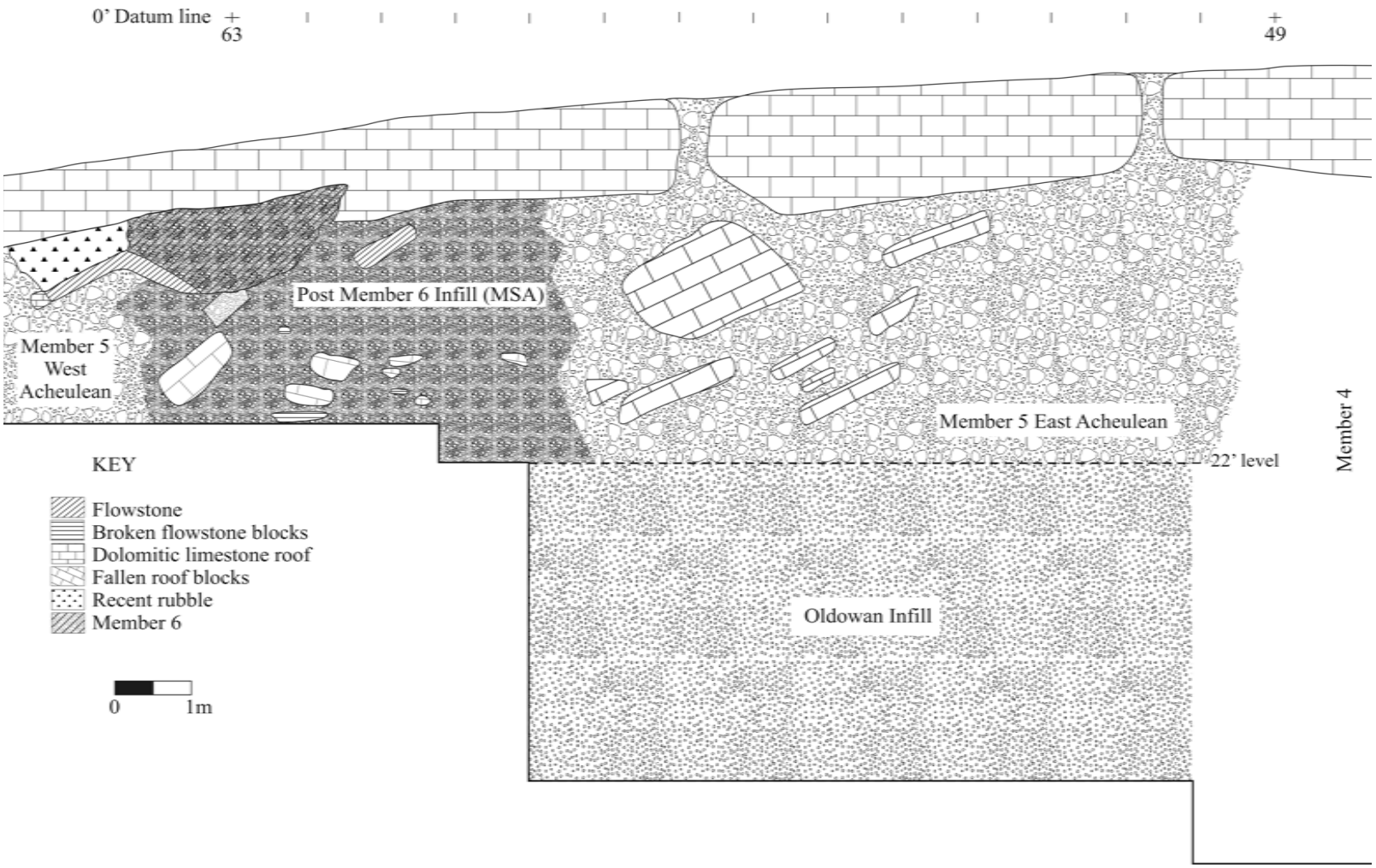


Figure 1.4: Sterkfontein Caves northern profile showing the position of the various members of the Sterkfontein formation identified in this profile (modified from Kuman and Clarke 2000).

Chapter five of this thesis outlines the results of the analysis of the entire faunal assemblage from the Post-Member 6 Infill, to provide the complete faunal taxa composition, modes of accumulation and modifications, as well as the interpretation of these aspects of the assemblage. The Post-Member 6 Infill occupies an erosion channel. This erosion has smoothed the undersurface of Member 6, leaving this portion of the older Member 6 breccia as a hanging remnant. It has also removed a large area which apparently once contained early Acheulean Member 5 breccia linking Member 5 West and Member 5 East. The early Acheulean in the area now filled with the Post-Member 6 Infill may have been decalcified and mixed with younger incoming sediments (Clarke, 1994; Kuman, 1994a,b, 1998; Kuman and Clarke, 2000; Reynolds, 2000). Excavations by Reynolds (1998, 2000) suggested possible extension of Post-Member 6 Infill sediments northwards into the adjacent Lincoln Cave through the excavated tunnel sediments in the northern profile. This suggestion is based on the similarity of faunal taxa and artefact composition from the area of square L63 in the main excavation with material in the Lincoln Cave breccia. The Lincoln Cave South sediments appear to be continuous with the Post-Member 6 Infill and have Middle Stone Age diagnostic artefacts. In a more northern breccia within the Lincoln Cave (Lincoln Cave North), a small deposit with a few early Acheulean tools eroded from Member 5 has been dated by Uranium Series on sandwiching flowstones to an age of between 252,600 ± 35 600 years and 116,300 ± 7 700 years, placing the deposit within the Middle Stone Age period of South Africa (Reynolds *et al.*, 2003). This implies that, despite its incorporation of Acheulean artefact contents, the Lincoln Cave North deposit accumulated during the Middle Stone Age period.

Similarities between the L63 and the Member 5 West assemblages indicate possible erosion or collapse of the older Member 5 West deposits and incorporation of some Acheulean artefacts and early *Homo* teeth into the younger Post-Member 6 Infill. Faunal species in the Member 5 West, Post-Member 6 Infill and the Lincoln Cave deposits indicate similar palaeo-environmental conditions during deposition. These deposits are, however, differentiated by their

contents, e.g., hominid species and artefact assemblages (Kuman and Clarke, 2000). Only fauna from square L63 and artefacts from squares L63 and M63 in the Post-Member 6 Infill have been analysed (Reynolds, 2000), and the information we have from Reynolds' study is therefore incomplete. The current study, including the analysis of all previously excavated fauna and artefacts and those resulting from the current excavation of this deposit, thus gives a more complete interpretation of the assemblage.

Chapter six provides a detailed analysis of artefacts from the Post-Member 6 Infill. No diagnostic artefacts from the the area of the Post-Member 6 Infill (square L63) were found by Reynolds, but a high percentage of small flaking debris in the infill is indicative of the Middle Stone Age rather than the Acheulean at Sterkfontein Caves. The Acheulean artefacts in the Lincoln Cave North are also an indication of the erosion and inclusion of components of earlier breccias in the younger sediments during deposition, as no other entrance for such artefacts is apparent in the Lincoln Cave. The Member 5 West Acheulean artefact assemblage at Sterkfontein lacks small flaking debris, but it is rich in cores, manuports, large chunks and stone fragments. This reflects an unstable landscape affected by erosion and hence winnowing out of the small artefacts prior to cavern filling (Kuman, 1994b; Field, 1999; Reynolds, 2000). Also, the early Acheulean artefacts are generally more weathered than the preceding Oldowan and the succeeding MSA assemblages. In contrast, the L63 area in the Post-Member 6 Infill appears to have more contents in common with the Lincoln Cave South breccia, which has Middle Stone Age diagnostic artefacts (Reynolds, 2000). Technological and typological analyses have been conducted on the artefact assemblage to determine the industrial affinities, and hence the chronological position, and to decipher the behavioural traits of the hominids responsible for their manufacture. Site formation processes leading to the accumulation of the artefact assemblage have also been analysed.

Chapter seven provides the discussion and conclusions of this thesis. The study provides an up-to-date analysis of Member 6 fauna and a complete analysis of the Post-Member 6 Infill fauna and artefact samples from which informed

interpretations of the assemblages can be made. A more up-to-date interpretation of the western area stratigraphy from the current study also provides information on the western extent of the Member 5 West and Member 4 breccias in the western reaches of the surface excavated area.

Chapter 2

Materials and Methods

2.1 Introduction

This chapter introduces the materials and explains the methods used in this study to achieve the goals outlined in Chapter One. The body of data available for this study (the materials) is described and the methods used in their analysis is explained in detail.

2.2 Materials

This study utilises the fossil faunal assemblage from Sterkfontein Member 6 and the Post-Member 6 Infill and the artefacts from the Post-Member 6 Infill to address the aims of this study put forward in Chapter One. Modern comparative samples of animal bones in the collections of the University of the Witwatersrand and the Transvaal Museum (Northern Flagship Institution) were used for faunal taxonomic and taphonomic identification.

2.2.1 Post-Member 6 Infill fossil fauna

The Post-Member 6 Infill assemblage consists of fossil material excavated in the 1960s by J. T. Robinson in the 1970s and 1980s by Alun Hughes, and those excavated by R. J. Clarke's team from 1991 onwards, all of which are curated at the University of the Witwatersrand. New excavations were conducted

during the course of this study and produced additional fossil fauna. The material for this sample derive from 35 squares (each measuring 3'x 3'x 1'), and including the 25 grid squares filling the erosion channel between Member 5 East and West, as well as material from the 6' wide by 15' long excavated tunnel, thought to link Sterkfontein main excavation with the adjacent Lincoln Cave (Appendix A.1 and Appendix A.2). A single square (L63) of fauna (5,584 specimens) from the Post-Member 6 Infill has previously been analysed by Reynolds (2000) for comparison with materials from Lincoln Cave. In total, 14, 025 faunal specimens from the rest of the excavated Post-Member 6 Infill squares have been analysed during this study.

2.2.2 Member 6 fossil fauna

Member 6 fauna consists of the fossils excavated in the 1960s by J. T. Robinson analysed by Brain (1981) and curated at the Transvaal Museum. In addition, some specimens from the Extension Site not initially analysed by Brain, but which were considered to derive from Member 6 based on the catalogue number prefix (SE), texture and colour of the adhering breccia matrix, were included in this sample (identified with the help of Stephany Potze, Department of Palaeontology, NFI). Further excavations conducted during this study did not produced more fossil fauna or artefacts. A total of 466 specimens is now available for study as opposed to the 454 studied by Brain. Microfauna, also present in this assemblage, is not analysed, while some of the materials listed by Brain (1981) as belonging to Member 6 were also not found during the sorting of Member 6 faunal material for this study at the Northern Flagship Institution (see Appendix B.1).

2.2.3 Lithic artefacts

Apart from the single foreign stone (i.e., manuport) seen in the Member 6 deposit during earlier excavation by J. T. Robinson [which was stolen before extraction (Robinson, 1962)], no other artefacts have been recovered from the

Member 6 deposit. A small sample of artefacts was, however, recovered during earlier excavations of the Post-Member 6 Infill from the 1960s to the 1990s. Fifty artefacts from two squares have previously been analysed by Reynolds (2000) and compared with the Lincoln Cave artefacts. More recently, over 400 artefacts have been recovered from the younger infill between Member 5 East and West and the excavated area that tunnels underneath the northern profile, increasing the sample size of the relatively small assemblage of artefacts available for analysis from the Post-Member 6 Infill to 608 artefacts. The Post-Member 6 Infill lithic material derives from the squares infilling the solution cavity between Member 5 East and West, as well as from the 6' wide by 15' long excavated tunnel, thought to link Sterkfontein Caves and the adjacent Lincoln cave (see Appendices A.3 and A.4).

2.2.4 Comparative samples

Skeletal remains of extant African mammals, and descriptions of extinct mammals where necessary, have been used as comparative samples in the identification of fossil bones for this study. Extant mammals' skeletons used for this study are housed at the Transvaal Museum, the University of the Witwatersrand Bernard Price Institute for Palaeontology, and the School of Anatomical Sciences at the University of the Witwatersrand. Bone samples modified by known agents and published descriptions of modifications have been used in the identification of modifications on fossils from Sterkfontein Caves, e.g., a porcupine-gnawed bone assemblage from Nossob collected by Brain (1967) was used.

2.3 Methods

2.3.1 Stratigraphic study

One of the major aims of this study was to clarify the stratigraphic details of the western breccias of the Sterkfontein deposits. To this extent, excavations were conducted to expose more breccia to the far west of the site. Under the directorship of my supervisor (Professor Ron Clarke), a excavation crew of University staff stationed at the site excavated the western area of the site. We took Electronic Distance Measuring (EDM) points on the western wall of the site prior to excavations to assist with detailed stratigraphic drawing of the profile in this area. These excavations revealed fresh breccia surfaces on which observations on currently exposed breccia have been made, e.g., differences in sediment colour, texture, stone tool and faunal contents. Contacts between adjacent breccias were identified and recorded to determine the conformability of sediment interfaces. Interpretation of the stratigraphic profile was achieved based on these observations with the help of, and in consultative discussions with Professor Clarke.

2.3.2 Artefact analysis

Typological and technological analyses were conducted for the Post-Member 6 Infill artefacts to establish the stone tool typologies and technology, as well as to establish which artefact industry is represented. This has aided interpretation of the chronology of the site, as well as the site formation processes leading to artefact accumulations. Typological studies were conducted using the classification methods applied by Kuman (1994a, 1996, 1998); Kuman *et al.* (1997) and Field (1999) for other assemblages at the site and at other sites in the Sterkfontein valley. Other attributes such as abrasion, weathering, artefact size distribution and post-depositional breakage, all relating to site formation processes, were recorded and examined according to published guidelines following Schick (1987); Kuman (1994a,b). Artefact analysis in this assemblage

involved sorting, classification of types, and distributional analysis of sizes, technology, and raw material.

Various researchers have devised classification schemes for different stone tool industries. Leakey (1971) established a typology for the Oldowan, Developed Oldowan and early Acheulean industries in East Africa with materials from Olduvai Gorge Bed I and II. This typology is generally accepted and widely used as the classification scheme of choice by other researchers, including those working in South Africa, for some of the early cultural periods such as those in the Sterkfontein valley, where Oldowan and Early Acheulean tool assemblages have been excavated and studied (Mason, 1957, 1962a,b; Kuman, 1994a,b, 1996, 1998).

The Middle Stone Age (MSA) has, however, been classified differently as it is characterised by flake and blade tools, e.g., denticulates, points and scrapers, and lacks Early Stone Age (ESA) core tools (Thackeray A., 1992).The Middle Stone Age was first classified as an industrial tradition, with variations described, such as Pietersburg, Mossel Bay, Hagenstad, Saw Mill, Alexandersfontein and Howiesons Poort (Goodwin and Van Riet Lowe, 1929; Goodwin, 1930; Mason, 1957, 1962a; Thackeray A., 1992).A scheme was later developed for the long sequence at Klasies River Mouth as a five stage sequence termed MSA I to IV, with a Howieson's Poort stage between the third and the fourth stages (Singer and Wymer, 1982). A similar scheme was used by Sampson (1972) for the southern Cape MSA assemblages, but with pre- and post- Howiesons Poort stages sandwiching the Howiesons Poort. These classifications have been modified by Volman (1981, 1984) into another more comprehensive MSA scheme: the MSA 1, MSA 2a, MSA 2b, Howiesons Poort and MSA 3. This later classification is now widely used and has been modified and applied for various MSA sites in South Africa, e.g., the study of the Florisbad MSA assemblages by Kuman (1989); Kuman *et al.* (1999) and by Wurz (2002).

Middle Stone Age sites in the Cape and the former Transvaal seem to vary in age and stone tool raw material and tool types, making their typology and technology vary considerably. Sites with sequences including the early MSA

are limited and have been reported and described by Volman (1981, 1984). The earliest MSA 1 assemblages of South Africa have small broad flakes with facetted butts, cores for production of flakes with intersecting dorsal scars, where there is little formal retouch, rare retouched scrapers and no retouched points. This earliest MSA (MSA 1) is placed in Oxygen Isotope Stage (OIS) 6. It has been identified at sites such as Duinefontein 2, Peers Cave, Elands Bay Cave and possibly at Bushman Rockshelter (Volman, 1981, 1984). A later phase of MSA 1 in the Transvaal at Cave of Hearths was initially called Lower Pietersburg by Mason (1957), but later put in the MSA 2a by Volman (1984).

The MSA 2 is the next MSA in age and has been divided into two: MSA 2a (OIS 5c-6), and MSA 2b (OIS) 5e-5c. The MSA 2 has been identified at Klasies River Mouth as MSA I and II (for MSA 2a and MSA 2b respectively) by Singer and Wymer (1982), Klasies River Mouth and Mossel Bay (for MSA 2a and MSA 2b respectively) by Wurz (2002), and at Border Cave, Cave of Hearths Beds 4-9, Mwulu 1-2 and Apollo 11 Cave among others by Volman (1984). The MSA 2 has relatively large, narrow flakes and flake-blades which are larger than those of MSA 1. Formal retouch, denticulates and scrapers are more common and unifacial and bifacial points begin to appear. The occurrence of points and retouch increases from MSA 2a to MSA 2b, with denticulates being more common in MSA 2a, but absent or less common in MSA 2b. The frequency of sidescrapers increase compared to endscrapers from 2a to 2b. MSA 2b also has occasional small backed or truncated pieces.

The Howieson's Poort is estimated to date to OIS 5b-5a (*Ca.* 60,000-75,000 kya) and is identified at Howieson's Poort Rockshelter, Klasies River Mouth, Cave of Hearths Bed 9, Rose Cottage Cave, Border Cave, Mwulu 3 and Klipfonteinrand among others. The Howieson's Poort is characterised by numerous trapezoids, backed and truncated pieces, and by relatively small broader flakes with facetted butts made on fine grained and cryptocrystalline rocks as opposed to those used in earlier stages of MSA (Volman, 1984). The MSA 3 has been called MSA IV (Singer and Wymer, 1982) and Post Howieson's Poort (Wurz, 2002) at Klasies River Mouth. The MSA 3 has flake blades

similar to those of the MSA 2, with unifacial points and laterally retouched blades more common.

To enable comparison of this artefact assemblage with others in the Sterkfontein valley and elsewhere in South Africa, classification of the artefacts in this assemblage followed that of MSA sites in South Africa, e.g., (Sampson, 1972; Volman, 1981, 1984; Singer and Wymer, 1982; Mason, 1988; Wurz, 2002), but also incorporated types used for the other assemblages in the valley (Kuman, 1994a,b, 1996, 1998; Kuman *et al.*, 1997; Field, 1999; Reynolds, 2000). The resulting typological classification is discussed below.

2.3.3 Typological classification

Flakes

Flakes and flake portions have been divided into three more specific categories in this assemblage.

Complete flakes

Complete flakes include pieces ≥20mm struck from cores. They have complete striking platforms, bulbs of percussion, as well as tapered, stepped or hinged terminations. Maximum lengths of flakes for this sample are taken in this study because the complete flakes' sample was too small for a complete technological analysis.

Incomplete flakes

These are broken flakes ≥20mm which may exhibit a bulb of percussion and/or tapered, stepped or hinged terminations. Incomplete flakes include split flakes, and proximal, lateral, medial or distal portions of flakes, but these further divisions of incomplete flakes were not used in this study because of the small sample size for incomplete flakes.

Core trimming flakes

These are complete flakes that have a triangular cross-section formed by dorsal scars that create a ridge, indicating previous platform working or removal of an angular portion of a core (Singer and Wymer, 1982; Field, 1999). Their

purpose seems to be only for preparation of core striking platforms or core shaping, as they are neither retouched nor have signs of use wear.

Cores

Cores are the remains of the original piece from which flakes have been detached and have negative flake scars on their surfaces. Cores in this assemblage have been classified as bipolar, freehand percussion flaked, or a combination of both. Leakey (1971) has classified freehand percussion-flaked cores by their shape and the worked edges, but with an emphasis on their use as tools. In studying the cores of the Sterkfontein early Acheulean and Oldowan, Field (1999) adopted and modified the types developed by Leakey and classified cores by shape, number and positions of flake scars, but without the emphasis on their assumed function, thereby referring to them as cores instead of core tools. The types used by Field have been adopted for use here where necessary, but with an emphasis on shape and flaking technique as done by Volman (1981) and Singer and Wymer (1982) in the study of the MSA of the southern Cape. Core types have been classified to include the core types below.

Casual cores

Casual cores have one or two flake removals. Although some pieces may have opportunistic removals such as those resulting form breakage during their use as hammerstones, casual core removals are considered to be intentional removals, either for testing of raw material quality or for flake tool production.

Single platform cores

These have also been referred to as edge cores by Field (1999) and have a set of contiguous removals off one platform, either a naturally flat edge or an edge made by flaking or splitting of the blank.

Chopper cores

These are pieces that are unifacially or bifacially flaked along one edge of a cobble. Occasionally, an opportunistic removal is made from another side of the core.

Discoidal cores

Discoidal cores are also known as radial cores and are bifacially flaked pieces with removals along all or most of the manuport circumference. Flaking takes place on two platforms creating a disc-like or bi-conical shape.

Polyhedral cores

These are cores that have been flaked on three or more separate platforms and have been flaked over most or all of the surface of the piece in a seemingly random pattern. Pieces with partial flaking are referred to as irregular polyhedral cores (Kuman, 1998; Field, 1999). Polyhedral cores have also been referred to as irregular cores by scientists working with MSA assemblages (Singer and Wymer, 1982).

Cores on flakes

These are flakes that have been subsequently knapped. This kind of knapping occurs on medium-to-large-sized flakes with manageable handling capability for knapping. The aim of such knapping may be flake removal or shaping of the initial flake, as in unfinished pieces possibly intended to produce Acheulean handaxes and cleavers, as at Olduvai Gorge (Leakey, 1971) and Sterkfontein (Kuman, 1994b; Field, 1999).

Core fragments

These are pieces $\geq$ 20mm which break off cores during the knapping process. They differ from chunks by the occurrence of occurrence clear evidence of knapping in the form of flake scars on one or more sides and a clear surface of breakage from the original core that has no evidence of flake scars.

Bipolar cores and core remains

Bipolar cores often with two opposing impact points, indicating that they have been knapped between a hammerstone and an anvil. Bipolar core remains are fragments of bipolar cores with some of the characteristics of bipolar cores. Bipolar cores and core remains have flat flake scars, unlike freehand flaked cores which have concave negative flake scars indicating negative bulbs of percussions. They may exhibit a flat profile or sometimes a spalled profile, plus crushing or splintering at the platforms.

Small Flaking Debris

Small flaking debris includes all pieces <20mm in maximum dimension (Leakey, 1971; Kuman, 1994a,b; Field, 1999). While most have characteristics of other types classified in this assemblage such as complete flakes, incomplete flakes or chunks, they are grouped in this category due to their small dimensions.

Chunks

Chunks are angular or blocky pieces $\geq$ 20mm in maximum length. They include pieces produced during knapping by the shattering of a core or flake, but exclude core fragments, which have clear flake scars and a surface of breakage from the main core (Kuman, 1998; Field, 1999).

Manuports

These include natural cobbles or pebbles transported to site by hominids but which have not have been knapped or utilised. Manuports occur in raw material suitable for knapping when compared with cores in the Sterkfontein assemblages. Such pieces could also have been transported for use as missiles (Leakey, 1971).

Hammerstones

These are cobbles or pebbles with pitting or battering indicating use as hammers to knock off flakes from other stones (cores) during knapping. They may also have one or more flake removals that result during accidental breakage of the stone during use (Leakey, 1971; Kuman, 1994b; Field, 1999).

Formal tools

Retouched pieces

These are complete flakes, incomplete flakes, chunks, cores, core fragments and any other pieces that have flakes removed from one or more edges for the purpose of shaping, sharpening, or modifying the edges for use as tools.

They include bi-facially and unifacially retouched pieces, points, denticulates, denticulated scrapers and scrapers.

Miscellaneous retouched pieces

These are pieces (chunks, flakes, incomplete flakes, chips and core fragments) that have minor and/or inconsistent retouch along one or more edges for shaping or modifying the edge for use as a tool (Leakey, 1971; Kuman, 1989, 1994b; Field, 1999).

2.3.4 Condition

The condition of artefacts in this assemblage, like that of bone, is an indicator of the time period between tool manufacture and deposition, as well as the depositional process (the mode, distance and duration of transport of artefacts to the site). Tools transported on the surface, exposed to the elements for longer periods, or abraded in decalcified and redeposited deposits are more likely to be 'weathered'. However, weathering in place versus abrasion caused by transport or sediment compaction varies according to each raw material type. In other words, abrasion can act on pieces, dulling them and thus giving them a weathered appearance. For example, quartz is highly resistant to weathering and requires some abrasion to appear weathered. Weathering condition is an indicator not just of the time period between tool manufacture and deposition or burial, but it also reflects those elements (sunlight, moisture and temperature fluctuations) that cause weathering. Weathering in this assemblage is classified as fresh, slightly weathered, weathered, or very weathered to conform with data recorded by Field (1999).

2.3.5 Raw materials

The stone tools in Sterkfontein artefact assemblages are made in quartz, quartzite, chert, sandstone, diabase, an unidentified igneous rock and dolomite. Some of these materials derive from within the cave system, such as dolomite and some chert. Dolomite is the parent cave rock, and chert occurs as bands within

the dolomite. Both are therefore found at the site and on the surrounding landscape of the cave in the form of polyhedral, angular and flattish rocks. Chert is, however, also available as cobbles and pebbles in the river gravels (Kuman, 1996). Quartz may be collected from the landscape around the cave or as cobbles or pebbles in the river gravels. Quartzite and igneous rocks all derive from the river gravels below the cave (Kuman, 1996). These are then split prior to knapping or knapped in their original form (Kuman, 1996).

2.3.6 Faunal analysis

The faunal assemblages for this study (Member 6 and the Post-Member 6 Infill) were examined to identify specimens, and data were recorded to describe bone fragment, element portion, side and age where possible, as well as taxa identification. Bone surfaces were examined for modifications that suggest their modes and agents of accumulation, as well as the processes that have acted to modify individual bones and/or the entire assemblages before, during and after deposition in the cave's sediments.

Bone fragment, element and taxa identification

Element and taxa identification was conducted using the comparative collections listed above. Identification of non-bovid and bovid mammals to genus or species was based on cranio-dental remains. These were designated to order, family, subfamily, genus and species where possible. In addition, non-bovid taxa were identified to at least family level using post-cranial material with diagnostic features that distinguish between the different taxa where possible. Attempts were made to identify bovid cranial remains to below family level using distinct features observed on the teeth. Bovid post-cranial material was identified to Size Class following Brain (1974, 1981), and these include:
Size Class I, 0-23kg: upper limit represented by a large female duiker.
Size Class II, 23-84kg: upper limit, large male blesbok.
Size Class III, 84-296kg: upper limit, large wildebeest or roan antelope.

Size Class IV, more than 296kg: very large animals such as eland or buffalo.

Identification of bone modification

In studying the taphonomic history of these assemblages, I examined bone surfaces for modifications that occurred after the death of the animals, either before, during or after deposition, and both prior to and after fossilisation. Bone surfaces were examined under X10 magnification and a low incident light and modification marks were recorded, including: carnivore gnawing marks, stomach acid etching, porcupine gnawing, small rodent gnawing, stone tool marks, weathering, trampling, abrasion, insect, geological, and excavation and preparation modification.

Mammalian gnawing

The frequency of carnivore-induced modification marks varies between the non-bone-gnawing and the bone-gnawing carnivores. For instance, bone collections accumulated by different hyaena species have been documented to be between 38% and 100% tooth marked (Skinner *et al.*, 1986; Bunn, 1983a,b; Lam, 1992; Maguire *et al.*, 1980). Fewer modifications are found on bones of carcasses consumed by large cats (cheetah, leopard and lion) that do not ordinarily crunch bones (Richardson, 1980; Lyman, 1994). The presence of carnivore modification marks in combinations, and patterns consistent with those from carnivore feeding and denning sites have been used to identify the agent(s) that have acted to accumulate and modify the assemblage. Various forms of modification marks have been observed and are known to be inflicted by carnivore teeth on bone during carcass defleshing, bone gnawing and crushing for marrow extraction. These marks include:

Score marks are short parallel U-shaped grooves with smooth bases occurring transverse to the bone's long axis. These marks result from dragging of teeth across the surface of bone and are normally found on the ends of long bones (Maguire *et al.*, 1980; Binford, 1981; Shipman, 1981; Lyman, 1994; Pickering

and Wallis, 1997).

Tooth punctures, also referred to as punctate depressions, are tapering, deep pits on bone surfaces caused by collapse of bone under the pressure of teeth cusps with flakes of bone from the puncture visible in the pit (Maguire *et al.*, 1980; Binford, 1981; Shipman, 1981; Johnson, 1985; Lyman, 1994).

Notches are crescent-shaped fracture scars produced when the strength of a bite is sufficient to split the bone producing a fracture line through the punctate perforation (Binford, 1981; Blumenschine, 1986; Blumenschine and Selvaggio, 1988, 1991; Blumenschine *et al.*, 1996; Lyman, 1994; Maguire *et al.*, 1980). Such crescents are produced on hard compact long bone shafts. Puncturing also produces bone flakes (similar to stone flakes with striking platforms, impact scars, bulb of percussion and tapering edges) when pieces of bone detach from notches.

Pitting occurs on dense bone when it withstands the pressure of teeth without being punctured as in the case of punctate depressions (Binford, 1981; Lyman, 1994; Maguire *et al.*, 1980).

Crenulated edges are also known as ragged chewing, and occur on the ends of thick bones such as limb bones and on thin bone, when teeth penetrate and remove part of the edge of the bone, biting it away during puncturing (Binford, 1981; Maguire *et al.*, 1980; Lyman, 1994; Pickering and Wallis, 1997; Pickering, 1999).

Scooping or hollowing out results from extreme furrowing on cancellous bone leading to the removal of significant portions of bone tissue in these areas. This produces large irregular holes on long bone ends (Binford, 1981; Haynes, 1983; Lyman, 1994; Maguire *et al.*, 1980) and tubular bone shafts when all limb bone ends are chewed away, leaving only the bone shaft.

Channeled bone is produce by puncturing the bone backwards from one end, leaving a channel running parallel to the long axis of the bone (Binford, 1981).

Chipping back results from chewing the edge of broken long bone, causing chipping and scoring of the outer surface of the bone, with licking resulting in rounding and polishing of edges (Binford, 1981; Haynes, 1983; Lyman, 1994).

Stomach acid etching

This kind of etching is observed on regurgitated bone and results from passing of bone along the digestive track of hyaenas and other small carnivores whose stomachs contain digestive acids capable of extracting bone nutrients (Lyman, 1994).

Even though the modification marks discussed above are known to be produced by carnivores, other mammals such as ungulates, humans and chimpanzees gnaw bone and may leave modifications on bones similar to those left by carnivores, e.g., peeling, pitting and crenulated edges (Maguire *et al.*, 1980; Brain, 1981; Pickering and Wallis, 1997). These marks are, therefore, best studied in combination with other more diagnostic modification marks, such as tooth punctures and notches, in order to characterise them as carnivore or other mammalian gnawing marks with certainty.

Porcupine and small rodent gnawing

Porcupine gnaw marks appear as shallow broad marks with double parallel chisel-like marks from porcupine incisors. Small rodent gnawing leaves U-shaped scratches which are smaller than carnivore tooth scores. Porcupines and small rodents gnaw on bone probably to keep in check the growth of their incisors that continue to grow throughout their life (Maguire *et al.*, 1980; Lyman, 1994). They thus accumulate various hard materials, including bones, in their dens for this purpose, but they also gnaw on material already accumulated by other agents. For example, bones known to have been accumulated by carnivores in dens have been observed to bear evidence of porcupine gnawing. Occasionally, porcupines also bring in some bones with them into these dens. Rodents also gnaw on already accumulated bones and other materials for their nutritive needs (Maguire *et al.*, 1980). Evidence for both porcupines and small rodent gnawing of bones and other objects such as wood and stone have been observed on materials accumulated at fossil sites.

Stone tool modification

Evidence for stone tool-use in animal carcass processing occurs as cutmarks, hammerstone percussion marks, chop marks and scrape marks.

Cutmarks are the V-shaped elongate marks with multiple fine parallel striae within their walls (Binford, 1981; Bunn, 1981; Lyman, 1994; Potts and Shipman, 1981; Shipman, 1981; Shipman and Rose, 1984). Cutmarks result from skinning, disarticulation and filleting (Binford, 1981, 1984a; Lyman, 1994) of carcasses and can be related to each of the functions (scraping, chopping, cutting), depending on the locations of the marks on a skeletal element (Binford, 1981; Lyman, 1994).

Scrape marks are multiple faint cutmark-like striations resulting from the corresponding scraping action aimed at detaching small amounts of meat from bones (Binford, 1984a).

Chopmarks are deep, thick, irregular grooves on bones resulting from chopping actions meant to detach large muscle groups and ligaments and to break bones for marrow extraction (Binford, 1981, 1984a; Blumenschine, 1986; Bunn, 1981; Potts and Shipman, 1981).

Cutmark-mimicking by other processes such as trampling or carnivore gnawing marks has been identified (Behrensmeyer *et al.*, 1986, 1989; Fiorillo, 1989), necessitating the use of sophisticated methods such as Scanning Electron Microscope (SEM) in the differentiation of attributes or their occurrence in combinations in identifying them. Cutmarks can be distinguished from other marks by the regularity in location, fine parallel striae within their walls, barbs at their ends, and their V-shaped profiles (Binford, 1981, 1985; Binford *et al.*, 1988; Blumenschine, 1995; Bunn, 1981, 1986, 1991; Bunn and Kroll, 1986; White, 1992; White and Toth, 1989). These are distinguishable from the randomly occurring striations caused by trampling, rockfall and carnivore teeth modification (Brain, 1981; Potts and Shipman, 1981).

Hammerstone percussion marks are pits resulting from the smashing of bone shafts with hammerstones to crack them open for marrow. Hammerstone percussion marks have been identified and authenticated using various

characteristics (Binford, 1981, 1984a; Blumenschine, 1988; Blumenschine and Selvaggio, 1988, 1991; Blumenschine *et al.*, 1996; Bunn, 1981; Potts and Shipman, 1981).

The observed assemblages contain bone specimens with stone tool processing marks, including cutmarks, hammerstone percussion marks and notches, scrape and chop marks (singly or in combinations). The relative frequencies of processing marks expected in modern human accumulated assemblages vary from site to site, but they are generally low, at around 5% (Bunn and Kroll, 1986). Simulated hominid-modified assemblages have been used to infer what is expected in hominid-accumulated bone assemblages (Binford *et al.*, 1988; Blumenschine, 1988, 1995). Modern hunter-gatherer-produced bone assemblages have also been studied with the objective of inferring the probable nature of hominid-modified and hominid-accumulated assemblages (Bunn, 1983a,b; Bunn and Kroll, 1986; Bunn *et al.*, 1988). However, archaeological assemblages differ from modern faunal assemblages because of the long taphonomic histories and the post-depositional factors that have affected the archaeological assemblages, but not the simulated modern and hunter-gatherer assemblages.

Weathering

Weathering occurs in the form of deterioration of the bone surface due to loss of moisture and elasticity resulting from exposure to sunshine, and to fluctuating temperature and moisture regimes. Effects of weathering have been recorded in stages established by Behrensmeyer (1978).

Stage 0 - includes fresh bone with no signs of cracking, still bearing soft tissue, marrow and skin. This kind of weathering modification was not recorded in this assemblage.

Stage 1 - Bone showing cracking parallel to the fibre structure of the bone, with articular surfaces showing sign of cracking of the covering tissue and the bone.

Stage 2 - flaking of thin concentric layer of outermost bone, associated with

cracks, with bone edges peeling away first.

Stage 3 - patches of rough, homogeneously weathered compact bone, with fibrous texture.

Stage 4 - coarsely fibrous bone surface and rough textured, with small and large splinters loose enough to fall from bone when moved.

Stage 5 - at this stage, bone is falling apart *in situ*, with large splinters lying around the remains of the bone that is usually fragile and easily broken by moving.

Bone surfaces have been examined for the most advanced weathering stage covering at least 1 square centimetre of the surface of bone, avoiding areas with breakages.

Post-depositional modification

Post-depositional factors can change an assemblage's original skeletal part representation and modification patterns, damaging the original bones and their surfaces. This destruction and/or modification hinders skeletal element identification and masks or deletes surface modifications that may be useful in the identification of accumulating and modifying agents. The effect of post-depositional destruction on bones depends on their structural density (Brain, 1981; Klein and Cruz-Uribe, 1984; Grayson, 1989; Klein, 1989). Less dense skeletal elements will be destroyed faster or before denser skeletal elements in the same depositional environment (Grayson, 1989; White, 1992). The skeletal elements that disappear first during post-depositional destruction include the axial elements such as ribs, vertebrae, scapulae, pelves, and limb bone epiphyses, as they have thin cortex and large sections of cancellous bone, and are thus less dense and fragile.

Insects modify bone surfaces, forming shallow gallery-like marks in addition to boring, furrowing and grooving of bone surfaces (Behrensmeyer, 1978; Kitching, 1980; Lyman, 1994). Geological modification caused by sediment overburden pressure is observed on bone specimens in the form of cracking of bones, distortion and plastic deformation of some specimens, resulting in

irregularity in the shape and breaking of specimens and dislocations of parts of bones relative to the normal shape of the bone (Lyman, 1994; Shipman, 1981). Other forms of post-depositional modification include trampling and abrasion. Trampling marks are identified as shallow, randomly orientated and multidirectional scratches that are at times sub-parallel (Behrensmeyer *et al.*, 1986, 1989; Fiorillo, 1989; Lyman, 1994; Olsen and Shipman, 1988). Abrasion is identified where there is smoothing or polishing of bones from trampling (Brain, 1967), especially in loose sedimentary matrix, or from transportation in wind-blown and fluvial sediments (Shipman and Rose, 1984).

Fluvial transport

Abraded bones result from transportation through fluvial action but may also be a product of movement within the sediments in the cave. According to Shipman and Rose (1988) and Lyman (1994), the appearance of abrasion marks on bones has been shown to depend on:

a) particle grain size of the sediments with which the bones are transported
b) composition of the sediment
c) presence or absence of soft tissue on the bone
d) condition of the bone at the onset of transport (fresh or weathered, broken or whole, mineralised or unmineralised)
e) presence or absence of water in the sedimentary system
f) duration or distance involved in transport

Lyman (1994) provides a summary of body parts likely to be found at different stages in the process of fluvial transport in relation to current velocity. These are known as Voorhies groups after the seminal study of bone fluvial transport by Voorhies (1969) and Behrensmeyer (1975). This summary indicates that the more dense and larger bone elements are more likely to be found at or close to the source of the remains and less dense elements farther from the source. An assemblage with most or all of the skeletal elements is likely to have been deposited at or near source or point of death of the animal in an

undisturbed or minimally disturbed assemblage.

Excavation and preparation midification

This kind of modification occurs on the bone specimens during excavation, cleaning and preparation of the faunal assemblage. These modifications range from complete breakage of specimens into many pieces to scratches, chipping and slicing of specimens (some of which I was able to refit). Other forms of modification appear as fresh chipping or slicing on the edge of compact bones or on bone surfaces. Preparation and excavation modification is differentiated from ancient or pre-fossilisation marks by the fresh appearance of the break or marks and lighter colouration, different from the rest of the bone surface and by the absence of matrix adhering to fracture edges which is unlike the rest of the bone showing ancient modification (White, 1992).

2.3.7 Skeletal element and taxa frequencies

Skeletal part and taxa frequencies are used in combination with modification marks to determine the agents of accumulation and the general taphonomic history of an assemblage. The following measures of abundance were used in this study:

Number of Identified Specimens (NISP)

This is the total number of bones identified to taxon (Grayson, 1984; Klein and Cruz-Uribe, 1984). NISP thus include post-cranial bone fragments and cranio-dental remains identified to skeletal element, family, subfamily, genus, species or mammalian size class (Lyman, 1994). White (1992) notes that the value of NISP of an assemblage depends greatly on the ability of a scientist to identify bone specimens to skeletal elements and to taxa from the most subtle features. My identifications were aided by the comparative materials named earlier in the materials section of this thesis, together with consultation with colleagues. I have tried to be as specific as possible with cranial specimen identification to the tribe, genus and/or species. Most post-cranial specimens

have been identified to mammalian size class for bovid specimens following (Brain, 1974, 1981) and to genus or species for non-bovid taxa such as primates and carnivores.

Minimum Number of Elements (MNE)

Minimum number of elements is the smallest number of skeletal elements necessary to account for the bone fragments identified. The minimum number of elements (MNE) was calculated on each skeletal element category for each taxon according to the method described by Bunn (1986), Bunn and Kroll (1986) and Pickering (1999). Using this method, all specimens assigned to one skeletal element category were matched and compared for overlapping regions of the bone, differences in thickness, and side before attributing them to different or single elements.

Comprehensive Minimum Number of Individuals (cMNI)

The comprehensive minimum number of individuals (cMNI) was calculated for each skeletal part category per taxon as done by Pickering (1999). In this method, all specimens belonging to a single taxon were compared to establish if further identification of individuals represented by the different elements is possible (Binford, 1978, 1981, 1984a; Bunn and Kroll, 1986). The cMNI values were estimated by visual examination among and between elements of the same taxa. These are compared to differentiate them by side (left or right), relative sizes, and ages (fused epiphyses for adults versus unfused for juveniles) of the individuals they represent where possible (Pickering, 1999). This estimate is substituted for the traditional Minimum Number of Individuals (MNI) in this study as the methods described for deriving MNI estimates do not take into account differences in individuals that can be deciphered from the differences in size and age of individuals observable on different specimens. This estimate derives the highest minimum number of individuals as described by Pickering (1999). It takes into account all the factors observed on specimens that differentiate specimens and individuals. By not assuming that two proximal femora (right and left) in an assemblage would always derive from a single individual,

this estimate differs from White (1953)'s MNI, cited in Lyman (1994) and Binford's Minimum Number of Animal Units (MAU) (Binford, 1978, 1981, 1984a). Instead cMNI estimation involves comparing such specimens and determining if they can be differentiated by relative age and size (Pickering, 1999).

Minimum Number of Animal Units (MAU) and *percentage Minimum Animal Units (%MAU)*

MAU and %MAU are estimated in order to derive the number of animal units transported to the accumulation site from the butchery site (Binford, 1981, 1984a,b). Binford developed this method on the realisation that accumulators do not necessarily transport whole carcasses, and where whole carcasses are transported, dispersal may be by secondary predators or scavengers. MAU of an element is estimated using MNE values, which are divided by the number of times that element occurs in a skeleton. Percentage MAU values are derived by dividing all MAU values by the highest MAU value of the taxon (Binford, 1981, 1984a,b; Lyman, 1994).

2.3.8 Fracture attribute analysis

Fractured edges of bones have been examined to determine if bone breakage occurred while the bone was fresh or dry (Johnson, 1985; Agenbroad, 1989; Villa and Mahieu, 1991; Lyman, 1994). Fresh bone fractures result when bones are relatively green, producing smooth-textured edges forming acute and obtuse angles with the outer cortical surface of bone (Johnson, 1985, 1989; Villa and Mahieu, 1991). These fractures have edge colours similar to those of the surface due to their similar antiquity (Johnson, 1985; Agenbroad, 1989; Lyman, 1994). Dry bone breaks, on the other hand, occur after bones have lost their moisture and some of their organic content due to degreasing, drying and mineralization. Dry bone breaks result from horizontal tension failure leading to a fracture that cuts across the diaphysis to produce perpendicular and parallel or diagonal breaks. These breaks normally have a different colour from that of the bone's outer surface, are rough-textured and are at right

angles to the outer cortical surface of bone (Johnson, 1985, 1989; Agenbroad, 1989; Villa and Mahieu, 1991; Lyman, 1994).

Carnivores and hominids break bone for marrow extraction shortly after the animals' death when bone is still fresh, while post-depositional factors tend to break dry bone, but they may also break fresh bones if burial occurs soon after death of animals (Agenbroad, 1989). Therefore bone breakage pattern can be used together with modification marks to determine at what stage in the taphonomic history of the bone the breakage occurred, and what could have caused breakage. Bone fracture surface attributes such as fracture outline, angle and edge are adopted from Villa and Mahieu (1991) for this purpose. Villa and Mahieu developed these fracture surface characteristics for establishing the timing of breakage of bones. These attributes include: angle, outline and edge length/breadth ratio of splinters, shaft circumference and fragmentation (Johnson, 1985; Villa and Mahieu, 1991).

These attributes were recorded for long bone shafts and shaft fragments with fresh breakage on one or both ends. These fracture attributes, however, were not recorded for fracture surfaces exhibiting porcupine or small rodent gnawing. Also excluded from fracture analysis were specimens with breakages through cancellous bone, or breakages at or near the epiphysis, as these regions of bone break irregularly and unpredictably, making them different from the hard compact bone shaft. In addition, their pattern of breakage is unpredictable (Villa and Mahieu, 1991). These authors noted that five of the fracture attributes they developed are useful in assessing the timing and cause of bone breakage in an assemblage. These have been adopted for this study to assess the timing of breakage of bones in this assemblage as occurring either soon after an animals death, thus fresh/green bone or dry bone break, and are discussed below:

Fracture angle is the angle formed by the fracture surface and the bone cortical surface. Fracture angles can be right angle, oblique or variable/intermediate (oblique and right angled). Fresh broken bone assemblages show a predominance of oblique angled fractures as opposed to right-angled fractures of dry

broken bone assemblages (Johnson, 1985; Villa and Mahieu, 1991).

Fracture outline refers to the shape of the fracture surface. This can be:
1) Transverse, straight fractures that are perpendicular to the long bone axis, or
2) Curved or portions of combined curved fracture and V-shaped or pointed fractures, representing complex multidirectional morphologies not similar to transverse, rectilinear morphologies, or
3) Intermediate fractures, which are straight in morphology but diagonal, or which have stepped outline. A fresh broken bone assemblage has a high frequency of curved fractures, while a dry broken bone assemblage has a higher frequency of transverse fractures (Villa and Mahieu, 1991).

Fracture edge is the texture of the fracture margin (Villa and Mahieu, 1991). These can be smooth or jagged. Breaks that occur when bones is still fresh (green bone breaks) result in smooth margins and surfaces, and dry bone breaks result in jagged edges. Johnson (1985) and Villa and Mahieu (1991), however, believe that this attribute does not strongly discriminate on the state of the bone at the time of break, but rather it is more likely to depend on whether the force applied to break the bone was dynamic or static loading.

Shaft circumference, according to Bunn (1983a,b), differentiates between bones accumulated by hyaenas, the majority of which have complete circumferences, and those accumulated by human hunter-gatherers, the majority of which are splinters. Attributes for circumference completeness used in this study include:
1) shaft circumference less than 50%
2) shaft circumference greater than 50% and
3) complete shaft circumference (100%), see Villa and Mahieu (1991). Post-depositionally broken bone assemblages are characterised by a high frequency of full circumference bone specimens, while carnivore and hominid-produced freshly broken bone assemblages produce predominantly full circumference bone specimens (Binford, 1981; Bunn, 1981; Todd and Rapson, 1988). This attribute cannot therefore be used on its own as an indication of the agent or

Table 2.1: Fracture attribute values for the French Neolithic sites from Villa and Mahieu (1991)

Fracture Attributes	**Sarrians**	**Bezouse**	**Fontebregoua**
Fracture Angle			
Oblique	22	27	144
Right	176	174	47
Intermediate	71	52	13
Total	**269**	**253**	**204**
Fracture Outline			
Curved	106	82	134
Transverse	193	144	92
Intermediate	59	61	35
Total	**358**	**287**	**261**
Circumference			
1 (100%)	200	60	13
2 (>50%)	10	0	23
3 (<50%)	16	33	115
Total	**226**	**93**	**151**

condition of breakage. It must be used with other attributes such as bone surface modification in order to determine fracture agents (Blumenschine, 1988; Todd and Rapson, 1988).

Breadth/Length ratio is calculated for long bone shaft fragments with widths smaller than their original shaft diameters (Villa and Mahieu, 1991). Therefore, specimens with complete circumferences are not included in the calculation of breadth/length ratio. Freshly broken bone assemblages are expected to have lower breadth/length ratios compared to dry broken assemblages. Table 2.1 provides absolute values for the fracture attributes of the three French Neolithic sites analysed by Villa and Mahieu (1991) and used to study the fracture attributes in this assemblage.

2.3.9 Bone fragments

Refitting of bone shaft fragments conducted in this study after the pioneer works of Bunn (1983a,b, 1986) and Bunn and Kroll (1986) helped put together some previously unidentifiable bone fragments and increased their identifiability. This has also raised the skeletal element representation by altering the

Minimum Number of Elements (MNE) and reducing bias from fragmentation. Some broken edges permitted this kind of refitting of even some old breaks with adhering soil and breccia.

Chapter 3

Stratigraphy of the western breccias

3.1 Introduction

This chapter outlines the findings of the stratigraphic investigations of the western younger breccias at Sterkfontein. One of the aims of this study was to clarify the stratigraphy of the western area breccias, including Member 5 West, Member 6 and the Post-Member 6 Infill. This research focused on determining the extent of the Member 5 West deposit and establishing the relationship with Member 6 in both the excavated and unexcavated areas of the deposit. This has been done by increasing the excavated area to the West in the calcified breccia of Member 5 West. These excavations were conducted by University of the Witwatersand staff stationed at the site, under the directorship of Professor R. J. Clarke.

The Sterkfontein excavations have exposed at least eight breccias with distinct faunal and artefactual properties. These have been classified in ascending order, Members 1 to 6, in the Sterkfontein Formation (Partridge, 1978). In addition, two separate infills, the StW 53 Infill and and the Post-Member 6 Infill have recently been identified by Kuman and Clarke (2000). The area at the western end of the current excavations was stratigraphically investigated during this study. This includes the area initially known as the Extension Site (Robinson, 1962), but today named Member 5 West. This area also includes

Member 6 and the Post-Member 6 Infill.

The current stratigraphic study of the western breccias involved excavations for the further recovery of fauna for biostratigraphic and biochronological age estimation. Also intended for this study was the recovery of artefacts for cultural chronology of the strata. Faunal analysis of material from these younger Member 6 and Post-Member 6 deposits reveals a mid to upper Pleistocene resulting from accumulation by multiple agents and impacted on by different modification agents. Detailed results of studies of faunal and artefact assemblages studied from these sediments are provided in Chapters four, five, six and seven of this thesis.

3.2 Earlier stratigraphic interpretations

Early research on the stratigraphy of the Sterkfontein Caves has been published by Robinson (1962), Partridge (1978) and Partridge and Watt (1991). Robinson postulated the existence of one large chamber in the area of the current excavations in which material accumulated in different phases of the caves' development. In this respect, Robinson (1962) observed that breccia of the Type Site (now Member 4) accumulated in a large underground cavern that may have extended east-west in the entire area now open to the surface by weathering of the dolomite roof. Clarke (1994) and Kuman and Clarke (2000), however, observed a later phase of Member 4 accumulation in the west. The deposition of Member 4 was followed by the deposition of the Oldowan Infill through a vertical shaft in the central area (Kuman, 1994a; Pickering, 1999; Kuman and Clarke, 2000). An instability of the dolomite floor below the Oldowan in the central area of the cavern may have led to the collapse of the Oldowan Infill, and probably the underlying Member 4 breccia into a lower cavern, the Name Chamber (Kuman and Clarke, 2000).

Member 5 was once thought to have accumulated as a single underground cavern deposit possibly overlying Member 4 breccia. It has, however, recently been subdivided into three distinct deposits: the StW 53 Infill, the Oldowan

Infill and the early Acheulean breccia (Member 5 East and West), leading to a revision of the deposition sequence of the Member 5 breccia (Kuman and Clarke, 2000). The StW 53 Infill deposit, originally thought to be part of the Member 5 breccia, is now considered to be intermediate in age between Member 4 and Member 5 as it has some earlier taxa (Pickering, 1999) and also lacks stone tools which are present in the adjacent Acheulean breccia. The hominid specimen, StW 53, assigned to the taxon early *Homo* by Hughes and Tobias (1977), has been re-assigned to a later phase of *Australopithecus* by Clarke (1994) and Kuman and Clarke (2000). The current study has also confirmed that the StW 53 Infill is a late phase of the Member 4 deposit [Figure 3.1, (Clarke, 2006)], as detailed in the sequence of infills. Further excavations in the Member 5 deposits in the 1990's revealed different phases of deposition following the StW 53 Infill. The Oldowan tool-bearing sediments are at a lower level underlying decalcified Member 5 early Acheulean deposits. Calcified Member 5 early Acheulean is found in good context to the west (Clarke, 1994; Kuman and Clarke, 2000).



Figure 3.1: The southern profile in the western area showing the Member 4 hanging remnant. The person at the left is pointing to the remnant of a stalagmite curtain (outlined in black) which separates the StW 53 Infill (in the upper part of the photo) from the early Acheulean deposits. Grid squares are 3 feet by 3 feet. Photo courtesy R. J. Clarke.

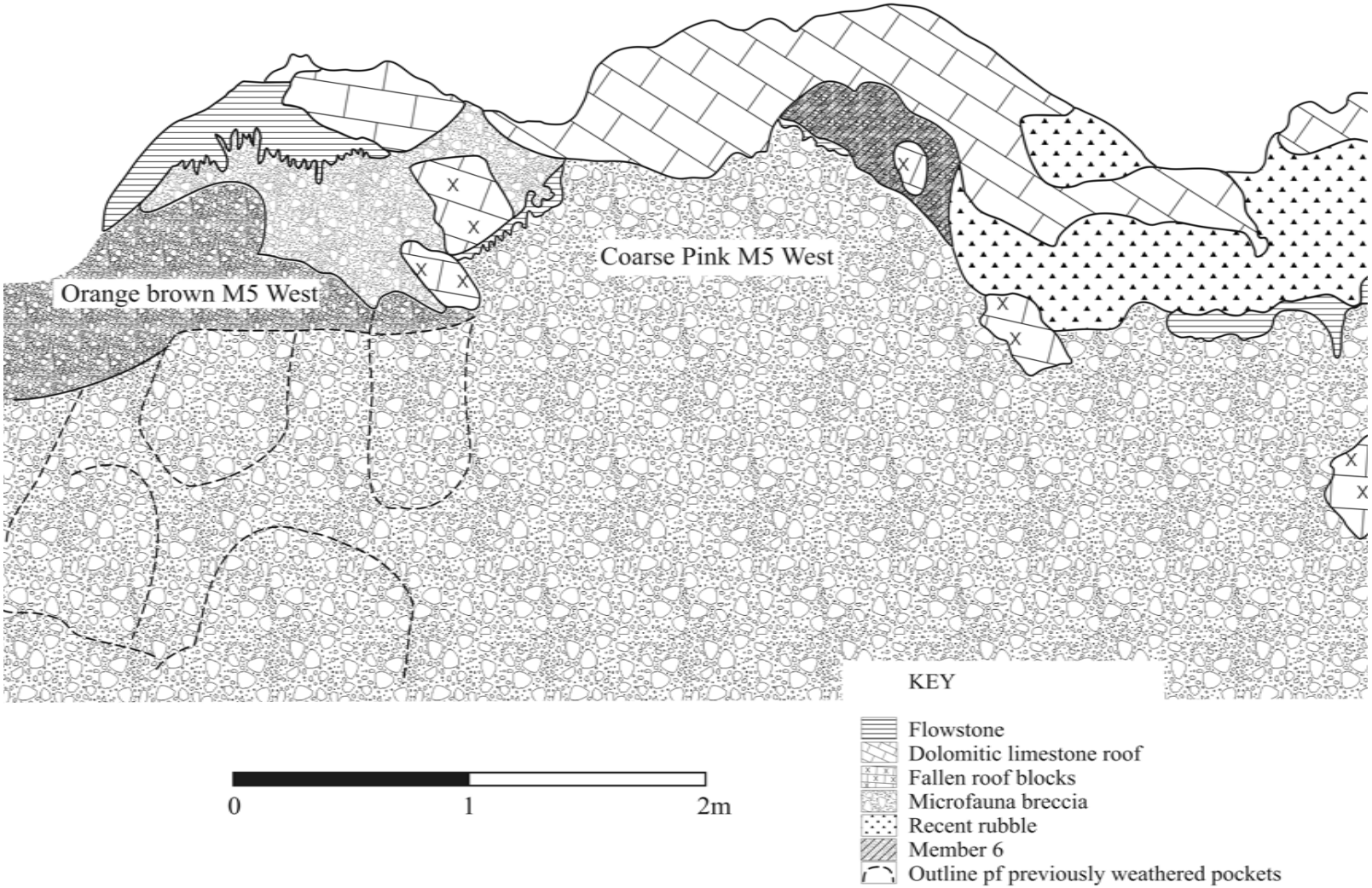


Figure 3.2: Profile of the western section showing the current layout of some Member 5 breccia types and Member 6.

The Member 5 West area also contains Middle Stone Age period deposits of Member 6 and the intrusive Post-Member 6 Infill. Member 6 is preserved as a small remnant of the original deposit overlying a flowstone capping Member 5 West (Robinson, 1962; Brain, 1981; Kuman and Clarke, 2000). The Member 6 deposit may have filled only a limited space between the dolomite roof and the underlying Member 5 breccia, prior to erosion of a channel in the northern area between Member 5 East and West. This channel was subsequently infilled with the Post-Member 6 deposit (Kuman and Clarke, 2000).

The erosion channel filled by Post-Member 6 had minimally dissolved the undersurface of Member 6, leaving this portion of Member 6 breccia as a hanging remnant. This later infill occupies a large area, which probably once contained Acheulean breccia linking Member 5 West and Member 5 East (Chapter One, Figures 2 and 3). The sediments of Member 5 East and West may have been decalcified and mixed with the younger incoming Post-Member 6 Infill sediments (Clarke, 1994; Kuman, 1994a,b, 1998; Kuman and Clarke, 2000; Reynolds, 2000; Reynolds *et al.*, 2003, 2007). The Post-Member 6 Infill thus appears to have incorporated some elements eroded from the Member 5 West Acheulean breccia and possibly Member 6, as well as broken blocks of the Member 5 West capping flowstone (Reynolds, 2000; Reynolds *et al.*, 2003, 2007). The decalcification and mixing of these sediments is suggested by the work of Reynolds (2000) on fauna and artefacts from the adjacent Lincoln Cave. Reynolds suggests similarity between the Post-Member 6 Infill, Lincoln Cave South assemblages and Member 5 West assemblage. These indicate possible erosion or collapse of the older Member 5 West deposits and the incorporation of some Acheulean artefacts and early *Homo* teeth into the younger Lincoln Cave and Post-Member 6 Infill deposits. The Member 5 West area was excavated for the present study to clarify the stratigraphy of the sediments. This excavation also increased the sample sizes for fauna and artefacts for the better understanding of the the Post-Member 6 Infill breccia contents. Following are the current interpretations for the stratigraphy in this area.

3.3 Revised stratigraphy of the western breccias

Recent excavations at the western end of the Sterkfontein surface excavation site have revealed a more complex stratigraphic sequence than previously recognised. Robinson (1962) identified blocks of the Lower Breccia (now Member 4) in the Middle Breccia (now Member 5) of the Extension Site, and postulated that the chamber first filled with Lower Breccia which would have extended west to the Extension Site, before a subsidence that allowed room for accumulation of the later breccias. The accumulation of Member 4 in the region of the Extension Site was confirmed by Kuman and Clarke (2000) when they identified inter-fingering of Member 4 breccia in the western area (Figure 3.3). This area was, until then, known to contain only Member 5 breccia. This study has determined that older, possibly Member 4 breccia may still lie further west of the Member 5 West early Acheulean, even beyond where Member 4 breccia had previously been identified by Kuman and Clarke (2000), Figure 1.2.



Figure 3.3: Planview of the southwest corner showing the complexity of the Member 4-Member 5 interface. Note the interfingering of the Member 4 (stony greyish, marked '4') and Member 5 (sandy orange, marked '5') in the foreground and hanging remnant of Member 4 left of stalagmite (white flowstone) curtain to the left (outlined in black). West is at the top of the picture and the dark oval pits running East-West are excavated decalcified pockets. Grid squares are 3 feet by 3 feet. Photo courtesy of R. J. Clarke.

The Member 4 hanging remnant on the southern wall of the cavern is separated from the Member 5 infill to the north by a stalagmite curtain that formed against the hanging remnant. This stalagmite curtain is continuous with the 'finger-like' stalagmite curtain that is sectioned through on the western face of the excavation and which is formed against an older breccia to the west. Extensive excavation of this older breccia is required in order to determine whether it is Member 4 or even older.

Thus, the collapse that later affected the Oldowan Infill of Member 5 East, resulting in deposition of some of its breccia in the underground Name Chamber, would also have affected any underlying Member 4 deposit in that area. The westward extent of Member 4 breccia is demonstrated by the presence of Member 4 hanging remnants at the western end of the southern dolomite wall (Figure 3.2), the apparent Member 4 breccia exposed in the western profile and the flowstone that curtains that breccia. It is noted that the Oldowan Infill did not accumulate as far west as the current western profile, as it has been shown to have accumulated in a horizontally restricted area in the Member 5 East via a narrow vertical shaft (Pickering, 1999; Kuman and Clarke, 2000). This deposition scenario has been confirmed by concentrations of artefacts in a small area (Kuman, 1994a; Kuman and Clarke, 2000) and the representation of animals, identified from bones in the deposit, by nearly all skeletal elements, indicating a death-trap situation where animals fell to their death down a vertical shaft concealed by vegetation (Pickering, 1999).

The current excavations have also provided a clean profile for the observation of Member 5 West sediments on the western excavation face. This has resulted in the identification of four distinct sediments on the western face (Figures 3.2 and 3.4). These sediments include a fine orange-brown, stone tool-bearing Member 5 West breccia with small dolomite rock pieces, a coarse pinkish stone tool-bearing Member 5 West breccia, a stone tool bearing yellowish microfauna breccia, and a fine chocolate brown Member 6. The fine, orange-brown, stone-tool-bearing Member 5 West breccia may be a variant of the pink Member 5 West breccia, with colour and possible texture differences



Figure 3.4: View of the southern end of the current western profile showing the extent of recent excavations and the breccia types represented. Notice the large Acheulean tools (in white circles) and the 'finger-like' stalactites at the top which formed against a breccia older than Member 5. See Figure 3.2 for an explanation of the profile.

due to ancient water filtration from the overlying microfauna breccia which was originally an organically rich owl pellet accumulation (Clarke personal communication 2006). These Member 5 West variants in the western face were previously regarded as a single homogenous deposit representing the Member 5 West early Acheulean.

At the base of the current west face, a fine brown breccia containing small dolomite pieces and stone tools is exposed. This is possibly the earliest sediment of Member 5, resting against a flowstone that has formed a curtain against Member 4 hanging remnants in the southern and western faces. This brown breccia is overlain by the coarse pinkish breccia in which stone tools can be seen (Figures 3.3 and 3.4), and which was previously described as Member 5 West early Acheulean breccia (Kuman, 1994a,b, 1996, 1998; Kuman and Clarke, 2000). In the north, this pinkish coarse breccia is capped by a flowstone that thins out southward and is not visible in the southwestern corner. In the south, this pinkish breccia has been overlain by the yellowish microfauna breccia which has filled spaces between stalactite strands curtaining the probable breccia of Member 4 in this area (Figures 3.2 and 3.4). This stalactite is continuous with a flowstone curtaining Member 4 on the southern profile and is not the same as the Member 5 West capping flowstone. Member 5 West is thus sandwiched between these two flowstones. A fine chocolate brown breccia initially described as the Upper Breccia (Robinson, 1962) and later termed Member 6 (Partridge, 1978) overlies the capping flowstone in a small pocket at the northern end of the current western profile. Although this area is close to the northern profile where Member 6 has been identified, Member 6 has not been identified elsewhere in the western profile, especially in the more southerly parts of the profile.

The Member 5 West (pinkish breccia) capping flowstone was laid down over the breccia. In contrast, the curtain of flowstone stalactites (Figure 3.4) appears to have formed prior to the deposition of Member 5 West itself, with the microfauna breccia filling spaces between the stalactites (rather than the stalactites filling cracks within the microfauna breccia if the breccia had been

deposited before the flowstone). In addition the stalactites are continuous with the southwestern flowstone curtain over the Member 4 hanging remnant against which Member 5 West breccia has been deposited. Thus, the Member 5 West breccias must have been deposited after the formation of the southern flowstone curtain and the 'finger-like' stalactites.

The layout of the breccias in the west profile supports the deposition sequence suggested by Robinson (1962) and Clarke (1994). They argued that Member 4 breccia collapsed into an underlying cavern after filling most of the upper chamber. This collapse created a cavity in the western area of the chamber, leaving Member 4 hanging remnants to the south and to the west (Figure 3.1). The cavern entrance was choked and a flowstone was formed over the Member 4 hanging remnants, dripping to form 'finger-like' stalactites in the western area. This flowstone thins towards the north and completely disappears halfway towards the northern excavation face.

After the formation of the flowstone, a vertical shaft entrance opened at the centre of the site and the Oldowan Infill was deposited, followed by the early Acheulean deposits after enlargement of this entrance (Kuman and Clarke, 2000). These Acheulean deposits filled the cavity in which 'finger-like' stalactites had earlier been formed during different sediment and climate regimes, resulting in the multiple types of Member 5 breccias. The larger opening for the accumulation of Member 5 was choked and another opening was later created in the western face area. This opening with a possible fallen roof block as a ledge allowed the roosting of owls, resulting in the accumulation of the microfauna breccia up to the base of the fallen roof block and filling the spaces between the 'finger-like' stalactites. This has left the 'finger-like' stalactites previously hanging from the dolomite roof/ledge now as 'finger-like' strands of flowstone in the microfauna breccia (Figures 3.2 and 3.4). The current face now exposed consists of stalactites, and it has a flowstone capping yellowish microfauna breccia. This breccia overlies a dark brown fine sediment with small dolomite blocks and stone tools, underlain by a coarse pinkish Member 5 West breccia.

3.4 Conclusion

Thus, the apparent deposition sequence of deposits at the western end of the current Sterkfontein excavation is as follows: Member 4 breccia filled at least part of the western end of the cavern. Some of this breccia collapsed into a lower cave, leaving Member 4 hanging remnants (including StW 53 breccia) against the southern cave wall. Extensions of Member 4 breccia were left jutting westward in the central part of the cavern. A stalagmite curtain formed against the western and southern remnants of Member 4. The space left by collapse was filled with a succession of Member 5 breccias that also banked against the stalagmite curtain. Owls roosted in the cave during the final Member 5 accumulation, resulting in a rodent breccia that fills interstices of the western stalagmite curtain. A capping flowstone formed over the northwestern portion of Member 5. Member 6 breccia formed on top of this capping flowstone and beneath the cave roof. Parts of the Member 5 and Member 6 breccias were eroded away and filled with Post-Member 6 deposit in the northern part of the cavern, and probably extending into the Lincoln Cave to the north.

This is the probable sequence of events as interpreted by this study based on the breccia remaining in situ after excavations by A. R. Hughes and R. J. Clarke and further clarified by excavations for this study. The occurrence of relatively recently formed deep decalcification pockets within the breccias has added to the complexity visually but not stratigraphically as their contents are a match for the surrounding breccia. For example, it was found during Alun Hughes' excavations of the StW 53 solution pocket that portions of the StW 53 hominid cranium within the decalcified breccia conjoined with a cranium portion in the solid breccia forming the wall of the pocket (Hughes and Tobias, 1977). Hence one can conclude that these pockets are of the same material as their surrounding breccia and have not been filled with more recent material.

Chapter 4

Member 6 Fauna

4.1 Introduction

Excavations in the Extension Site at Sterkfontein Cave by Robinson (1962) in the 1950s identified the chocolate brown Upper Breccia; a small infilling under the roof overlying Member 5. It was later named Member 6 by Partridge (1978). Faunal material from this deposit was initially analysed by Brain (1981), who noted that this sample was small and not very informative. Further excavations were thus conducted during this study to increase the sample size of the fauna and to possibly recover artefacts from this deposit, but unfortunately they did not yield any further material. This chapter, therefore, provides a re-analysis of the fauna from earlier excavations of the Member 6 deposit to provide a more up-to-date identification and interpretation of the assemblage.

In the new excavations, Member 6 sediments were identified as a small pocket of sediment in the western profile where only Member 5 West early Acheulean was previously identified (Figure 3.2). A hanging remnant of Member 6 breccia is identified in the northern profile (see Figure 1.4), but further excavation in the norther profile was not possible here due to instability of the overlying roof blocks. However, some Member 6 faunal material not previously analysed was found in boxes with the fine dark brown breccia in storage at the NFI (Transvaal Museum), and these specimens were included in this study (Appendix B.1). On the other hand, some published specimens from

Robinson's collection could not be identified as a result of breakage of some of the specimens in storage, and illegible catalogue numbers, or parts of catalogue numbers which had deteriorated in storage (Appendix B.2). Since no artefacts have been recovered from this and earlier excavations of the Member 6 deposits, only fauna has been analysed for this study to provide a new and more accurate interpretation of the deposit.

4.2 Taxonomy

Representatives of two bovid tribes Antilopini and Alcelaphini have been identified in the Member 6 assemblage. Three carnivore families (Hyaenidae, Felidae and Canidae) and one family each for the Orders Primates, Peryssodactyla, Lagomorpha, Rodentia and Hyracoidea have also been identified among the Member 6 faunal assemblage. Table 4.1 gives details of family, subfamily and/or tribe, genus and species of the specimens identified. A list of all identified specimens from this assemblage can be found in Appendix B.2.

At least one species of primate, *Papio ursinus*, is identified in Member 6.

One canid species (*Canis* cf *mesomelas*) and an indeterminate canid represent the Carnivora.

Size Class 1 bovids were only identified to size category. Size Class 2 bovids include *Antidorcas* and *Damaliscus*, while Size Class 3-4 include *Connochaetes*.

The Equidae are represented by Burchell's zebra, *Equus burchelli*. Hyrax, *Procavia capensis*, hare, *Lepus capensis*, and porcupine, *Hystrix africaeaustralis* have also been identified in this assemblage.

4.3 Skeletal part and taxa representation

The assemblage consists of 465 specimens, 52 (11.2%) of which are identified to skeletal element and/or family. 410 (88%) are identified to skeletal element and size class. At least 34 individuals are present in the Member 6 assemblage. Table 4.2 gives details of the element representation in this assemblage by

Table 4.1: Member 6 faunal assemblage taxa representation

Order	**Family/Tribe**	**Genus/Species**	**Common Name**
Primate	Cercopithecidae	*Papio ursinus*	Baboon
Carnivora	Felidae	indet. small felid	
		indet. medium felid	
	Hyaenidae	*Parahyaena brunnea*	Brown hyaena
	Canidae	*Canis* cf. *mesomelas*	Jackal
		indet. Canid	
		indet. small carnivore	
		indet. medium carnivore	
Artiodactyla	Bovidae		
Size Class 1			
Size Class 2			
	Antilopini	*Antidorcas marsupialis*	Springbok
	Alcelaphini	*Damaliscus* cf *dorcas*	Blesbok
Size Class 3-4		*Connochaetes* cf *gnou*	Wildebeest
Perissodactyla	Equidae	*Equus burchelli*	Burchell's zebra
Hyracoidea	Procaviidae	*Procavia capensis*	Hyrax
Rodentia	Hystricidae	*Hystrix africaeaustralis*	Porcupine
Lagomorpha	Leporidae	*Lepus* cf *capensis*	Cape hare

taxon.

4.3.1 Primates

The primate NISP is two, with an MNI of 1. The specimens are SE-2046, a proximal right humerus shaft fragment and SE-731, a first left phalanx. Neither of these specimens was previously identified as primate and the taxon primate was not listed by Brain (1981) as being present in Member 6.

Table 4.2: Member 6 faunal assemblage element and taxa representation (NISP/MNE/cMNI).

Element	Primate	Carnivore	Equid	Size Class 1	Size Class 2	Size Class 3-4
HORN					1/1/1	
1/2 MAX					1/1/1	
1/2 MAND		1/1/1		1/1/1		
I		1/1/1				
C		2/2/2				
P				1/1/1		
M3 M		1/1/1	 5/3/2			
VERT				1/1/1	3/3/1	1/1/1
SCAP					2/2/2	2/2/2
HUM	1/1/1	1/1/1		3/3/3	7/6/6	2/2/2
RAD				1/1/1	1/1/1	1/1/1
ULN		1/1/1				
MTC		2/2/2			5/5/5	3/3/3
PHAL 1	1/1/1				5/5/5	3/3/3
PHAL 2				1/1/1		
1/2 PEL				1/1/1	3/3/3	
FEM				3/3/3	8/6/6	
TIB		1/1/1		3/3/3	8/6/6	4/3/3
MTT		2/2/1			13/9/9	8/4/4
MTP				1/1/1		2/1/1
CALC				1/1/1	2/2/2	
SES					1/1/1	
RIB					10/10/2	5/5/1

4.3.2 Carnivora

Twelve specimens have been identified as carnivores in the Member 6 assemblage. Table 4.2 gives details of specimens representing the carnivores. Two hyaenid individuals are represented by an upper right third incisor, SE-2299, and an upper right canine, SE-2329, of one brown hyaena (*Parahyaena brunnea*) and an M^3 of a sub-adult hyaena individual. Two canid specimens are SE-1423, which is a right proximal ulna fragment, and SE-2109, which is a distal metapodial fragment of *Canis mesomelas*. Felid individuals are represented by SE-864 and SE-2062, which are a distal left humerus and a proximal right fourth metacarpal of a medium-sized cat respectively. SE-2095 is a proximal right fourth metacarpal of a small-sized felid.

4.3.3 Perissodactyla

Equus

A total of five equid specimens has been identified in the Member 6 faunal assemblage. These specimens represent at least two individuals, a juvenile and an adult. SE-686 is a lower molar of a juvenile individual, SE-795 is a lower molar of an old individual, while SE-693, SE-704, and SE-818 are teeth fragments of adult equid individuals. The rest of the teeth are too fragmented to be assigned to any tooth category, side or age.

4.3.4 Bovidae

The bovid sub-assemblage is represented by an NISP of 415. Size Class 1 has an NISP of 28, Size Class 2 an NISP of 342, and Size Class 3-4 an NISP of 40. The bovid MNI is 20 (51.5% of tMNI). Table 4.2 gives details of bovid representation by skeletal element. The %MAU by size classes is presented in Figures 4.1, 4.2 and 4.3.

Size Class 1

Size Class 1 is best represented by tibiae, humerii, metapodia and femora

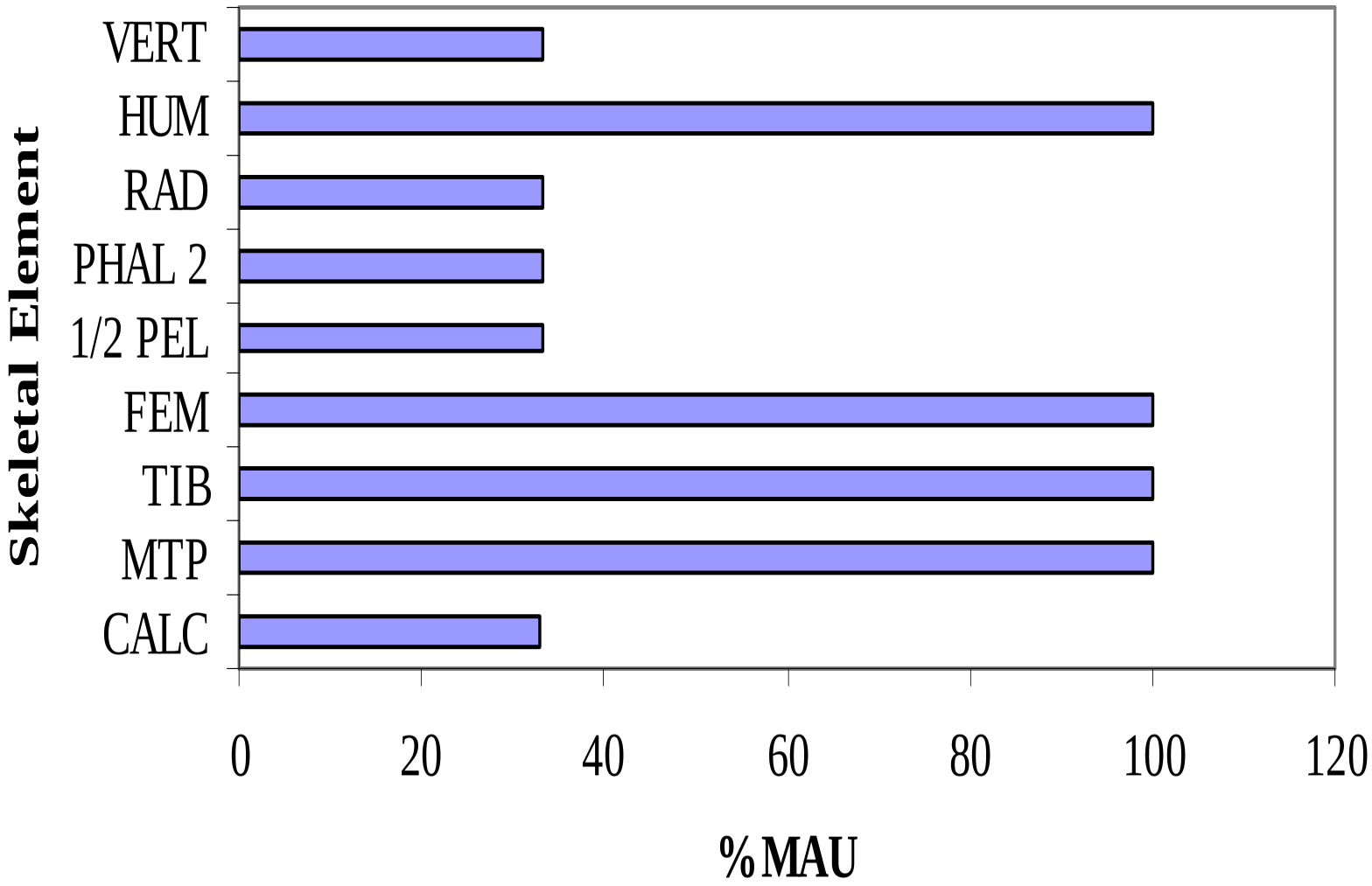


Figure 4.1: Member 6 assemblage Size Class 1 bovid %MAU

(Figure 4.1). These elements indicate at least three individuals based on three humeri (two right distal and a single shaft fragment of different sized-individuals) and three tibia shaft fragments representing three individuals. The other specimens belonging to Size Class 1 include one each of calcaneum, vertebra, innominate fragment, first phalanx, radius and premolar fragment. These specimens could have derived from three individuals already identified.

Size Class 2

This size class is well represented by the metapodia (metatarsals, metacarpals and indeterminate metapodia), humerii, femora and tibiae (Figure 4.2). At least nine individuals are represented by nine metatarsal elements identified from 13 specimens. All the other 319 specimens of at least 47 elements of Size Class 2 could belong to some of the nine individuals already identified as present in the assemblage from the enumerated elements. The small to medium-sized bovids are also represented in the Member 6 deposit by *Antidorcas* and *Damaliscus*. The *Antidorcas* individual is indicated by the three specimens SE-690, SE-691 and SE-692. SE-690 is a right mandible fragment with second and third molars. *Damaliscus* is identified from one specimen (SE-)1318, a right maxilla fragment with all premolars and the M^1 and M^2. The *Antidorcas* and *Damaliscus* MNI of 2 form part of the Size Class 2 tMNI of nine, the highest element MNI derived from 13 metatarsal fragments.

Size Class 3-4

Size Class 3-4 is best represented by four metatarsal elements (see Figure 4.3) with the metacarpals and tibiae being moderately represented. The MNI of Size Class 3-4 is four, derived from two right proximal, one left proximal and two metatarsal shaft fragments of different sizes. Size Class 3 is also represented by a *Connochaetes* identified from SE-1444, an upper molar fragment. The single *Connochaetes* individual forms part of the MNI of 4 derived for Size Class 3-4 bovids.

Other taxa

There are at least two *Procavia capensis* (hyrax) individuals identified from

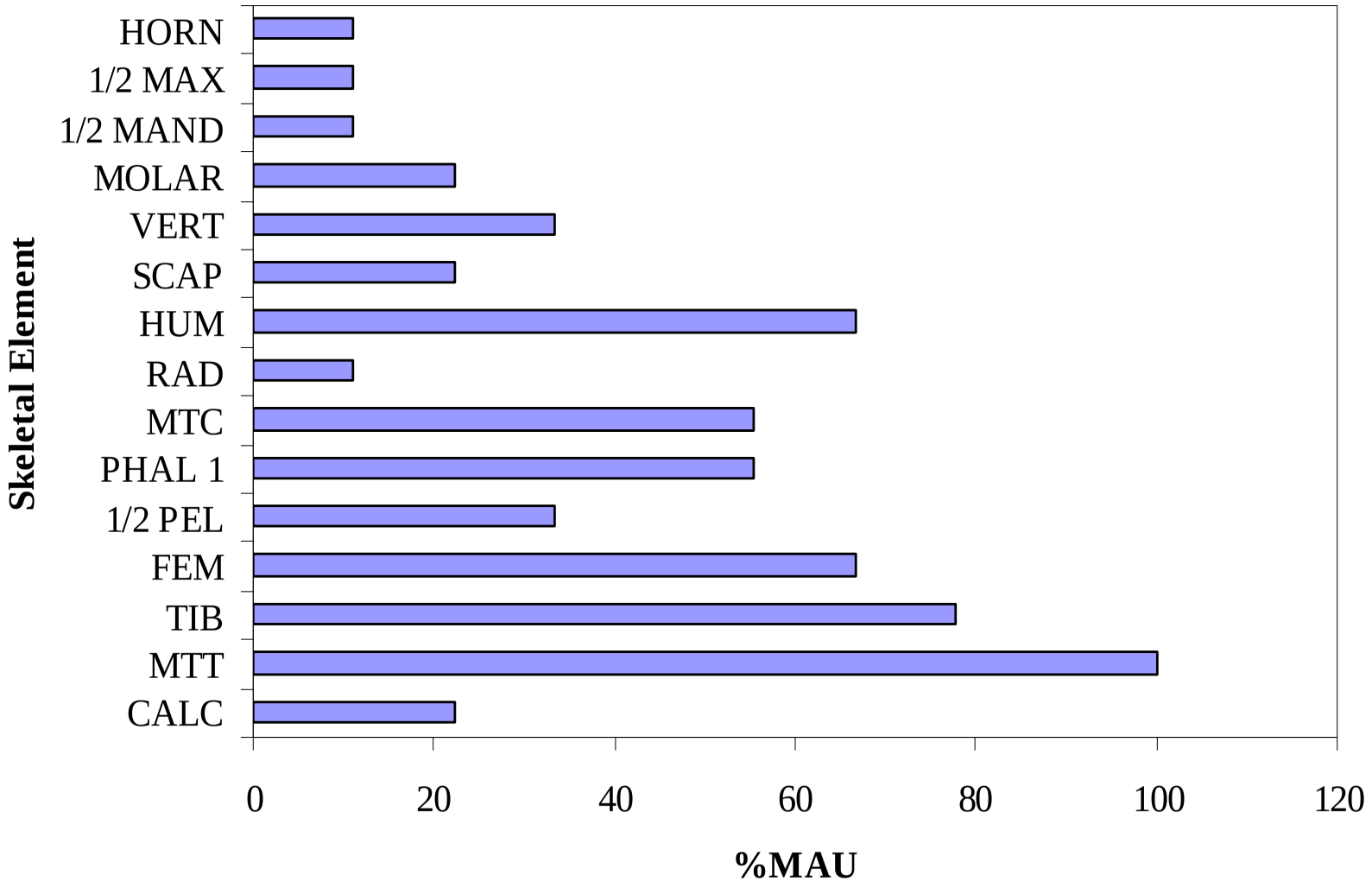


Figure 4.2: Member 6 assemblage Size Class 2 bovid %MAU

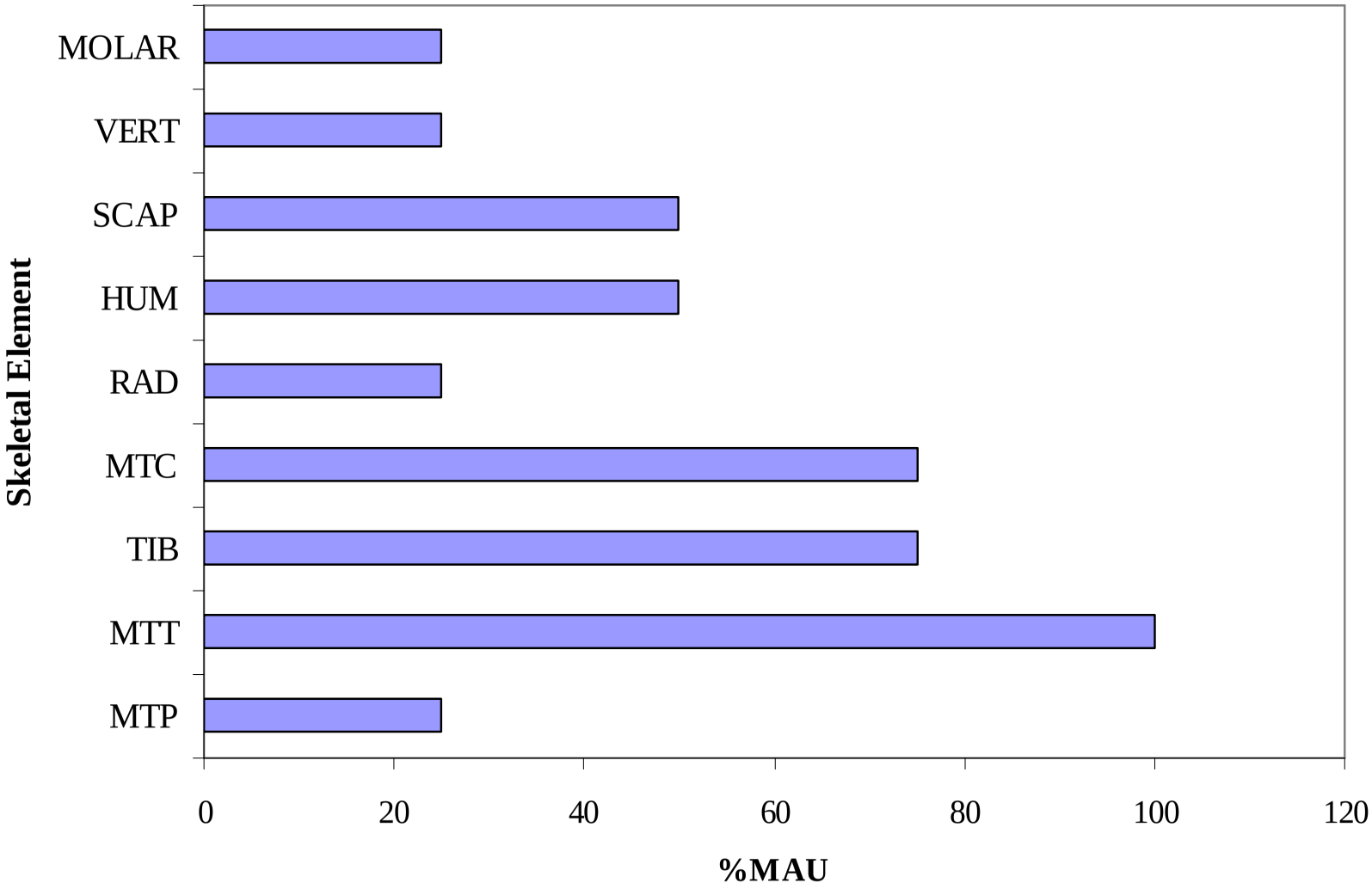


Figure 4.3: Member 6 assemblage Size Class 3-4 bovid %MAU

a left premolar and a left mandible with all teeth present (SE-703 and SE-1050 respectively). A proximal right radius shaft fragment and a right femur (SE-806 and SE-995) also represent *Procavia*. There is one tooth fragment (SE-707) belonging to the Leporidae (*Lepus capensis*), while Hystricidae (*Hystrix africaeaustralis*) is identified from an incisor, an incisor fragment and a molar (SE-994, SE-921 and SE-928 respectively).

4.4 Taphonomy

The Member 6 faunal assemblage preserves various types of modifications (Table 4.3). These include modifications from biotic and abiotic agents. Biotic agents such as carnivores and hominids acted on the carcasses soon after death to produce carnivore gnaw marks and stone tool modification marks. Porcupines and small rodents gnaw on dry bones, but they can also gnaw on fresh bones after they have been defleshed by other agents. Other agents of modification, the results of which have been observed in this assemblage, include weathering, post-depositional modification (abrasion, trampling, sediment overburden pressure and soil acid), as well as excavation and preparation modification.

Table 4.3: Member 6 identified bone modifications

Modification	**Number**	**Percentage modification**
Cutmarks	6	1.29
Hammerstone percussion	4	0.86
Carnivore gnawing	16	3.44
Stomach acid etching	4	0.84
Porcupine gnawing	25	5.37
Small rodent gnawing	20	4.29
Weathering	377	80.90
post-deposition modification	65	13.95
Excavation and preparation modification	325	69.74

4.4.1 Stone tool modification

Brain (1981) observed stone tool cutmarks on a mandible of *Antidorcas bondi* (SE 690). Following this current analysis, there are now 10 specimens (2.15%, N=465) which show signs of butchery in the form of cutmarks (1.29%) and hammerstone percussion notches (0.86%). Three of the hammerstone percussion-marked specimens also have impact created notches.

4.4.2 Mammalian modification

Sixty one specimens (13.12 %) of this assemblage show marks from gnawing by various animals. Carnivore gnawing is observed on 3.44%, while 5.37% and 4.29% are porcupine and small rodent gnawed respectively. Gnawing also occurs in various combinations in this assemblage. A few of the carnivore gnawed bones also have tooth puncture notches and stomach acid etching (three and four bones respectively). In addition, three other specimens are stomach acid etched.

4.4.3 Weathering

A total of 377 specimens (80.90%) is weathered in various stages (Table 4.4). The rest of the Member 6 assemblage (19.10%) are teeth and teeth fragment specimens, breccia-covered bones and bone fragments, and therefore their surfaces were either inappropriate or too small and could not be analysed for these weathering stages. Even though there are no entirely fresh bones in the assemblage, weathering occurs mainly in mild stages (1, 2, and 3), indicating that the assemblage was not exposed for long periods prior to deposition in the cave. The extent of weathering, coupled with minimal abrasion, indicates initial accumulation of the bones close to the cave or cave entrance.

4.4.4 Post-depositional modifications

Sixty five specimens (13.95%) show signs of modification that occurred after deposition, either before, during or after fossilisation. These occur as crushing, resulting in cracked or deformed specimens. Other post-depositional modification also occurs in the form of trampling (1.6%), abrading (0.2%), corrosion (0.7%) and insect modification (0.5%).

4.4.5 Excavation and preparation modifications

Nearly three quarters (69.74%) of the assemblage has borne the brunt of excavation and preparation modification. This occurs in the form of breakage, chipping, hacking, slicing and even scratching of specimens. These marks are easily distinguished from the stone tool cut marks and hammerstone percussion marks based on the fresh coloured nature of their surfaces indicating the modern or recent occurrence, lack of breccia matric adhering to the fracture edges as well their broad U-shaped form.

4.5 Fracture attribute analysis

4.5.1 Fracture surface analysis

Fracture attributes used for this analysis include angle, outline, edge, circumference and breadth/length ratio. Figure 4.4 illustrates the distribution of surface morphologies and circumference completeness (angle, outline, edge and circumference), while Figures 4.5 provides details for breadth/length ratios.

Two hundred and eighty-four ancient fracture surfaces were available for fracture surface analysis. 60% have curved, 21% transverse and 19% intermediate outlines. 52% have oblique angles, 26% intermediate and 21% right angles. 67% of the surfaces examined in this sample are smooth, while 33% are jagged-edge breaks. The greater percentage of curved outlines indicates that most of the bones were broken soon after the animals death, hence the

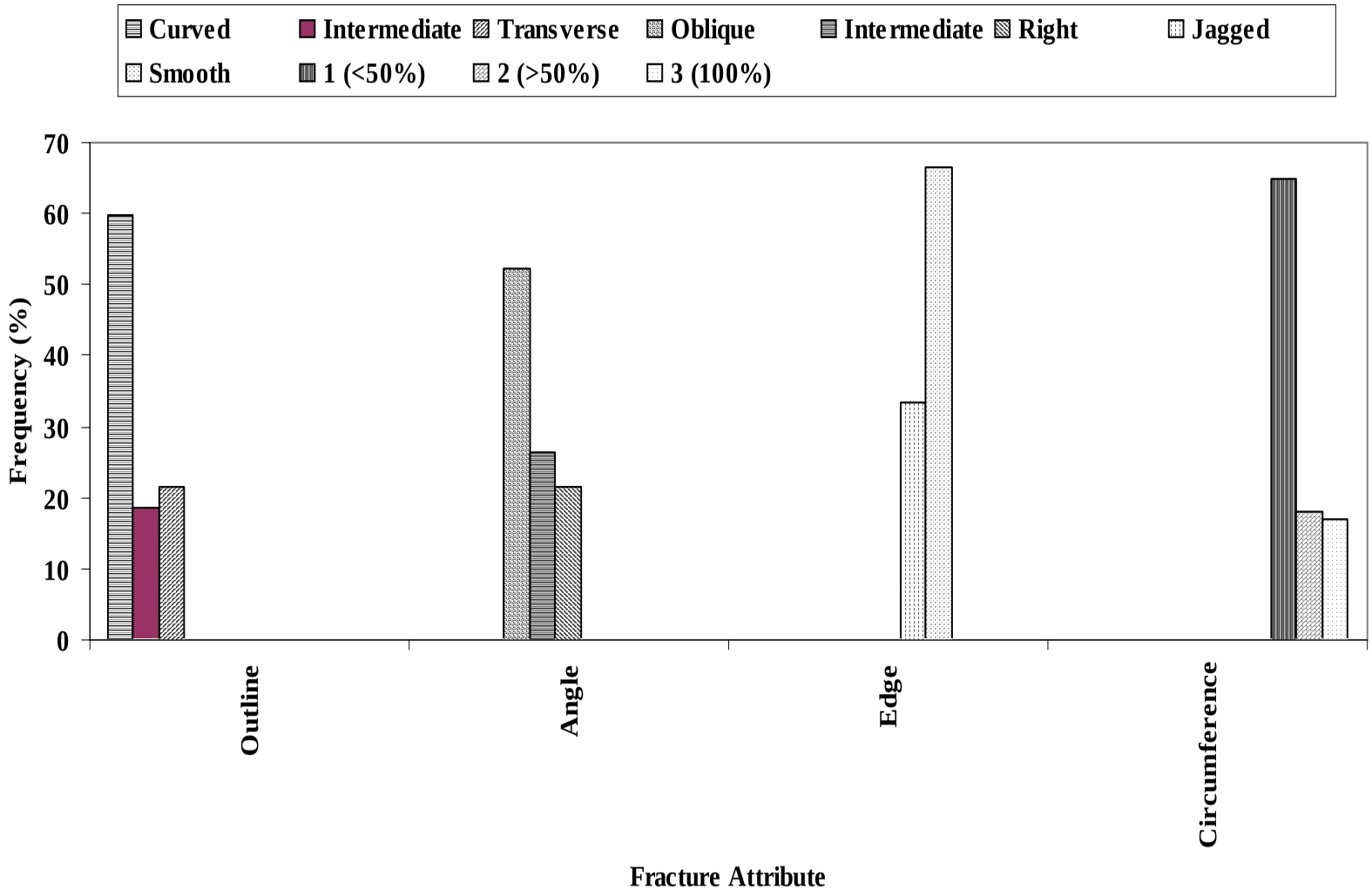


Figure 4.4: Member 6 fauna fracture attributes and circumference completeness frequencies

predominance of green bone breakages.

Table 4.5 provides the absolute fracture attributes for the three French Neolithic sites and Member 6, as well as the Member 6 sample X^2 values of the various fracture attributes. X^2 comparisons were conducted between Member 6 and the three French Neolithic assemblages to check the hypothesis that the Member 6 assemblage fracture attributes are not significantly different from those of the French Neolithic assemblages (P¡0.05, df=2). The X^2 values indicate that Member 6 assemblage fracture attributes are significantly different from the three French Neolithic samples; one of which was predominantly green-bone-broken while two are dry-bone-broken. Member 6 is thus neither similar to the dry-bone-broken assemblages nor the fresh bone broken assemblage French Neolithic samples, indicating possible mixture of green and dry bone breakages in the assemblage. The inconsistency can also be attributed to different sources of bones in the deposit, depositional environments for the French and the member 6 assemblage, sample sizes and post-depositional modification.

4.5.2 Circumference analysis

Two hundred sixty nine specimens have been used in circumference completeness analysis in this assemblage. As seen in Figure 4.4, a majority (65%) of the sample has less than 50% circumferences. 18% and 17% of the sample have >50% and 100% circumference respectively. The high frequency of the less than 50% circumference category is consistent with the circumference completeness frequencies expected in fresh-bone-broken assemblages (Villa and Mahieu, 1991). Member 6 is significantly different from the dry broken French Neolithic assemblages by circumference, but it is not significantly different from the green broken sample of Fontebregoua. This similarity implies a green-bone-broken assemblage like that of Fontebregoua.

Table 4.4: Member 6 faunal assemblage weathering stages

Weathering Stage	**Number weathered**	**% weathered**
Stage 1	52	11.66
Stage 2	278	59.66
Stage 3	47	10.09
Total	**377**	**80.90**

Table 4.5: X^2 analysis of Member 6 fauna fracture attributes in comparison to the French Neolithic sites studied by Villa and Mahieu (1991)

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Fracture Attributes	**Sarrians**	**Bezouse**	**Fonterbregoua**	**Member 6**
Fracture Angle				
Oblique	22	27	144	148
Right	176	174	47	62
Intermediate	71	52	13	75
Total	**269**	**253**	**204**	**285**
X^2	149	140	33.3	
Difference	significant	significant	significant	
Fracture Outline				
Curved	106	82	134	170
Transverse	193	144	92	61
Intermediate	59	61	35	53
Total	**358**	**287**	**261**	**284**
X^2	77.36	65.86	13.82	
Difference	significant	significant	significant	
Circumference				
1 (100%)	200	60	13	17
2 (>50%)	10	0	23	18
3 (<50%)	16	33	115	174
Total	**226**	**93**	**151**	**209**
X^2	287.78	109.68	3.95	
Difference	significant	significant	not significant	

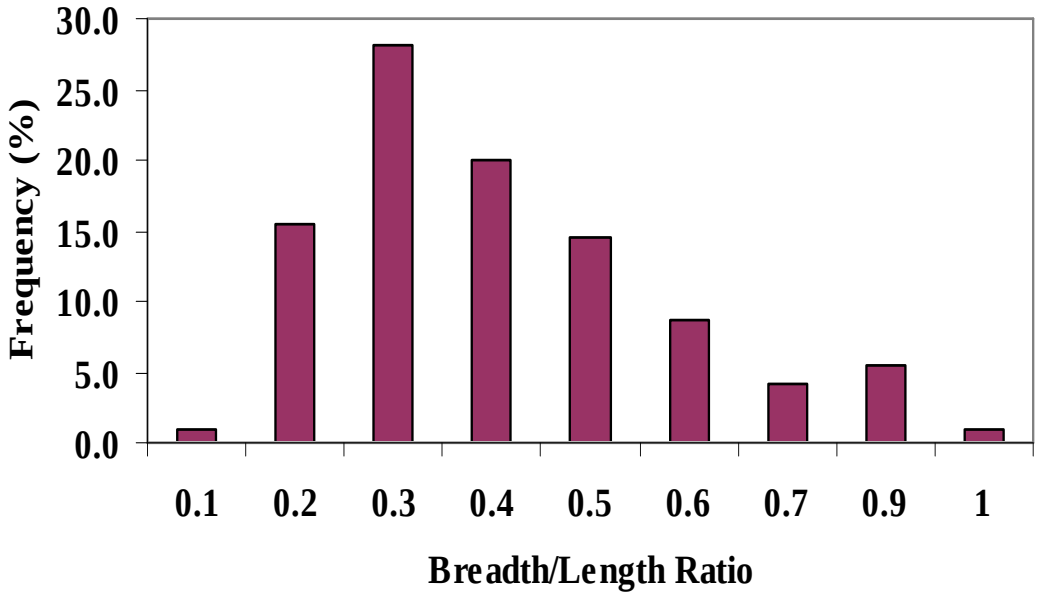


Figure 4.5: Member 6 fauna Breadth/Length ratio distribution

4.5.3 Breadth/length ratio

Figure 4.5 shows the frequencies of the breadth/length ratios derived for this faunal assemblage. A total of 220 specimens have been used in the calculation of breadth/length ratio. 87% of these fall in the breadth/length ratio categories between 0.2 and 0.6., indicating a less fragmented collection, similar to that expected from a fresh bone broken assemblage. Carnivore gnawing leaves more bone cylinders as carnivores chew away the articular ends to reach the marrow, while hominid exploitation of bone for marrow leaves mainly splinters (Johnson, 1985). Thus, such less fragmented accumulations indicate assemblages indicate minimal or no hominid exploitation and accumulation of the assemblage.

4.6 Discussion

4.6.1 Taxa and skeletal part representation

There are mainly open grassland savannah taxa such as *Papio*, *Equus*, *Lepus*, antelopines and alcelaphines. However, water-loving reduncines and Hippopotamidae found in the Lincoln Cave (Reynolds, 2000) are lacking. These species differ from those of Member 5 West, which has more extinct taxa, and indicate recent fauna of open grassland similar to the modern environment.

Several carnivore species of the Hyaenidae and Felidae families are represented, but the larger felids are conspicuously absent, while most of the other carnivore element fragments could not be identified beyond the family level (Tables 4.1 and 4.2). Bovid size classes are well represented by meat-rich skeletal elements of the hind and fore limbs (Figures 4.1, 4.2 and 4.3). The taxa are identified by few skeletal elements and portions of elements, especially Size Classes 1 and 2, but also include compact and grease-rich axial elements and epiphyseal ends of long bones (Table 4.2). This indicates an assemblage not severely ravaged by carnivores, especially hyaenas that are more likely to delete most of such grease-rich parts (Marean, 1991). It is noteworthy, however, that some of the compact bones, long bone epiphyseal ends and long bone shaft fragments have carnivore gnaw marks and stomach acid etching, implying that a part of this assemblage is carnivore-accumulated. The stone tool modification marks indicate that hominids played a part in its modification and accumulation. It is, however, noted that small sample size may have resulted in the non-representation of some taxa, especially the woodland or water-dependent species, due to possible collection biases or absence of deposition.

4.6.2 Bone accumulation

This assemblage has been affected by both biotic and abiotic bone assemblage modifiers. The effect of the biotic modifiers such as carnivores, rodents and

hominids on the assemblage appears to be limited (Table 4.3), with less than 10% modified by each of the agents. In order to understand the taphonomic history of the fauna, the effects of the possible bone collecting and modifying agents are assessed.

Biotic accumulators

Carnivore accumulation

This assemblage has a small carnivore sub-assemblage, with only one known bone-accumulating carnivore (hyaena) represented (Table 4.1). Hyaenas are likely to accumulate bones at their denning sites as they bring back carcasses and carcass parts to their dens to feed their cubs (Mills and Mills, 1977; Kruuk, 1972; Brain, 1981; Mills, 1990). In contrast to spotted hyaenas that forage in large competing groups, hunting and transporting carcasses as large as those of Size Class 4 ungulates, brown hyaenas are solitary foragers and hunt small mammals, and they are only capable of transporting small to medium size-bodied animals to their dens (Bunn, 1983b; Lam, 1992; Mills and Mills, 1977). Brown hyaena-accumulated assemblages contain up to 68% chewed bones (Maguire *et al.*, 1980), while spotted hyaena-accumulated assemblages have between 38% and 100% chewed bones (Bunn, 1983b; Lam, 1992; Maguire *et al.*, 1980; Mills and Mills, 1977; Skinner *et al.*, 1986). It has been observed by Cruz-Uribe (1991) and Stiner (1991) that hyaena-accumulated assemblages contain up to 20% carnivore individuals. Some of these remains result from some of the resident hyaenas, especially cubs, dying in the dens, as well as from hyaenas hunting small carnivores to feed their young (Kruuk, 1972; Mills, 1990). Such assemblages can therefore contain juvenile hyaena and small carnivore remains in addition to those of other ungulate prey.

Of the cats, lions are not known to transport and accumulate bones, while leopards and cheetahs transport carcasses to favourite feeding places in trees and on cliffs (Brain, 1981; Marean, 1989; Cavallo and Blumenschine, 1989) as well as to dark cave passages (Simons, 1966). This leads to accumulation of

bone assemblages around these areas from their food remains and regurgitation. Cave roof overhangs and trees growing around the Sterkfontein Cave openings would have been suitable for this purpose, leading to the accumulation of bones around the cave entrances, which were later washed or gravitated into the cave.

Small carnivores like jackals are not dominant bone accumulators but may also transport some bone, leading to a minor contribution to bone assemblage formation. Among the carnivore taxa represented in Member 6 is a *Parahyaena brunnea* (brown hyaena) individual. No juvenile hyaena remains or coprolites have been identified in this sample to suggest hyaena denning (Kruuk, 1972; Mills, 1990; Cruz-Uribe, 1991; Klein *et al.*, 1991; Stiner, 1991; Pickering, 2002), but the presence of 3.44% carnivore gnawed bone specimens indicate hyaena, possibly brown hyaena activity in the cave or cave vicinity. The absence of coprolites and juvenile remains, though not supporting a hypothesis that the cave was used as a den by carnivores, does not rule out the possibility that denning took place in this cave, as has been noted by Pickering (2002) for the Member 5 West assemblage. Carnivore voiding at times happens outside the cave, and coprolites may or may not be washed in, while juvenile remains are fragile and could easily be completely destroyed by post-depositional factors. The proportion of gnawed bone in this assemblage is small compared to that recorded for modern carnivore-accumulated assemblages, but it indicates the activity of carnivores around and possibly inside the cave at the time of bone assemblage accumulation. This assemblage has undergone post-depositional modification such as breakage and excavation and preparation modification which obscure or delete carnivore modification. This makes the sample slightly different from the modern accumulations which were studied to establish the ratios of carnivore gnawing in such carnivore-accumulated assemblages.

Porcupine and small rodent accumulation

Porcupines accumulate and/or gnaw bones already accumulated by other agents. They are however incapable of climbing up and down the steep walls of vertical shafts and thus will only inhabit fairly horizontal caves and shelters (Pickering,

1999). For example, Pickering has argued for little or no porcupine involvement in the accumulation of the Oldowan Infill faunal assemblage, due to the inferred vertical shaft nature of the cave opening. However, during Member 6 accumulation, the cave is considered to have been largely filled and therefore more accessible to porcupines. Porcupine accumulated assemblages can include their skeletal remains, which may also result from predator accumulation (Mitchell *et al.*, 1965; Pienaar, 1969; Kruuk, 1972), death of denning individuals in the dens, or gravitation of such remains from surface deposits. These researchers determined that leopard-accumulated porcupine remains consist mainly of cranio-dental elements, while porcupine collections resulting from den deaths will include most of the skeleton if other carnivore scavenging is precluded.

Porcupines are represented in this assemblage by three teeth and teeth fragments of at least a single individual. While the three porcupine teeth specimens may have been accumulated through carnivore predation, it is also likely that slope wash led to their accumulation in the cave. Porcupine gnawing occurs on a small proportion (5.37%) of this assemblage, which is much lower than the 22% - 100% incidence of gnawing recorded in porcupine-accumulated assemblages (Maguire *et al.*, 1980; Brain, 1981). Therefore, porcupines were not an important accumulation agent.

Small rodents are not known to collect and accumulate bones, especially of the larger mammals such as those identified in this assemblage, but may bring in small amounts of bones of smaller animals to the cave. Modification marks of such small rodents have also been identified in this sample (4.29%). Despite this, it is unlikely that small rodents accumulated any of the fauna in this assemblage. It is, however, noted that Member 6 has a small sample which has also undergone abiotic post-depositional modification through sediment overburden pressure modification, which may have deleted delicate porcupine post-cranial remains and some porcupine and small rodent-gnawed bones.

Hominid accumulation

Apart from hominid bones, the presence of stone tools and stone tool modified

bones are some of the foremost indicators of hominid presence. They do not, however, imply hominid accumulation of stone tools and the modified bones, but only indicate hominid activity in the vicinity of a site. No hominid bones and artefacts have been recovered from Member 6 except for one foreign unmodified stone, which Robinson (1962) noted as stolen before it could be lifted from the site. Thus, the only indication of hominid presence and activity in the Sterkfontein valley during Member 6 times is stone tool-modified bone. While these stone tool modifications are signs of hominid exploitation of animal resources in the vicinity of the cave, they do not show to what extent the hominids were involved in the accumulation of Member 6 bone collection.

There is 2.15% stone tool modification in Member 6, putting it within the range for hominid modification proportions for Holocene assemblages (Gifford *et al.*, 1980; Crader, 1981) and for Plio-Pliestocene fossil archaeological assemblages at FxJj 50 at Koobi Fora, Kenya and FLK Zinjanthropus site at Olduvai Gorge, Tanzania (Bunn *et al.*, 1980; Bunn, 1983a), as well as for simulated hominid accumulated samples from hunter/gatherer-accumulated bone assemblages bearing tool modification marks (Bunn, 1983a; Bunn *et al.*, 1988). Modifications in this assemblage, however, only show that hominids interacted with the bones, but not that hominids necessarily accumulated the majority of bones in the cave.

The skeletal elements with modifications and the location of butchery marks on specific elements have been used to identify the role of hominids in the acquisition of animal food resources and bone accumulation (Binford, 1981; Bunn, 1983a; Pickering *et al.*, 2004). There are more tooth marks on shafts than there are percussion marks on shafts in Member 6, with only a few tooth-marked epiphyses. In addition, some shafts, some of which are also tooth-marked, have stomach acid etching, indicating possible post-hominid accumulation carnivore ravaging. This is an indication that the carcasses from which the bones in the Member 6 deposit were recovered were probably exploited by carnivores after the incidents of the stone tool marks on them. This is evidenced by the identification of carnivore tooth marks on epiphyseal ends

and percussion marks on midshafts. It is, however, noted that this sample is small and some bones with more of each modification may not have been recovered or deposited altogether. Such a limited deposit may have only captured a small component of the original assemblage. The modifications in this assemblage and the skeletal element representation as well as location of modifications on elements, however, only show that hominids and carnivores interacted with the bones, but not that they accumulated the bones in the cave. Bones modified by these agents (especially hominids) in the landscape may have been deposited in the cave by other agents, e.g., slopewash and gravitation. The space left under the cave roof for the deposition of Member 6 after the deposition of Member 5 was too low for hominid occupation. Carnivores could more easily have accessed such a low cave entrance, with bones from their food remains being accumulated therein. These remains were then mixed with fauna modified by other agents, such as hominids.

Abiotic accumulators

Death trap

Death trap assemblages have been recorded in earlier deposits at Sterkfontein, namely, in the Member 2 deposits and in the Oldowan Infill (Pickering, 1999; Pickering *et al.*, 2004). These earlier death trap assemblages formed as a result of animals accidentally falling down concealed avens. Due to the vertical shaft-like nature of these cave openings, marks on bones indicating scavenging by carnivores on death trap carcasses are rare or absent in the fauna. Scavenging attempts by carnivores sometimes result in the inclusion of their own carcasses in such deposits where they cannot climb out of the shaft (Lyman, 1994). The few marks that are present were likely made by carnivores above the ground before those marked bones were washed into the shaft.

In the absence of scavenging, death trap assemblage bones and body parts

are preserved as mostly complete and/or articulated, unless sediment movement or compaction causes post-depositional breakage, disarticulation or destruction of the more fragile elements. Because more agile taxa such as primates and carnivores may become trapped after climbing down avens, such animal classes may be abundantly represented in the assemblages, reflecting the presence of these species on the landscape (Pickering, 1999; Pickering *et al.*, 2004). It has also been argued that such agile animals are more likely to fall to their death down these shafts (Lyman, 1994; Pickering, 1999; Pickering *et al.*, 2004). The Member 6 faunal assemblage is small and has only a few carnivore and primate individuals. The skeletal element representation is also very poor with mostly compact and resistant elements being present. These skeletal elements and the associated modifications make it unlikely that the bones in the Member 6 assemblage were accumulated as whole carcasses. Moreover, a death trap situation is unlikely as this deposit was laid right under a low roof.

Fluvial transport

Indications of fluvial transport are preserved in faunal assemblages as winnowed skeletal elements and abraded bones. Fluvial transport associated with skeletal element winnowing has been studied by Voorhies (1969) and Behrensmeyer (1975). According to these studies, structural densities, size and shape of bones influence the possibility of their transport. A summary of the different body parts found at different stages of fluvial transport has been provided by Lyman (1994). This summary shows that light skeletal elements and those with lesser volumes such as ribs, vertebrae and girdle bones are transported further by water than heavier and high volume ones such as long bones, crania and mandibles. Fluvial transported assemblages will thus contain fewer of the heavier elements and more of the lighter elements and vise versa for the lag deposits from fluvial winnowed remains. The skeletal element representation of each taxon in this assemblage is poor, but it appears that most Voorhies groups are represented, leaving other causes of biases such as carnivore predation and post-depositional destruction as the possible causes of poor skeletal element representation.

Some abraded and trampled specimens have been identified in this assemblage. Abrasion marks can result from fluvial transport, movements in sediments and trampling. Those in this assemblage are more likely attributed to movement in sediments, as there is no direct evidence of fluvial transport. The minimal amount of abrasion in this assemblage indicates that the bones have not been transported long distances prior to deposition in the cave, and that movement above the surface of the cave and within the cave was also minimal. From such marks, however, it is not possible to differentiate abrasion from colluvial versus fluvial transport. Both would have involved sediments as the major abrasive agent, producing similar abrasion results on bones, if all other factors determining extent of abrasion defined by Shipman and Rose (1988) and Lyman (1994) are held constant.

4.6.3 Post-depositional modification and destruction

Post-depositional destruction and/or modification have been observed in the Member 6 assemblage to include trampling, crushing, surface erosion and plastic deformation. The assemblage has a poor representation of structurally less dense and fragile axial elements such as ribs and vertebrae. This may have resulted from post-depositional destruction or other fragile bone deleting processes such as carnivore gnawing. However, extreme forms of post-depositional modification evident in plastic deformation of specimens are not recorded in this assemblage, leaving carnivore gnawing and collection as possible eliminators of some of the fragile elements from this assemblage. Hominid processing leaves little meat and probably no marrow resources to be exploited by carnivores, resulting in carnivores relying on the fragile, but grease-rich epiphyses, ribs and vertebrae for their feeding, in effect deleting these elements and element portions from the assemblage. Thus, irregular spongy and non-identifiable bone fragments such as these are accumulated under such circumstances circumstances. The effect of possible sampling bias is apparent in this

assemblage in the seemingly selected nature of the specimens that were recovered and that were available for this study. The Member 6 assemblage, though small, has a very high percentage of identifiable bones and bone fragments, including those of small mammals, compared to non-identifiable specimens.

4.7 Conclusions

The previous study of Member 6 fauna by Brain (1981) indicated possible porcupine and carnivore accumulation and noted some possible hominid involvement as a bovid mandible showed cutmarks made by tools. He also noted that the high percentage of bone flakes was similar to that of Stone Age human food remains. With the percentages of carnivore and stone tool modifications discussed above, it is clear that hominids modified the assemblage, with minor modification of the resultant assemblage by carnivores and rodents. These modifications not only imply an important role of hominids in the accumulation of the assemblage, but also a role of other biotic accumulators in the catchment of the cave. These modifications, together with the faunal taxa represented, suggest the contribution to the accumulation of the assemblage by all these agents. Slopewash of some of bones, including those modified by other agents in the vicinity of the cave, is demonstrated by the presence and intensity of abrasion marks; even though minimal, they indicate some movement of material.

This sample is small but may be a good representation of the material in the limited area under the dolomite roof in which it was deposited. With this in mind, it is possible that the fauna it contains provides a good representation of the taxa in the cave environment at the time. Stratigraphically, this assemblage seems to directly overlie the Member 5 West capping flowstone, but it was deposited relatively much later than the Member 5 West as extinct forms are absent indicating a time gap between the Acheulean infills and this younger deposit. The relatively thick Member 5 West capping flowstone, which is beyond the range of Thorium-Uranium dating represents the time when the

cave was closed to infilling. Thus the Member 6 deposit is thus considerably younger than the Member 5 West Acheulean of about 1.6 mya, but it is older than the MSA breccia that filled the eroded area between Member 5 West and East and entered the Lincoln Cave. As Lincoln Cave North has produced a maximum date of 252,000 ± 37,000 years, the Member 6 deposit should be at least that age or older. The absence of stone tools in this deposit is attributed to the limited deposition of sediment, which is in turn related to the small available space under the dolomite roof. Incomplete excavation of the deposit could also be a factor.

Chapter 5

Post-Member 6 Infill Fauna

5.1 Introduction

In this chapter, I provide results of the analysis of fauna from the Post-Member 6 Infill. Finds from earlier and present excavations have been combined for this analysis, providing a larger sample of fauna from the deposit. The excavated sample includes material from 35 squares, including previously analysed faunal material from the L63 square (Appendices A.1 and A.2). This analysis provides a more complete depiction of the faunal assemblage of this deposit. Results of analysis of Post-Member 6 Infill lithic artefacts from these squares is provided in Chapter seven.

5.2 Taxonomy

Tables 5.1 and 5.2 provide a summary of taxa identified to family, subfamily and/or tribe, genus and species. A complete list of identified specimens for this assemblage is available in Appendix C.1.

Three primate species, *Homo sapiens*, *Cercopithecus aethiops* and *Papio ursinus* are identified in the Post-Member 6 Infill assemblage by dental and cranial remains. Both *Cercopithecus* and *Papio* are represented by post-cranial remains in addition to the cranio-dental remains.

Carnivores have the highest number of taxa in the assemblage. Some of the taxa identified here have also previously been identified by Turner (1997), but

Table 5.1: Post-Member 6 fauna mammalian taxa representation

Order	**Family**	**Subfamily/Tribe**	**Genus/Species**	**Common Name**
Primate	Hominidae		*Homo sapiens*	*Homo sapiens*
	Cercopithecidae	Cercopithecinae	*Papio ursinus*	Baboon
			Cercopithecus aethiops	Vervet monkey
Carnivora	Felidae		*Acinonyx jubatus*	Cheetah
			Panthera leo	Lion
			Panthera pardus	Leopard
			Caracal caracal	Caracal
			Felis. cf lybica	African wild cat
			Leptailurus serval	Serval cat
	Hyaenidae	Hyaeninae	*Crocuta crocuta*	Spotted hyaena
			Parahyaena brunnea	Brown hyaena
			Proteles cristatus	Aardwolf
	Canidae	Caninae	*Canis mesomelas*	Black-backed jackal
			indet. canis	
			Vulpes chama	Cape fox
		Otocyoninae	*Otocyon megalotis*	Bat-eared fox
		Simocyoninae	*Lycaon pictus*	Wild dog
			indet. canid	
				indet. large carnivore
				indet. medium carnivore
				indet small carnivore
	Viverridae	Herpestinae	*Herpestes ichneumon*	Large grey mongoose
			cf Herpestes	indet. Mongoose
		Viverrinae	*Genetta genetta*	Genet
		Civettictis	*Civettictis civetta*	Civet
			indet. Viverride	
Perissodactyla	Equidae	Equinae	*Equus* sp	Zebra

Table 5.2: Taxa represented in the Post-Member 6 Infill faunal assemblage *Continued*

Order	**Family**	**Subfamily/Tribe**	**Genus/Species**	**Common Name**
Artiodactyla	Suidae		*Potamochoerus porcus*	Bushpig
			Phacochoerus aethiopicus	Warthog
	Bovidae	Hippotraginae		
		Hippotragini	*Hippotragus equinus*	Roan antelope
		Aepycerotinae	*Aepyceros melampus*	Impala
		Aepycerotini		
		Antilopinae	*Antidorcas marsupialis*	Springbok
		Antilopini		
		Neotragini	*Ourebia ourebi*	Oribi
			Raphicerus sp.	Grysbok
		Caprinae	*Ammotragus lervia* sp.	Barbary sheep
		Alcelaphinae	*Connochaetes* sp.	Wildebeest
		Connochaetini		
		Alcelaphini	*Damaliscus lunatus*	Tsessebe
			Damaliscus dorcas	Blesbok
		Reduncinae	*Kobus ellipsiprymnus*	Waterbuck
		Reduncini	*Kobus leche*	Lechwe
			Redunca arundinum	Common reedbuck
			Redunca fulvorufula	Mountain reedbuck
			Redunca sp.	
		Cephalophinae	*Cephalophus* sp.	Duiker
		Cephalophini		
Hyracoidea	Procaviidae		*Procavia capensis*	Hyrax
Rodentia	Hystricidae		*Hystrix africaeaustralis*	Porcupine
	Pedetidae		*Pedetes capensis*	Springhare
Lagomorpha	Leporidae		*Lepus capensis*	Cape hare

this study has provided a larger sample and the following carnivore taxa list is now provided. The Felidae are represented by six species *(Acinonyx jubatus, Panthera leo, Panthera pardus, Caracal caracal, Leptailurus serval* and *Felis* cf. *lybica*). Three species each have been identified for the hyaenids, the canids and the viverrids.

The Artiodactyla are represented by the Suidae and the Bovidae. The Suidae *Potamochoerus porcus* and *Phacochoerus aethiopicus* have been identified. Size Class 1 bovids present are *Raphicerus, Oreotragus, Ourebia* and *Cephalophus*. Size Class 2 bovids include *Damaliscus, Redunca, Aepyceros, Ammotragus* and *Antidorcas*. Size Class 3 bovids are *Hippotragus, Connochaetes* and two *Kobus* species. All these species assignments are based on craniodental remains. Bovid post-cranial remains were assigned size classes alone.

An equid *Equus* sp. is present in the assemblage. A hyrax, *Procavia capensis*, porcupine *Hystrix africaeaustralis* and hare *Lepus capensis*, as well as springhare *Pedetes capensis* are also present.

5.3 Skeletal part and taxa representation

There are 14,025 specimens in this assemblage, 27.15% (N=3808) of which are identifiable to skeletal element and family, and/or size class. At least 124 individuals are present in the Post-Member 6 Infill assemblage. Tables 5.3, 5.4, 5.5, 5.6, 5.7 and 5.8 give details of the element representation by different taxa.

5.3.1 Primates

There is a total of 29 specimens belonging to three genera, *Homo*, *Cercopithecus* and *Papio* (Table 5.3).

Homo

A single specimen (StW 585), a right upper canine, represents a hominid individual, perhaps archaic *Homo sapiens* identified by Kuman and Clarke (2000),

Table 5.3: Post-Member 6 Infill primate representation by skeletal element.

Element	*Homo* NISP/MNE/cMNI	*Papio* NISP/MNE/cMNI	*Cercopithecus* NISP/MNE/cMNI
1/2 MAND		3/3/3	1/1/1
CRAN		1/1/1	
I^1		1/1/1	
I_1		1/1/1	
C	1/1/1	1/1/1	1/1/1
P^4		2/2/2	
M^1			1/1/1
M_1		2/2/1	
M_2		1/1/1	
M_3			1/1/1
CERV		1/1/1	
THOR			1/1/1
HUM		1/1/1	1/1/1
ULN			2/2/2
1/2 PEL			1/1/1
TIB			3/3/3
CALC		3/3/3	
ASTRAG		1/1/1	

Reynolds (2000) and Reynolds *et al.* (2007).

Papio

Eighteen specimens of at least three individuals have been identified as *Papio* (Table 5.3, column 3). These identifications are based on a left mandible fragment with the first and second molars in place (SWP-2145), as well as an isolated fourth premolar crown (SWP-2146), seemingly of a young adult, in addition to a mandibular process of a smaller individual. Three calcanei, two left and a right, all of different sizes, may also belong to the three individuals already identified from the cranial remains.

Cercopithecus

Eleven specimens have been identified as *Cercopithecus*, belonging to at least three individuals based on three tibia shaft fragments. Two of these fragments belong to two tibiae, a right and a left, deriving from two adult individuals differentiated by size and state of epiphyseal fusion. The third tibia derives from a juvenile individual. *Cercopithecus* is also represented by other elements,

which may derive from the same individuals identified from the tibiae (Table 5.3).

5.3.2 Carnivora

At least fourteen carnivore genera of four families (Felidae, Hyaenidae, Canidae and Viverridae) have been identified in the Post-Member 6 Infill faunal assemblage (Table 5.1). Tables 5.4, 5.5, 5.6 and 5.7 provide details of carnivore element representation by taxa. A complete list of identified carnivore specimens is available in Appendix C.1.

Felidae

The cats are represented by the genera *Acinonyx*, *Panthera* (two species), *Caracal* and *Felis*. One indeterminate felid has also been identified.

Seven lion (*Panthera leo)* specimens of at least two individuals have been identified. The MNI is based on a left M_1 and a left M_1 crown (Table 5.4). The additional specimens, including the navicular cuboid identified by Turner (1997) do not raise the MNI of the lion as they could not be differentiated by size or age from the teeth specimens identified (Tables 5.4 and 5.6). Five leopard (*Panthera pardus*) specimens of at least one individual have been identified, based on the dental remains - a left I_3 and a right P_3, that could not be separated by size or age. The radii specimens belonging to two elements of a single individual do not raise this MNI. The cheetah, *Acinonyx jubatus*, is identified from a single specimen, a left canine.

Two caracal (*Caracal caracal*) individuals are represented by three specimens: two right lower canines and a P_3. The premolar may belong to any of the individuals represented by the identified right canines. Five African wild cat (*Felis* cf *lybica*) specimens with an MNI of 2 are present. These include: a right capitate, a right distal humerus, a left hind foot (with all the metatarsals in articulation), a mandible fragment with the P_3 and M_1 and an isolated I^1.

Hyaenidae

The Hyaenids are represented by 17 specimens. Seven specimens are of *Parahyaena*

Table 5.4: Post-Member 6 Infill carnivore representation by cranio-dental remains (NSIP/MNE/cMNI).

Element	*A. jubatus*	*P. leo*	*P. pardus*	*C. crocuta*	*P.brunnea*	*P. cristatus*	*L. pictus*	*C. mesomelas*	*V. chama*	*C. caracal*
CRAN					2/2/2	1/1/1		1/1/1		
1/2MAND						2/2/2				
I_1								1/1/1		
I_2			1/1/1							
C			1/1/1							
C	1/1/1			1/1/1			1/1/1	1/1/1	2/2/2	2/2/2
$_{Dp}$					1/1/1		1/1/1			
$_{Dp}$					1/1/1					
Dp_2				1/1/1						
Dp^4				1/1/1						
P^1						1/1/1				
P^2								2/2/2		
P_2					1/1/1					
P^3								4/4/4		
P_3			1/1/1	1/1/1						1/1/1
P^4								1/1/1		
M^1								1/1/1		
M_1		2/2/2		1/1/1		1/1/1	2/2/2			
M_2								1/1/1		
$_P$								1/1/1		

Table 5.5: Carnivore representation by cranio-dental remains (NSIP/MNE/cMNI).

Element	*F.lybica*	*C. civetta*	*G. genetta*	indet. Canid	indet small Felid	indet small Carnivore	indet Med Carnivore	Indet. Viverrid
CRAN				1/1/1				
1/2MAND	1/1/1	1/1/1	1/1/1		1/1/1		2/2/2	
I^1	1/1/1							
I_3					1/1/1			
C					/1/1		3/3/3	3/3/3
P^1								1/1/1
P_1						1/1/1		
P^3						1/1/1		
P_4							1/1/1	
P							1/1/1	
M^1				1/1/1			1/1/1	
M_1	1/1/1							
P				1/1/1				
TOOTH							2/2/2	

bruunea, two of which (a left P_2 and a left M_1) are of at least one adult individual. Another three adults are represented by two half mandibles and three specimens (lower right C. A lower right DP and a left upper DP) indicate at least a juvenile individual. The listed specimens represent at least three *Parahyaena brunnea* individuals. Seven specimens, four adult (left P_3, a right second metacarpal, a right fourth metacarpal and distal metapodial) and three juvenile (a right DP_2, DP_4 and an upper canine) come from at least 2 *Crocuta crocuta* individuals. At least one juvenile indeterminate Hyaenid individual is also present, as shown by six specimens consisting of deciduous teeth.

Four specimens (a cranium with some teeth and teeth roots; see Figure 5.1, a complete right mandible with teeth, a right mandible fragment and a left P^1), belong to an aardwolf *(Proteles cristatus)*, with an MNI of 3. The MNI is based on the differences in size of both mandibles relative to the cranium which is relatively larger.



Figure 5.1: *Proteles* cranium from the Post-Member 6 Infill. Photo by courtesy of R. J. Clarke.

Canidae

There are four Canid genera from three subfamilies. These include *Canis*

Table 5.6: Carnivore representation by post-cranial remains in the Post-Member 6 Infill assemblage (NISP/MNE/cMNI).

Element	*P. leo*	*P. pardus*	*C. crocuta*	*P. brunnea*	*C.mesomelas*	*V. chama*
ATLAS					1/1/1	
CERV					1/1/1	
HUM	1/1/1					
RAD		3/2/1			1/1/1	
MCP II				1/1/1		
MCP V	1/1/1					
FEM	1/1/1				1/1/1	
TIB						1/1/1
CALC						1/1/1
ASTRAG					1/1/1	
NAV	1/1/1					
MTT III					1/1/1	
MTT IV			1/1/1			
MTP			1/1/1			
PHAL II	1/1/1					

and *Vulpes* for the Caninae, *Otocyon* for the Otocyoninae and *Lycaon* for the Symocyoninae. At least three black-backed jackal *Canis mesomelas* individuals are indicated from 21 specimens. One sub-adult individual is identified from three specimens, a left M_1 fragment, a left P^3 and a right P^2. Two adult individuals are identified on the basis of two upper right P^3s. Ten specimens, all of which are post-cranial remains, belong to an indeterminate *Canis* with an MNI of at least one.

There are four specimens including an atlas, a right calcaneum, a right distal tibia fragment and a lower left canine of at least two *Vulpes chama* (Cape fox) individuals. The wild dog (*Lycaon pictus*) is identified from three specimens with an MNI of two. The individuals represented include a juvenile individual identified from a deciduous premolar and an adult represented by a lower left canine and a M_1. Another sixteen specimens represent at least two other indeterminate canid individuals.

Viverridae

Nine specimens have been identified as viverrids from two subfamilies (*Herpestinae* and *Viverridae*) and three genera (*Herpestes*, *Genetta* and *Civettictis*). There is also one indeterminate viverrid.

A single *Herpestes ichneumon* (large grey mongoose) individual is identified from a right ilium fragment, while a right upper canine identified by Turner (1997) represents an indeterminate *Herpestes* sp. individual. A genet *Genetta genetta* individual is from a right mandible fragment (BP/3/34648). One civet *Civettictis civetta* is represented by a right mandible fragment (BP/3/17891). Four specimens (two canines, a right third metatarsal and a first phalanx) have been identified as viverrids indet.

5.3.3 Perissodactyla

Equus

There are 88 equid specimens in this assemblage, with an MNI of at least nine. These MNI values are based on four left M^3 and three sub-adult right M^3. Another two juvenile individuals are indicated by two left deciduous upper third premolars. Equids in this assemblage are well accounted for by dental remains (65 specimens), with nearly all equid tooth classes (incisors, canines, premolars and molars) being identified. Twenty three post-cranial elements have been recovered (Tables 5.8 and 5.9).

5.3.4 Artiodactyla

The Artiodactyla identified in the assemblage include two genera of the Suidae and eleven genera of the Bovidae (Tables 5.1).

Suidae

Two suid individuals are identified from three tooth specimens: a single individual of *P. porcus* is identified based on two dental specimens, an I_1 and a right M_1, while *P. aethiopicus* is identified from a maxilla fragment.

Bovidae

The bovids in this assemblage are indicated by a total of 3,463 specimens. One

Table 5.7: Carnivore representation by post-cranial remains (NISP/MNE/cMNI).

Element	*F.lybica*	*H. icheumon*	indet. Canis	indet. Canid	indet. Felid	indet small Carnivore	indet Medium Carnivore	Indet. Viverrid
ATLAS						1/1/1		
AXIS			1/1/1					
THOR						1/1/1		
CAUD						3/1/1		
VERT							1/1/1	
1/2PEL		1/1/1						
RIB						2/2/2	2/2/2	
SCAP			1/1/1					
HUM	1/1/1				1/1/1			
RAD			1/1/1	1/1/1		1/1/1		
ULN				1/1/1		1/1/1		
CARP	1/1/1							
FOOT	1/1/1							
MCP II					1/1/1			
MTC II			1/1/1	1/1/1				
MPC						3/3/1		
FEM						1/1/1		
TIB				4/4/2				
MTT II							1/1/1	
MTT III			4/2/2					1/1/1
MTT IV						1/1/1		
MTT						1/1/1		
MTP					1/1/1	1/1/1	2/2/2	
PHAL I			1/1/1	4/4/2	1/1/1			
PHAL II					1/1/1		1/1/1	

hundred and forty two specimens are identified to skeletal element, tribe, genus and species, while 3,321 specimens are identified to long bone shaft fragment and to mammalian size class. Tables 5.1, 5.8 and 5.9 provide details of bovid taxa and skeletal elements represented by size class. Details of Percentage Minimum Number of Animal Units (%MAU) are provided in Figures 5.3, 5.4 and 5.5. A complete listing of bovid representation by specimens is available in Appendix C.1.

Five hundred and five specimens of Size Class 1 are identified, a majority (>80%) of which are post-cranial remains. Two thousand, four hundred fourteen Size Class 2 specimens have been identified in the Post-Member 6 Infill assemblage. Size Class 2 is also best represented by post-cranial material (>90%), consisting mainly of the upper hind and fore limbs. Size Class 2 foot bones are better represented than cranio-dental remains. Size Classes 3-4 have been identified from 412 specimens, a majority of which is also post-cranial remains. The upper fore and hind limbs are also the regions that best represent Size Classes 3-4. Elements of the appendicular skeleton, particularly the vertebrae, are moderately represented in all the three size classes.

The taxa *Ourebi*, *Raphicerus* and *Cephalophus* represent Size Class 1 bovids in this assemblage. The *Ourebi* is identified from a single maxilla fragment with P^3 to M^2. A right mandible fragment with M_1 and M_2, a right maxilla fragment with all molars and a left maxilla fragment with P^4 and M^1 represent *Cephalophus*, with an MNI of 3. The *Raphicerus* has an MNI of 2 identified on the basis of a left M_3 and a mandible with premolar roots and all molars, as well as a right maxilla fragment with M^1 and M^2.

Size Class 2 bovids identified in this assemblage include the taxa *Antidorcas, Aepyceros, Ammotragus* and *Redunca*. Springbok (*Antidorcas*) was identified from 56 teeth and cranial specimens belonging to at least four individuals identified from four left first incisors and four left M_2. Three impala (*Aepyceros melampus*) individuals are indicated by six specimens: three right M_3, two M^2 (a left and a right), and a right M^3. A caprine individual similar to the barbary sheep (*Ammotragus lervia*) is represented by a pair of contiguous

Table 5.8: Post-Member 6 Infill Bovid and Equid cranio-dental skeletal part representation.

Skeletal Part	Size Class 1 NISP/MNE / cMNI	Size Class 2 NISP/MNE / cMNI	Size Class 3 NISP/MNE / cMNI	Equid NISP/MNE / cMNI
HORN	4/4/4	11/11/8	5/5/5	
CRAN	10/4/4	8/8/7	3/3/3	
1/2 MAX	4/4/4	16/16/14	1/1/1	1/1/1
1/2 MAND	21/17/12	41/41/23	2/2/2	1/1/1
I^1		14/14/11		3/3/3
I_1	1/1/1		5/5/5	1/1/1
I_2	1/1/1	8/8/7		
I_3		4/4/3		
P^2	1/1/1	3/3/3		6/6/5
P_2	1/1/1	4/4/3		2/2/1
P^3	1/1/1	4/4/3		4/4/4
P_3	1/1/1	5/5/5		4/4/4
P^4	1/1/1	5/5/5	1/1/	1/1/1
P_4	2/2/2	8/8/8		
M^1	3/3/3	11/11/11	1/1/1	4/4/3
M_1	1/1/1	7/7/7		
M^2	2/2/2	8/8/8	2/2/2	5/5/5
M_2		25/25/16		3/3/3
M^3	1/1/1	10/10/9	3/3/3	8/8/7
M_3	1/1/1	20/20/17	1/1/1	6/5/5
DP^2		7/7/7		
DP_2		3/3/3		
DP^3		4/4/2		
DP_3		1/1/1		
DP^4		4/4/4	2/2/2	
M	1/1/1			
TOOTH	6/6/6			

Table 5.9: Bovid and Equid post-cranial skeletal part representation.

Skeletal Part	Size Class 1 NISP/MNE /cMNI	Size Class 2 NISP/MNE /cMNI	Size Class 3-4 NISP/MNE /cMNI	Equid NISP/MNE /cMNI
ATLAS		3/3/3	1/1/1	
AXIS		4/4/4		
CERV	1/1/1	15/12/8	20/15/8	1/1/1
THOR	9/9/6	27/17/13	4/3/2	
LUMB	3/3/3	1/1/1	2/2/2	
CAUD			1/1/1	
SAC	3/3/2			
1/2 PEL	3/3/3	68/63/22	9/9/9	1/1/1
RIB	17/3/3		17/10/4	
HYO		1/1/1		
SCAP	12/5/3	98/37/23	12/7/7	1/1/1
HUM	37/21/15	109/70/57	16/12/12	
RAD	9/8/7	84/23/23	13/12/12	2/2/2
ULN	2/2/2	16/10/10	2/2/2	
MAG		8/7/7	1/1/1	
UNCI		3/3/3		
SCAPH	1/1/1	8/8/7		
LUN	1/1/1	6/6/6	1/1/1	
CUN	1/1/1	3/3/2	1/1/1	
MTC	8/6/6	62/39/24	6/4/4	5/5/3
FEM	35/20/17	164/53/33	11/11/8	
TIB	20/19/16	202/49/33	17/13/11	
LATMEL	1/1/1	6/6/6		
CALC	3/3/3	28/22/19	4/4/4	
ASTRAG	3/3/3	23/23/17	1/1/1	1/1/1
NAVCUB	6/6/5	10/10/9		
EXCUN	2/2/2	4/4/4		
MTT	36/25/14	71/33/27	19/15/15	2/2/2
MTP			7/5/5	8/2/2
PHAL 1	17/14/9	74/60/17	5/5/4	
PHAL 2	20/8/8	58/44/11	4/4/4	
PHAL 3	11/11/4	29/29/14	2/2/2	3/3/3
PAT		3/3/3		
SES		11/11/1		



Figure 5.2: Caprine horncores from the Post-Member 6 Infill. These horncores are similar to those of the Barbary sheep *Ammotragus lervia*. Photos courtesy by R. J. Clarke.

horncores (Figure 5.2). This species is now only found in northern Africa and it inhabits mountainous and rock terrain. The mountain reedbuck (*Redunca fulvorufora*) and common reedbuck (*Redunca arundinum*) are both present. One specimen (a right maxilla fragment with the M^2 and M^3) belong to the mountain reedbuck, while at least two individuals identified from four specimens (two lower P_4 and two left M^2) are common reedbuck. Two specimens representing an indeterminate *Redunca* sp. have also been identified.

Size Classes 3-4 is indicated by the taxa *Connochaetes, Damaliscus*, *Hippotragus* and *Kobus*. There are six specimens of *Connochaetes* with an MNI of two (one adult and one juvenile). An upper left P^4, right I_1 and molar, an upper molar and tooth fragment could be from one adult individual. The juvenile individual is identified from a left DP^3. There are 17 teeth specimens of blesbok (*D. dorcas*), indicating at least five individuals identified from five left M_2. Tsessebe (*Damaliscus lunatus*,) is identified from a single specimen (a maxilla fragment with the M^1 and M^2).

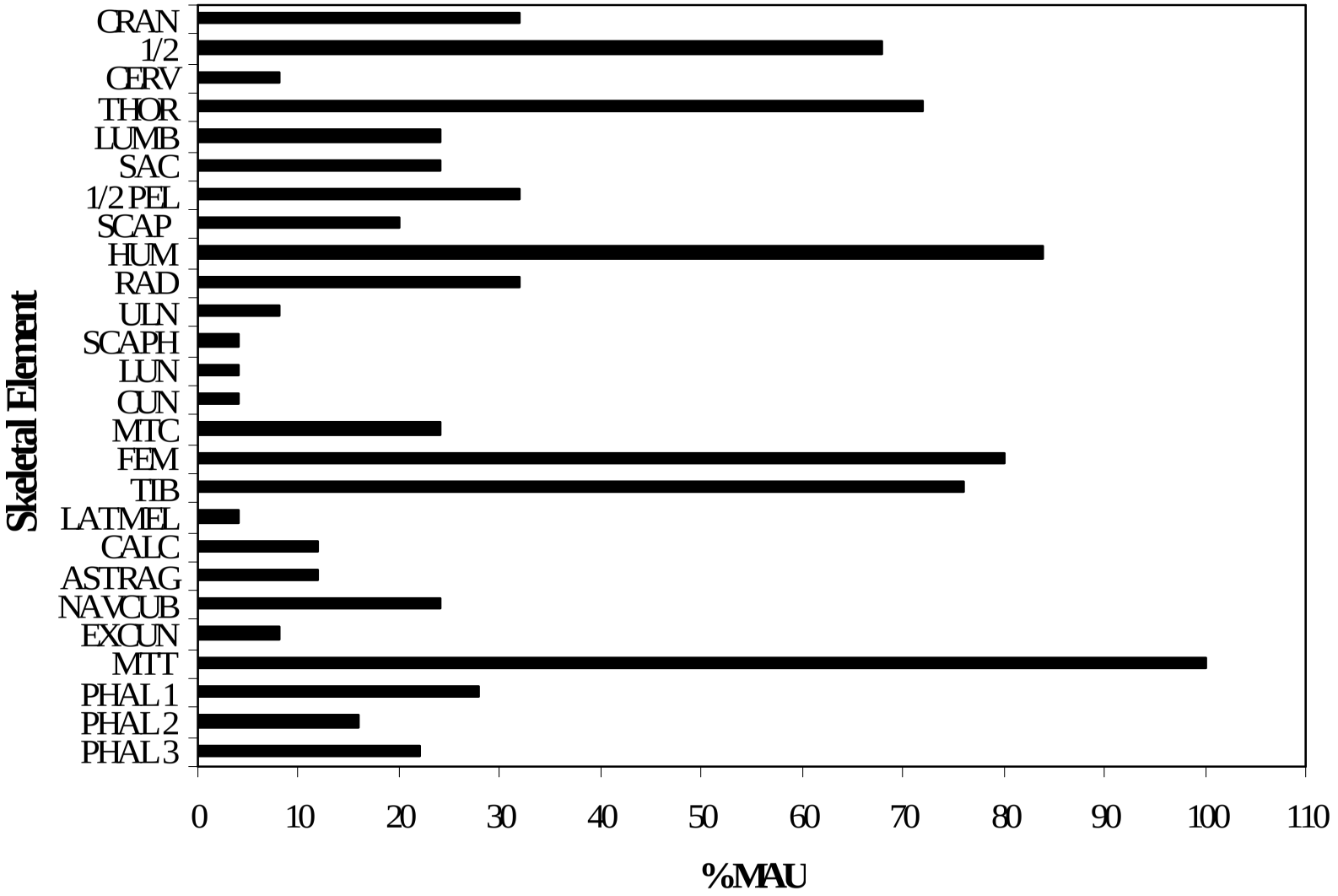


Figure 5.3: Post-Member 6 Infill Size Class 1 bovid %MAU

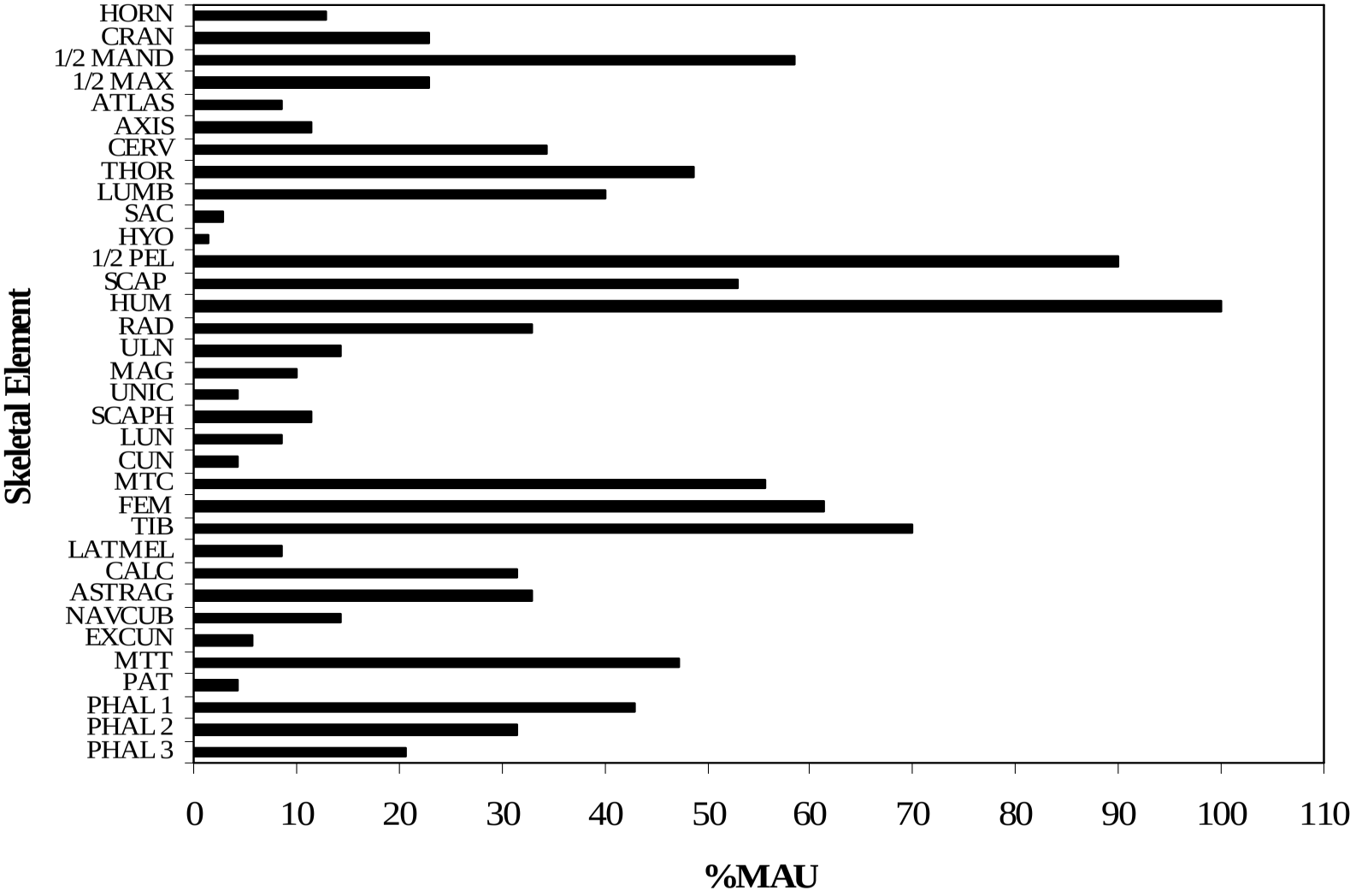


Figure 5.4: Post-Member 6 Infill Size Class 2 bovid %MAU

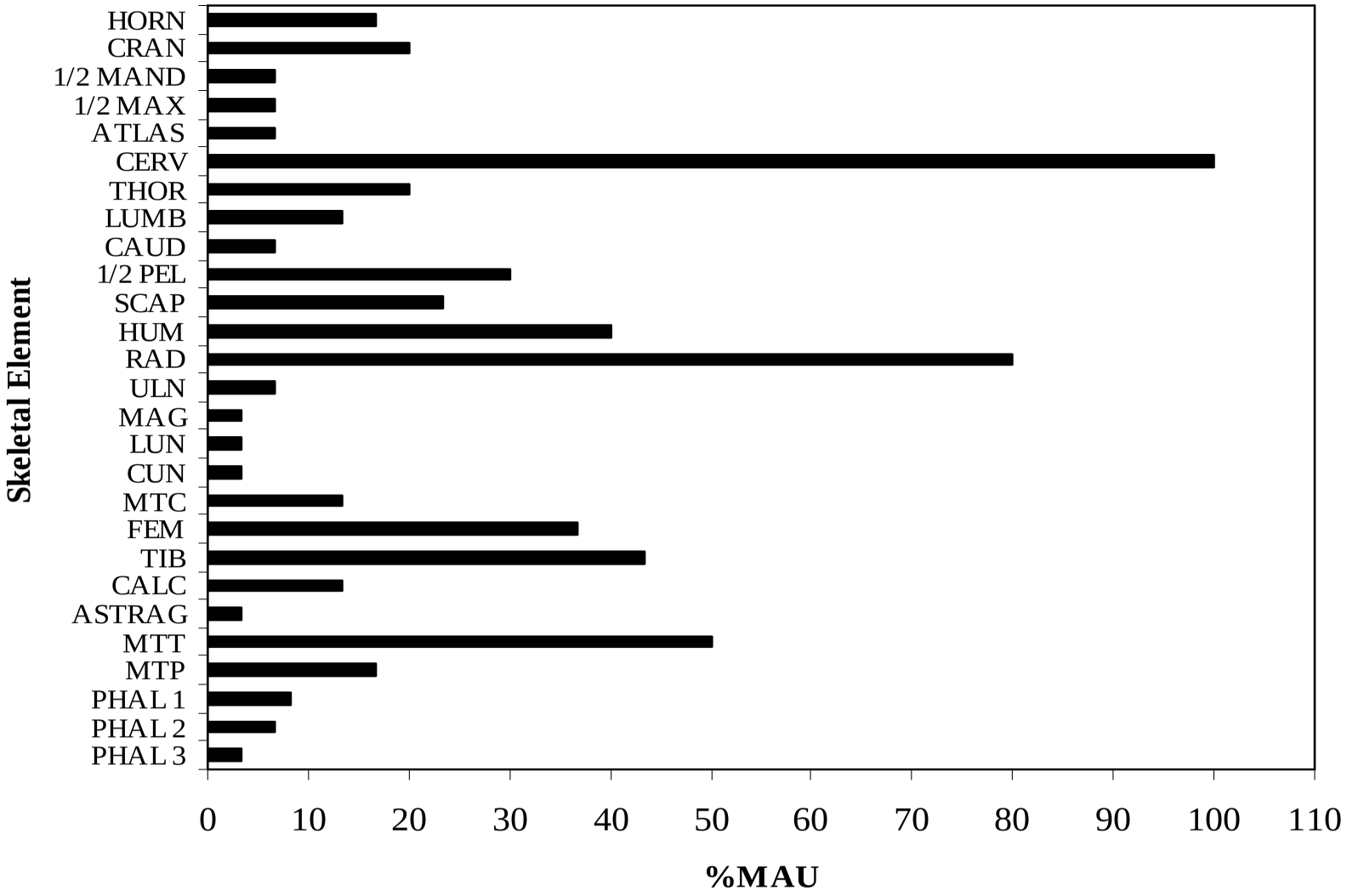


Figure 5.5: Post-Member 6 Infill Size Class 3-4 bovid %MAU

One *Hippotragus* individual has been identified from a left P^1. *Kobus* is represented by waterbuck (*Kobus ellipsyprimnus*) and lechwe (*Kobus leche*). At least one individual of *K. leche* is identified from three specimens: a left M^1, a right M^1 and right M_2. The waterbuck is identified from two specimens with an MNI of 2 for two sub-adult right M^1 specimens. The total MNI of Size Classes 3-4 bovids based on these taxa is 15 from 19 metatarsal specimens.

5.3.5 Other taxa

There are 23 specimens of porcupine, *Hystrix africaeaustralis*, only two of which are post-cranial elements (an ischium fragment and a distal scapula fragment). These specimens represent at least four individuals, two adults identified from two right M^4 two upper M^3, and a juvenile, as well as a subadult.

Cape hare (*Lepus capensis*) is indicated by seven specimens with an MNI of 3. These identifications are based on three left tibiae shaft fragments. A left distal radius shaft fragment, proximal humerus, femur shaft fragments and incisor are also present, but they do not raise the estimated number of individuals represented.

There are three specimens of hyrax (*Procavia capensis*), BP/3/34560 BP/3/34561 and BP/3/32271, possibly of one individual.

Spring hare (*Pedetes capensis*) is represented by two specimens, a proximal right humerus shaft fragment and a proximal left tibia shaft fragment with an MNI of 1.

5.4 Taphonomy

This assemblage was examined for various types of modifications and the action of modifying and accumulating agents. The modifications observed indicate the action of both biotic and abiotic agents of modification and accumulation on the assemblage during its taphonomic history (Table 5.10).

5.4.1 Stone tool modification

Butchery marks have been observed on 1.24% of the assemblage. The first three rows of Table 5.10 give a breakdown of the types of butchery marks and Figures 5.6, 5.7, 5.8 and 5.9 are pictures of some of the butchery modifications. Over one third (36%) of the hammerstone percussion marks are also accompanied by impact notches. The presence of notches indicates that hominids were involved not just in dismembering the carcasses, but also in marrow extraction from these bones.



Figure 5.6: Hammerstone percussion marked bones from the Post-Member 6 Infill at Sterkfontein. Note the curved breaks and the percussion notches on the two bone fragments in the left of the figure.



Figure 5.7: Chop marks on a bovid Size Class 2 distal femur shaft fragment from the Post-Member 6 Infill assemblage.

Table 5.10: Post-Member 6 Infill assemblage bone modifications

Modification	**Number of modified**	**% modified**
Cutmarks	16	0.42
Hammerstone percussion	25	0.74
Scrape marks	3	0.08
Carnivore gnawing	219	5.75
Stomach acid etching	24	0.63
Porcupine gnawing	281	7.38
Small rodent gnawing	159	4.08
Weathering	2838	74.53
Post-depositional modification	571	15
Excavation and preparation modification	2687	70.56



Figure 5.8: Scrape marked bone from the Post-Member 6 Infill. The scrape marks appear as fine striations in the encircled area.



Figure 5.9: Cut marked bones from the Post-Member 6 Infill at Sterkfontein.

5.4.2 Mammalian modification

Two hundred and nineteen specimens (5.75 %) are carnivore gnawed, 281 (7.39%) porcupine gnawed and 159 (4.08%) small rodent gnawed. These marks also occur in combinations, e.g. carnivore and porcupine gnawed (0.16%), carnivore and small rodent gnawing (0.26%), porcupine and small rodent gnawing (1.16%) and a combination of all the above listed gnawing agents (0.05%). Figures 5.10 and 5.11 show some of the carnivore and porcupine gnawed bones from this assemblage. Some hyaena coprolites and coprolite fragments have also been identified, in addition to 24 stomach acid etched bone fragments, all of which have tooth marks.



Figure 5.10: Carnivore gnawed bones from the Post-Member 6 Infill at Sterkfontein. Most of these have tooth notches, which are differentiated from percussion notches by their small, semi-circular and more arcuate nature.

The gnawing marks show that carnivores exploited some carcasses, parts of which were later accumulated in the cave, while the presence of stomach acid etched bone and coprolites indicates that carnivores were residing in the cave or nearby, resulting in the accumulation of their scat.

5.4.3 Weathering

A total of 2838 specimens (74.5%) in this assemblage has been weathered in various stages. Table 5.11 gives a breakdown of the weathering stages to which

bones have been assigned. A component of the assemblage was deemed inappropriate for weathering condition analysis, as it consists of tooth specimens, breccia covered bones and bone fragments or recently broken bones, and therefore surfaces could not be examined for weathering stages. Weathering in this assemblage is minimal indicating deposition and burial without extensive exposure to sunshine, heat and fluctuating moisture regimes that cause extensive weathering. This in turn indicates fast burial with deposition of the bones in the cave or near the cave entrance.

Table 5.11: Post-Member 6 Infill assemblage weathering stages

Weathering Stage	**Number of weathered**	% **weathered**
Stage 0	1	0.03
Stage 1	562	14.76
Stage 2	2105	55.28
Stage 3	161	4.23
Stage 4	9	0.24
Total	**2838**	**74.53**

5.4.4 Post-depositional modification

A total of 571 specimens (15%) of this assemblage has been post-depositionally modified, before, during or after fossilisation. These modifications occur as crushing, cracking and displacement of portions of specimens as well as exfoliation, trampling, abrading, corrosion, soil acid and root etching and insect modification. The proportions of the assemblage affected by each of these modes of post-depositional modification can be seen in Table 5.12. In Figure 5.12 are some of the abraded bones.



Figure 5.11: Porcupine gnawed bones from the Post-Member 6 Infill at Sterkfontein.

Table 5.12: Post-Member 6 Infill post-depositional modification

post-depositional modification	Number modified	%modified
Abrasion	22	0.58
Corrosion	14	0.37
Trampling	16	0.42
Sediment overburden pressure	451	11.84
Soil acid etching	29	0.76
Root etching	7	0.18
Insect action	5	0.13
Exfoliation	27	0.71



Figure 5.12: Some of the more abraded bone specimens from the Post-Member 6 Infill at Sterkfontein. Note the rounding and sharpening of the tips of the bones.

5.4.5 Excavation and preparation modification

Most of the specimens (70.1%) in this assemblage have undergone post excavation modification as is clear from the clean modern breakage surfaces on the bone edges. While some of these would have occurred as a result of the minimal preparation carried out on some these bones after excavation, it is possible that some of the modification occurred in storage. Many of the breakages on specimens in this assemblage are a result of excavation of friable bones in the soft decalcified deposits (Table 5.10). The modification on these specimens occurs as breakage, chipping, hacking, slicing and even scratching of specimens. Some broken specimens have been refitted during analysis, aiding in their identification but, many breakages are not refitted. Most of the non-identified specimens are broken.

5.5 Fracture attribute analysis

5.5.1 Fracture surface analysis

Fracture angle, outline, edge and circumference completeness values derived for this assemblage are provided in Tables 5.13 and Figure 5.13. Breadth/length ratio details are provided on Figure 5.14. One thousand five hundred sixty five fracture surfaces were available for fracture outline, angle and edge analysis in this assemblage.

Sixty five percent of these are curved, 12% are transverse, while 23% are intermediate outlines. Fifty two percent have oblique angles, 12% are intermediate and 36% are right angles. High frequencies of oblique outlines are indicative of fresh bone broken assemblages (Villa and Mahieu, 1991). Fifty eight percent of breakage surfaces in this sample have fresh bone broken smooth edges, while 42% are jagged edged. Forty three percent of the bones have >50%, and 22% have >50% of the original circumference remaining respectively (Figure 5.13). The greater percentage of curved outlines, oblique angles and smooth edges indicates a green-bone-broken assemblage. Complete and

Table 5.13: X^2 analysis of Member 6 fracture attributes in comparison with the French Neolithic sites.

Fracture Attributes	**Sarrians**	**Bezouse**	**Fontebregoua**	**Post-Member 6 Infill**
Fracture Angle				
Oblique	22	27	144	811
Right	176	174	47	185
Intermediate	71	52	13	569
Total	**269**	**253**	**204**	**1565**
X^2	437	453.68	78.41	
Difference	significant	Significant	significant	
Fracture Outline				
Curved	106	82	134	1017
Transverse	193	144	92	190
Intermediate	59	61	35	358
Total	**358**	**287**	**261**	**1565**
X^2	323.16	249	93.27	
Difference	significant	Significant	significant	
Circumference				
1 (100%)	200	60	13	565
2 (>50%)	10	0	23	289
3 (<50%)	16	33	115	450
Total	**226**	**93**	**151**	**1304**
X^2	157.18	29.35	178.08	
Difference	significant	Significant	significant	

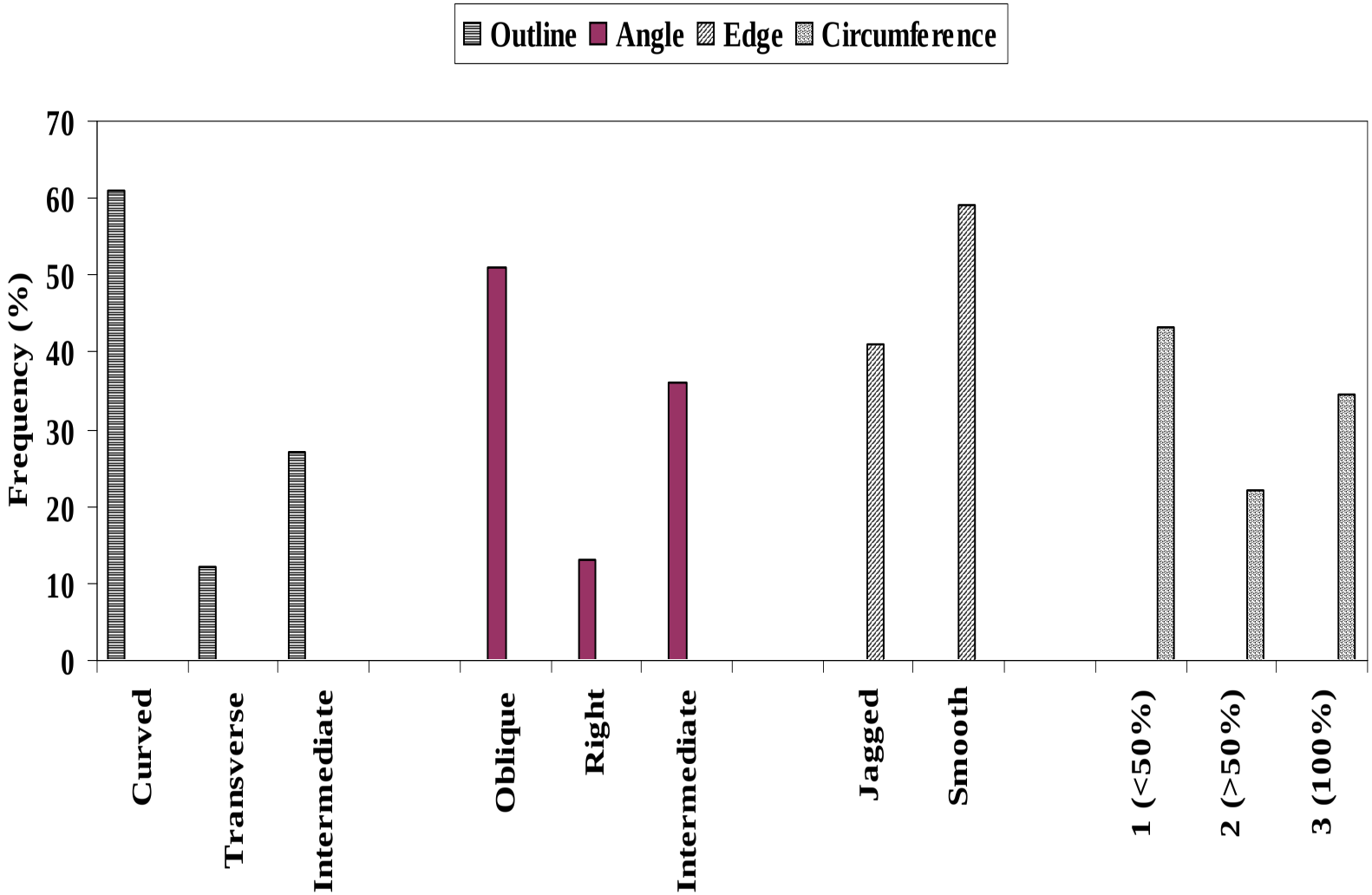


Figure 5.13: Post-Member 6 Infill fauna fracture attributes and circumference completeness frequencies.

nearly complete (>50%) circumferences indicate a carnivore broken assemblage, but hominid breakage of some bones in the assemblage is also indicated by the hammerstone percussion marks and notches. Table 5.13 provide X^2 values of the various fracture attributes of the Post-Member 6 Infill assemblage compared to the French Neolithic assemblages. Although the Post-Member 6 Infill appears similar to the green broken Fontebregoua assemblage by circumference, it is significantly different from all of the French Neolithic sites fracture attributes. This implies that Post-Member 6 Infill is similar to neither the dry-bone-broken assemblages nor the fresh bone assemblages. This dissimilarity with all the control assemblages in all the fracture attributes can be explained by different depositional environments, sample size differences between the French Neolithic assemblages and the Post Member 6 Infill as well as post-depositional modification to the Sterkfontein sample.

5.5.2 Breadth/length ratio

Figure 5.14 shows frequencies of the breadth/length ratios derived for the Post-Member 6 Infill faunal assemblage. One thousand three hundred one specimens were analysed for breadth/length ratios. Of these, 88% are within the breadth/length ratio categories between 0.2 and 0.6. This kind of distribution indicates a less fragmented assemblage expected from an assemblage of fresh broken bone, not predominantly broken by hominids.

5.6 Discussion

5.6.1 Taxa and skeletal part representation

This assemblage has a taxonomically diverse and rich faunal composition, with at least seven orders, 11 families and 35 genera represented. These include 3 primate, 23 carnivore, 100 ungulate, five rodent, a hyrax and three lagomorph individuals. The species diversity of this assemblage indicates environmental

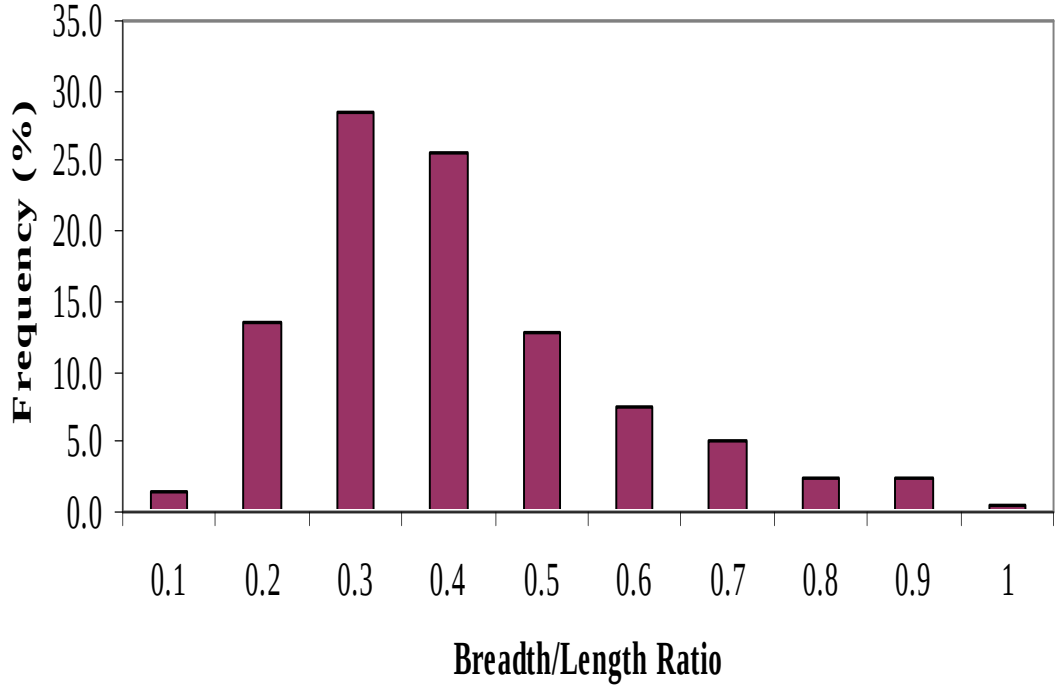


Figure 5.14: Post-Member 6 Infill fauna lreadth/length ratio distribution (N=1304).

and climatic diversity in the area during its accumulation. Taxa known to thrive in different ecological conditions (e.g the woodland hippotragines, and the grassland species, antilopines and alcelaphines and some water-loving reduncines, as well as the mountain or rock-loving barbary sheep) have been identified in this assemblage. These species, when considered together, suggest a riverine woodland with adjacent open grassland and some high, rocky hills. This is similar to the open grassland taxa characterised by woodland elements identified in the older Member 5 West early Acheulean breccia, the Oldowan Infill, and L63 and Lincoln Cave North (Pickering, 1999; Kuman and Clarke, 2000; Reynolds, 2000). However, this assemblage differs from the Member 5 West early Acheulean and the Lincoln Cave North assemblages in that it doest not have extinct forms such as *Dinofelis barlowi* (Pickering, 1999), and the *Hippopotamus amphibius* from Lincoln Cave North (Reynolds, 2000). Furthermore, *Megalotragus* found in the Lincoln Cave (Reynolds, 2000), but which apparently derived from Member 5 West, is also not represented in this

assemblage. This assemblage, however, has more water-dependent species such as the roan antelope (*Hippotragus equinus*), waterbuck (*Kobus ellipsiprymnus*) and lechwe (*Kobus leche*). This indicates a more recent savannah mosaic grassland fauna for the Post-Member 6 Infill times.

The carnivore species in this assemblage include two *Panthera leo* individuals not identified in the assemblage analysed by Reynolds (2000) and Reynolds *et al.* (2007), due to the limited sample size. The primate individuals identified in the Post-Member 6 Infill are represented mainly by dental remains, a characteristic of carnivore-predated primate remains (Brain, 1981). Studies by Brain (1981) and Pickering (2001a,b) indicate that carnivore predation of primate carcasses (e.g., cheetah and leopard) leave intact crania as opposed to the fragmentary crania for hyaena-ravaged primate carcasses, as hyaenas consume most elements of the postcrania. The state in which post-cranial bones are found is, however, dependent on the carnivore species involved, the length of the bones (Carlson and Pickering, 2003), and whether the bones are deposited as scat or refuse assemblages. For instance, phalanges, metapodia, carpals, and tarsals are unlikely to be found within the refuse assemblages but may be found in scat assemblages after being swallowed whole during feeding and later regurgitated or defecated (Marean, 1991; Pickering, 2001a,b). The number of carnivores, and thus competition for the carcasses, as well as how hungry a predator is, will also influence how much of the carcass is consumed.

Eighty nine bovid individuals are present in the Post-Member 6 Infill, based on post-cranial material only identified to size classes. Majority (57) of the bovid individuals are Size Class 2. All bovid size classes are best represented by limbs (both meat-rich and non-rich parts), as can be seen in Figures 5.3, 5.4 and 5.5. This assemblage also has a high representation of cranio-dental remains, notably of Size Class 2, as well as the fragile axial and the compact tarsal and carpal elements. In fact, Size Class 2 bovids appear to be represented by complete or near complete skeletons.

5.6.2 Bone accumulation

This assemblage has been modified by various agents (Table 5.10). While some of the modifications have been inflicted during accumulation, others are inflicted prior to or after accumulation by different modifying agents. The accumulating and modifying agents include biotic agents (carnivores such as leopard, brown and spotted hyaenas, porcupines and small rodents and hominids), and abiotic agents (fluvial action and death traps, as well as post-depositional destruction and modification).

Biotic bone accumulators

Carnivore accumulation

The number of carnivore individuals in this assemblage is large (17.2% of tMNI) and the diverse elements (Tables 5.4 and 5.6). Of these carnivore taxa, lions are not known to transport and/or accumulate bones, but leopards and cheetahs transport carcasses to regular feeding grounds (Brain, 1981; Marean, 1989), and in the absence of scavenging by other carnivores, prey remains eventually build up at these feeding points. Leopards carry prey carcasses to specific feeding spots, normally to trees away from scavengers (Cavallo and Blumenschine, 1989), but also to cliffs formed by cave roof overhangs (Brain, 1981) and to lairs within caves and cave tunnels (Simons, 1966), making them possible contributors to this assemblage, even if to a small degree. Trees at the cavern entrance would also have made attractive leopard feeding locations, from which such bone refuse would drop to the ground, gravitating into the cavern deposit, as postulated for Swartkrans (Brain, 1981).

The Post-Member 6 Infill assemblage consists of a majority of small to medium-sized mammals including mainly bovids, with the majority of carnivore-gnawed bones also being Size Class 2 or smaller bovids. Of the 219 carnivore modified specimens, only 14 are Size Class 3-4. The size categories of the taxa represented in the assemblage, the number of small carnivore bones, the gnawed bones, and the ratio of gnawing at 5.75% implicate brown hyaena,

which is also represented in the assemblage. Brown hyaenas are solitary foragers but bring back carcasses to the denning sites for feeding their cubs. They thus hunt small-bodied animals, including other small carnivores that can be manageably killed and/or transported by a single hyaena individual (Bunn, 1983b; Lam, 1992; Mills and Mills, 1977). Spotted hyaenas, on the other hand, forage in groups and can transport carcasses as large as those of Size Class 4 ungulates, with gnawing incidence of between 38% and 100% of the bone (Bunn, 1983b; Lam, 1992; Maguire *et al.*, 1980; Mills and Mills, 1977; Skinner *et al.*, 1986). Thus, both species of hyaena represented in this assemblage could have played a part in the accumulation of the bones. The proportion of gnawed bone in the Post-Member 6 Infill is, however, relatively small compared to that in documented modern brown and spotted hyaena accumulated assemblages, but the difference can be due to the fact that this assemblage has gone through other diverse modifications, such as post-depositional modifications that delete and/or obscure modifications. In addition, juvenile brown hyaena specimens and hyaena coprolites have been recovered from the assemblage, indicating that hyaena (possibly both species) used the cave or part of the cave as a den at some point during the accumulation of this deposit (Kruuk, 1972; Mills, 1990).

This assemblage, however, consists of most skeletal elements and portions of taxa (especially Size Class 1 and 2 bovids) that include compact bones and fragile grease-rich axial elements (Tables 5.8 and 5.9) and epiphyseal ends of long bones that are more likely to be chewed by carnivores, especially hyaenas during feeding (Marean, 1991). It is noteworthy that some of the compact bones and epiphyseal ends, in addition to long bone shaft fragments, also have gnaw marks and/or stomach acid etching, indicating that they are probably carnivore-accumulated. This kind of scenario is possible in cases of multiple-agent accumulation, where a small part of the assemblage is accumulated by a non-bone-crunching carnivore, such as leopard, with part of it being accumulated by other agents like hyaenas, porcupines, hominids and death traps. Multiple accumulation by these agents may at the same time occur through

one or more entrances, and at different times of the year, but the presence of denning carnivores and the signs of denning by hyaenas in this assemblage seem to argue against hominid accumulation at the same time, unless there was more than one entrance to the cave during Post-Member 6 Infill times. Alternate occupation and accumulation over brief periods of time are a possibility.

Porcupine and small rodent accumulation

Porcupine bone accumulation in earlier deposits at Sterkfontein has been argued to be restricted by cave form, as porcupines are unable to negotiate vertical slopes such as the one that characterised the steep cavern opening through which the Oldowan Infill accumulated (Pickering, 1999). The Oldowan Infill assemblage, however, has only three porcupine modified bones and no porcupine remains, setting it apart from the assemblage under current study, which has 23 specimens of at least three porcupine individuals and 7.38% porcupine gnawed bones. Porcupine remains in this assemblage may have been accumulated by carnivores, or through natural deaths of porcupines in the cave, or by such remains gravitating in to the cave from the landscape above. Leopards and hyaenas have been observed to prey on porcupines (Mitchell *et al.*, 1965; Pienaar, 1969; Kruuk, 1972), depositing their remains in or near the cave. While none of the 23 porcupine specimens identified in this assemblage bears any carnivore gnaw marks or stomach acid etching, they are almost entirely (91%) cranial remains, which is inconsistent with elements expected from carnivore predated porcupine remains which should bear carnivore tooth marks, or a death trap situation, which should include most porcupine skeletal elements.

Thus, the 7.38% porcupine gnawed bones observed in this assemblage may have accumulated outside the cave, gravitating or washing into the cave. Alternatively, porcupines could could have occupied a cave with a narrow opening or a low roofed cave. Porcupine gnawing in this assemblage is minimal and falls below the range of 22% - 100% of bones accumulated by porcupines in their dens (Maguire *et al.*, 1980; Brain, 1981). However, we should, consider

that the Post-Member 6 Infill assemblage may have been affected by post-depositional factors that modify, obscure or delete some modifications. The result of this deletion and/or modification could be the post-depositional removal of the porcupine post-cranial remains, as well as some of the porcupine gnawed bones. It is therefore possible that a component of the Post-Member 6 Infill faunal assemblage was porcupine-accumulated. Other small rodent gnawing has also been identified in this sample. Small rodents are also not known to be major bone accumulators but may bring in small amounts of bones. It is therefore considered that if they brought in any bones, the amount is negligible compared to those accumulated by other agents.

Hominid accumulation

The hominid specimen in this assemblage is not of *Australopithecus*, *Paranthropus* or early *Homo* and is more like *H. sapiens*, and indicates that the cave or its environs was suitable for hominid habitation. The presence of porcupine remains and porcupine gnawed bones in the assemblage implies that porcupines could have used the cave, which suggests a fairly horizontal cave entrance. However, if the cave roof overhang was not too low, it may have been possible for hominids to use this cave or its entrance area, accumulating artefacts and their food refuse. Other evidence of hominid cave habitation, such as the use of fire, have not been found in this deposit. On the other hand, such dolomitic limestone cave deposits are characterised by periods of erosion, reworking and collapse that would hamper the preservation of such evidence, e.g., hearths.

This assemblage has 1.24% hominid stone tool modification marks, a proportion which is within the range of modifications expected from other fossil, as well as simulated hominid accumulated assemblages (Gifford *et al.*, 1980; Crader, 1981; Bunn *et al.*, 1980; Bunn, 1983b,a). The presence of stone tools indicated hominid stone tool manufacture and/or use in the cave's vicinity but does not necessarily imply hominid accumulation of the stone tools or the bone assemblage in the cave. Indication of use of the cave by denning carnivores in the form of stomach acid etched bone, coprolites and juvenile individuals

argues against the possibility of hominid use of the cave, although they may have been using the cave when carnivores were not denning in it, possibly after using fire to keep away carnivores as has been postulated for Swartkrans Member 3 (Brain, 1981).

Abiotic bone accumulators

Death trap

Common features of the dolomitic limestone landscape in the Sterkfontein valley are clusters of trees around the mouths of concealed avens. Tree and vegetation-concealed avens have created death traps for hominids and animals roaming the landscape since the Plio-Pleistocene, leading to accumulation of bones of victims in the caverns below (Pickering, 1999; Clarke, 1999; Carlson and Pickering, 2003; Pickering *et al.*, 2004). Because of the inaccessibility of the cavern to scavenging carnivores, the accumulated bones are preserved mostly complete and/or articulated if spared the post-depositional destruction and dislocation that is common in these caves due to sediment movement and collapse as the sediments calcify and decalcify, and as the walls and roofs get eroded. Lyman (1994) observed that some death traps have more carnivore or primate remains than other mammalian taxa because carnivores and primates are agile and are more likely to fall into these traps during play or climbing. Carnivores are also likely to be drawn to the carcasses already in the death trap. Pickering (1999) has, however, argued for representation of mammalian taxa in death traps proportional to their abundance in the landscape as the trap would likely trap animals in relation to how abundant or scarce they are on the landscape.

It might seem possible that some of the Post-Member 6 Infill fauna accumulated as a death trap assemblage, because of the majority of skeletal parts by which taxa, especially the smaller bovid size classes, are represented. The Size Class 1 and 2 bovids are represented by most skeletal elements, including epiphyses and meat rich bones that are more likely to be destroyed by predators

and/or post-depositional destruction (Marean, 1991). This general completeness of the bovid skeletons (seen in the identification of most elements) can, however, also be explained by accumulation by some other less destructive mode, like leopard predation coupled with good preservation conditions, with little if any post-depositional destruction of bones. Also, primates and carnivores that dominate death trap assemblages are scarce in the assemblage, which argues against the death trap scenario for the accumulation of this assemblage.

Fluvial transport

There are abraded specimens in this assemblage which may also be interpreted by scratch marks resulting from water transport and movement and compaction in sediments. Abrasion is however minimal in extent and intensity, indicating possible short distances of transport in fluvial sediments and movement in sediment on the deposit talus. Based on the Voorhies groups profiles of various skeletal elements' possible deposition at points along a fluvial channel (Voorhies, 1969; Lyman, 1994), it can be said that this assemblage has preserved skeletal elements from all the different Voorhies groups, indicating that fluvial transport was not a major mode of accumulation, or did not affect the assemblage much. Thus, most of the abrasion in the assemblage is not a result of fluvial transport. It is thus likely that movement and compaction of sediments within the cave was the cause of the minimal abrasion on some of the bones in this assemblage, but both minimal fluvial transport and movement within sediments and compaction may have abraded the bones.

5.6.3 Post-depositional modification and destruction

Post-depositional destruction and/or modification is visible in this assemblage in the form of crushing, surface erosion and dislocation of parts of bones. These forms of post-depositional destruction may have comminuted the bones further, thereby destroying or obscuring other modification marks and/or rendering some skeletal elements unidentifiable. The Post-Member 6 Infill has a high

frequency of both the fragile axial elements and compact bones. This implies that this assemblage was not subjected to intense post-depositional destructive processes that would have deleted these fragile skeletal elements prior to fossilization and recovery. Neither was carnivore action intense enough to delete these fragile elements that are greasy and thus more nutritionally attractive to bone crunching carnivores. However, this assemblage has a high proportion (9.9%) of fragments of compact long bone shafts and a high frequency of green-bone-broken specimens. Post-depositional modification may have lowered the frequencies of other modification marks by fragmenting modified pieces and deleting or masking other modifications, and leading to inadequate preservation of modifications of particular dominant accumulators or modifiers of the assemblage.

5.7 Conclusions

This assemblage is an important asset to the understanding of the later periods of deposition and hominid occupation of the Sterkfontein valley. It has proved useful to this end by providing a faunal assemblage more diverse than that of the older and adjacent assemblages and thus providing a proxy for the understanding of the diverse micro-environmental conditions prevailing in the valley at the time of its formation. It is, however, complex in origin and has apparently been accumulated by more than one agent, including carnivores, hominids, porcupines, and possibly slope wash of material from the surface above. The faunal composition of the Post-Member 6 Infill and the recovery of carnivore tooth marked bone, stomach acid etched bone and coprolites suggest the contribution to the accumulation of the assemblage by carnivores, probably brown or striped hyaena. Porcupine remains and modifications also imply the role of porcupines in the assemblage modification and accumulation.

One hominid specimen and stone tools indicate a hominid presence and activity in the vicinity of the cave at the time, while stone tool butchery-modified bones indicate hominid involvement in its accumulation. Slopewash of some

bones (including those with carnivore, stone tool and porcupine as well as small rodent modifications from the vicinity) may have occurred, as demonstrated by the presence of abrasion marks on some of the bones. Accumulation of bones in the cave by these agents could have occurred roughly contemporaneously, with different agents utilising different parts or even different entrances to the cave. Assuming that the cave was occupied, this, as well as the accumulation of bone by these agents could also have occurred at different times.

Chapter 6

Post-Member 6 Infill stone tools

6.1 Introduction

In this Chapter, I provide a classification and interpretation of the stone tool assemblage recovered from the Post-Member 6 Infill deposit at Sterkfontein Caves. These artefacts derive from squares identified during excavations as belonging to this younger deposit from an area between the calcified Member 5 West Acheulean and the decalcified Member 5 East (Kuman and Clarke, 2000); see Figure 1.4 and Appendices A.1 and A.2.

Six hundred and eight specimens are available for this study. This area has produced Middle Stone Age artefacts, and it appears to be continuous with the adjacent Lincoln Cave deposits, as revealed in our excavations which have tunneled under the northern roof to link the two cave systems (Reynolds, 2000; Reynolds *et al.*, 2003, 2007). The Lincoln Cave South, which has diagnostic Middle Stone Age tools, is likely to be of similar age to the Lincoln Cave North deposit, which has been dated to between 252 600 ± 35 600 years and 116 300 ± 7 700 years (Reynolds *et al.*, 2003). Thus the Post-Member 6 Infill that is continuous with the Lincoln Cave South dates to approximately the same time. The analysis of this assemblage included the typological classification of the artefacts, raw material identification, weathering condition determination, maximum dimension, retouch and degree of platform faceting. This chapter thus provides a typological and technological examination of the Sterkfontein Caves MSA material and contributes to an understanding of the tool making

Table 6.1: Artefact types of the Post-Member Infill assemblage

Type	**N**	**%**
Small flaking debris <20mm	330	54.3
Complete flakes ≥20mm	21	3.5
Incomplete flakes ≥20mm	73	12.0
Core trimming flakes ≥20mm	3	0.5
Chunks ≥20mm	60	9.9
Retouched pieces ≥20mm	10	1.6
Cores	57	9.4
Hammerstone	1	0.2
Manuports	53	8.7
Total	**608**	**100.0**

behaviour of the MSA hominids, as well as to an understanding of the site formation processes.

6.2 Artefact typology

The assemblage is dominated by small flaking debris at 54.3% (see Table 6.1 and Figure 6.1). The small flaking debris is mostly of quartz, while many of the larger pieces, including cores and manuports, are in quartzite (Table 6.2). This indicates that quartzite was probably not flaked in the vicinity of the cave because the assemblage has not been winnowed of small elements prior to deposition. The import of large quartzite cores is unlikely to have occurred if the small flaking debris is absent. Therefore, it is most reasonable to conclude that most of the manuports and quartzite cores have been mixed with the older Acheulean breccia that was decalcified and redeposited with the younger incoming breccia.

Table 6.2: Artefact types by raw materials in the Post-Member 6 Infill assemblage (N = 608).

Type	**Quartz**		**Quartzite**		**Chert**		**Other**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Small flaking debris <20mm	290	47.7	6	1.0	32	5.3	2	0.3	330	54.3
Complete flakes ≥20mm	10	1.6	6	1.0	2	0.3	3	0.5	21	3.5
Incomplete flakes ≥20mm	58	9.5	11	1.8	4	0.7			73	12.0
Core trimming flakes ≥20mm	2	0.3	1	0.2					3	0.5
Chunks ≥20mm	47	7.7	10	1.6	2	0.3	1	0.2	60	9.9
Retouched pieces ≥20mm	5	0.8	5	0.8					10	1.6
Cores	17	2.8	18	3.0	1	0.2	1	0.2	37	6.1
Core fragments	5	0.8	1	0.2					6	1.0
Bipolar cores	4	0.7							4	0.7
Bipolar core remains	9	1.5	1	0.2					10	1.6
Hammerstone			1	0.2					1	0.2
Manuports	12	2.0	31	5.1	1	0.2	9	1.5	53	8.7
Total	**459**	**75.5**	**91**	**15.0**	**42**	**6.9**	**16**	**2.6**	**608**	**100.0**

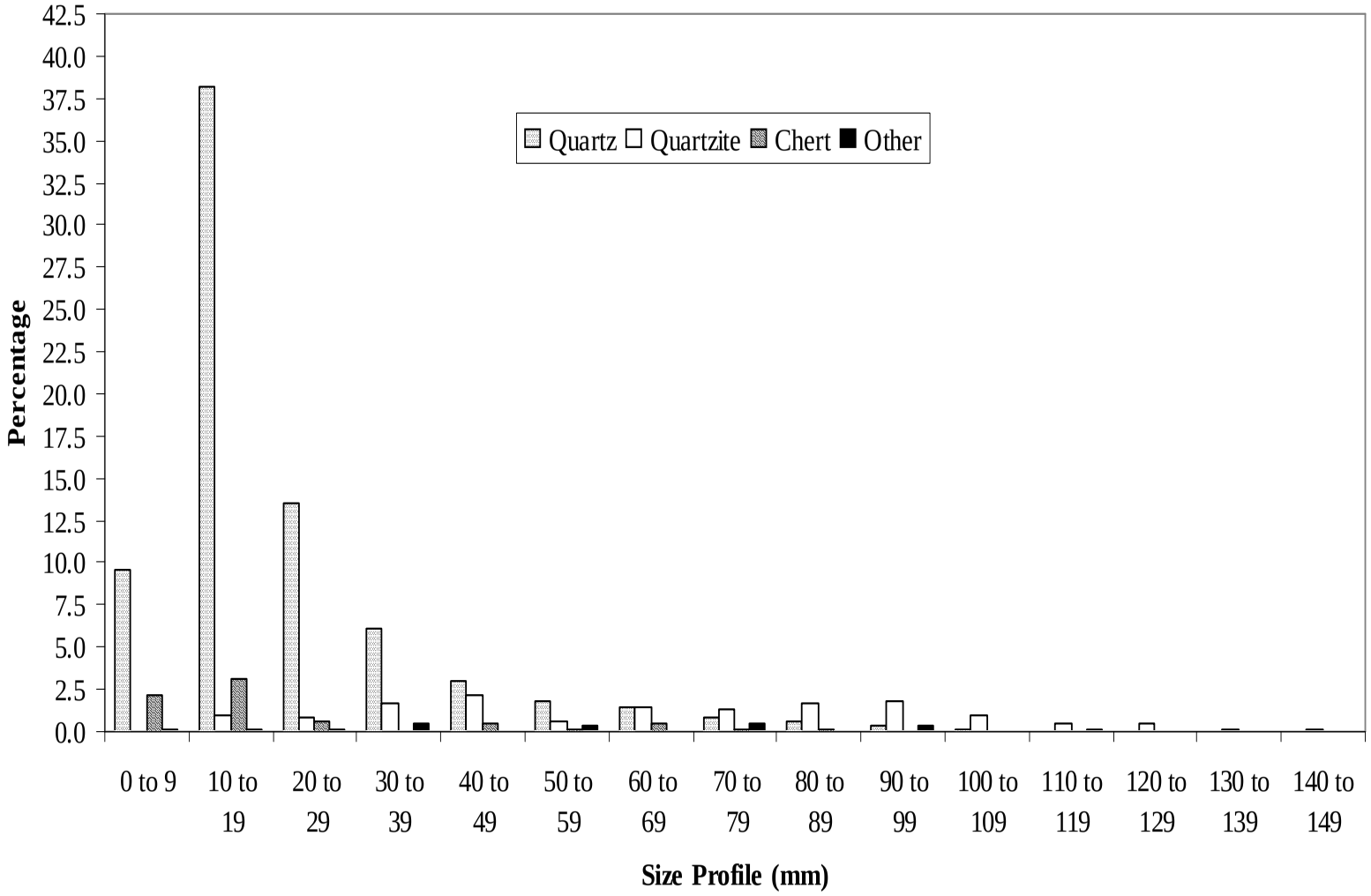


Figure 6.1: Post-Member 6 Infill artefact assemblage size profiles

6.3 Size profile

The proportion of small flaking debris of the assemblage is considerably lower than that recovered from the adjacent, but older Oldowan Infill assemblage with a near-complete size profile (Kuman *et al.*, 2005; Field, 1999). It has been established that the proportion of small flaking debris in experimental assemblages made in local quartz and quartzite is 85% and 79% respectively (Kuman *et al.*, 2005; Field, 1999). Other experiments have produced slightly lower proportions of small flaking debris - 60% to 75% (e.g., Schick, 1987), probably due to the different raw materials (lava) used in the latter experiments. Lava is less brittle than quartz and produces less small flaking debris. Also, the Schick experiments were aimed at producing specific core types, while the Kuman *et al.* experiments were aimed at completely reducing cores. The shattering tendency of quartz is noticeable in the abundance of quartz in the smaller-sized artefact categories (Figures 6.1).

The proportion of small flaking debris in this assemblage is also higher than that of the adjacent Member 5 West early Acheulean deposit, where only 2.71% of the assemblage consists of material <20 mm in size. Quartzite cores, manuports and some heavy-duty tools dominate in the early Acheulean deposit, while quartz light-duty tools are dominant in Post-Member 6 Infill assemblage. These differences support the suggestion that some larger artifacts in the MSA assemblage were mixed in from the older Acheulean deposit. This is because the area where the MSA assemblage is recovered once contained Member 5 early Acheulean with artefacts. As the breccia was decalcified, some Acheulean material appears to have been incorporated through re-working into the Lincoln Cave and the Post-Member 6 MSA Infill. Some of the large-sized pieces (cores and manuports) in the MSA assemblage are more consistent with the early Acheulean sample at Sterkfontein, as is the predominance of quartzite in that assemblage.

6.4 Raw materials

Quartz forms the largest portion of the raw materials in the assemblage at 75.5%, and quartzite at 15% is relatively more abundant than chert (at 7%) (Tables 6.2). Quartz also dominates (at 61%) when the small flaking debris are excluded from the assemblage (Table 6.3), and also when (73%) larger pieces such as cores and manuports are excluded (Table 6.4). Quartz is also more abundant in the core categories (including cores, core fragments, bipolar cores and bipolar core remains (Table 6.3), while quartzite is more abundant in the manuport sample (Tables 6.2, 6.3 and 6.5). This means that the abundance of small flaking debris is not just a result of quartz' tendency to shatter, but that quartz was the preferred material, perhaps for functional reasons. In addition, the cores in this assemblage include choppers and polyhedrons, which are common in the Acheulean deposit. These core types and the prominence of quartzite cores in general further support the argument for mixing with some material from the older Acheulean breccia into the younger MSA infill.

The combination of quartzite cores and manuports with a paucity of small flaking debris in quartzite indicates a strong similarity with the early Acheulean assemblage and suggests that the early Acheulean is perhaps the source for some of the quartzite component of the Post-Member 6 Infill. The abundance of quartz, on the other hand, differentiates this assemblage from the Member 5 West early Acheulean, where quartz is less abundant than quartzite at 29% and 64% respectively (Kuman *et al.*, 2005). These facts all lead to the conclusion that the component of the Post-Member 6 Infill MSA that is not reworked or does not derive from the decalcified early Acheulean is quartz-dominated, while most of the quartzite component may be deriving from the early Acheulean.

6.5 Weathering condition

A high proportion of the assemblage (66.8%) is fresh; see Tables 6.6 and 6.7 and Figure 6.2. Quartz is the least weathered and is therefore abundant in

Table 6.3: Post-Member 6 Infill artefact abundance when small flaking debris are excluded from the sample.

Type	**Quartz**		**Quartzite**		**Chert**		**Other**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Complete flakes ≥20mm	10	3.6	6	2.2	2	0.7	3	1.1	21	7.6
Incomplete flakes ≥20mm	58	20.9	11	4.0	4	1.4			73	26.3
Core trimming flakes ≥20mm	2	0.7	1	0.4					3	1.1
Chunks ≥20mm	47	16.9	10	3.6	2	0.7	1	0.4	60	21.6
Retouched pieces ≥20mm	5	1.8	5	1.8					10	3.6
Cores	17	6.1	18	6.5	1	0.4	1	0.4	37	13.3
Core fragments	5	1.8	1	0.4					6	2.2
Bipolar cores	4	1.4							4	1.4
Bipolar core remains	9	3.2	1	0.4					10	3.6
Hammerstone			1	0.4					1	0.4
Manuports	13	4.3	31	11.2	1	0.4	9	3.2	53	19.1
Total	**169**	**60.8**	**85**	**30.6**	**10**	**3.6**	**14**	**5.0**	**278**	**100.0**

Table 6.4: Post-Member 6 Infill artefact abundance when small flaking debris, cores and manuports are excluded from the sample.

Type	**Quartz**		**Quartzite**		**Chert**		**Other**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Complete flakes ≥20mm	10	6.0	6	3.6	2	1.2	3	1.8	21	12.6
Incomplete flakes ≥20mm	58	34.7	11	6.6	4	2.4			73	43.7
Core trimming flakes ≥20mm	2	1.2	1	0.6					3	1.8
Chunks ≥20mm	47	28.1	10	6.0	2	1.2	1	0.5	60	35.9
Retouched pieces ≥20mm	5	3.0	5	3.0					10	6.0
Total	**122**	**73.1**	**33**	**19.8**	**8**	**4.8**	**4**	**2.4**	**167**	**100.0**

Table 6.5: Post-Member 6 Infill core types by raw materials

Types	**Quartz**		**Quartzite**		**Other**		**Total**	
	N	%	N	%	N	%	N	%
Bipolar Core	4	7.8					4	7.8
Bipolar Core remain	9	17.8	1	2.0			10	19.6
Casual Core	1	2.0	4	7.8			5	9.8
Chopper Core	1	2.0	3	5.9			4	7.8
Discoidal Core	1	2.0	2	3.9			3	5.9
Core on flake			1	2.0			1	2.0
Polyhedral Core	5	9.8	2	3.9	1	2.0	8	15.7
Single platform core			1	2.0	1	2.0	2	4.0
Irregular core	9	17.8	5	9.8			14	27.5
Total	30	**58.8**	19	**37.3**	2	**4.0**	**51**	**100.0**

the fresh category, possibly because it is the dominant raw material in the assemblage. The abundance of quartz in the fresh component of the assemblage may also be due to the fact that quartz is resistant and requires some degree of abrasion for the surface to appear weathered. The presence of weathered and slightly weathered quartz thus indicates that an element of abrasion affected the sample, probably resulting from the movement of the artefacts in sediment, either during deposition or re-working of sediments.

The general freshness of the assemblage, on the other hand, indicates that the artefacts in the assemblage were not transported for long distances prior to deposition. It is also likely that some of the weathered pieces in this assemblage, especially the large quartzite pieces which dominate the weathered category, may have derived from the early Acheulean. It appears that the reworked component is small, making the contribution of re-working of weathered elements from the Acheulean relatively small and thus the minimum weathering observed in the entire assemblage. The majority of fresh material thus indicates that most material accumulated around the cave entrance and movement of the artefacts in the sediments, as well as the inclusion of reworked and weathered artefacts from the decalcified Acheulean, was minor.

Weathering condition has been used in the past to differentiate between the early Acheulean at Sterkfontein and the Oldowan Infill as well as the later L/63 and Lincoln Cave South artefact assemblages (Field, 1999; Reynolds, 2000). The early Acheulean artefacts are generally more weathered than the Oldowan Infill and the younger deposits' artefacts assemblages. Although some of the weathered components in the MSA assemblage may have derived from the Member 5 West early Acheulean as a result of re-working of the early Acheulean breccia into the younger deposits, the extent of weathering is low compared to weathering in the early Acheulean, where the majority of artefacts are weathered. This implies that mixing from the Acheulean breccia probably occurred, but it made a relatively minor contribution to the MSA assemblage as a whole.

Table 6.6: Percentages of Post-Member 6 Infill artefact types by weathering condition.

Type	**Fresh**	**Slightly weathered**	**Weathered**	**Very Weathered**	**Total**
Small flaking debris <20mm	44.58	9.57	5.42		59.57
Complete flakes ≥20mm	1.81	1.26	0.72		3.79
Incomplete flakes ≥20mm	9.57	2.53	0.90	0.18	13.18
Core trimming flakes ≥20mm	0.36		0.18		0.54
Chunks ≥20mm	5.78	2.53	2.53		10.83
Retouched pieces	0.54	0.72	0.54		1.81
Cores	1.26	1.08	3.97	0.36	6.68
Core fragments	0.90		0.18		1.08
Bipolar cores	0.36	0.36			0.72
Bipolar core remains	1.62		0.18		1.81
Total	**66.79**	**18.05**	**14.62**	**0.54**	**100.0**

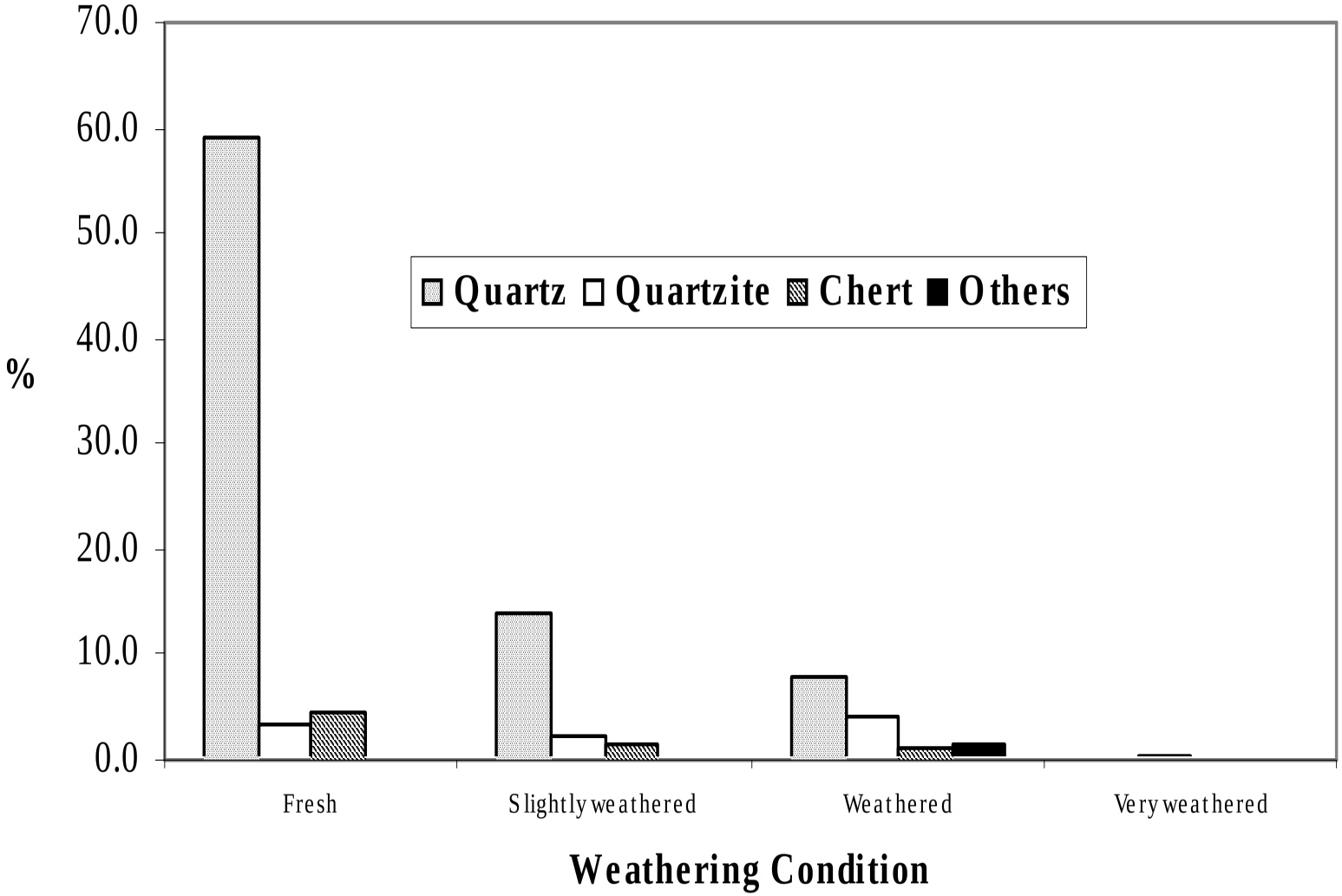


Figure 6.2: Post-Member 6 Infill artefact weathering conditions by raw material.

Table 6.7: Percentages of Post-Member 6 Infill weathering condition by stone tool raw material type.

Raw material	Fresh	Slightly weathered	Weathered	Very weathered	Total
Quartz	73.3	17.1	9.6		100.0
Quartzite	32.1	23.2	41.1	3.6	100.0
Chert	61.0	22.0	17.1		100.0
Others		10.0	80.0	10.0	100.0

6.6 Raw material and flaking technology

Whenever diagnostic features were present, flaking technique was recorded as bipolar or freehand. Of the total of 51 cores or core fragments, 27% are bipolar, with 43% of the quartz cores showing bipolar flaking. Thus the cores indicate that, regardless of raw material, the majority of flaking technology is freehand. For flakes and chunks, the figures for freehand versus bipolar flaking are 88 freehand flaked, (21 complete flakes and 67 of the 73 incomplete flakes), and 10 bipolar flaked, (six incomplete flakes and four chunks), with 56 out of the 60 chunks being indeterminate for technique. Chunks, flake fragments and small flaking debris produced by shatter during bipolar flaking often do not show diagnostic features. Furthermore, only five quartz artifacts have clear evidence of freehand flaking (e.g., 6.3 a, 6.4 a and b). These observations show that figures for the percentage of bipolar pieces could well be an underestimation of the technique in an assemblage. The dominance of quartz in the bipolar category is apparent, and it may be due to the ease with which quartz cobbles and pebbles from the nearby gravels are flaked with this method. Freehand flaking is also relatively easier to identify on flakes, particularly with quartzite (e.g., Figures 6.3 b and c; 6.4 d; and 6.5).

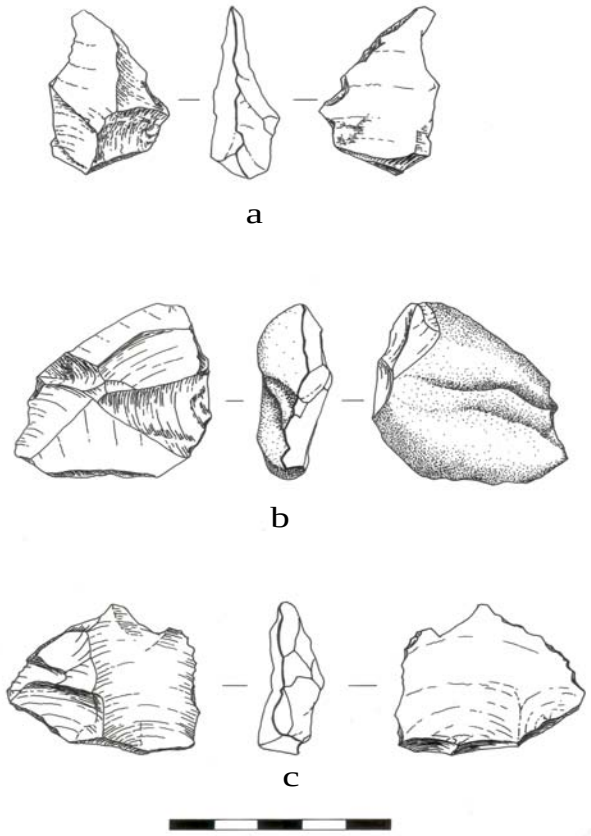


Figure 6.3: Post-Member 6 Infill flakes: (a) quartz flake, (b) quartzite flaked flake and (c) quartzite flake.

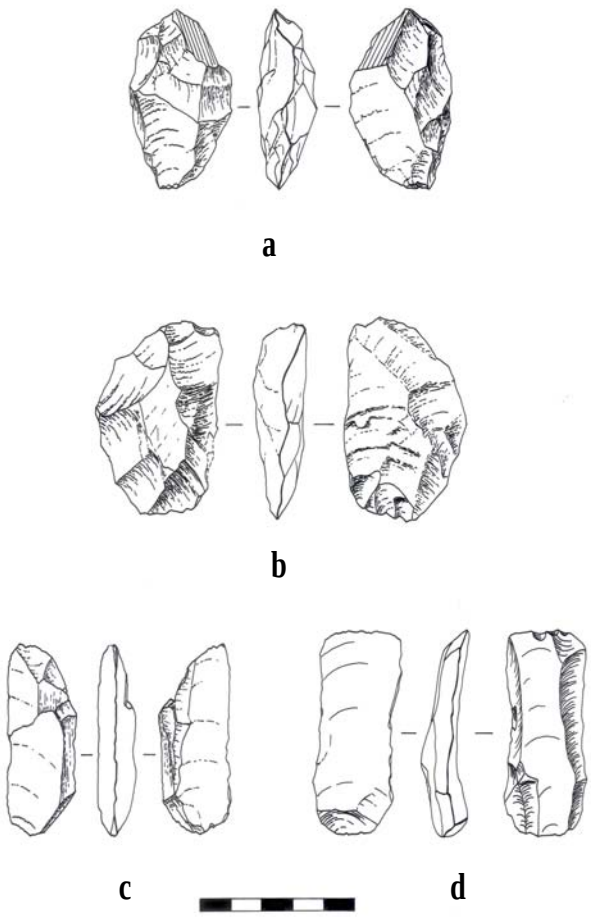


Figure 6.4: Selected Post-Member 6 Infill artefacts from the Post-Member 6 Infill: (a) quartz bifacially retouched piece, (b) quartz retouched flake fragment, (c) quartzite incomplete flake, possibly a bipolar flake and (d) a quartzite blade-like flake.

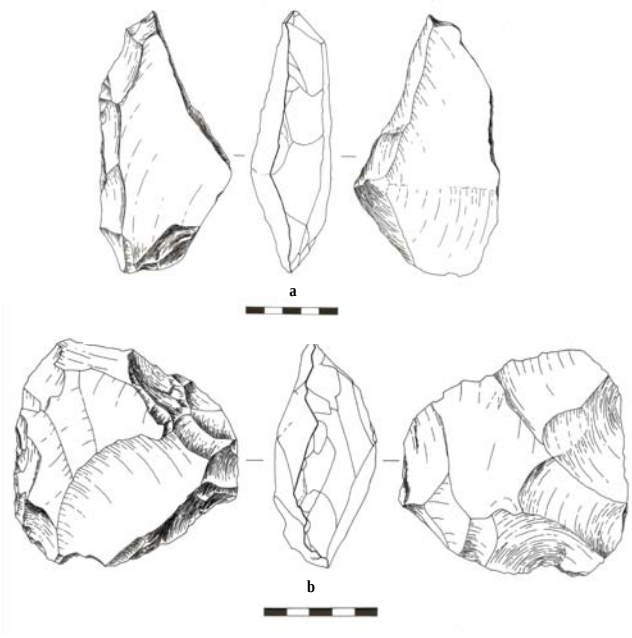


Figure 6.5: Post-Member 6 Infill artefacts: (a) Quartzite retouched large flake and (b) quartzite discoidal core.

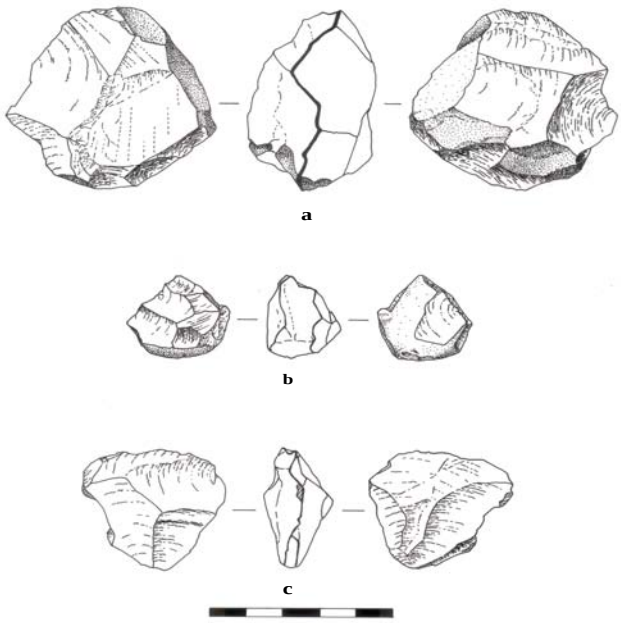


Figure 6.6: Post-Member 6 Infill cores: (a) quartz chopper core, (b) quartz single platform core and (c) quartz radial core.

Post-Member 6 Infill has a large proportion of bipolar pieces (2.3%) when compared to Member 5 West early Acheulean which has only two bipolar artifacts out of 3,245 pieces (Kuman *et al.*, 2005). This indicates that bipolar flaking is probably a significant MSA technique at the site. It is also more prominent in the MSA assemblage than in the Oldowan, which has only two bipolar artifacts out of 3,245 pieces. One quartz single platform core appears to have been made on a pebble, initially split by bipolar technique before being flaked from one platform (Figure 6.6b). It is thus possible that other quartz pebbles in the collection were also obtained from the river gravels and split by bipolar technique before being freehand-knapped, while larger quartz cobbles were directly freehand knapped, as in the case of the quartzite cores and large flake producing cores (Figure 6.5). The size differences for freehand knapped quartzite versus bipolar knapped quartz is not clear from the available data. It is, however, evident from the larger sizes of quartzite cobbles, cores and flakes that quartzite manuports were generally larger (larger than 60mm, mean = 67.4, median = 67 and standard deviation = 21.7) when collected for knapping, making then easily flaked by freehand technique. Quartz manuports, cores and flakes on the other hand are generally smaller (mean = 66.3, median = 62 and standard deviation = 18.5), and thus quartz cobbles may have been generally smaller when collected. The proportion of small flaking debris for quartz indicates that quartz was knapped at the site, as opposed to quartzite, which could be a mix of material both brought into the site during the MSA and those reworked from the Acheulean breccia.

6.7 Typological classification and the influence of raw materials

The assemblage has a variety of core types, with the majority composed of irregular cores (27.5%) and polyhedral cores (15.7%). It is difficult to distinguish the MSA from the ESA components from the data available for this

study. Even though most of the cores are in quartz, the less extensively worked cores are abundant, but the most worked core types with many flake scars (discoids, single platform cores and core on flake) are in quartzite. There are only 10 retouched pieces in the assemblage. As all have miscellaneous (rather than formal) retouch, they do not provide any detail on formal tool types for this industry. Manuports and cores are better represented, but it is not certain how many of these may belong to the MSA or may derive from the Acheulean due to mixing of the younger incoming breccia with the older Acheulean breccia. Overall, the assemblage is informal in nature, but it is not possible to know if this is characteristic of the MSA industry to which it belongs (i.e., to an early MSA phase) or is due to the small size of the sample.

6.8 Conclusions

The MSA assemblage has a high percentage of small flaking debris, mostly in quartz, but the dominance of quartz is notable even if the small debris is eliminated from the count. The small flaking debris thus indicates that quartz was knapped at the site and is unlikely to have derived from reworked Acheulean breccia, which is winnowed of small material. The Acheulean on the other hand is dominated by large quartzite pieces. The quartzite components of the Post-Member 6 Infill are comparable to the early Acheulean assemblage in their large size, lack of small flaking debris and their more weathered condition of the pieces. The difference between the quartzite and quartz components of the Post-Member 6 Infill indicates that the quartzite component does not derive from the same source as the quartz component and bolsters the argument for mixing of the younger deposit with the older reworked early Acheulean. It has been noted that this mixing was minor, and hence the small degree of weathering, the lack of small flaking debris in quartzite, and the rarity of other quartzite tools.

This assemblage consists of a variety of stone tool types, including a variety of core types, many of which are indistinguishable from the Acheulean types.

The flaking technique is freehand dominated, but the proportion of bipolar flaked pieces is relatively larger than that for the older assemblages in the Sterkfontein Formation. This, together with an abundance of quartz as raw material, gives a unique character to the MSA at Sterkfontein that is different from the other industries in the Formation. Stone tool raw material has also contributed to the variety of core types in the assemblage, with some of the cores possibly being derived from decalcified early Acheulean breccia.

Chapter 7

Discussion and conclusions

New excavations of the western Sterkfontein breccias have provided a clean North-South stratigraphic profile. They have revealed the probable extension of Member 4 breccia to the far west of the site beyond the Member 5 West breccia, which we suggest formed within collapsed areas of late Member 4. The western profile preserves part of a small stalagmite boss in the southwestern corner and a flowstone in the south. Together, this stalagmite boss and the flowstone form a flowstone curtain between Member 4 hanging remnant in the South and the southwestern area of Member 5 West (Clarke, 1994). Compared to the Member 5 West capping flowstone, which directly succeeded the Acheulean breccia in its formation, these flowstones are older and appear to have formed after collapse of Member 4 and against the hanging remnant of this early breccia. These stalagmites thus formed prior to both the deposition of the Member 5 West breccia and its subsequent capping flowstone. Later, Member 5 was overlain by the fine chocolate brown Member 6 breccia, visible in the northern profile and in a small remnant at the northern end of the western profile. The confirmation of the relative stratigraphic positioning of these two flowstones will facilitate possible palaeomagnetic dating of the western area on these flowstones, providing more accurate relative age-bracket for Member 5. This kind of age estimate will help the correlation of the western area of the site to the better studied eastern area.

This study also revealed that Member 5 West breccia consists of at least three types of deposits, which are, from bottom to top, a coarse pink breccia,

a fine orange-brown breccia and a yellowish microfauna-rich breccia (Figures 3.2 and 3.4). Large quartzite cores that are characteristic of the Member 5 West early Acheulean are visible *in situ* in these different breccia types, indicating their antiquity and their early Acheulean association. This implies that the Member 5 West early Acheulean was deposited in different phases in a manner similar to that suggested for Member 4 (Partridge, 1978). The pinkish coarse Member 5 West breccia is overlain by the fine orange-brown breccia and later by the microfauna breccia. Robinson (1962) postulated that the fossil cavern was completely filled with Member 4 deposit, while Kuman and Clarke (2000) suggested that the deposition of Member 4 deposits occurred at different periods, with an earlier more forested environment fauna and a later deposit of relatively more open grassland fauna (the STW 53 Infill). The deposition scenario suggested by Partridge (1978) thus provides a model for better understanding of Member 5 sequential infills.

After the filling of the fossil cavern with Member 4 deposit, collapse occurred in the central and western area, leaving a hanging remnant of Member 4 to the southwest and west. Dripstone formed over the Member 4 hanging remnant, which has been called the StW 53 Infill, forming stalactite curtains over Member 4 breccia in the west and filling cracks in the Member 4 deposit. Excavations by Clarke (1994) have revealed that the next event was the formation of a relatively narrow, shaft-like entrance over the central area, through which the deposition of the Oldowan Infill occurred. This later widened to allow entrance of the early Acheulean deposits (Clarke, 1994; Kuman and Clarke, 2000). At some point, the Acheulean deposits filled the westernmost area of the cave, resulting in the current western profile. Here, owls roosted on a ledge below the dolomite roof overhang, and thus there was an accumulation of owl pellets that formed the microfauna breccia.

The microfauna breccia later filled the entire space under the dolomite roof in this area, filling the spaces between the 'finger-like' stalactites that curtained the older Member 4 breccia. This entrance was in turn choked and there was deposition of the capping flowstone over the early Acheulean breccia under

the dolomite roof towards the north, leaving a limited space under the roof, which was later filled by the Member 6 breccia (Robinson, 1962). Further collapse of these breccias into the lower cave occurred, probably due to wetter conditions, which is correlated with the presence of some water-dependent taxa in the younger deposits (Reynolds *et al.*, 2007). These events led to the decalcification of Member 5 early Acheulean breccia in the northwestern area between grid lines 58 and 63, and a channel was formed. This channel was then filled with Post-Member 6 Infill, much of which lies in the Lincoln Cave, which connects with the Post-Member 6 area. Some artefacts from the decalcified Member 5 West early Acheulean breccia were redeposited with these younger incoming deposits in the Post-Member 6 Infill and the Lincoln Cave during the Middle Stone Age period.

The present analysis of the Member 6 fauna from earlier excavations shows that this is a sample of grassland taxa, including medium-sized cat and one baboon previously not identified in the faunal list given by Brain (1981). The Member 6 faunal assemblage also has signs of both carnivore and hominid modification, indicating both as agents of accumulation, as earlier suggested by Brain. This study has examined the fracture edge morphology of the long bones and long bone shaft fragments in this assemblage to establish the accumulator and the timing of breakage of bones in the assemblage. Results indicate that the assemblage has mainly fresh broken fracture morphology (52% oblique angles and 60% curved outline) and modification marks of both a carnivore and hominid ravaged assemblage. Circumference analysis, however, reveals a non-hyaena broken assemblage (83% less than complete circumferences), suggesting a mostly hominid hammerstone percussion broken assemblage, and therefore implies that hominids were the main accumulating agent. This kind of splintering can also be produced by post-depositional destruction, but the presence of hominid hammerstone percussion marks and notches together with carnivore tooth marks and notches indicates that both agents were involved in the accumulation and modification of at least part of the assemblage. A portion of the sample could also have been accumulated by

slopewash and by porcupines.

Given the restricted area under the dolomite roof in which Member 6 was deposited, it is unlikely that the bones were deposited directly in the cave by hominids, as this cave area was too vertically restricted for hominid occupation. Hominid stone tool modified and fractured bones identified in this assemblage may have accumulated in the cave from the landscape above through slopewash, fluvial action and gravitation. The cave may, however, have been suitable for carnivore denning as hyaenas can occupy low caves and burrows. There is, however, no indication of carnivore denning in the faunal assemblage in the form of juvenile and small carnivore remains or coprolites. Lack of evidence for denning carnivore activity in Member 6 does not preclude carnivore denning in the cave, but indicate only that the signs were not preserved. It is, however, more likely that the Member 6 fauna was accumulated by multiple agents, including carnivores, hominids and porcupines outside the cave before material was washed into the cave.

The Post-Member Infill fauna suggests a diverse animal community indicative of savannah mosaic environments with savannah-woodland and grassland habitats near permanent water sources, such as swamps or a perennial stream. Such a mosaic is shown by taxa such as bushbuck, springbok, lechwe and waterbuck. This assemblage also exhibits porcupine, carnivore and hominid influence in its modification and accumulation. Signs of hominid accumulation include butchery-modified bones on at least a portion of the assemblage. Stone tools and hominid-modified bones may have been deposited in the cave from the landscape above by abiotic forces, such as slopewash and gravitation. Some of the hominid-modified bones may also have been deposited in the cave by carnivores and porcupines. Although the frequencies of stone tool modifications are much lower than those established for simulated hominid accumulations and modern hunter/gatherer assemblages (Bunn, 1983a,b; Gifford *et al.*, 1980; Crader, 1981; Bunn *et al.*, 1988), they are relatively frequent considering the taphonomic history of this assemblage and the sample size. Stone tool modification in this assemblage is thus considered to fall within the

expected range for hominid accumulated assemblages, indicating hominid activity in accumulation of this assemblage. Most of the carnivore tooth marks are on long bone shaft fragments indicating that carnivores probably acquired the carcasses or parts thereof before hominids broke them open for marrow as carnivores are unlikely to gnaw on bones that have been previously broken by hominids (Marean, 1991).

Hominid stone tool cutmarks and hammerstone percussion marks are found on marginal parts such as phalanges, indicating secondary access to these bones. The incidence of butchery marks and carnivore tooth marks on the different skeletal parts indicates that they may have been gaining access to each other's food or food remains. Carnivore occupation is indicated by coprolites and juvenile carnivore remains, especially juvenile hyaena, and by the carnivore-modified bones (Mills and Mills, 1977; Brain, 1981; Mills, 1990; Klein *et al.*, 1991; Pickering, 2002). More than half of the bone (56.7%, N=1304) in this assemblage preserves less than 100% of their circumference indicative of accumulation agents other than hyaena. In addition, fracture edge morphology indicates a mostly fresh broken assemblage in the form of 52% oblique angles and 65% curved outline (Villa and Mahieu, 1991). The presence of porcupine remains and porcupine-modified bones suggests suitability of the cave for porcupine occupation. The cave had filled up almost to the roof, thus providing easy access for carnivores and porcupines (Pickering, 2002), but it may have been too low for hominid occupation. It is likely that carnivores and hominids accumulated bones around the cave at different times or used different entrances to different parts of the cave. It is also possible that both carnivores and hominids used areas adjacent to the cave entrance as living and feeding sites, leaving food remains and other signs of activity around the cave entrance in the form modified bones, coprolites and stone tools, which were later washed into the cave. Alternatively denning areas may have been available for carnivores in the cave, with hominids accumulating modified bones on the land surface above. It is most likely that the Post-Member 6 Infill faunal assemblage was accumulated partly by hominids who left bones and tools near

the cave entrance and partly by carnivores and porcupines using the cave and areas around the cave.

The Post-Member 6 Infill artefact assemblage has neither MSA nor Acheulean diagnostic pieces, except for the MSA diagnostic artefacts from the adjacent and apparently connected Lincoln Cave South. However, it differs from the Member 5 West early Acheulean in the high proportion of small flaking debris, general freshness of artefacts and the dominance of quartz as the stone tool making raw material. This assemblage is similar to the Lincoln Cave South that has MSA diagnostic artefacts and is dated by proxy to the MSA period in all these respects. Therefore, this assemblage is assigned to the MSA period in age. It is apparent that the connection with Lincoln Cave South through the excavated tunnel area in the northern profile is further proof that this assemblage is MSA in age and appears to comprise the upper portion of the Lincoln Cave South breccia. The Lincoln Cave North deposit with the Acheulean-like cores and fauna has Uranium Series dates of between 252,600 ± 35,600kya and 116 ± 7700kya on sandwiching flowstones (Reynolds *et al.*, 2003) and this is well within the MSA.

7.1 Conclusion

This study has clarified the stratigraphy of the western breccias and shown that Member 4 breccia exists in the far western parts of the current excavated surface probably beyond the current Member 5 West profile. The analysis of the Member 6 and Post-Member 6 Infill faunal assemblages have provided more information on taxa variety and modes of accumulation and the assemblage modifiers. This study has in turn helped to show that the Post-Member 6 Infill fauna is more diverse than was previously indicated from the analysis of a limited sample from squares L63 and M63 of the assemblage. The larger artefact sample from the Post-Member 6 Infill analysed during this study has shown that this younger assemblage has more features in common with the Lincoln Cave South than with the early Acheulean. However, Post-Member 6

and the Lincoln Cave have Acheulean-like cores and some large flakes which are like those in early Acheulean in Member 5 West, and these must result from re-working and re-deposition of the older element with the younger incoming deposits.

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Appendix A

Post-Member 6 Infill Artefact and Fauna provenances

A.1 Post-Member 6 Infill fauna squares

A.2 Post-Member 6 Infill fauna depths

A.3 Sterkfontein Middle Stone Age artefact squares

A.4 Sterkfontein Middle Stone Age artefact depths

Table A.1: Post-Member 6 Infill fauna provenances by squares.

Square	58	59	60	61	62	63	64	MIXED	Total
H					93	7			**100**
I					74	12			**86**
J					270	159			**429**
K					205	342			**546**
L				3	282	426		32	**743**
M			103	310	214	242	84	13	**966**
N		162	129	25	9	71	11		**407**
O		8	89	42	17	61			**217**
P	29	108	51	63	13		8		**272**
Q	45	15		4					**64**
Total	**74**	**293**	**372**	**447**	**1177**	**1320**	**103**	**45**	**3831**

Table A.2: Post-Member 6 Infill fauna provenances by depths. Depth in feet (').

Square	58	59	60	61	62	63	64	Total
Depth								
2 - 6			3					**3**
6 - 8						6		**6**
8 -10		3	10	4	7	8	69	**101**
10-12		9	29	88	10	146	45	**327**
12-14	14	14	77	33	102	433	10	**683**
14-16	3	62	83	162	277	307		**894**
16-18	2	31	67	107	456	129		**792**
18-20	11	64	12	53	182	31		**353**
20-22	12	99	64		144	22		**341**
22-24	23	6	27			10		**66**
24-26	4	3						**7**
MIXED						46	44	**90**
Total	**74**	**293**	**372**	**447**	**1177**	**1320**	**168**	**3831**

Table A.3: Sterkfontein Middle Stone Age artefact provenances by squares.

Square	58	59	60	61	62	63	64	Total
I					1	1		**2**
J					1	5		**6**
K					2	8	2	**10**
L					2	4		**6**
M			18	23	7	34		**72**
N		10	111	15	1	24		**161**
O		66	119	14	1			**190**
P	3	8	30	50	2			**93**
Q	10	1	1	1				**13**
Total	**13**	**85**	**279**	**103**	**17**	**76**	**2**	**608**

Table A.4: Sterkfontein Middle Stone Age artefact provenances by depth. Depth in feet (').

Square	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**Total**
Depth								
6 - 8		2					1	**3**
10-12			4				1	**5**
10-12	1	2	9	15	1	19		**47**
12-14		3	3	30		52		**88**
14-16	1	9	9	20	4	16		**59**
16-18	6	14	7	45	25	8		**105)**
18-20	5	19	48	12	3	2		**89**
20-22		9	101			1		**111**
22-24		24	41					**65**
24-26		5						**5**
Total	**13**	**87**	**222**	**141**	**33**	**96**	**2**	**608**

Appendix B

List of identified Fauna from Member 6 at Sterkfontein Caves

B.1 Member 6 Infill fauna

B.2 Identified fauna from Member 6 Infill

Table B.1: Member 6 Infill fauna sample

Taxon	**Brains sample**	**Current sample**	**New specimens**	**Not found**
Primates		2		
Carnivore	9	13	4	
Artiodactyla				
Antidorcas	2	2		
Damaliscus	1	1		
Connochaetes	1	1		
Size Class 1	10	20		
Size Class 2	37	63	16	
Size Class 3	19	29	10	
Perissodactyla				
Equdae	6	5		1
Hyracoidea	5	4		1
Rodentia				
Hystricidae	2	3	1	
indet. Rodents		9	9	
Bone Flakes (LBSF)				
1-2cm	17	15		3
2-3cm	112	109		7
3-4cm	85	77		8
4-5cm	41	34		7
5-6cm	17	10		7
6-7cm	8	8		
7-8cm	7	4		3
>8cm	3	5	2	
In Breccia (not measured)		8	8	
Total	**454**	**466**	**50**	**37**

Table B.2: Identified fauna from Member 6 Infill

Catalogue No.	**Level**	**Element**	**Portion**	**Side**	**Taxon**
SE 2046	DECALCIFIED	HUM	shaft frag	R	*Papio* sp.
SE 731	DECALCIFIED	PHAL I		L	*Papio* sp.
SE 864	DECALCIFIED	HUM	dist.	L	Medium-sized Felid
SE 1423	DECALCIFIED	ULNA	prox frag	R	CANID
SE 2109	DECALCIFIED	MTP	dist.		CANIS
	DECALCIFIED	M3		R	*Parahyaena brunnea*
SE 2329	DECALCIFIED	C		R	*Parahyaena brunnea*
SE 2299	DECALCIFIED	I		R	*Parahyaena brunnea*
SE 2059	DECALCIFIED	TIB	dist. Shaft frag	L	M.CARN
SE 2062	DECALCIFIED	MTC	prox.	R	M.FELID
SE 1140	DECALCIFIED	MTT			S.CARN
SE 2065	DECALCIFIED	MTT			S.CARN
SE 2095	DECALCIFIED	MTC		R	S.FELID
SE 2064	DECALCIFIED	FEM			S.MAMM
SE 2104	DECALCIFIED	1/2 MAND		L	VIVERRIDAE
SE 686	DECALCIFIED	MOLAR			EQUID
SE 693	DECALCIFIED	MOLAR	frag		EQUID
SE 795	DECALCIFIED	M3			EQUID
SE 704	DECALCIFIED	TOOTH	frag		EQUID
SE 818	DECALCIFIED	TOOTH	frag		EQUID
SE 996	DECALCIFIED	CRAN	frag		BOV I
SE 837	DECALCIFIED	CALC	dist. Frag	L	BOV I
SE 723	DECALCIFIED	HUM	dist.	R	BOV I
SE 2202	DECALCIFIED	HUM	dist. Cond.	R	BOV I
SE 863	DECALCIFIED	MTP	dist.		BOV I
SE 702	DECALCIFIED	TIB	dist shaft frag	L	BOV I
SE 698	DECALCIFIED	FEM	shaft frag	R	BOV I
SE 707	DECALCIFIED	FEM	shaft frag		BOV I
SE 845	DECALCIFIED	FEM	shaft frag		BOV I
SE 2066	DECALCIFIED	HUM	shaft frag		BOV I
SE 133	DECALCIFIED	LBSF			BOV I

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 1907	DECALCIFIED	LBSF			BOV I
SE 2103	DECALCIFIED	LBSF			BOV I
SE 834	DECALCIFIED	LBSF			BOV I
SE 838	DECALCIFIED	LBSF			BOV I
SE 965	DECALCIFIED	MTC		R	BOV I
SE 720	DECALCIFIED	1/2 PEL			BOV I
SE 984	DECALCIFIED	PHAL II			BOV I
SE 376	DECALCIFIED	RIB	frag		BOV I
SE 2080	DECALCIFIED	RAD	shaft frag		BOV I
SE 2312	DECALCIFIED	RAD	shaft frag		BOV I
SE 2093	DECALCIFIED	RIB	frag		BOV I
SE 712	DECALCIFIED	SCAP	ridge frag		BOV I
SE 870	DECALCIFIED	SCAP	ridge frag		BOV I
SE 855	DECALCIFIED	THOR	neural spine		BOV I
SE 846	DECALCIFIED	FEM	shaft frag		BOV I
SE 1059	DECALCIFIED	LBSF			BOV I
SE 1899	DECALCIFIED	LBSF			BOV I
SE 690	DECALCIFIED	MAND	frag	R	*Antidorcas* sp.
SE 691	DECALCIFIED	TIB	prox	L	*Antidorcas* sp.
SE 692	DECALCIFIED	MOLAR		R	*Antidorcas* sp.
SE 1318	DECALCIFIED	MAX	frag	R	*Damaliscus* sp.
SE 1419	DECALCIFIED	CALC	frag		BOV II
SE 924	DECALCIFIED	CALC	frag	R	BOV II
SE 2336	DECALCIFIED	CALC	frag	L	BOV II
SE 904	DECALCIFIED	CERV	frag		BOV II
SE 1785	DECALCIFIED	HUM	dist.	L	BOV II
SE 1442	DECALCIFIED	HUM	dist. Shaft frag	L	BOV II
SE 1446	DECALCIFIED	HUM	dist. Shaft frag	R	BOV II
SE 2036	DECALCIFIED	HUM	dist. Shaft	R	BOV II
SE 860	UPPER BRECCIA	HUM	dist. Shaft	L	BOV II

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 2096	DECALCIFIED	HUM	dist. Shaft frag	R	BOV II
SE 848	DECALCIFIED	HUM	dist. Shaft frag	R	BOV II
SE 865	DECALCIFIED	HUM	dist. Shaft frag	R	BOV II
SE 2316	DECALCIFIED	MTC	dist. Shaft frag		BOV II
SE 1683	DECALCIFIED	MTP	dist.		BOV II
SE 1451	DECALCIFIED	MTP	dist. Cond.		BOV II
SE 2347	DECALCIFIED	MTP	dist. Cond.		BOV II
SE 2310	DECALCIFIED	MTT	dist.		BOV II
SE 836	DECALCIFIED	PHAL I	dist.		BOV II
SE 691	DECALCIFIED	TIB	dist. Shaft frag	L	BOV II
SE 2370	DECALCIFIED	FEM	head		BOV II
SE 823	DECALCIFIED	FEM	shaft	L	BOV II
SE 858	DECALCIFIED	FEM	shaft	R	BOV II
SE 2058	DECALCIFIED	FEM	shaft frag		BOV II
SE 2067	DECALCIFIED	FEM	shaft frag		BOV II
SE 2068	DECALCIFIED	FEM	shaft frag		BOV II
SE 2297	DECALCIFIED	FEM	shaft frag		BOV II
SE 2333	DECALCIFIED	FEM	shaft frag		BOV II
SE 800	DECALCIFIED	FEM	shaft frag		BOV II
SE 813	DECALCIFIED	FEM	shaft frag	L	BOV II
SE 820	DECALCIFIED	FEM	shaft frag		BOV II
SE 1142	DECALCIFIED	HORN	frag		BOV II
SE 2086	DECALCIFIED	HORN	frag		BOV II
SE 2302	DECALCIFIED	HUM	shaft frag	L	BOV II
SE 2309	DECALCIFIED	HUM	shaft frag	L	BOV II
SE 697	DECALCIFIED	1/2 PEL	frag	L	BOV II
SE 438	DECALCIFIED	1/2 MAND	frag		BOV II
SE 939	DECALCIFIED	1/2 MAND	frag		BOV II
SE 1139	DECALCIFIED	MTC	shaft frag		BOV II
SE 2374	DECALCIFIED	MTC	shaft frag		BOV II
SE 891	DECALCIFIED	MTP	shaft		BOV II

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 2363	DECALCIFIED	MTP	shaft frag		BOV II
SE 819	DECALCIFIED	MTP	shaft frag		BOV II
SE 980	DECALCIFIED	MTP	shaft frag		BOV II
SE 692	DECALCIFIED	MTT	shaft		BOV II
SE 792	DECALCIFIED	MTT	shaft		BOV II
SE 2065	DECALCIFIED	MTT	shaft frag		BOV II
SE 2307	UPPER BRECCIA	MTT	shaft frag	L	BOV II
SE 2343	DECALCIFIED	MTT	shaft frag		BOV II
SE 2344	DECALCIFIED	MTT	shaft frag		BOV II
SE 2381	DECALCIFIED	MTT	shaft frag		BOV II
SE 834	DECALCIFIED	MTT	shaft frag		BOV II
SE 956	DECALCIFIED	OCC	cond.		BOV II
SE 2380	DECALCIFIED	OS PET			BOV II
SE 1150	DECALCIFIED	1/2 PEL	frag		BOV II
SE 1539	DECALCIFIED	1/2 PEL	frag	R	BOV II
SE 1798	DECALCIFIED	PHAL I			BOV II
SE 2303	DECALCIFIED	PHAL I			BOV II
SE 869	DECALCIFIED	PHAL I			BOV II
SE 900	DECALCIFIED	PHAL I			BOV II
SE 878	DECALCIFIED	PHAL I			BOV II
SE 861	DECALCIFIED	PHAL II			BOV II
SE 981	DECALCIFIED	PHAL II			BOV II
SE 2062	DECALCIFIED	FEM	prox. Shaft frag		BOV II
SE 2076	DECALCIFIED	FEM	prox. Shaft frag		BOV II
SE 2311	DECALCIFIED	MTP	prox.	R	BOV II
SE 2298	DECALCIFIED	MTT	prox.	R	BOV II
SE 2322	DECALCIFIED	MTT	prox.	R	BOV II
SE 1907	DECALCIFIED	LBSF			BOV I
SE 2103	DECALCIFIED	LBSF			BOV I
SE 834	DECALCIFIED	LBSF			BOV I
SE 838	DECALCIFIED	LBSF			BOV I

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 965	DECALCIFIED	MTC		R	BOV I
SE 720	DECALCIFIED	1/2 PEL			BOV I
SE 984	DECALCIFIED	PHAL II			BOV I
SE 376	DECALCIFIED	RIB	frag		BOV I
SE 2080	DECALCIFIED	RAD	shaft frag		BOV I
SE 2312	DECALCIFIED	RAD	shaft frag		BOV I
SE 2093	DECALCIFIED	RIB	frag		BOV I
SE 712	DECALCIFIED	SCAP	ridge frag		BOV I
SE 870	DECALCIFIED	SCAP	ridge frag		BOV I
SE 855	DECALCIFIED	THOR	neural spine		BOV I
SE 846	DECALCIFIED	FEM	shaft frag		BOV I
SE 1059	DECALCIFIED	LBSF			BOV I
SE 1899	DECALCIFIED	LBSF			BOV I
SE 2352	DECALCIFIED	MTT	prox. Shaft frag	R	BOV II
SE 2362	DECALCIFIED	MTT	prox. Shaft frag	R	BOV II
SE 1247	DECALCIFIED	PHAL I			BOV II
SE 1890	DECALCIFIED	PHAL I			BOV II
SE 668	UPPER BRECCIA	PHAL I			BOV II
SE 605	DECALCIFIED	RIB	frag		BOV II
SE 907	DECALCIFIED	RIB	frag		BOV II
SE 2325	DECALCIFIED	TIB	shaft frag	R	BOV II
SE 688	DECALCIFIED	TIB	shaft frag	L	BOV II
SE 2351	DECALCIFIED	PUB	frag	L	BOV II
SE 2048	DECALCIFIED	PUB	frag	L	BOV II
SE 1887	DECALCIFIED	RAD	shaft frag	L	BOV II
SE 1892	DECALCIFIED	RAD	shaft frag	L	BOV II
SE 948	DECALCIFIED	RAD	shaft frag	L	BOV II
SE 2386	DECALCIFIED	RIB	shaft frag		BOV II
SE 1002	DECALCIFIED	RIB	shaft frag		BOV II
SE 1014	DECALCIFIED	RIB	shaft frag		BOV II
SE 1062	DECALCIFIED	RIB	shaft frag		BOV II
SE 2069	DECALCIFIED	RIB	shaft frag		BOV II

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 2078	DECALCIFIED	RIB	shaft frag		BOV II
SE 433	DECALCIFIED	RIB	shaft frag		BOV II
SE 819	DECALCIFIED	RIB	shaft frag		BOV II
SE 843	DECALCIFIED	RIB	shaft frag		BOV II
SE 868	DECALCIFIED	RIB	shaft frag		BOV II
SE 875	DECALCIFIED	RIB	shaft frag		BOV II
SE 886	DECALCIFIED	RIB	shaft frag		BOV II
SE 892	DECALCIFIED	RIB	shaft frag		BOV II
SE 909	DECALCIFIED	RIB	shaft frag		BOV II
SE 910	DECALCIFIED	RIB	shaft frag		BOV II
SE 911	DECALCIFIED	RIB	shaft frag		BOV II
SE 913	DECALCIFIED	RIB	shaft frag		BOV II
SE 2331	DECALCIFIED	SCAP	blade frag		BOV II
SE 833	DECALCIFIED	SCAP	blade frag		BOV II
SE 838	DECALCIFIED	SCAP	blade frag	L	BOV II
SE 1889	DECALCIFIED	SCAP	glenoid	R	BOV II
SE 1663	DECALCIFIED	SCAP	blade frag		BOV II
SE 927	DECALCIFIED	SES			BOV II
SE 1162	DECALCIFIED	TIB	shaft frag	R	BOV II
SE 2063	DECALCIFIED	TIB	shaft frag	R	BOV II
SE 2073	DECALCIFIED	TIB	shaft frag		BOV II
SE 865	DECALCIFIED	TIB	shaft frag	R	BOV II
SE 953	DECALCIFIED	TIB	shaft frag	L	BOV II
SE 953	DECALCIFIED	TIB	shaft frag		BOV II
SE 2357	DECALCIFIED	TOOTH	frag		BOV II
SE 2378	DECALCIFIED	TOOTH	frag		BOV II
SE 2379	DECALCIFIED	TOOTH	frag		BOV II
SE 718	DECALCIFIED	TOOTH	frag		BOV II
SE 944	DECALCIFIED	TOOTH	frag		BOV II
SE 850	DECALCIFIED	ULNA	frag	L	BOV II

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 875	DECALCIFIED	MOLAR	frag		BOV II
SE 842	DECALCIFIED	VERT	frag		BOV II
SE 2305	DECALCIFIED	VERT	frag		BOV II
SE 2392	DECALCIFIED	VERT	frag		BOV II
SE 208	DECALCIFIED				BOV II
SE 2346	DECALCIFIED	MTT	shaft frag		BOV II
SE 1444	DECALCIFIED	MOLAR	frag		*Connochaetes* sp.
SE 2323	DECALCIFIED	MTP	dist.		BOV III
SE 1133	DECALCIFIED	FEM	shaft frag		BOV III
SE 816	DECALCIFIED	HUM	shaft frag	R	BOV III
SE 737	DECALCIFIED	MTC	shaft		BOV III
SE 2353	DECALCIFIED	MTC	shaft frag		BOV III
SE 2340	DECALCIFIED	MTP	shaft frag		BOV III
SE 867	DECALCIFIED	MTP	shaft frag		BOV III
SE 1001	DECALCIFIED	MTT	shaft frag		BOV III
SE 2304	DECALCIFIED	MTT	shaft frag		BOV III
SE 2320	DECALCIFIED	MTT	shaft frag		BOV III
SE 2334	DECALCIFIED	MTT	shaft frag		BOV III
SE 2339	DECALCIFIED	MTT	shaft frag		BOV III
SE 2049	DECALCIFIED	VERT	neural spine		BOV III
SE 2249	DECALCIFIED	MTC	prox.	R	BOV III
SE 2330	DECALCIFIED	MTT	prox.	L	BOV III
SE 235	DECALCIFIED	MTT	prox. frag		BOV III
SE 847	DECALCIFIED	RIB	prox.		BOV III
SE 1137	DECALCIFIED	RIB	prox.		BOV III
SE 2052	DECALCIFIED	TIB	prox. Shaft frag	R	BOV III
SE 2355	DECALCIFIED	RIB	frag		BOV III
SE 2168	DECALCIFIED	RIB	shaft frag		BOV III

Catalogue No.	Level	Element	Portion	Side	Taxon
SE 700	DECALCIFIED	RIB	shaft frag		BOV III
SE 2328	DECALCIFIED	SCAP	glenoid	R	BOV III
SE 11	DECALCIFIED	SCAP	blade frag		BOV III
SE 2355	DECALCIFIED	TIB	shaft frag		BOV III
SE 2075	DECALCIFIED	VERT	centrum frag		BOV III
SE 359	DECALCIFIED	MTT	prox.		BOV IV
SE 458	UPPER BRECCIA	TIB	shaft frag		BOV IV
SE 707	DECALCIFIED	TOOTH			*Lepus capensis*
SE 703	DECALCIFIED	FEM		R	*Procavia capensis*
SE 1050	DECALCIFIED	P		L	*Procavia capensis*
SE 806	DECALCIFIED	1/2 MAND		L	*Procavia capensis*
SE 995	DECALCIFIED	RAD	shaft frag	R	*Procavia capensis*
SE 994	DECALCIFIED	I			*Hystrix africaeaustralis*
SE 921	DECALCIFIED	I	frag		*Hystrix africaeaustralis*
SE 928	DECALCIFIED	TOOTH			*Hystrix africaeaustralis*

Appendix C

List of identified bones from the Post-Member 6 Infill at Sterkfontein Caves

C.1 Post-Member 6 Infill Fauna

Table C.1: Post-Member 6 Infill Fauna

Catalogue No.	**Square**	**Level**	**Element**	**Side**	**Portion**	**Taxon**
StW 585	L63		C	R		*Homo sapien*
BP/3/33787	K63		1/2 MAND	L	Frag	*Cercopithecus aethiops*
BP/3/33853	L63	16'6" - 17'6"	C	R		*C. aethiops*
BP/3/34170	L63	15'6" - 16'6"	HUM	L	dist.	*C. aethiops*
BP/3/33457	M60	15'2" - 16'2"	ILL	R	Frag	*C. aethiops*
BP/3/33915	K62	15'10" - 16'10"	M1	L		*C. aethiops*
BP/3/33411	L62	14'5" - 15'5"	THOR			*C. aethiops*
BP/3/33082	N59	21'0" - 22'0"	TIB	R	shaft frag	*C. aethiops*
BP/3/32871	N59	16'0" - 17'0"	TIB			*C. aethiops*
BP/3/33537	H62	21'10" - 22'10"	ULNA	L	shaft frag	*C. aethiops*
BP/3/18000	L63+M63	MIXED	CALC		Frag	*C. aethiops*
BP/3/33605	L62	14'5" - 15'5"	ULNA		shaft frag	*C. aethiops*
SWP-2139	O60	18'0" - 19'0"	1/2 MAND	L	Frag	*Papio ursinus*
SWP-2145	P58	20'10" - 21'10"	1/2 MAND	L	Frag	*P. ursinus*
BP/3/33310	P59	13'1" - 14'1"	1/2 MAND	R	Frag	*P. ursinus*
SWP-2149	O61	18'8" - 19'1"	ASTRAG	L		*P. ursinus*
SWP-2791	M62	17'11" - 18'11"	C	R	Frag	*P. ursinus*
S94-7694	M61	12'8" - 13'8"	CALC	L	Frag	*P. ursinus*
SWP-2741	O62	17'9" - 18'9"	CALC		Frag	*P. ursinus*
S94-8291	O62	17'9" - 18'9"	CALC	R	Frag	*P. ursinus*
BP/3/32426	J62	19'10" - 20'10"	CERV		Frag	*P. ursinus*
SWP 2152	O59	16'6" - 17'6"	CRAN		Frag	*P. ursinus*
SWP-2152	O63	16'6" - 17'6"	CRAN	R	Frag	*P. ursinus*
S94-10064	N60	13'9" - 14'9"	HUM	R		*P. ursinus*
BP/3/17902	L63	13'6" - 14'6"	I	R		*P. ursinus*
BP/3/33188	N60	22'9" - 23'9"	I1	L		*P. ursinus*
SWP-2138	O63	20'6" - 21'6"	M+P			*P. ursinus*
SWP-2143	O63	22'6" - 23'6"	M1	R		*P. ursinus*
SWP-2146	O60	17'0" - 18'0"	P4	L	Frag	*P. ursinus*
BP/3/19236	P59	8'1" - 9'1"	TIB	L		*P. ursinus*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/18076	L63	14'6" - 15'6"	C	L	Frag	*Acynonix Jubatus*
BP/3/32320	K63	15'10" - 16'10"	C	R		*Parahyaena bruunea*
BP/3/33603	L62	14'5" - 15'5"	DP	R		*P. bruunea*
BP/3/33604	L62	14'5" - 15'5"	DP	L		*P. bruunea*
BP/3/17899	L63	13'6" - 14'6"	M1	L		*P. bruunea*
BP/3/17900	L63	13'6" - 14'6"	P2	L		*P. bruunea*
BP/3/34169	L63	15'6" - 16'6"	ASTRAG	R	Frag	*Canis mesomelas*
BP/3/34464	K62	20'10" - 21'10"	ATLAS			*C. mesomelas*
BP/3/34490	K62	17'10" - 18'10"	C	L		*C. mesomelas*
S94-7803	Q59	15'0" - 16'0"	CERV			*C. mesomelas*
BP/3/34128	K63		FEM	R	head	*C. mesomelas*
BP/3/32343	K63	15'10" - 16'10"	I1	R		*C. mesomelas*
BP/3/34550	K62	18'10" - 19'10"	M1	L		*C. mesomelas*
BP/3/32299	K63	17'0" - 18'0"	M1	L	Frag	*C. mesomelas*
BP/3/33851	L63	16'6" - 17'6"	M1	R	Frag	*C. mesomelas*
BP/3/34674	K63	17'0" - 18'0"	M2	L		*C. mesomelas*
BP/3/34476	K62	17'10" - 18'10"	MTC III	R		*C. mesomelas*
BP/3/33406	J62	16'10" - 17'10"	ORB	L	Frag	*C. mesomelas*
BP/3/18244	M62	17'11" - 18'11"	P	R	Frag	*C. mesomelas*
BP/3/33262	L62	17'5" - 18'5"	P2	R		*C. mesomelas*
S94-14783	L63	12'6" - 13'6"	P2	L		*C. mesomelas*
BP/3/34542	K62	18'10" - 19'10"	P3	R		*C. mesomelas*
BP/3/32362	K63	15'10" - 16'10"	P3	R		*C. mesomelas*
BP/3/34673			P3	L		*C. mesomelas*
BP/3/33864	L63	16'6" - 17'6"	P4	R	Frag	*C. mesomelas*
BP/3/17892	L63	13'6" - 14'6"	RAD	R	prox. shaft frag	*C. mesomelas*
S94-14781	L63	12'6" - 13'6"	C			CANID
BP/3/33788	K63		CRAN	R	ZYGM + PARI	CANID
S94-88	P59	16'2" - 17'2"	I3	L		CANID
BP/3/34064	M60	12'5" - 13'5"	M1	R	Frag	CANID

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34027	M61	11'3" - 12'3"	MTC III	R	Frag	CANID
BP/3/34028	M61	11'3" - 12'3"	MTC III	L	FRag	CANID
S94-171	N60	20'9" - 21'9"	P		Frag	CANID
BP/3/33393	L62	15'5" - 16'5"	PHAL		prox. frag	CANID
BP/3/32391	J63	20'10" - 21'10"	PHAL I		prox. frag	CANID
S94-14770	L63	12'6" - 13'6"	PHAL I			CANID
BP/3/34030	M61	11'3" - 12'3"	PHAL I			CANID
BP/3/33791	K63		RAD	R	shaft frag	CANID
BP/3/33707	K63		TIB	L	distal	CANID
BP/3/34063	M60	12'5" - 13'5"	TIB	L	distal	CANID
BP/3/18201	M62	17'11" - 18'11"	TIB	R	distal	CANID
BP/3/16855	O63	21'6" - 22'6"	TIB	R	dist. shaft frag	CANID
BP/3/33990	M61	11'3" - 12'3"	ULNA	L	shaft frag	CANID
BP/3/34342	J63	15'10" - 16'10"	AXIS			CANIS
BP/3/34008	M61	11'3" - 12'3"	MTC III	L	whole	CANIS
BP/3/18243	M62	17'11" - 18'11"	MTT	L	shaft frag	CANIS
S94-14774	L63	12'6" - 13'6"	MTT III		distal	CANIS
S94-14771	L63	12'6" - 13'6"	MTT III	side	prox.	CANIS
BP/3/17894	L63	13'6" - 14'6"	MTT III	L	prox.	CANIS
BP/3/32379	I62	19'10" - 20'20"	PHAL I			CANIS
BP/3/33751	K63		RAD	R	distal	CANIS
BP/3/33846	L63	16'6" - 17'6"	SCAP	L	distaL frag	CANIS
BP/3/33831	L63	16'6" - 17'6"	TIB	L	distal+shaft	CANIS
S94-14780	L63	12'6" - 13'6"	C	R		*Caracal caracal*
BP/3/33852	L63	16'6" - 17'6"	C	R		*C. caracal*
S94-8407	N63	13'7" - 14'7"	P3	R		*C. caracal*
BP/3/32346	K63	15'10" - 16'10"	ENAMEL		Frag	CARN
BP/3/32340	K63	15'10" - 16'10"	1/2 MAND		Frag	CARN
BP/3/33609	L62	14'5" - 15'5"	1/2 MAND	R	ascend. ramus frag	CARN

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33679	L63	10'6" - 11'6"	MTP			CARN
BP/3/33680	L63	10'6" - 11'6"	MTP			CARN
BP/3/32397	J63	20'10" - 21'10"	RIB		Frag	CARN
BP/3/32643	J62	19'10" - 20'10"	VERT		neural spine frag	CARN
BP/3/32407	K63	17'0" - 18'0"	1/2 MAND		Frag	*Felis lybica silvestris*
BP/3/32389	J63	20'10"-21'10"	CAPITATE	R	whole	*F. lybica silvestris*
BP/3/34675	M61	11'3" - 12'3"	FOOT	L		*F. lybica silvestris*
BP/3/32341	K63	15'10"-16'10"	HUM	L	dist. frag	*F. lybica silvestris*
S94-14732	L63	12'6" - 13'6"	I1	R		*F. lybica silvestris*
BP/3/32870	N59	16'0" - 17'0"	C			HYAENA
BP/3/16679	L63	10'6" - 11'6"	COPROLITE			HYAENA
S94-14784	L63	12'6" - 13'6"	COPROLITE			HYAENA
BP/3/17878	L63	13'6" - 14'6"	COPROLITE			HYAENA
BP/3/17879	L63	13'6" - 14'6"	COPROLITE			HYAENA
BP/3/18073	L63	14'6" - 15'6"	COPROLITE			HYAENA
BP/3/18074	L63	14'6" - 15'6"	COPROLITE			HYAENA
BP/3/18075	L63	14'6" - 15'6"	COPROLITE			HYAENA
BP/3/16678	L63	7'6" - 8'6"	DIST MTT	R		HYAENA
BP/3/32712	J62	17'10" - 18'10"	DP2	R		HYAENA
BP/3/32305	K63	15'10" - 16'10"	DP4	R		HYAENA
S94-7360	P60	2'9" - 5'6"	MTT IV	R		HYAENA
BP/3/34182	L63	15'6" - 16'6"	P3	L		HYAENA
BP/3/17905	L63	13'6" - 14'6"	DP			*Lycoan pictus*
BP/3/34661	J62	20'10" - 21'10"	$_C$	L	whole	*L. pictus*
BP/3/34567	J63	18'10" - 19'10"	M_1		whole	*L. pictus*

Catalogue No.	**Square**	**Level**	**Element**	**Side**	**Portion**	**Taxon**
BP/3/33311	P59	14'1" - 15'1"	C		root	M.CARN
BP/3/17910	L63	13'6" - 14'6"	C		Frag	M.CARN
BP/3/18077	L63	14'6" - 15'6"	C		Frag	M.CARN
BP/3/17911	L63	13'6" - 14'6"	ENAMEL		Frag	M.CARN
BP/3/34551	K62	18'10" - 19'10"	P_4	R		M.CARN
S94-14775	L63	12'6" - 13'6"	MTT II		prox.	M.CARN
S94-103	M61	17'8" - 18'8"	P	L	Frag	M.CARN
S94-29	O60	18'0" - 19'0"	RAD	L	dist. Shaft frag	M.CARN
S94-30	O60	18'0" - 19'0"	RAD	R	dist. Shaft frag	M.CARN
S94-31	O60	18'0" - 19'0"	RAD	L	shaft frag	M.CARN
BP/3/33843	L63	16'6" - 17'6"	RIB		Frag	M.CARN
BP/3/34127	K63		TOOTH		Frag	M.CARN
BP/3/34116	K63		M^1	R	root	M.CARN
BP/3/34296	K62	19'10" - 20'10"	TIB	L	dist. + shaft	*P.leo*
BP/3/34382	K62	19'10" - 20'10"	HUM	R	dist.	*P.leo*
S94-7033	N59	10'0" - 11'0"	LOWER M1	L		*P.leo*
S94-7224	N59	20'0" - 21'0"	LOWER M1	L	crown	*P.leo*
S94-115			MTC	R	dist.	*P.leo*
S94-183	O60	8'3" - 9'3"	NAVCL	L		*P.leo*
BP/3/18180	M62	16'11" - 17'11"	PHAL II	R		*P.leo*
S94-1727	N61	11'10" - 12'10"	FEM	R	prox.+shaft frag	*P.leo*
BP/3/18246	M62	17'11" - 18'11"	LOWER I3	L		*P.pardus*
BP/3/34660	J62	20'10" - 21'10"	LOWER P3	R		*P.pardus*
BP/3/33790	K63		1/2 MAND	R	Frag	*P. cristatus*
S94-7231	N61	14'11" - 15'11"	1/2 MAND	R		*P. cristatus*
BP/3/17909	L63	13'6" - 14'6"	UPPER P1	L		*P. cristatus*
30/09/1999	K62	19'10" - 20'10"	CRAN		whole	*P. cristatus*
S94-14778	L63	12'6" - 13'6"	ATLAS			S.CARN

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32642	J62	19'10" - 20'10"	CAUD			S.CARN
BP/3/32442	J63	19'10" - 20'10"	CAUD			S.CARN
BP/3/17896	L63	13'6" - 14'6"	CAUD			S.CARN
S94-7590	M63	11'9" - 12'9"	FEM	L	shaft frag	S.CARN
S94-14782	L63	12'6" - 13'6"	LOWER P1	R	whole	S.CARN
BP/3/17906	L63	13'6" - 14'6"	MTC			S.CARN
S94-7670	M62	14'11" - 15'11"	MTC		prox. frag	S.CARN
BP/3/18181	M62	16'11" - 17'11"	MTC			S.CARN
BP/3/34406	J62	18'10" - 19'10"	MTP			S.CARN
BP/3/17897	L63	13'6" - 14'6"	MTT			S.CARN
S94-14776	L63	12'6" - 13'6"	RAD		dist.	S.CARN
BP/3/32300	K63	17'0" - 18'0"	RIB	L	prox. frag	S.CARN
BP/3/17898	L63	13'6" - 14'6"	RIB		prox. frag	S.CARN
S94-14777	L63	12'6" - 13'6"	THOR		whole	S.CARN
S94-14772	L63	12'6" - 13'6"	ULNA		dist.	S.CARN
S94-2407	N63	13'7" - 14'7"	UPPER P3	L	whole	S.CARN
BP/3/18179	M62	16'11" - 17'11"	1/2 MAND	L	Frag	S.FELID
S94-7531	M63	11'9" - 12'9"	HUM		dist.	S.FELID
BP/3/17893	L63	13'6" - 14'6"	MTC II	R	prox.	S.FELID
BP/3/17895	L63	13'6" - 14'6"	MTP		dist.	S.FELID
S94-14779	L63	12'6" - 13'6"	PHAL I		whole	S.FELID
BP/3/17907	L63	13'6" - 14'6"	PHAL II		whole	S.FELID
BP/3/17891	L63	13'6" - 14'6"	1/2 MAND	R	Frag	*Civettictis civetta*
BP/3/34648	J62	20'10" - 21'10"	1/2 MAND	R	Frag	*Genetta genetta*
BP/3/32425	J62	19'10" - 20'10"	ILI	R	Frag	*Herpestes ichneumon*
BP/3/17908	L63	13'6" - 14'6"	C		whole	viverrid indet.
BP/3/17904	L63	13'6" - 14'6"	C		root	viverrid indet.
S94-8405	M63	13'9" - 14'9"	C		whole	viverrid indet.
BP/3/18001	L63+M64	MIXED	LOWER P1	L	whole	viverrid indet.

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/18078	L63	14'6" - 15'6"	MTT III	R	whole	viverrid indet.
BP/3/17912	L63	13'6" - 14'6"	PHAL I		whole	viverrid indet.
BP/3/34491	K62	20'10" - 21'10"	ATLAS		whole	*Vulpes chama*
BP/3/34622	I62	18'10" - 19'10"	CALC	R	whole	*V. chama*
BP/3/18245	M62	17'11" - 18'11"	LOWER C	L	whole	*V. chama*
BP/3/33971	L62	16'5" - 17'5"	TIB	R	dist.	*V. chama*
BP/3/32364	J63	19'10" - 20'10"	LOWER I1	R	whole	*Phacochoerus aethiopicus*
BP/3/34036	M61	11'3" - 12'3"	LOWER M1UPPER M1	R	whole	*P.aethiopicus*
BP/3/32395	J63	20'10" - 21'10"	1/2 MAX		Frag	*Potamochoerus porcus*
BP/3/34209	L63	15'6" - 16'6"	1/2 MAND	R	Frag	*Equus* sp.
S9-379	M61	14'8" - 15'8"	1/2 MAND		Frag	*Equus* sp.
BP/3/33067	O60	19'0" - 20'0"	1/2 MAND		Frag	*Equus* sp.
BP/3/16673	L63	10'6" - 11'6"	1/2 MAX	R	Frag	*Equus* sp.
S94-364	M61	10'8" - 11'8"	1/2 MAX	L	Frag	*Equus* sp.
BP/3/34002	M61	11'3" - 12'3"	1/2 MAX	L	Frag	*Equus* sp.
S94-373	M61	15'8" - 16'8"	1/2 MAX	L	Frag	*Equus* sp.
S94-368	M61	16'8" - 17'8"	1/2 MAX	L	Frag	*Equus* sp.
BP/3/34443	J63	17'10" - 18'10"	ASTRAG			*Equus* sp.
BP/3/16674	L63	10'6" - 11'6"	DI 1	R		*Equus* sp.
S94-14793	L63	12'6" - 13'6"	DP		Frag	*Equus* sp.
S94-14792	L63	12'6" - 13'6"	DP3	L	Frag	*Equus* sp.
S94-14794	L63	12'6" - 13'6"	DP3	L	Frag	*Equus* sp.
S94-7745	M63	11'9" - 12'9"	FEM	R		*Equus* sp.
BP/3/33913	K62	15'10" - 16'10"	I1	L		*Equus* sp.
S94-366	M61	10'8" - 11'8"	I1	L		*Equus* sp.
BP/3/19330	O63	8'6" - 10'6"	I3	R		*Equus* sp.
BP/3/33085	P61	16'10" - 17'10"	ILIUM		Frag	*Equus* sp.
BP/3/34385	J62	14'10" - 15'10"	M1	L		*Equus* sp.
BP/3/34496	K62	20'10" - 21'10"	M1	R		*Equus* sp.

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32408	K63	17'0" - 18'0"	M1	L		*Equus* sp.
S94-363	M61	10'8" - 11'8"	M1	L		*Equus* sp.
BP/3/33151	L62	14'5" - 15'5"	M2	L		*Equus* sp.
BP/3/17999	L63	MIXED	M2	L		*Equus* sp.
S94-14789	L63	12'6" - 13'6"	M2	R		*Equus* sp.
S94-9384	M63	11'9" - 12'9"	M2	L		*Equus* sp.
S94-356	M63	8'9' - 99"	M2	R	Frag	*Equus* sp.
S94-374	O60	14'3" - 15'3"	M2	L		*Equus* sp.
S94-8296	P62	17'0" - 18'5"	M2	L		*Equus* sp.
BP/3/34623	I62	18'10" - 19'10"	M3	L		*Equus* sp.
BP/3/32660	J62	16'10" - 17'10"	M3			*Equus* sp.
BP/3/34537	K62	18'10" - 19'10"	M3	R		*Equus* sp.
BP/3/33150	L62	14'5" - 15'5"	M3	R		*Equus* sp.
BP/3/16676	L63	10'6" - 11'6"	M3	R		*Equus* sp.
BP/3/33861	L63	16'6" - 17'6"	M3	R		*Equus* sp.
BP/3/33863	L63	16'6" - 17'6"	M3	L		*Equus* sp.
S94-353	O60	19'0" - 20'0"	M3	L		*Equus* sp.
S94-359	P59	21'2" - 22'2"	M3	R		*Equus* sp.
BP/3/34640	H63	22'10" - 23'10"	MOLAR		Frag	*Equus* sp.
BP/3/32661	J62	16'10" - 17'10"	MOLAR			*Equus* sp.
BP/3/32421	J62	19'10" - 20'10"	MOLAR	L		*Equus* sp.
BP/3/34114	K63		MOLAR		Frag	*Equus* sp.
BP/3/34115	K63		MOLAR		Frag	*Equus* sp.
S94-362	M61	10'8" - 11'8"	MOLAR		Frag	*Equus* sp.
S94-365	M61	10'8" - 11'8"	MOLAR		Frag	*Equus* sp.
BP/3/34001	M61	11'3" - 12'3"	MOLAR		Frag	*Equus* sp.
S94-358	M61	16'8" - 17'8"	MOLAR		Frag	*Equus* sp.
S94-355	M63	15'9" - 16'9"	MOLAR		Frag	*Equus* sp.
BP/3/33822	K63		MTC		dist.	*Equus* sp.

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33149	L62	14'5" - 15'5"	MTC	L		*Equus* sp.
BP/3/34223	L63	15'6" - 16'6"	MTC II	L	prox. frag	*Equus* sp.
BP/3/33007	L62	13'5" - 14'5"	MTC IV	L		*Equus* sp.
BP/3/33538	H62	21'10" - 22'10"	MTP		shaft frag	*Equus* sp.
BP/3/33821	K62	19'10" - 20'10"	MTP		distal	*Equus* sp.
S94-14795	L63	12'6" - 13'6"	MTP		distal	*Equus* sp.
S94-9988	M64	9'8" - 10'8"	MTP		shaft frag	*Equus* sp.
S94-328	N59	22'0" - 23'0"	MTP		dist.	*Equus* sp.
S94-2015	P60	15'4" - 16'4"	MTP		dist. shaft frag	*Equus* sp.
S94-2014	P60	15'4" - 16'4"	MTP		shaft frag	*Equus* sp.
BP/3/32368	J63	19'10" - 20'10"	MTP II/1V	R	Frag	*Equus* sp.
S94-7682	M62	13'11" - 14'11"	MTT	L	prox.	*Equus* sp.
BP/3/34384	J62	14'10" - 15'10"	P2	L		*Equus* sp.
BP/3/34293	J63	14'10" - 15'10"	P2	L		*Equus* sp.
S94-14790	L63	12'6" - 13'6"	P2	L		*Equus* sp.
S94-14788	L63	12'6" - 13'6"	P2	L	Frag	*Equus* sp.
S94-14791	L63	12'6" - 13'6"	P2	L	Frag	*Equus* sp.
BP/3/34210	L63	15'6" - 16'6"	P2	R		*Equus* sp.
S9-378	M61	14'8" - 15'8"	P2	R		*Equus* sp.
S94-9383	M63	11'9" - 12'9"	P2	L		*Equus* sp.
S94-1785	N61	16'11' ' - 17'11"	P2	L		*Equus* sp.
S94-377	O62	10'0" - 11'0"	P2	L	Frag	*Equus* sp.
BP/3/18944	L63	10'6" - 11'6"	P3	L		*Equus* sp.
BP/3/34211	L63	15'6" - 16'6"	P3	R		*Equus* sp.
BP/3/33862	L63	16'6" - 17'6"	P3	L	Frag	*Equus* sp.
S94-376	M61	13'8" - 14'8"	P3	R		*Equus* sp.
BP/3/34506	I63	15'10" - 16'10"	PHAL III			*Equus* sp.
BP/3/16677	L63	10'6" - 11'6"	PHAL III			*Equus* sp.
S94-7632	M62	15'11" - 16'11"	RAD	L	dist. shaft frag	*Equus* sp.
BP/3/32435	H62	21'10" - 22'10"	SCAP		blade frag	*Equus* sp.

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-6604	O60	15'3" - 16'0"	TARS + MTT			*Equus* sp.
BP/3/32432	J6	2 19'10" - 20'10"	THOR		centrum	*Equus* sp.
BP/3/33875	K62	15'10" - 16'10"	TIB	R	dist.	*Equus* sp.
BP/3/33924	K62	15'10" - 16'10"	TOOTH		Frag	*Equus* sp.
BP/3/16675	L63	10'6" - 11'6"	TOOTH		Frag	*Equus* sp.
BP/3/18945	L63	10'6" - 11'6"	TOOTH		Frag	*Equus* sp.
S94-371	M61	15'8" - 16'8"	TOOTH		Frag	*Equus* sp.
BP/3/18202	M62	17'11" - 18'11"	TOOTH		Frag	*Equus* sp.
BP/3/34538	K62	18'10" - 19'10"	UPPER 3	R	whole	*Equus* sp.
BP/3/33780	K63		1/2 MAND	L	Frag	*Ourebia ourebi*
BP/3/34559	J63	18'10" - 19'10"	1/2 MAX	L	Frag	*O. ourebi*
S94-6704	P61	17'10" - 18'5"	1/2 MAX	R	Frag	*O. ourebi*
BP/3/34390	J62	14'10" - 15'10"	LOWER M3	L	whole	*O. ourebi*
S94-6836	P58	27'10" - 28'10"	1/2 MAND	R	Frag	*Cephalophus* sp.
BP/3/33050	L62	13'5" - 14'5"	1/2 MAX	L	Frag	*Cephalophus* sp.
BP/3/33267	L62	17'5" - 18'5"	1/2 MAX	R	Frag	*Cephalophus* sp.
BP/3/33541	H62	21'10" - 22'10"	1/2 MAND	R	Frag	BOV I
BP/3/34625	I62	18'10" - 19'10"	1/2 MAND	R	Frag	BOV I
BP/3/32375	I62	19'10" - 20'20"	1/2 MAND	L	Frag	BOV I
BP/3/32378	I62	19'10" - 20'20"	1/2 MAND	L	Frag	BOV I
BP/3/33379	J62	16'10" - 17'10"	1/2 MAND		Frag	BOV I
BP/3/33376	J62	16'10" - 17'10"	1/2 MAND	R	Frag	BOV I
BP/3/34278	J63	14'10" - 15'10"	1/2 MAND	L	Frag	BOV I
BP/3/34440	K62	17'10" - 18'10"	1/2 MAND	R	condyle	BOV I
BP/3/34437	K62	17'10" - 18'10"	1/2 MAND	R	Frag	BOV I
BP/3/34555	K62	18'10" - 19'10"	1/2 MAND	L	ascend. ramus frag	BOV I
BP/3/33599	L62	14'5" - 15'5"	1/2 MAND	L	Frag	BOV I
BP/3/33275	L62	15'5" - 16'5"	1/2 MAND		ascend. ramus frag	BOV I
BP/3/33265	L62	17'5" - 18'5"	1/2 MAND	R	ascend. ramus	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34232	L63	15'6" - 16'6"	1/2 MAND	R	ascend. ramus	BOV I
BP/3/34248	L63	15'6" - 16'6"	1/2 MAND	R	Frag	BOV I
BP/3/34216	L63	15'6" - 16'6"	1/2 MAND		Frag	BOV I
BP/3/34045	M60	10'5" - 11'5"	1/2 MAND	L	ascend. ramus	BOV I
BP/3/32922	M61	14'8" - 15'8"	1/2 MAND	L	Frag	BOV I
BP/3/18178	M62	16'11" - 17'11"	1/2 MAND		Frag	BOV I
BP/3/18137	M62	16'11" - 17'11"	1/2 MAND	R	Frag	BOV I
S94-7585	M63	11'9" - 12'9"	1/2 MAND	R	ascend. ramus	BOV I
S94-1613	M63	11'9" - 12'9"	1/2 MAND	L	Frag	BOV I
S94-1614	M63	11'9" - 12'9"	1/2 MAND	L	Frag	BOV I
S94-6725	P59	22'2"-.	1/2 MAND	R	Frag	BOV I
S94-7259	Q58	19'3" - 20'3"	1/2 MAND	L	ascend. ramus	BOV I
BP/3/33378	J62	16'10" - 17'10"	1/2 MAX	L	Frag	BOV I
BP/3/34558	J63	18'10" - 19'10"	1/2 MAX	R	Frag	BOV I
BP/3/33781	K63		1/2 MAX	R	Frag	BOV I
BP/3/34034	M61	11'3" - 12'3"	1/2 MAX	R	Frag	BOV I
BP/3/18174	M62	16'11" - 17'11"	1/2 MAX		Frag	BOV I
BP/3/18175	M62	16'11" - 17'11"	1/2 MAX		Frag	BOV I
BP/3/34120	K63		1/2 PEL	R	Frag	BOV I
BP/3/33394	L62	15'5" - 16'5"	1/2 PEL	L	Frag	BOV I
S94-1695	M62	13'11" - 14'11"	1/2 PEL		Frag	BOV I
BP/3/33665	M62	16'11" - 17'11"	1/2 PEL		Frag	BOV I
S94-14841	M63	MIXED	1/2 PEL		Frag	BOV I
BP/3/34132	K63		ACET		Frag	BOV I
BP/3/34258	K62	19'10" - 20'10"	ASTRAG	L		BOV I
BP/3/34174	L63	15'6" - 16'6"	ASTRAG	L	Frag	BOV I
BP/3/34175	L63	15'6" - 16'6"	ASTRAG	L	Frag	BOV I
BP/3/33844	L63	16'6" - 17'6"	ASTRAG	L	Frag	BOV I
BP/3/18185	M62	17'11" - 18'11"	ASTRAG	R		BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-7529	M63	11’9” - 12’9”	ASTRAG	R		BOV I
S94-7530	M63	11’9” - 12’9”	ASTRAG	R		BOV I
S94-1198	N63	13’10” - 14’10”	ASTRAG	L		BOV I
S94-6844	P59	18’2” - 19’2”	ASTRAG	L		BOV I
BP/3/33380	J62	16’10” - 17’10”	BONE		Frag	BOV I
S94-14800	M61	16’8” - 17’8”	BONE		Frag	BOV I
S94-7580	M63	11’9” - 12’9”	CALC	R	caudal frag	BOV I
S94-7602	M63	12’9” - 13’9”	CALC	L		BOV I
BP/3/33885	K62	15’10” - 16’10”	CALC	R	caudal frag	BOV I
S94-14797	M61	16’8” - 17’8”	CALC		caudal frag	BOV I
S94-7528	M63	11’9” - 12’9”	CALC	L		BOV I
BP/3/34462	K62	20’10” - 21’10”	CERV			BOV I
BP/3/33964	L62	16’5” - 17’5”	CORO	L	Frag	BOV I
BP/3/34421	J63	13’10” - 14’10”	CRAN		mastoid	BOV I
BP/3/34441	K62	17’10” - 18’10”	CRAN		Frag	BOV I
BP/3/34401	J62	14’10” - 15’10”	DIASTEMA	L	Frag	BOV I
S94-14806	M61	16’8” - 17’8”	DIASTEMAR		whole	BOV I
S94-1600	M63	12’9” - 13’9”	DIASTEMA	L	whole	BOV I
BP/3/34565	J63	18’10” - 19’10”	DP1			BOV I
BP/3/33965	L62	16’5” - 17’5”	DP2			BOV I
BP/3/18247	M62	17’11” - 18’11”	DP2	L		BOV I
BP/3/32955	L62	13’5” - 14’5”	ENAMEL		Frag	BOV I
BP/3/18163	M62	16’11” - 17’11”	ENAMEL		Frag	BOV I
BP/3/18167	M62	16’11” - 17’11”	ENAMEL		Frag	BOV I
S94-8377	M63	13’9” - 14’9”	ENAMEL		Frag	BOV I
S94-6729	P59	22’2”-	ENAMEL		Frag	BOV I
S94-6730	P59	22’2”-	ENAMEL		Frag	BOV I
S94-6731	P59	22’2”-	ENAMEL		Frag	BOV I
S94-6732	P59	22’2”-	ENAMEL		Frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-6733	P59	22'2"-	ENAMEL		Frag	BOV I
S94-6830	P60	16'6" - 17'6"	ENAMEL		Frag	BOV I
S94-6831	P60	16'6" - 17'6"	ENAMEL		Frag	BOV I
BP/3/34350	J63	15'10" - 16'10"	EXT+MED CUN	L		BOV I
BP/3/33906	K62	15'10" - 16'10"	EXT+MED CUN	R		BOV I
BP/3/33527	L62	14'5" - 15'5"	EXT+MED CUN	R		BOV I
BP/3/33574	H62	21'10" - 22'10"	FEM	L	distal shaft frag	BOV I
BP/3/34586	I62	18'10" - 19'10"	FEM		dist. Condyle	BOV I
BP/3/34585	I62	18'10" - 19'10"	FEM	L	prox. shaft frag	BOV I
BP/3/33317	J62	16'10" - 17'10"	FEM	R	distal shaft frag	BOV I
BP/3/33329	J62	16'10" - 17'10"	FEM		shaft frag	BOV I
BP/3/33331	J62	16'10" - 17'10"	FEM		shaft frag	BOV I
BP/3/33582	J62	16'10" - 17'10"	FEM	R	shaft frag	BOV I
BP/3/33581	J62	16'10" - 17'10"	FEM	L	prox. shaft frag	BOV I
BP/3/33505	J62	17'10" - 18'10"	FEM	R	shaft frag	BOV I
BP/3/34375	J62	17'10" - 18'10"	FEM	R	shaft frag	BOV I
BP/3/34376	J62	17'10" - 18'10"	FEM	L	shaft frag	BOV I
BP/3/34282	J63	14'10" - 15'10"	FEM		shaft frag	BOV I
BP/3/34452	J63	17'10" - 18'10"	FEM	R	shaft frag	BOV I
BP/3/33749	K63		FEM	L	shaft frag	BOV I
BP/3/33771	K63		FEM	L	shaft frag	BOV I
BP/3/33585	L62	13'5" - 14'5"	FEM	L	distal shaft frag	BOV I
BP/3/33586	L62	13'5" - 14'5"	FEM		distal shaft frag	BOV I
BP/3/33497	L62	13'5" - 14'5"	FEM	L	prox. shaft frag	BOV I
BP/3/33682	L63	12'6" - 13'6"	FEM	R	dist. Shaft frag	BOV I
BP/3/17437	L63	13'6" - 14'6"	FEM	L	distal shaft frag	BOV I
BP/3/34228	L63	15'6" - 16'6"	FEM	L	distal shaft frag	BOV I
BP/3/34043	M60	10'5" - 11'5"	FEM	R	head	BOV I
BP/3/33472	M61	19'8"-20'8"	FEM	R	prox. shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33655	M62	16'11" - 17'11"	FEM	L	distal shaft frag	BOV I
BP/3/33661	M62	16'11" - 17'11"	FEM	L	distal shaft frag	BOV I
BP/3/18124	M62	16'11" - 17'11"	FEM	R	shaft frag	BOV I
BP/3/18198	M62	17'11" - 18'11"	FEM	L	prox. shaft frag	BOV I
S94-7631	M63	12'9" - 13'9"	FEM	L	head	BOV I
BP/3/33293	M63	13'9" - 14'9"	FEM	L	prox. shaft frag	BOV I
S94-10007	M64	10'8" - 11'8"	FEM		shaft frag	BOV I
BP/3/33631	M64	11'4" - 12'4"	FEM		shaft frag	BOV I
S94-7724	M64	8'8" - 9'8"	FEM	L	dist. Condyle	BOV I
BP/3/33089	O60	12'3" - 13'3"	FEM		shaft frag	BOV I
S94-6587	O60	14'3" - 15'3"	FEM	L	dist.	BOV I
S94-6462	O63	10'0" - 11'0"	FEM		shaft frag	BOV I
S94-6448	O63	13'0" - 14'0"	FEM		head	BOV I
BP/3/34226	L63	15'6" - 16'6"	FEM	L	Shaft	BOV I
BP/3/34317	J62	15'10" - 16'10"	HORN		core frag	BOV I
BP/3/33908	K62	15'10" - 16'10"	HORN		core frag	BOV I
BP/3/34556	K62	18'10" - 19'10"	HORN		core frag	BOV I
BP/3/34007	M61	11'3" - 12'3"	HORN		core frag	BOV I
S94-7355	M61	14'8" - 15'8"	HORN		core frag	BOV I
S94-7644	M62	15'11" - 16'11"	HORN		Frag	BOV I
BP/3/33236	N60	20'9" - 21'9"	HORN		core frag	BOV I
BP/3/34522	K62	18'10" - 19'10"	HORN+CRAN	L	core frag	BOV I
BP/3/32453	H62	21'10" - 22'10"	HUM	L	dist. Frag	BOV I
BP/3/33549	H62	21'10" - 22'10"	HUM	R	distal shaft frag	BOV I
BP/3/33578	H62	21'10" - 22'10"	HUM	R	distal shaft frag	BOV I
BP/3/34604	I62	18'10" - 19'10"	HUM	L	shaft frag	BOV I
BP/3/34402	J62	14'10" - 15'10"	HUM	R	dist. Shaft frag	BOV I
BP/3/33206	J62	16'10" - 17'10"	HUM	R	distal shaft frag	BOV I
BP/3/33318	J62	16'10" - 17'10"	HUM	R	distal shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34280	J63	14'10" - 15'10"	HUM	R	distal shaft frag	BOV I
BP/3/34279	J63	14'10" - 15'10"	HUM	R	shaft frag	BOV I
BP/3/34468	J63	16'10" - 17'10"	HUM	L	distal shaft frag	BOVI
BP/3/33871	K62	15'10" - 16'10"	HUM	R	dist.	BOV I
BP/3/33738	K63		HUM	L	distal shaft frag	BOV I
BP/3/33495	L62	13'5" - 14'5"	HUM	R	distal shaft frag	BOV I
BP/3/33506	L62	14'5" - 15'5"	HUM	R	distal shaft frag	BOV I
S94-14979	L63	12'6" - 13'6"	HUM	R	shaft frag	BOV I
BP/3/32579	M60	16'2" - 17'2"	HUM		shaft frag	BOV I
BP/3/32580	M60	16'2" - 17'2"	HUM		shaft frag	BOV I
BP/3/34020	M61	11'3" - 12'3"	HUM	R	shaft frag	BOV I
BP/3/32905	M61	14'8" - 15'8"	HUM		shaft frag	BOV I
BP/3/32906	M61	14'8" - 15'8"	HUM	L	shaft frag	BOV I
BP/3/32925	M61	14'8" - 15'8"	HUM	R	shaft frag	BOV I
BP/3/32929	M61	14'8" - 15'8"	HUM		shaft frag	BOV I
S94-7525	M63	11'9" - 12'9"	HUM	R	shaft frag	BOV I
S94-7622	M63	12'9" - 13'9"	HUM		distal shaft frag	BOV I
S94-10005	M64	10'8" - 11'8"	HUM	R	dist. Frag	BOV I
S94-7703	M64	8'8" - 9'8"	HUM	L	distal shaft frag	BOV I
S94-7706	M64	8'8" - 9'8"	HUM	L	distal shaft frag	BOV I
S94-9978	M64	9'8" - 10'8"	HUM	R	distal shaft frag	BOV I
S94-6589	O60	14'3" - 15'3"	HUM	R	dist.	BOV I
SWP-2147	O61	18'8" - 19'1"	HUM	L	condyles	BOV I
SWP-2148	O61	18'8" - 19'1"	HUM	R	distal shaft frag	BOV I
S94-2022	P61	14'10" - 15'10"	HUM		shaft frag	BOV I
BP/3/34583	I6	2 18'10" - 19'10"	HUM	R	shaft frag	BOV I
BP/3/33234	N60	21'9" - 22'9"	I			BOV I
BP/3/33190	N60	22'9" - 23'9"	I			BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34445	J63	17'10" - 18'10"	ILI	R	Frag	BOV I
BP/3/33883	K62	15'10" - 16'10"	ILI	R	Frag	BOV I
BP/3/33276	L62	15'5" - 16'5"	ILI	R	Frag	BOV I
BP/3/33485	M61	15'8" - 16'8"	ILI	R	Frag	BOV I
S94-7598	M63	12'9" - 13'9"	ILI	R	Frag	BOV I
BP/3/32861	N59	16'0" - 17'0"	ILI	R	Frag	BOV I
S94-10040	N60	12'9" - 13'9"	ILI	L	Frag	BOV I
BP/3/33897	K62	15'10" - 16'10"	ISCH	R	Frag	BOV I
BP/3/34534	K62	18'10" - 19'10"	ISCH	R	Frag	BOV I
S94-7554	M63	11'9" - 12'9"	ISCH	L	Frag	BOV I
S94-7599	M63	12'9" - 13'9"	ISCH		Frag	BOV I
S94-7606	M63	12'9" - 13'9"	ISCH	R		BOV I
S94-10035	N60	12'9" - 13'9"	ISCH	L	Frag	BOV I
S94-10048	N60	12'9" - 13'9"	ISCH	R	Frag	BOV I
BP/3/16802	O63	22'6" - 23'6"	ISCH	R	Frag	BOV I
BP/3/33733	K63		LAT MELL	R	Frag	BOV I
BP/3/34400	J62	14'10" - 15'10"	LUMB			BOV I
BP/3/34536	K62	18'10" - 19'10"	LUMB		neural arch + spine	BOV I
BP/3/34257	L63	15'6" - 16'6"	LUMB		neural arch + spine	BOV I
BP/3/34672	P60	14'10" - 15'10"	LUN	L		BOV I
BP/3/34358	J63	15'10" - 16'10"	M1	L		BOV I
BP/3/34501	J63	16'10" - 17'10"	M1	L	whole	BOV I
BP/3/33922	K62	15'10" - 16'10"	M1	L	whole	BOV I
BP/3/34100	K63		M1	L	whole	BOV I
BP/3/34242	L63	15'6" - 16'6"	M1	R		BOV I
S94-8367	M63	13'9" - 14'9"	M1	L	whole	BOV I
BP/3/34632	I62	18'10" - 19'10"	M2	R	whole	BOV I
BP/3/34103	K63		M2	L		BOV I
BP/3/33858	L63	16'6" - 17'6"	M2	L	whole	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/19246	Q61	10'5" - 11'9"	MAG	L		BOV I
BP/3/33715	K63		MTC		dist. Shaft frag	BOV I
BP/3/34453	J63	17'10" - 18'10"	MTC		shaft frag	BOV I
BP/3/34435	K62	17'10" - 18'10"	MTC		shaft frag	BOV I
S94-7258	Q58	19'3" - 20'3"	MTC		shaft frag	BOV I
BP/3/33758	K63		MTP		dist. condyle	BOV I
BP/3/33396	L62	15'5" - 16'5"	MTP		shaft frag	BOV I
BP/3/33292	M63	15'9" - 16'9"	MTP		dist.	BOV I
S94-11254	P61	17'10" - 18'5"	MTP		Frag	BOV I
BP/3/33756	K63		MTT		dist.	BOV I
BP/3/33757	K63		MTT		dist.	BOV I
BP/3/34160	K63		MTT		dist. shaft frag	BOV I
BP/3/33143	L62	14'5" - 15'5"	MTT		dist. shaft frag	BOV I
BP/3/33829	L63	16'6" - 17'6"	MTT		dist.	BOV I
S94-14822	M61	16'8" - 17'8"	MTT		dist.	BOV I
S94-9979	M64	9'8" - 10'8"	MTT	R	dist. shaft frag	BOV I
BP/3/33551	H62	21'10" - 22'10"	MTT		shaft frag	BOV I
BP/3/33573	H62	21'10" - 22'10"	MTT		shaft frag	BOV I
BP/3/34286	J63	14'10" - 15'10"	MTT	R	shaft frag	BOV I
BP/3/34531	K62	18'10" - 19'10"	MTT	R	shaft frag	BOV I
BP/3/33718	K63		MTT	R	shaft frag	BOV I
BP/3/33719	K63		MTT		shaft frag	BOV I
BP/3/33739	K63		MTT		shaft frag	BOV I
BP/3/33740	K63		MTT		shaft frag	BOV I
BP/3/33453	M60	15'2" - 16'2"	MTT		shaft frag	BOV I
BP/3/33455	M60	15'2" - 16'2"	MTT		shaft frag	BOV I
BP/3/33307	M60	19'2" - 20'2"	MTT		shaft frag	BOV I
BP/3/34006	M61	11'3" - 12'3"	MTT		shaft frag	BOV I
BP/3/32901	M61	14'8" - 15'8"	MTT	L	shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32902	M61	14'8" - 15'8"	MTT		shaft frag	BOV I
BP/3/33487	M61	15'8" - 16'8"	MTT		shaft frag	BOV I
BP/3/33491	M61	15'8" - 16'8"	MTT		shaft frag	BOV I
S94-7679	M62	13'11" - 14'11"	MTT		shaft frag	BOV I
S94-7740	M62	9'11" - 10'11"	MTT		shaft frag	BOV I
S94-7591	M63	11'9" - 12'9"	MTT		shaft frag	BOV I
S94-6601	O62	14'9" - 15'9"	MTT		shaft frag	BOV I
BP/3/34298	K62	19'10" - 20'10"	NAV-CUB	L		BOV I
BP/3/33754	K63		NAV-CUB	L		BOV I
BP/3/33177	L62	14'5" - 15'5"	NAV-CUB	L		BOV I
BP/3/34177	L63	15'6" - 16'6"	NAV-CUB	L		BOV I
BP/3/34247	L63	15'6" - 16'6"	NAV-CUB	R		BOV I
BP/3/33828	L63	16'6" - 17'6"	NAV-CUB	R		BOV I
BP/3/34250	L63	15'6" - 16'6"	OCC	R	condyle	BOV I
BP/3/33483	M61	15'8" - 16'8"	OCC	R	Frag	BOV I
S94-7582	M63	11'9" - 12'9"	ORB		Frag	BOV I
BP/3/34535	K62	18'10" - 19'10"	OS PET	R		BOV I
BP/3/34477	K62	20'10" - 21'10"	OS PET	L		BOV I
BP/3/18176	M62	16'11" - 17'11"	OS PET			BOV I
S94-1753	N60	12'9" - 13'9"	OS PET			BOV I
S94-14644	L63	12'6" - 13'6"	P		Frag	BOV I
BP/3/32342	K63	15'10" - 16'10"	P3	R		BOV I
BP/3/32360	K63	15'10" - 16'10"	P3	L	whole	BOV I
BP/3/33060	M61	14'8" - 15'8"	P3			BOV I
BP/3/33388	L62	15'5" - 16'5"	P4	L		BOV I
BP/3/33952	L62	16'5" - 17'5"	P4	L	whole	BOV I
BP/3/33271	L62	17'5" - 18'5"	P4			BOV I
S94-14687	L63	12'6" - 13'6"	P4	L	whole	BOV I
S94-14708	L63	12'6" - 13'6"	P4		whole	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-1606	M61	15'11" - 16'11"	P4	L	Frag	BOV I
S94-6447	O63	13'0" - 14'0"	PAT		Frag	BOV I
BP/3/33220	J62	16'10" - 17'10"	PHAL		Frag	BOV I
BP/3/33203	J62	16'10" - 17'10"	PHAL I			BOV I
BP/3/33902	K62	15'10" - 16'10"	PHAL I	R	2 whole	BOV I
BP/3/34300	K62	19'10" - 20'10"	PHAL I			BOV I
BP/3/34305	K62	19'10" - 20'10"	PHAL I			BOV I
BP/3/33744	K63		PHAL I		dist. frag	BOV I
BP/3/34085	K63		PHAL I			BOV I
BP/17986	L-M63	MIXED	PHAL I		dist. frag	BOV I
BP/3/33991	M61	11'3" - 12'3"	PHAL I		2 whole	BOV I
BP/3/18084	M62	16'11" - 17'11"	PHAL I		dist. frag	BOV I
BP/3/18085	M62	16'11" - 17'11"	PHAL I		dist. frag	BOV I
S94-7548	M63	11'9" - 12'9"	PHAL I		dist. frag	BOV I
S94-9972	M64	9'8" - 10'8"	PHAL I		dist. frag	BOV I
S94-1234	N63	12'9" - 13'9"	PHAL I		dist. frag	BOV I
S94-1203	N63	13'10" - 14'10"	PHAL I		dist. frag	BOV I
S94-1205	N63	13'10" - 14'10"	PHAL I			BOV I
BP/3/34430	K62	17'10" - 18'10"	PHAL I		Frag	BOV I
BP/3/34591	I62	18'10" - 19'10"	PHAL II			BOV I
BP/3/34415	J63	13'10" - 14'10"	PHAL II			BOV I
BP/3/34417	J63	13'10" - 14'10"	PHAL II			BOV I
BP/3/33890	K62	15'10" - 16'10"	PHAL II			BOV I
BP/3/34518	K62	18'10" - 19'10"	PHAL II			BOV I
BP/3/34474	K62	20'10" - 21'10"	PHAL II			BOV I
BP/3/34086	K63		PHAL II			BOV I
BP/3/34087	K63		PHAL II			BOV I
BP/3/34088	K63		PHAL II			BOV I
BP/3/34089	K63		PHAL II			BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33176	L62	14’5” - 15’5”	PHAL II			BOV I
BP/3/33525	L62	14’5” - 15’5”	PHAL II			BOV I
BP/3/33526	L62	14’5” - 15’5”	PHAL II			BOV I
BP/3/34234	L63	15’6” - 16’6”	PHAL II			BOV I
S94-7542	M63	11’9” - 12’9”	PHAL II			BOV I
S94-8051	N63	13’7” - 14’7”	PHAL II			BOV I
S94-6456	O59	10’0” - 11’0”	PHAL II		dist. frag	BOV I
S94-2037	P60	14’4” - 15’4”	PHAL II		dist. frag	BOV I
BP/3/33992	M61	11’3” - 12’3”	PHAL II		whole	BOV I
BP/3/34621	I62	18’10” - 19’10”	PHAL III			BOV I
BP/3/34418	J63	13’10” - 14’10”	PHAL III			BOV I
BP/3/34288	J63	14’10” - 15’10”	PHAL III			BOV I
BP/3/33891	K62	15’10” - 16’10”	PHAL III			BOV I
BP/3/33892	K62	15’10” - 16’10”	PHAL III			BOV I
BP/3/34090	K63		PHAL III			BOV I
BP/3/34150	K63		PHAL III			BOV I
S94-1228	N63	12’9” - 13’9”	PHAL III			BOV I
S94-6824	P60	16’6” - 17’6”	PHAL III			BOV I
BP/3/18229	M62	17’11” - 18’11”	PREMOLAR		root Frag	BOV I
BP/3/32652	J62	16’10” - 17’10”	FEM	L	prox.	BOV I
S94-9960	M64	9’8” - 10’8”	FEM	R	prox.	BOV I
BP/3/18123	M62	16’11” - 17’11”	HUM	L	prox.	BOV I
S94-8397	M63	13’9” - 14’9”	HUM	L	prox.	BOV I
BP/3/33901	K62	15’10” - 16’10”	MTC	R	prox.	BOV I
S94-14833	M61	16’8” - 17’8”	MTC		prox.	BOV I
BP/3/33291	M63	15’9” - 16’9”	MTC	R	prox.	BOV I
S94-10046	N60	12’9” - 13’9”	MTC	R	prox.	BOV I
S94-7691	M61	12’8” - 13’8”	MTT	R	prox.	BOV I
S94-14830	M61	16’8” - 17’8”	MTT	L	prox.	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-7667	M62	14'11" - 15'11"	MTT	R	prox.	BOV I
BP/3/18188	M62	17'11" - 18'11"	MTT	R	prox.	BOV I
S94-7597	M63	12'9" - 13'9"	MTT	L	prox.	BOV I
BP/3/16916	L63	0'6" - 11'6"	MTT	L	prox. frag	BOV I
BP/3/32824	N59	15'0" - 16'0"	MTT	R	prox. frag	BOV I
BP/3/33732	K63		MTT		prox. frag	BOV I
BP/3/18189	M62	17'11" - 18'11"	MTT		prox. shaft	BOV I
BP/3/34584	I62	18'10" - 19'10"	MTT	L	prox. + shaft frag	BOV I
BP/3/34013	M61	11'3" - 12'3"	PHAL		prox. epiph frag	BOV I
BP/3/33792	K63		PHAL I		prox. frag	BOV I
S94-1197	N63	13'10" - 14'10"	PHAL I		prox. frag	BOV I
BP/3/32961	L62	13'5" - 14'5"	PHAL I		prox. frag	BOV I
S94-7633	M62	15'11" - 16'11"	PHAL I		prox. frag	BOV I
BP/3/19256	O63	8'6" - 10'6"	RIB		prox. frag	BOV I
BP/3/33847	L63	16'6" - 17'6"	RIB		prox. frag	BOV I
BP/3/19268	P59	12'1" - 13'8"	SCAP		prox. frag	BOV I
S94-7651	M62	15'11" - 16'11"	TIB		prox frag	BOV I
BP/3/33128	M60	14'2" - 15'2"	TIB	R	prox. frag	BOV I
BP/3/33572	H62	21'10" - 22'10"	TIB	R	prox. shaft frag	BOV I
BP/3/32810	N61	18'11" - 19'11"	TIB	R	prox. shaft frag	BOV I
S94-14839	M61	16'8" - 17'8"	ULNA	L	prox. frag	BOV I
BP/3/34593	I62	18'10" - 19'10"	ULNA	L	pxox. frag	BOV I
S94-7629	M63	12'9" - 13'9"	PUB	R	frag	BOV I
S94-7630	M63	12'9" - 13'9"	PUB	R	frag	BOV I
BP/3/34444	J63	17'10" - 18'10"	PUB	R	frag	BOV I
BP/3/32817	N59	15'0" - 16'0"	PUB	R	frag	BOV I
S94-10033	N60	12'9" - 13'9"	PUB	L	frag	BOV I
S94-14814	M61	16'8" - 17'8"	RAD	L	frag	BOV I
BP/3/18125	M62	16'11" - 17'11"	RAD	L	dist. shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32465	H62	21'10" - 22'10"	RAD	L	shaft frag	BOV I
BP/3/33750	K63		RAD	R	shaft frag	BOV I
BP/3/33532	L62	14'5" - 15'5"	RAD		shaft frag	BOV I
BP/3/33533	L62	14'5" - 15'5"	RAD		shaft frag	BOV I
BP/3/33689	L63	12'6" - 13'6"	RAD	R	shaft frag	BOV I
S94-7558	M63	11'9" - 12'9"	RAD		shaft frag	BOV I
S94-7594	M63	11'9" - 12'9"	RAD		shaft frag	BOV I
S94-10067	N60	13'9" - 14'9"	RAD	L	shaft frag	BOV I
BP/3/33093	O60	14'3" - 15'3"	RAD		shaft frag	BOV I
BP/3/19287	P60	9'5" - 10'5"	RAD	R	shaft frag	BOV I
BP/3/33384	J62	16'10" - 17'10"	RIB		shaft frag	BOV I
BP/3/32347	K63	15'10" - 16'10"	RIB		shaft frag	BOV I
BP/3/32348	K63	15'10" - 16'10"	RIB		shaft frag	BOV I
BP/3/33797	K63		RIB		shaft frag	BOV I
BP/3/17919	L63	11'6" - 12'6"	RIB		frag frag	BOV I
BP/3/18105	L63	12'6" - 13'6"	RIB		frag	BOV I
BP/3/18113	L63	12'6" - 13'6"	RIB		frag	BOV I
BP/3/32953	M60	15'2" - 16'2"	RIB		shaft frag	BOV I
BP/3/33028	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
BP/3/33029	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
BP/3/33030	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
BP/3/33031	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
BP/3/33032	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
BP/3/33043	M61	15'8" - 16'8"	RIB		shaft frag	BOV I
S94-7532	M63	11'9" - 12'9"	RIB		shaft frag	BOV I
S94-7563	M63	11'9" - 12'9"	RIB		shaft frag	BOV I
S94-7605	M63	12'9" - 13'9"	RIB		shaft frag	BOV I
S94-7608	M63	12'9" - 13'9"	RIB		shaft frag	BOV I
S94-7620	M63	12'9" - 13'9"	RIB		shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33283	N60	20'9" - 21'9"	RIB		shaft frag	BOV I
BP/3/32814	N61	18'11" - 19'11"	RIB		shaft frag	BOV I
BP/3/19257	O63	8'6" - 10'6"	RIB		shaft frag	BOV I
BP/3/19281	P61	12'1" - 13'1"	RIB		Frag	BOV I
S94-2006	P62	16'0" - 17'0"	RIB		Frag	BOV I
BP/3/34165	K63		SAC		Frag	BOV I
BP/3/34058	M60	10'5" - 11'5"	SAC		Frag	BOV I
BP/3/34420	J63	13'10" - 14'10"	SCAP	L	blade frag	BOV I
BP/3/33886	K62	15'10" - 16'10"	SCAP	L	distal frag	BOV I
BP/3/33898	K62	15'10" - 16'10"	SCAP	L	ridge frag	BOV I
BP/3/34525	K62	18'10" - 19'10"	SCAP	L	blade frag	BOV I
BP/3/33596	K63	15'10" - 16'10"	SCAP	R	ridge frag	BOV I
BP/3/33817	K63		SCAP	L	neck	BOV I
BP/3/33522	L62	14'5" - 15'5"	SCAP	L	ridge frag	BOV I
BP/3/33278	L62	15'5" - 16'5"	SCAP	R	dist.	BOV I
BP/3/33418	L62	17'5" - 18'5"	SCAP	R	ridge frag	BOV I
BP/3/34151	L63	12'6" - 13'6"	SCAP	R	neck	BOV I
BP/3/34057	M60	10'5" - 11'5"	SCAP	R	ridge frag	BOV I
BP/3/33458	M60	15'2" - 16'2"	SCAP	L	dist.	BOV I
BP/3/33490	M61	15'8" - 16'8"	SCAP		blade frag	BOV I
S94-14802	M61	16'8" - 17'8"	SCAP		blade frag	BOV I
S94-7654	M62	15'11" - 16'11"	SCAP	R	distal frag	BOV I
BP/3/18194	M62	17'11" - 18'11"	SCAP		Frag	BOV I
S94-10060	N60	13'9" - 14'9"	SCAP	L	blade frag	BOV I
S94-6573	O60	12'3" - 13'3"	SCAP	L	Frag	BOV I
BP/3/34255	L63	15'6" - 16'6"	SCAPH	R		BOV I
BP/3/34456	J63	16'10" - 17'10"	SES			BOV I
S94-8052	N63	13'7" - 14'7"	SES			BOV I
BP/3/34343	J63	15'10" - 16'10"	THOR		Frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34129	K63		THOR			BOV I
BP/3/33722	K63		THOR		centrum	BOV I
S94-14744	L63	12'6" - 13'6"	THOR		neural arch + spine	BOV I
BP/3/28099	L63	12'6" - 13'6"	THOR		Frag	BOV I
S94-14739	L63	12'6" - 13'6"	THOR		neural spine	BOV I
BP/3/34178	L63	15'6" - 16'6"	THOR		Frag	BOV I
BP/3/33849	L63	16'6" - 17'6"	THOR		centrum	BOV I
BP/3/34053	M60	10'5" - 11'5"	THOR		centrum	BOV I
BP/3/32919	M61	14'8" - 15'8"	THOR		centrum	BOV I
BP/3/32920	M61	14'8" - 15'8"	THOR		centrum	BOV I
S94-14801	M61	16'8" - 17'8"	THOR			BOV I
BP/3/33571	H62	21'10" - 22'10"	TIB	R	dist. shaft frag	BOV I
BP/3/34578	I62	18'10" - 19'10"	TIB	L	dist. Shaft frag	BOV I
BP/3/34404	J62	14'10" - 15'10"	TIB	L	shaft frag	BOV I
BP/3/33339	J62	16'10" - 17'10"	TIB	L	shaft frag	BOV I
BP/3/33118	L62	13'5" - 14'5"	TIB		shaft frag	BOV I
BP/3/33529	L62	14'5" - 15'5"	TIB	L	dist. shaft frag	BOV I
BP/3/18112	L63	12'6" - 13'6"	TIB	R	shaft frag	BOV I
BP/3/33465	M60	15'2" - 16'2"	TIB		shaft frag	BOV I
BP/3/33652	M62	16'11" - 17'11"	TIB		dist. shaft frag	BOV I
BP/3/33650	M62	16'11" - 17'11"	TIB	L	shaft frag	BOV I
BP/3/33651	M62	16'11" - 17'11"	TIB		shaft frag	BOV I
S94-7621	M63	12'9" - 13'9"	TIB		shaft frag	BOV I
S94-1202	N63	13'10" - 14'10"	TIB	L	dist.	BOV I
S94-1193	N63	13'10" - 14'10"	TIB	L	shaft frag	BOV I
BP/3/32811	N61	18'11" - 19'11"	TIB		dist. shaft frag	BOV I
S94-6576	O60	12'3" - 13'3"	TIB	R	shaft frag	BOV I
S94-11216	P58	18'10" - 19'10"	TIB	L	shaft frag	BOV I
BP/3/19151	Q58	14'6" - 15'3"	TIB	R	dist. Frag	BOV I
BP/3/33017	M61	15'8" - 16'8"	TIB	R	shaft	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33274	L62	15'5" - 16'5"	ULNA	L	trochlea notch	BOV I
BP/3/34426	J62	20'10" - 21'10"	UPPER M		whole	BOV I
BP/3/33767	K63		VERT		neural arch	BOV I
BP/3/33766	K63		VERT		neural spine frag	BOV I
BP/3/33768	K63		VERT		centrum	BOV I
BP/3/34164	K63		VERT		Frag	BOV I
BP/3/33417	L62	17'5" - 18'5"	VERT		centrum frag	BOV I
P/3/17018	L63	11'6" - 12'6"	VERT		neural arch + spine	BOV I
BP/3/17016	L63	11'6" - 12'6"	VERT		centrum frag	BOV I
BP/3/28100	L63	12'6" - 13'6"	VERT		neural spine frag	BOV I
BP/3/28102	L63	12'6" - 13'6"	VERT		centrum frag	BOV I
S94-14740	L63	12'6" - 13'6"	VERT		Frag	BOV I
BP/3/18012	L63	14'6" - 15'6"	VERT		Frag	BOV I
BP/3/33429	M61	14'8" - 15'8"	VERT		neural spine frag	BOV I
BP/3/33042	M61	15'8" - 16'8"	VERT		neural spine	BOV I
BP/3/33294	M63	13'9" - 14'9"	VERT		Frag	BOV I
S94-11218	P58	19'10" - 20'10"	VERT		centrum frag	BOV I
S94-6845	P59	18'2" - 19'2"	VERT		centrum frag	BOV I
S94-6823	P60	16'6" - 17'6"	VERT		Frag	BOV I
S94-7798	Q59	14'0" '- 15'0"	VERT		centrum frag	BOV I
BP/3/32672	J62	16'10" - 17'10"	1/2 MAX	L	Frag	BOV I
BP/3/33092	O60	14'3" - 15'3"	1/2 PEL			BOV I
BP/3/32533	M61	19'8" - 20'9"	CALC	L	Frag	BOV I
BP/3/32283	K63	17'0" - 18'0"	HUM	L	dist.	BOV I
BP/3/32651	J62	16'10" - 17'10"	MTT		dist.	BOV I
BP/3/33613	K63	17'0" - 18'0"	TIB	R	dist.	BOV I
BP/3/32498	O63	13'6" - 14'6"	FEM		shaft frag	BOV I
BP/3/32512	M63	15'9" - 16'9"	HUM		shaft frag	BOV I
BP/3/32632	L62	17'5" - 18'5"	HUM	L	dist. shaft frag	BOV I
BP/3/32883	M61	14'8" - 15'8"	HUM	L	shaft frag	BOV I

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32942	M61	14’8” - 15’8”	HUM	L	shaft frag	BOV I
BP/3/32848	N59	18’0” - 19’0”	HUM	L	shaft frag	BOV I
BP/3/32618	M63	13’9” - 14’9”	LBSF			BOV I
S94-1340	O60	12’3” - 13’3”	LBSF			BOV I
S94-6828	P60	16’6” - 17’6”	M1	L		BOV I
BP/3/32677	J62	16’10” - 17’10”	M3	L		BOV I
BP/3/32561	M63	14’9” - 15’9”	PHAL I			BOV I
BP/3/32484	K63	15’10” - 16’10”	RIB		shaft frag	BOV I
BP/3/32401	K63	17’0” - 18’0”	RIB		shaft frag	BOV I
BP/3/32992	L62	13’5” - 14’5”	RIB		shaft frag	BOV I
BP/3/33117	L62	13’5” - 14’5”	RIB		shaft frag	BOV I
BP/3/33027	M61	15’8” - 16’8”	RIB		shaft frag	BOV I
BP/3/19150	Q58	14’6” - 15’3”	RIB		shaft frag	BOV I
BP/3/32570	M63	14’9” - 15’9”	TIB	R	shaft frag	BOV I
BP/3/33087	O60	12’3” - 13’3”	TIB		shaft frag	BOV I
BP/3/33111	O61	14’8” - 15’8”	TIB	R	shaft frag	BOV I
BP/3/33200	J62	16’10” - 17’10”	ULNA	R	trochlea	BOV I
BP/3/32918	M61	14’8” - 15’8”	VERT		neural spine	BOV I
BP/3/34112	K63		M2	R		*Aepyceros melampus*
BP/3/33281	L62	15’5” - 16’5”	I	R	Frag	*A. melampus*
S94-14817	M61	16’8” - 17’8”	LOWER MOLAR	R	whole	*A. melampus*
BP/3/33155	L62	14’5” - 15’5”	M2	L		*A. melampus*
BP/3/34204	L63	15’6” - 16’6”	M2	R	Frag	*A. melampus*
BP/3/33933	K62	15’10” - 16’10”	M3	R		*A. melampus*
BP/3/34311	K62	21’10” - 22’10”	M3	R		*A. melampus*
BP/3/32409	K63	17’0” - 18’0”	M3	R		*A. melampus*
BP/3/34191	L63	15’6” - 16’6”	M3	R		*A. melampus*
NO NUMBER	POST-MEMBER 6		HORN	L+R		*Ammotragus lervia*
S94-6875	P59	15’2” - 16’2”	DIASTEMA	R		*Antidorcas marsupialis*
BP/3/34186	L63	15’6” - 16’6”	DP2	R		*A. marsupialis*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32318	K63	15'10" - 16'10"	DP4	L		*A. marsupialis*
BP/3/34192	L63	15'6" - 16'6"	DP4	R		*A. marsupialis*
BP/3/32753	N59	21'0" - 22'0"	DP4		Frag	*A. marsupialis*
BP/3/34481	K62	17'10" - 18'10"	HORN		core + cranial frag	*A. marsupialis*
BP/3/34315	J62	15'10" - 16'10"	HORN		core	*A. marsupialis*
BP/3/33951	L62	16'5" - 17'5"	I	R		*A. marsupialis*
BP/3/33273	L62	15'5" - 16'5"	I1	L		*A. marsupialis*
BP/3/33957	L62	16'5" - 17'5"	I1	L		*A. marsupialis*
BP/3/33259	L62	17'5" - 18'5"	I1	L		*A. marsupialis*
BP/3/34183	L63	15'6" - 16'6"	I1	R		*A. marsupialis*
BP/3/34066	M60	12'5" - 13'5"	I1	L		*A. marsupialis*
BP/3/33931	K62	15'10" - 16'10"	I2	L		*A. marsupialis*
BP/3/34094	K63		I2	R		*A. marsupialis*
S94-6837	P58	27'10" - 28'10"	I2	L		*A. marsupialis*
BP/3/33579	M63	17'10" - 18'10"	I3	L		*A. marsupialis*
BP/3/32369	I62	19'10" - 20'20"	M1	L		*A. marsupialis*
BP/3/32367	J63	19'10" - 20'10"	M1	R		*A. marsupialis*
BP/3/34111	K63		M1	L		*A. marsupialis*
BP/3/34213	L63	15'6" - 16'6"	M1	R		*A. marsupialis*
BP/3/33856	L63	16'6" - 17'6"	M1	L		*A. marsupialis*
BP/3/34033	M61	11'3" - 12'3"	M1	R		*A. marsupialis*
BP/3/32706	J62	17'10" - 18'10"	M2	L		*A. marsupialis*
BP/3/33260	L62	17'5" - 18'5"	M2	L		*A. marsupialis*
BP/3/33270	L62	17'5" - 18'5"	M2	L		*A. marsupialis*
BP/3/33256	N60	20'9" - 21'9"	M2	L		*A. marsupialis*
S94-6856	P58	23'10" - 24'10"	M2	L		*A. marsupialis*
BP/3/33269	L62	17'5" - 18'5"	M2-3	R		*A. marsupialis*
BP/3/34493	K62	20'10" - 21'10"	M3	L		*A. marsupialis*
BP/3/33261	L62	17'5" - 18'5"	M3	L		*A. marsupialis*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33065	M61	14'8" - 15'8"	M3	L	Frag	*A. marsupialis*
BP/3/32751	N59	21'0" - 22'0"	M3	R		*A. marsupialis*
S94-6802	P59	18'4" - 19'4"	M3	R		*A. marsupialis*
S94-6871	P59	15'2" - 16'2"	1/2 MAND +M1-2	R	Frag	*A. marsupialis*
BP/3/33779	K63		1/2 MAND +M1+M2/P4	L	Frag	*A. marsupialis*
BP/3/33919	K62	15'10" - 16'10"	1/2 MAND +M2	R	Frag	*A. marsupialis*
BP/3/33254	N60	20'9" - 21'9"	1/2 MAND +M2	R	Frag	*A. marsupialis*
BP/3/33929	K62	15'10" - 16'10"	1/2 MAND +P3-M3	L	Frag	*A. marsupialis*
BP/3/33044	L62	13'5" - 14'5"	1/2 MAND +P3-M3	R	Frag	*A. marsupialis*
BP/3/33928	K62	15'10" - 16'10"	1/2 MAND +P4-M3	R	Frag	*A. marsupialis*
BP/3/33045	L62	13'5" - 14'5"	1/2 MAND +P4-M3	L	Frag	*A. marsupialis*
BP/3/34188	L63	15'6" - 16'6"	1/2 MAND +TEETH	R	Frag	*A. marsupialis*
BP/3/33783	K63		1/2 MAX P2-M2	R	Frag	*A. marsupialis*
BP/3/33051	L62	13'5" - 14'5"	1/2 MAX +MS	R	Frag	*A. marsupialis*
BP/3/33268	L62	17'5" - 18'5"	1/2 MAX +P3-M3	L	Frag	*A. marsupialis*
BP/3/33048	L62	13'5" - 14'5"	1/2 MAX +P4-M3	L	Frag	*A. marsupialis*
BP/3/33049	L62	13'5" - 14'5"	1/2 MAX +P4-M3	R	Frag	*A. marsupialis*
BP/3/34189	L63	15'6" - 16'6"	1/2 MAX +TEETH	L	Frag	*A. marsupialis*
BP/3/32705	J62	17'10" - 18'10"	1/2 MAX FRAG +P2&3	L	Frag	*A. marsupialis*
BP/3/34113	K63		P			*A. marsupialis*
BP/3/34097	K63		P3	L		*A. marsupialis*
BP/3/34200	L63	15'6" - 16'6"	P3	L		*A. marsupialis*
BP/3/32410	K63	17'0" - 18'0"	P4	L		*A. marsupialis*
BP/3/34201	L63	15'6" - 16'6"	P4	L		*A. marsupialis*
BP/3/34010	M61	11'3" - 12'3"	P4	L		*A. marsupialis*
BP/3/32293	K63	17'0" - 18'0"	PHAL I			*A. marsupialis*
BP/3/32406	K63	17'0" - 18'0"	TIB	R	dist. shaft frag	*A. marsupialis*
BP/3/33542	H62	21'10" - 22'10"	1/2 MAND	R	Frag	BOV II
BP/3/33543	H62	21'10" - 22'10"	1/2 MAND	L	Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34624	I62	18'10" - 19'10"	1/2 MAND	L	Frag	BOV II
BP/3/34465	J63	17'10" - 18'10"	1/2 MAND	L	Frag	BOV II
BP/3/34439	K62	17'10" - 18'10"	1/2 MAND		Frag	BOV II
BP/3/34497	K62	20'10" - 21'10"	1/2 MAND	R	Frag	BOV II
BP/3/33591	L62	13'5" - 14'5"	1/2 MAND	L	Frag	BOV II
BP/3/32382	I62	19'10" - 20'20"	1/2 MAND	R	Frag	BOV II
BP/3/33377	J62	16'10" - 17'10"	1/2 MAND	L	Frag	BOV II
BP/3/32323	K63	15'10" - 16'10"	1/2 MAND	R	Frag	BOV II
BP/3/34147	K63		1/2 MAND		Frag	BOV II
BP/3/33389	L62	15'5" - 16'5"	1/2 MAND	R	Frag	BOV II
BP/3/34243	L63	15'6" - 16'6"	1/2 MAND	R	Frag	BOV II
BP/3/34046	M60	10'5" - 11'5"	1/2 MAND	R	symph.	BOV II
BP/3/33134	M60	14'2" - 15'2"	1/2 MAND	R	Frag	BOV II
BP/3/33135	M60	14'2" - 15'2"	1/2 MAND		Frag	BOV II
BP/3/33456	M60	15'2" - 16'2"	1/2 MAND		Frag	BOV II
BP/3/32921	M61	14'8" - 15'8"	1/2 MAND	L	Frag	BOV II
BP/3/33482	M61	15'8" - 16'8"	1/2 MAND	L	Frag	BOV II
S94-1603	M62	9'11" - 10'11"	1/2 MAND	L	Frag	BOV II
BP/3/32563	M63	14'9" - 15'9"	1/2 MAND		Frag	BOV II
S94-1618	N61	15'11" - 16'11"	1/2 MAND	R	Frag	BOV II
BP/3/33474	O60	13'3" - 14'3"	1/2 MAND		Frag	BOV II
BP/3/33399	P58	13'10" - 14'10"	1/2 MAND	L	Frag	BOV II
S94-11215	P58	18'10" - 19'10"	1/2 MAND	L	Frag	BOV II
BP/3/33663	M62	16'11" - 17'11"	1/2 MAND+ROOTS		Frag	BOV II
BP/3/34438	K62	17'10" - 18'10"	1/2 MAND	L	ramus frag	BOV II
BP/3/34011	M61	11'3" - 12'3"	1/2 MAND	L	ramus frag	BOV II
BP/3/34654	J62	20'10" - 21'10"	1/2 MAND+DP	R	Frag	BOV II
BP/3/18177	M62	16'11" - 17'11"	1/2 MAND+M		Frag	BOV II
BP/3/34241	L63	15'6" - 16'6"	1/2 MAND+M1-2	R	Frag	BOV II
BP/3/34370	J63	15'10" - 16'10"	1/2 MAND+M1-2	L	Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34217	L63	15'6" - 16'6"	1/2 MAND +M2-3	R	Frag	BOV II
BP/3/33778	K63		1/2 MAND +M2F+M3	R	Frag	BOV II
BP/3/33776	K63		1/2 MAND +M3	R	Frag	BOV II
BP/3/34239	L63	15'6" - 16'6"	1/2 MAND +M3	L	Frag	BOV II
BP/3/34218	L63	15'6" - 16'6"	1/2 MAND +MS	R	Frag	BOV II
BP/3/33777	K63		1/2 MAND +P2-4	R	Frag	BOV II
BP/3/34000	M61	11'3" - 12'3"	1/2 MAND +ROOTS		Frag	BOV II
BP/3/34187	L63	15'6" - 16'6"	1/2 MAND +TEETH	L	Frag	BOV II
S94-8364	M63	13'9" - 14'9"	1/2 MAND +TEETH		Frag	BOV II
BP/3/34425	J62	20'10" - 21'10"	1/2 MAND +DP	R	Frag	BOV II
BP/3/34371	J63	15'10" - 16'10"	1/2 MAND +M2	R	Frag	BOV II
BP/3/33785	K63		1/2 MAX +P2+3	R	Frag	BOV II
BP/3/18127	M62	16'11" - 17'11"	1/2 MAX +M1+2		Frag	BOV II
BP/3/33920	K62	15'10" - 16'10"	1/2 MAX +M		Frag	BOV II
BP/3/33782	K63		1/2 MAX +M2		Frag	BOV II
BP/3/18205	M62	17'11" - 18'11"	1/2 MAX +P		Frag	BOV II
BP/3/33047	L62	13'5" - 14'5"	1/2 MAX +TEETH		Frag	BOV II
BP/3/33584	J62	16'10" - 17'10"	1/2 MAX		frag	BOV II
BP/3/32398	J63	20'10" - 21'10"	1/2 MAX	L	Frag	BOV II
BP/3/33594	L62	13'5" - 14'5"	1/2 MAX	R	Frag	BOV II
BP/3/33136	M60	14'2" - 15'2"	1/2 MAX		Frag	BOV II
BP/3/34637	H63	22'10" - 23'10"	1/2 MAX +M2-3	R	frag	BOV II
BP/3/34636	H63	22'10" - 23'10"	1/2 MAX +M3	L	frag	BOV II
BP/3/34620	I62	18'10" - 19'10"	1/2 PEL		Frag	BOV II
BP/3/33900	K62	15'10" - 16'10"	1/2 PEL		Frag	BOV II
BP/3/33940	L63		1/2 PEL		Frag	BOV II
BP/3/33989	M61	11'3" - 12'3"	1/2 PEL	R	Frag	BOV II
BP/3/34005	M61	11'3" - 12'3"	1/2 PEL	L	Frag	BOV II
BP/3/32934	M61	14'8" - 15'8"	1/2 PEL		Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33477	M61	15'8" - 16'8"	1/2 PEL		Frag	BOV II
S94-7684	M62	13'11" - 14'11"	1/2 PEL	L	Frag	BOV II
BP/3/33258	N60	20'9" - 21'9"	1/2 PEL		Frag	BOV II
S94-10125	N64	12'8" - 13'8"	1/2 PEL		Frag	BOV II
BP/3/16892	O63	16'6" - 17'6"	1/2 PEL		Frag	BOV II
BP/3/33400	P58	13'10" - 14'10"	1/2 PEL		Frag	BOV II
S94-11246	P59	18'4" - 19'4"	1/2 PEL		Frag	BOV II
BP/3/34641	J62	20'10" - 21'10"	1/2 PEL	L	Frag	BOV II
BP/3/33471	M61	19'8"-20'8"	ACET	R	Frag	BOV II
S94-1163	N61	11'10" - 12'10"	ACET	L	Frag	BOV II
BP/3/34671	P60	14'10" - 15'10"	ACET	R	Frag	BOV II
S94-7652	M62	15'11" - 16'11"	1/2 PEL	L	Frag	BOV II
S94-7729	M62	10'11" - 11'11"	1/2 PEL	L	Frag	BOV II
S94-7744	M63	11'9" - 12'9"	1/2 PEL	R	Frag	BOV II
S94-7746	M63	11'9" - 12'9"	1/2 PEL	L	Frag	BOV II
S94-6481	O63	13'0" - 14'0"	1/2 PEL	R	Frag	BOV II
S94-7737	M62	9'11" - 10'11"	1/2 PEL	R	Frag	BOV II
BP/3/33558	H62	21'10" - 22'10"	1/2 PEL	R	Frag	BOV II
S94-6723	P59	16'2" - 17'2"	1/2 PEL	R	Frag	BOV II
BP/3/34348	J63	15'10" - 16'10"	ASTRAG	R	Frag	BOV II
BP/3/34428	K62	17'10" - 18'10"	ASTRAG	L		BOV II
BP/3/34070	K63		ASTRAG	L		BOV II
BP/3/34071	K63		ASTRAG	R		BOV II
BP/3/34072	K63		ASTRAG	L		BOV II
BP/3/34074	K63		ASTRAG	R	Frag	BOV II
BP/3/34168	K63		ASTRAG		Frag	BOV II
S94-7637	M62	15'11" - 16'11"	ASTRAG	L		BOV II
S94-7544	M63	11'9" - 12'9"	ASTRAG	L		BOV II
S94-7550	M63	11'9" - 12'9"	ASTRAG	R		BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32728	N59	21'0" - 22'0"	ASTRAG	R	Frag	BOV II
BP/3/33237	N60	20'9" - 21'9"	ASTRAG	L		BOV II
S94-9540	N60	20'9" - 21'9"	ASTRAG	L	Frag	BOV II
S94-6574	O60	12'3" - 13'3"	ASTRAG	R	Frag	BOV II
S94-6800	P59	18'4" - 19'4"	ASTRAG	L		BOV II
S94-2703	Q58	18'3" - 19'3"	ASTRAG	R		BOV II
S94-7797	Q59	14'0' '- 15'0"	ASTRAG	L	Frag	BOV II
S94-7808	Q59	15'0" - 16'0"	ASTRAG	R	Frag	BOV II
BP/3/33760	K63		ATLAS			BOV II
BP/3/33823	K63		ATLAS			BOV II
S94-7604	M63	12'9" - 13'9"	ATLAS			BOV II
BP/3/34461	K62	20'10" - 21'10"	AXIS		Frag	BOV II
S94-7527	M63	11'9" - 12'9"	AXIS		Frag	BOV II
S94-9998	M64	10'8" - 11'8"	AXIS		Frag	BOV II
S94-8050	N63	13'7" - 14'7"	AXIS		Frag	BOV II
BP/3/32650	J62	16'10" - 17'10"	CALC	L		BOV II
BP/3/34351	J63	15'10" - 16'10"	CALC	L		BOV II
BP/3/33907	K62	15'10" - 16'10"	CALC	R	caudal frag	BOV II
BP/3/34176	L63	15'6" - 16'6"	CALC	L	caudal frag	BOV II
S94-14993	M64	11'4" - 12'4"	CALC	L	caudal frag	BOV II
BP/3/32727	N59	21'0" - 22'0"	CALC	L		BOV II
S94-6681	P58	24'10" - 25'10"	CALC	L	caudal	BOV II
BP/3/19208	P61	11'11" - 12'11"	CALC	L	head	BOV II
BP/3/34429	K62	17'10" - 18'10"	CALC	L	Frag	BOV II
BP/3/33005	L62	13'5" - 14'5"	CALC	L	Frag	BOV II
BP/3/33161	L62	14'5" - 15'5"	CALC	R	Frag	BOV II
BP/3/34254	L63	15'6" - 16'6"	CALC	L	Frag	BOV II
BP/3/34040	M60	10'5" - 11'5"	CALC	R		BOV II
BP/3/33994	M61	11'3" - 12'3"	CALC	L	Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32530	M61	19'8" - 20'9"	CALC	R	Frag	BOV II
S94-7526	M63	11'9" - 12'9"	CALC	L		BOV II
S94-7549	M63	11'9" - 12'9"	CALC	L	Frag	BOV II
S94-7583	M63	11'9" - 12'9"	CALC		Frag	BOV II
S94-14923	M63	MIXED	CALC	R	Frag	BOV II
S94-9986	M64	9'8" - 10'8"	CALC	R	Frag	BOV II
BP/3/33185	N60	22'9" - 23'9"	CALC	R	Frag	BOV II
BP/3/32548	P59	14'1" - 15'1"	CALC	R	Frag	BOV II
BP/3/33080	P61	15'10" - 16'10"	CALC		Frag	BOV II
BP/3/32648	L62	15'5" - 16'5"	CALC	L	Frag	BOV II
S94-14832	M61	16'8" - 17'8"	CARA			BOV II
BP/3/34396	J63	18'10" - 19'10"	CAUD			BOV II
BP/3/33841	L63	16'6" - 17'6"	CAUD			BOV II
BP/3/33559	H62	21'10" - 22'10"	CERV		Frag	BOV II
BP/3/33560	H62	21'10" - 22'10"	CERV		Frag	BOV II
BP/3/34597	I62	18'10" - 19'10"	CERV		Frag	BOV II
BP/3/32710	J62	17'10" - 18'10"	CERV			BOV II
BP/3/34455	J63	16'10" - 17'10"	CERV			BOV II
BP/3/28094	L63	12'6" - 13'6"	CERV		Frag	BOV II
BP/3/28097	L63	12'6" - 13'6"	CERV		Frag	BOV II
S94-14737	L63	12'6" - 13'6"	CERV		Frag	BOV II
S94-14752	L63	12'6" - 13'6"	CERV		Frag	BOV II
S94-14755	L63	12'6" - 13'6"	CERV		Frag	BOV II
BP/3/33850	L63	16'6" - 17'6"	CERV		Frag	BOV II
BP/3/17953	L63	MIXED	CERV		Frag	BOV II
BP/3/17958	L63	MIXED	CERV		Frag	BOV II
BP/3/32832	N59	15'0" - 16'0"	CERV		centrum	BOV II
S94-1227	N63	12'9" - 13'9"	CERV		centrum frag	BOV II
S94-6437	O63	14'6" - 15'10"	CERV		Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-11250	P59	25'2" - 26'2"	condyle		frag	BOV II
BP/3/33570	H62	21'10" - 22'10"	CRAN		Frag	BOV II
BP/3/33222	J62	16'10" - 17'10"	CRAN		Frag	BOV II
BP/3/33927	K62	15'10" - 16'10"	CRAN		Frag	BOV II
BP/3/34480	K62	17'10" - 18'10"	CRAN		Frag	BOV II
BP/3/32319	K63	15'10" - 16'10"	CRAN		Frag	BOV II
BP/3/32330	K63	15'10" - 16'10"	CRAN		Frag	BOV II
BP/3/32301	K63	17'0" - 18'0"	CRAN		Frag	BOV II
BP/3/33478	O60	13'3" - 14'3"	CRAN		Frag	BOV II
BP/3/192043	O60	8'3" - 9'3"	CRAN		Frag	BOV II
BP/3/192405	O60	8'3" - 9'3"	CRAN		Frag	BOV II
BP/3/192408	O60	8'3" - 9'3"	CRAN		Frag	BOV II
BP/3/19130	O61	11'5" - 12'5"	CRAN		Frag	BOV II
BP/3/33298	P59	14'1" - 15'1"	CRAN		Frag	BOV II
BP/3/19140	P61	13'1" - 14'10"	CRAN		Frag	BOV II
	P64	10'8" - 11'8"	OS PET			BOV II
BP/3/32723	N59	21'0" - 22'0"	CRAN+HORNCORE		Frag	BOV II
BP/3/33248	N60	20'9" - 21'9"	CUN	L		BOV II
BP/3/33251	N60	20'9" - 21'9"	CUN		Frag	BOV II
S94-6799	P59	18'4" - 19'4"	CUN	L		BOV II
BP/3/33881	K62	15'10" - 16'10"	DIASTEMA	R	Frag	BOV II
BP/3/34003	M61	11'3" - 12'3"	DIASTEMA	L	Frag	BOV II
S94-1626	M62	15'11" - 16'11"	DIASTEMA	R	Frag	BOV II
S94-1620	M63	11'9" - 12'9"	DIASTEMA	L	Frag	BOV II
BP/3/32999	L62	13'5" - 14'5"	FEM	R	dist.	BOV II
S94-7522	M63	11'9" - 12'9"	FEM	L	dist.	BOV II
S94-7546	M63	11'9" - 12'9"	FEM	R	dist.	BOV II
S94-7656	M62	14'11" - 15'11"	FEM	R	dist. + shaft	BOV II
BP/3/34231	L63	15'6" - 16'6"	FEM	R	dist. frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32873	N59	13'0" - 14'0"	FEM	L	dist. frag	BOV II
S94-7579	M63	11'9" - 12'9"	FEM	L	dist. frag	BOV II
BP/3/33018	M61	15'8" - 16'8"	FEM	R	dist. shaft frag	BOV II
BP/3/33640	M62	16'11" - 17'11"	FEM		dist. shaft	BOV II
BP/3/33225	N59	22'0" - 23'0"	FEM	R	dist. shaft	BOV II
S94-14834	M61	16'8" - 17'8"	FEM	L	dist. shaft	BOV II
BP/3/32734	N59	21'0" - 22'0"	FEM	L	dist. shaft	BOV II
BP/3/32688	J62	17'10" - 18'10"	HUM	R	dist.	BOV II
BP/3/34260	K62	19'10" - 20'10"	HUM	R	dist.	BOV II
BP/3/33706	K63		HUM	R	dist.	BOV II
BP/3/16102	L63	10'6" - 11'6"	HUM	R	dist.	BOV II
S94-14733	L63	12'6" - 13'6"	HUM	R	dist.	BOV II
BP/3/18195	M62	17'11" - 18'11"	HUM	R	dist.	BOV II
BP/3/18197	M62	17'11" - 18'11"	HUM	L	dist.	BOV II
S94-7519	M63	11'9" - 12'9"	HUM	R	dist.	BOV II
S94-7600	M63	12'9" - 13'9"	HUM	R	dist.	BOV II
S94-6567	O60	13'3" - 14'3"	HUM	R	dist.	BOV II
S94-6847	P59	18'2" - 19'2"	HUM	R	dist.	BOV II
BP/3/33826	L63	16'6" - 17'6"	HUM	R	dist. +shaft	BOV II
BP/3/34392	J63	18'10" - 19'10"	HUM		dist. condyle frag	BOV II
BP/3/32950	M60	15'2" - 16'2"	HUM		dist. condyle	BOV II
S94-7665	M62	14'11" - 15'11"	HUM	R	dist. condyle frag	BOV II
S94-10068	N60	13'9" - 14'9"	HUM		dist. condyle frag	BOV II
S94-9538	N60	20'9" - 21'9"	HUM	L	dist. condyle frag	BOV II
S94-1236	N63	12'9" - 13'9"	HUM	L	dist. condyle	BOV II
BP/3/17101	L63	13'6" - 14'6"	HUM	R	shaft frag	BOV II
S94-10143	N64	12'8" - 13'8"	HUM	L	dist. frag	BOV II
BP/3/34582	I62	18'10" - 19'10"	HUM	L	dist. + shaft	BOV II
BP/3/34581	I62	18'10" - 19'10"	HUM	L	dist.+ shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34362	J63	15'10" - 16'10"	HUM	R	dist. + shaft frag	BOV II
BP/3/34427	K62	17'10" - 18'10"	HUM	L	dist. + shaft frag	BOV II
BP/3/33441	M61	17'8" - 18'8"	HUM	L	dist. lat. condyle	BOV II
BP/3/32439	L62	18'5" - 19'5"	MTP		dist.	BOV II
BP/3/33703	K63		MTC		dist.	BOV II
BP/3/32900	M61	14'8" - 15'8"	MTC		dist.	BOV II
BP/3/32908	M61	14'8" - 15'8"	MTC		dist.	BOV II
BP/3/33015	M61	15'8" - 16'8"	MTC			BOV II
S94-14821	M61	16'8" - 17'8"	MTC		dist.	BOV II
S94-14825	M61	16'8" - 17'8"	MTC		dist.	BOV II
S94-14829	M61	16'8" - 17'8"	MTC		dist.	BOV II
S94-7551	M63	11'9" - 12'9"	MTC		dist.	BOV II
S94-8393	M63	13'9" - 14'9"	MTC		dist.	BOV II
BP/3/33226	N60	21'9" - 22'9"	MTC		dist.	BOV II
S94-8042	N63	13'7" - 14'7"	MTC		dist.	BOV II
BP/3/32441	L62	18'5" - 19'5"	MTC		dist.	BOV II
BP/3/32419	J62	19'10" - 20'10"	MTC		dist.	BOV II
S94-7571	M63	11'9" - 12'9"	MTC		dist.shaft frag	BOV II
BP/3/34513	K62	18'10" - 19'10"	MTC		dist + shaft frag	BOV II
BP/3/32644	L62	15'5" - 16'5"	MTP		dist.	BOV II
S94-14828	M61	16'8" - 17'8"	MTP		dist	BOV II
BP/3/33238	N60	20'9" - 21'9"	MTP		dist.	BOV II
BP/3/33240	N60	20'9" - 21'9"	MTP		dist.	BOV II
BP/3/33297	P59	14'1" - 15'1"	MTP		dist.	BOV II
S94-6722	P59	16'2" - 17'2"	MTP		dist.	BOV II
BP/3/33775	K63		MTP		dist.	BOV II
BP/3/32602	M63	15'9" - 16'9"	MTP		dist. shaft frag	BOV II
BP/3/34172	L63	15'6" - 16'6"	MTP		dist.	BOV II
BP/3/33882	K62	15'10" - 16'10"	MTP		dist.	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33984	M61	11'3" - 12'3"	MTT	R	dist.	BOV II
BP/3/32899	M61	14'8" - 15'8"	MTT		dist.	BOV II
S94-14820	M61	16'8" - 17'8"	MTT		dist.	BOV II
S94-7552	M63	11'9" - 12'9"	MTT		dist.	BOV II
BP/3/33072	N59	21'0" - 22'0"	MTT		dist.	BOV II
S94-6872	P59	15'2" - 16'2"	MTT		dist.	BOV II
S94-6609	P59	21'2" - 22'2"	MTT		dist.	BOV II
S94-6571	O60	12'3" - 13'3"	MTT		dist.	BOV II
BP/3/34377	J62	17'10" - 18'10"	RAD	R	dist.	BOV II
BP/3/34412	J63	13'10" - 14'10"	RAD	L	dist.	BOV II
S94-14831	M61	16'8" - 17'8"	RAD	R	dist.	BOV II
S94-8396	M63	13'9" - 14'9"	RAD	L	dist.	BOV II
S94-6873	P59	15'2" - 16'2"	RAD	R	dist.	BOV II
S94-8388	M63	13'9" - 14'9"	RAD	R	dist.	BOV II
S94-10043	N60	12'9" - 13'9"	RAD	R	dist.	BOV II
BP/3/34133	K63		RAD	R	dist.	BOV II
BP/3/18196	M62	17'11" - 18'11"	RAD	R	dist. shaft	BOV II
BP/3/33218	J62	16'10" - 17'10"	TIB	L	dist.	BOV II
BP/3/33753	K63		TIB	R	dist.	BOV II
BP/3/33001	L62	13'5" - 14'5"	TIB		dist.	BOV II
BP/3/32884	M61	14'8" - 15'8"	TIB	L	dist.	BOV II
BP/3/33016	M61	15'8" - 16'8"	TIB	L	dist.	BOV II
S94-14989	M64	11'4" - 12'4"	TIB	L	dist.	BOV II
BP/3/33081	O61	18'8" - 19'1"	TIB	R	dist.	BOV II
BP/3/32844	N59	18'0" - 19'0"	TIB	L	dist.	BOV II
S94-1238	N63	12'9" - 13'9"	TIB	R	dist.	BOV II
BP/3/33734	K63		TIB	R	dist.	BOV II
BP/3/34393	J63	18'10" - 19'10"	TIB	L	dist.	BOV II
BP/3/32980	L62	13'5" - 14'5"	TIB	L	dist.	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32981	L62	13'5" - 14'5"	TIB	L	dist.	BOV II
BP/3/32982	L62	13'5" - 14'5"	TIB	R	dist.	BOV II
BP/3/32365	J63	19'10" - 20'10"	ULNA		dist.	BOV II
BP/3/32749	N59	21'0" - 22'0"	DISTEMA		Frag	BOV II
BP/3/34102	K63		DP			BOV II
BP/3/34193	L63	15'6" - 16'6"	DP			BOV II
BP/3/33356	J62	16'10" - 17'10"	DP		Frag	BOV II
BP/3/34629	I62	18'10" - 19'10"	DP			BOV II
BP/3/34564	J63	18'10" - 19'10"	DP1			BOV II
BP/3/33958	L62	16'5" - 17'5"	DP1			BOV II
BP/3/34656	J62	20'10" - 21'10"	DP2	R		BOV II
BP/3/33959	L62	16'5" - 17'5"	DP2			BOV II
BP/3/34221	L63	15'6" - 16'6"	DP2			BOV II
BP/3/34195	L63	15'6" - 16'6"	DP2	R		BOV II
BP/3/34032	M61	11'3" - 12'3"	DP2	R		BOV II
BP/3/34628	I62	18'10" - 19'10"	DP3	R		BOV II
BP/3/32708	J62	17'10" - 18'10"	DP3		Frag	BOV II
BP/3/32392	J63	20'10" - 21'10"	DP3	L		BOV II
BP/3/33960	L62	16'5" - 17'5"	DP3			BOV II
BP/3/34222	L63	15'6" - 16'6"	DP3			BOV II
BP/3/32393	J63	20'10" - 21'10"	DP4	L		BOV II
BP/3/32402	K63	17'0" - 18'0"	DP4	R		BOV II
S94-8365	M63	13'9" - 14'9"	DP4			BOV II
BP/3/18133	M62	16'11" - 17'11"	DP4	R	Frag	BOV II
BP/3/33516	L62	14'5" - 15'5"	ELBOW JOINT		frag	BOV II
BP/3/33517	L62	14'5" - 15'5"	ELBOW JOINT	L	Frag	BOV II
BP/3/34299	K62	19'10" - 20'10"	EXT & MED CUN	R		BOV II
BP/3/34459	K62	20'10" - 21'10"	EXT & MED CUN	R		BOV II
BP/3/32528	M61	19'8" - 20'9"	EXT. CUN	R		BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32467	H62	21'10" - 22'10"	FEM	L	shaft frag	BOV II
BP/3/33539	H62	21'10" - 22'10"	FEM	L	shaft frag	BOV II
BP/3/33564	H62	21'10" - 22'10"	FEM	L	shaft frag	BOV II
BP/3/32466	H62	21'10" - 22'10"	FEM	L	shaft frag	BOV II
BP/3/34579	I62	18'10" - 19'10"	FEM	R	shaft frag	BOV II
BP/3/34592	I62	18'10" - 19'10"	FEM	L	shaft frag	BOV II
BP/3/34617	I62	18'10" - 19'10"	FEM	R	head	BOV II
BP/3/34580	I62	18'10" - 19'10"	FEM	R	shaft frag	BOV II
BP/3/34605	I62	18'10" - 19'10"	FEM	R	shaft frag	BOV II
BP/3/34606	I62	18'10" - 19'10"	FEM		shaft frag	BOV II
BP/3/34571	I63	15'10" - 16'10"	FEM	L	shaft frag	BOV II
BP/3/34397	J62	14'10" - 15'10"	FEM	L	shaft frag	BOV II
BP/3/34320	J62	15'10" - 16'10"	FEM	R	shaft frag	BOV II
BP/3/33330	J62	16'10" - 17'10"	FEM	L	shaft frag	BOV II
BP/3/33332	J62	16'10" - 17'10"	FEM	R	prox. shaft frag	BOV II
BP/3/32697	J62	17'10" - 18'10"	FEM	R	prox. shaft frag	BOV II
BP/3/34642	J62	20'10" - 21'10"	FEM	R	head	BOV II
BP/3/34424	J62	20'10" - 21'10"	FEM	R	prox. shaft frag	BOV II
BP/3/34281	J63	14'10" - 15'10"	FEM	L	shaft frag	BOV II
BP/3/34361	J63	15'10" - 16'10"	FEM	L	shaft frag	BOV II
BP/3/34332	J63	15'10" - 16'10"	FEM	L	shaft frag	BOV II
BP/3/34451	J63	17'10" - 18'10"	FEM	R	shaft frag	BOV II
BP/3/32390	J63	20'10" - 21'10"	FEM	L	shaft frag	BOV II
BP/3/33910	K62	15'10" - 16'10"	FEM	L	shaft frag	BOV II
BP/3/33909	K62	15'10" - 16'10"	FEM	R	shaft frag	BOV II
BP/3/33918	K62	15'10" - 16'10"	FEM	R	prox. shaft frag	BOV II
BP/3/34532	K62	18'10" - 19'10"	FEM		dist. condyle frag	BOV II
BP/3/34527	K62	18'10" - 19'10"	FEM	R	shaft frag	BOV II
BP/3/34267	K62	19'10" - 20'10"	FEM	L	shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34460	K62	20'10" - 21'10"	FEM	L	shaft frag	BOV II
BP/3/33598	K63	15'10" - 16'10"	FEM	R	shaft frag	BOV II
BP/3/32308	K63	15'10" - 16'10"	FEM	R	shaft frag	BOV II
BP/3/32309	K63	15'10" - 16'10"	FEM	R	shaft frag	BOV II
BP/3/33720	K63		FEM	L	shaft frag	BOV II
BP/3/33772	K63		FEM	L	shaft frag	BOV II
BP/3/34139	K63		FEM	R	shaft frag	BOV II
BP/3/33712	K63		FEM	R	shaft frag	BOV II
BP/3/33713	K63		FEM	R	shaft frag	BOV II
BP/3/33714	K63		FEM	R	shaft frag	BOV II
BP/3/33743	K63		FEM	R	shaft frag	BOV II
BP/3/33773	K63		FEM		shaft frag	BOV II
BP/3/34136	K63		FEM	R	shaft frag	BOV II
BP/3/34137	K63		FEM	R	shaft frag	BOV II
BP/3/34144	K63		FEM		shaft frag	BOV II
BP/3/33705	K63		FEM	R	prox. shaft frag	BOV II
BP/3/33741	K63		FEM	R	prox. shaft frag	BOV II
BP/3/33742	K63		FEM	L	prox. shaft frag	BOV II
BP/3/33535	L61	13'5" - 14'5"	FEM	R	shaft frag	BOV II
BP/3/33536	L61	13'5" - 14'5"	FEM	R	shaft frag	BOV II
BP/3/33587	L62	13'5" - 14'5"	FEM	R	shaft frag	BOV II
BP/3/33588	L62	13'5" - 14'5"	FEM	L	shaft frag	BOV II
BP/3/33515	L62	14'5" - 15'5"	FEM	R	shaft frag	BOV II
BP/3/33514	L62	14'5" - 15'5"	FEM		shaft frag	BOV II
BP/3/33521	L62	14'5" - 15'5"	FEM	L	shaft frag	BOV II
BP/3/33392	L62	15'5" - 16'5"	FEM	R	prox. shaft frag	BOV II
BP/3/33427	L62	17'5" - 18'5"	FEM	R	shaft frag	BOV II
BP/3/33670	L63	10'6" - 11'6"	FEM	R	shaft frag	BOV II
BP/3/34152	L63	12'6" - 13'6"	FEM	R	shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/33687	L63	12'6" - 13'6"	FEM	L	shaft frag	BOV II
BP/3/33699	L63	12'6" - 13'6"	FEM		shaft frag	BOV II
S94-14967	L63	12'6" - 13'6"	FEM		shaft frag	BOV II
BP/3/33684	L63	12'6" - 13'6"	FEM	R	prox. shaft frag	BOV II
BP/3/18019	L63	13'6" - 14'6"	FEM	R	shaft frag	BOV II
BP/3/34245	L63	15'6" - 16'6"	FEM	R	shaft frag	BOV II
BP/3/33833	L63	16'6" - 17'6"	FEM	L	head frag	BOV II
BP/3/33827	L63	16'6" - 17'6"	FEM	L	shaft frag	BOV II
BP/3/16736	L63	7'6" - 8'6"	FEM	L	shaft frag	BOV II
S94-14876	L63	MIXED	FEM		shaft frag	BOV II
BP/3/33676	L63	MIXED	FEM	R	shaft frag	BOV II
BP/3/34051	M60	10'5" - 11'5"	FEM	R	shaft frag	BOV II
BP/3/34055	M60	10'5" - 11'5"	FEM		shaft frag	BOV II
BP/3/34060	M60	12'5" - 13'5"	FEM	L	distal condyle	BOV II
BP/3/34065	M60	12'5" - 13'5"	FEM		shaft frag	BOV II
BP/3/34059	M60	12'5" - 13'5"	FEM	R	prox. shaft frag	BOV II
BP/3/33306	M60	18'2" - 19'2"	FEM	L	shaft frag	BOV II
BP/3/33982	M61	11'3" - 12'3"	FEM	L	shaft frag	BOV II
S94-7690	M61	12'8" - 13'8"	FEM	L	shaft frag	BOV II
S94-7688	M61	12'8" - 13'8"	FEM	L	shaft frag	BOV II
BP/3/32935	M61	14'8" - 15'8"	FEM	L	shaft frag	BOV II
BP/3/32940	M61	14'8" - 15'8"	FEM	R	shaft frag	BOV II
BP/3/33014	M61	15'8" - 16'8"	FEM		shaft frag	BOV II
BP/3/33020	M61	15'8" - 16'8"	FEM	L	shaft frag	BOV II
BP/3/33022	M61	15'8" - 16'8"	FEM		shaft frag	BOV II
BP/3/33058	M61	15'8" - 16'8"	FEM	R	shaft frag	BOV II
S94-14836	M61	16'8" - 17'8"	FEM	R	shaft frag	BOV II
BP/3/32551	M61	18'8" - 19'8"	FEM	L	distal epiph.	BOV II
BP/3/32525	M61	19'8" - 20'9"	FEM	L	shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32542	M61	19'8" - 20'9"	FEM	L	shaft frag	BOV II
S94-7747	M62	12'11" - 13'11"	FEM	R	shaft frag	BOV II
S94-7649	M62	15'11" - 16'11"	FEM	L	shaft frag	BOV II
S94-7653	M62	15'11" - 16'11"	FEM	L	shaft frag	BOV II
S94-7655	M62	15'11" - 16'11"	FEM	L	shaft frag	BOV II
S94-7647	M62	15'11" - 16'11"	FEM		prox. shaft frag	BOV II
BP/3/33638	M62	16'11" - 17'11"	FEM	R	shaft frag	BOV II
BP/3/33634	M62	17'11" - 18'11"	FEM	L	shaft frag	BOV II
BP/3/33635	M62	17'11" - 18'11"	FEM	R	shaft frag	BOV II
BP/3/18200	M62	17'11" - 18'11"	FEM	L	shaft frag	BOV II
S94-7520	M63	11'9" - 12'9"	FEM	R	shaft frag	BOV II
S94-7565	M63	11'9" - 12'9"	FEM	L	shaft frag	BOV II
S94-7574	M63	11'9" - 12'9"	FEM	L	shaft frag	BOV II
S94-7586	M63	11'9" - 12'9"	FEM	L	shaft frag	BOV II
S94-7588	M63	11'9" - 12'9"	FEM		shaft frag	BOV II
S94-7592	M63	11'9" - 12'9"	FEM	L	shaft frag	BOV II
BP/3/32620	M63	13'9" - 14'9"	FEM	L	shaft frag	BOV II
S94-8404	M63	13'9" - 14'9"	FEM		shaft frag	BOV II
BP/3/32575	M63	14'9" - 15'9"	FEM		shaft frag	BOV II
BP/3/32505	M63	15'9" - 16'9"	FEM	L	shaft frag	BOV II
BP/3/32506	M63	15'9" - 16'9"	FEM	L	head	BOV II
BP/3/32513	M63	15'9" - 16'9"	FEM		shaft frag	BOV II
S94-7705	M64	8'8" - 9'8"	FEM	R	prox. shaft frag	BOV II
BP/3/32851	N59	18'0" - 19'0"	FEM	L	shaft frag	BOV II
BP/3/33480	N59	22'0" - 23'0"	FEM	R	shaft frag	BOV II
S94-10063	N60	13'9" - 14'9"	FEM	R	shaft frag	BOV II
S94-9531	N60	20'9" - 21'9"	FEM	R	shaft frag	BOV II
S94-9547	N60	20'9" - 21'9"	FEM		shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-9539	N60	20'9" - 21'9"	FEM	R	prox. shaft frag	BOV II
S94-1244	N63	12'9" - 13'9"	FEM	L	head	BOV II
S94-1245	N63	12'9" - 13'9"	FEM	R	shaft frag	BOV II
BP/3/16803	O63	22'6" - 23'6"	FEM	R	shaft frag	BOV II
BP/3/32626	O59	12'6" - 13'6"	FEM	L	shaft frag	BOV II
S94-6575	O60	12'3" - 13'3"	FEM	L	shaft frag	BOV II
BP/3/33475	O60	13'3" - 14'3"	FEM	R	shaft frag	BOV II
S94-6593	O60	14'3" - 15'3"	FEM	R	shaft frag	BOV II
S94-6594	O60	14'3" - 15'3"	FEM	R	prox. shaft frag	BOV II
BP/3/16857	O60	17'0" - 18'0"	FEM	R	shaft frag	BOV II
S94-6467	O61	14'8" - 15'8"	FEM	L	shaft frag	BOV II
S94-6488	O61	15'8" - 16'8"	FEM		shaft frag	BOV II
BP/3/16764	O61	17'8" - 18'8"	FEM	R	shaft frag	BOV II
BP/3/16765	O61	17'8" - 18'8"	FEM	R	shaft frag	BOV II
S94-6599	O62	14'9" - 15'9"	FEM		shaft frag	BOV II
BP/3/33101	O62	14'9" - 15'9"	FEM	L	prox. shaft frag	BOV II
S94-6461	O63	10'0" - 11'0"	FEM	R	shaft frag	BOV II
S94-6463	O63	10'0" - 11'0"	FEM	R	shaft frag	BOV II
S94-6442	O63	13'0" - 14'0"	FEM	L	prox. shaft frag	BOV II
BP/3/32501	O63	13'6" - 14'6"	FEM		shaft frag	BOV II
BP/3/32502	O63	13'6" - 14'6"	FEM		shaft frag	BOV II
S94-6721	P58	25'10" - 26'10"	FEM	R	head	BOV II
S94-6839	P58	27'10" - 28'10"	FEM	R	shaft frag	BOV II
S94-6840	P58	27'10" - 28'10"	FEM	R	shaft frag	BOV II
S94-2035	P60	14'4" - 15'4"	FEM	R	shaft frag	BOV II
S94-6825	P60	16'6" - 17'6"	FEM		dist. condyle frag	BOV II
S94-6618	P60	17'6" - 18'6"	FEM	R	shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/19161	P61	8'6" - 9'6"	FEM	L	shaft frag	BOV II
BP/3/19164	P61	8'6" - 9'6"	FEM		shaft frag	BOV II
BP/3/19275	Q58	13'6" - 14'6"	FEM	L	shaft frag	BOV II
BP/3/19153	Q58	14'6" - 15'3"	FEM	R	shaft frag	BOV II
S94-7260	Q58	19'3" - 20'3"	FEM	L	dist.	BOV II
S94-7256	Q58	19'3" - 20'3"	FEM	L	shaft frag	BOV II
S94-13065	Q58	23'3' '- 24'3"	FEM		shaft frag	BOV II
S94-9546	N60	20'9" - 21'9"	FEM		head frag	BOV II
BP/3/34324	J62	15'10" - 16'10"	FEM	R	shaft	BOV II
BP/3/34159	K63		FEM	R	shaft	BOV II
BP/3/34054	M60	10'5" - 11'5"	FRONT	R	Frag	BOV II
S94-6675	P59	17'2" - 18'2"	FEM	L	frag	BOV II
BP/3/32444	H62	21'10" - 22'10"	HORN		Frag	BOV II
BP/3/33315	J62	16'10" - 17'10"	HORN		Frag	BOV II
BP/3/34368	J63	15'10" - 16'10"	HORN		Frag	BOV II
BP/3/34069	K63		HORN		Frag	BOV II
BP/3/33444	M61	17'8" - 18'8"	HORN		Frag	BOV II
BP/3/33639	M62	16'11" - 17'11"	HORN		Frag	BOV II
BP/3/32863	N59	16'0" - 17'0"	HORN		Frag	BOV II
BP/3/32833	N59	18'0" - 19'0"	HORN		Frag	BOV II
BP/3/33479	N59	22'0" - 23'0"	HORN		Frag	BOV II
BP/3/32877	N60	17'9" - 18'9"	HORN		Frag	BOV II
S94-1194	N63	13'10" - 14'10"	HORN		Frag	BOV II
S94-1698	N61	11'10" - 12'10"	HORN		Frag	BOV II
S94-1724	N61	12'10" - 13'10"	HORN		Frag	BOV II
S94-6451	O63	12'6" - 13'10"	HORN		Frag	BOV II
BP/3/33403	P58	13'10" - 14'10"	HORN		Frag	BOV II
S94-11241	P59	16'2" - 17'2"	HORN		Frag	BOV II
S94-6796	P59	18'4" - 19'4"	HORN		Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-11248	P59	25'2" - 26'2"	HORN		Frag	BOV II
BP/3/33069	P61	16'10" - 17'10"	HORN		Frag	BOV II
S94-10095	P64	10'8" - 11'8"	HORN		Frag	BOV II
BP/3/32458	H62	21'10" - 22'10"	HUM	L	dist. shaft frag	BOV II
BP/3/33548	H62	21'10" - 22'10"	HUM	R	dist. shaft frag	BOV II
BP/3/33557	H62	21'10" - 22'10"	HUM	R	dist. shaft frag	BOV II
BP/3/34398	J62	14'10" - 15'10"	HUM	R	prox. shaft frag	BOV II
BP/3/33207	J62	16'10" - 17'10"	HUM	R	dist. shaft frag	BOV II
BP/3/33208	J62	16'10" - 17'10"	HUM	R	dist. shaft frag	BOV II
BP/3/32429	J62	19'10" - 20'10"	HUM	L	shaft frag	BOV II
BP/3/34331	J63	15'10" - 16'10"	HUM	L	shaft frag	BOV II
BP/3/33880	K62	15'10" - 16'10"	HUM	L	shaft frag	BOV II
BP/3/34526	K62	18'10" - 19'10"	HUM	R	shaft frag	BOV II
BP/3/32331	K63	15'10" - 16'10"	HUM	R	shaft frag	BOV II
BP/3/32316	K63	15'10" - 16'10"	HUM	R	prox. shaft frag	BOV II
BP/3/33717	K63		HUM	R	dist. shaft frag	BOV II
BP/3/33737	K63		HUM	L	dist. shaft frag	BOV II
BP/3/34135	K63		HUM	L	shaft frag	BOV II
BP/3/33723	K63		HUM	R	prox. shaft frag	BOV II
BP/3/33494	L62	13'5" - 14'5"	HUM	R	dist. shaft frag	BOV II
BP/3/33512	L62	14'5" - 15'5"	HUM	L	shaft frag	BOV II
BP/3/32639	L62	15'5" - 16'5"	HUM	R	dist. shaft frag	BOV II
BP/3/18936	L63	10'6" - 11'6"	HUM	R	shaft frag	BOV II
BP/3/17143	L63	12'6" - 13'6"	HUM	R	dist. shaft frag	BOV II
BP/3/33690	L63	12'6" - 13'6"	HUM	R	dist. shaft frag	BOV II
S94-15020	L63	12'6" - 13'6"	HUM	L	dist. shaft frag	BOV II
BP/3/34039	M60	10'5" - 11'5"	HUM	L	shaft frag	BOV II
BP/3/33104	M60	14'2" - 15'2"	HUM		shaft frag	BOV II
BP/3/32596	M60	17'2" - 18'2"	HUM	R	dist. shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32897	M61	14'8" - 15'8"	HUM	R	dist. shaft frag	BOV II
BP/3/32928	M61	14'8" - 15'8"	HUM	L	dist. shaft frag	BOV II
BP/3/32898	M61	14'8" - 15'8"	HUM	R	shaft frag	BOV II
BP/3/32936	M61	14'8" - 15'8"	HUM	L	shaft frag	BOV II
BP/3/32552	M61	18'8" - 19'8"	HUM	R	dist. shaft frag	BOV II
BP/3/33473	M61	19'8"-20'8"	HUM	R	prox. shaft frag	BOV II
S94-7681	M62	13'11" - 14'11"	HUM	L	shaft frag	BOV II
BP/3/33641	M62	16'11" - 17'11"	HUM	R	dist. shaft frag	BOV II
BP/3/33642	M62	16'11" - 17'11"	HUM	R	dist. shaft frag	BOV II
BP/3/33643	M62	16'11" - 17'11"	HUM	L	dist. shaft frag	BOV II
BP/3/33644	M62	16'11" - 17'11"	HUM		dist. shaft frag	BOV II
BP/3/33662	M62	16'11" - 17'11"	HUM	L	dist. shaft frag	BOV II
BP/3/33666	M62	16'11" - 17'11"	HUM	L	dist. shaft frag	BOV II
S94-7741	M62	9'11" - 10'11"	HUM	L	dist. shaft frag	BOV II
S94-8394	M63	13'9" - 14'9"	HUM	R	dist. shaft frag	BOV II
BP/3/32603	M63	13'9" - 14'9"	HUM	L	prox. shaft frag	BOV II
S94-8395	M63	13'9" - 14'9"	HUM	R	prox. shaft frag	BOV II
BP/3/32518	M63	15'9" - 16'9"	HUM		shaft frag	BOV II
BP/3/33615	M64	11'4" - 12'4"	HUM	L	dist. shaft frag	BOV II
BP/3/33626	M64	11'4" - 12'4"	HUM	L	shaft frag	BOV II
BP/3/33617	M64	11'4" - 12'4"	HUM	L	prox. shaft frag	BOV II
BP/3/33625	M64	11'4" - 12'4"	HUM	R	prox. shaft frag	BOV II
BP/3/33629	M64	11'4" - 12'4"	HUM	L	prox. shaft frag	BOV II
BP/3/32796	N59	19'0" - 20'0"	HUM	L	dist. shaft frag	BOV II
BP/3/32794	N59	20'0" - 21'0"	HUM	L	dist. shaft frag	BOV II
BP/3/32736	N59	21'0" - 22'0"	HUM	R	prox. shaft frag	BOV II
S94-10061	N60	13'9" - 14'9"	HUM	R	dist. shaft frag	BOV II
BP/3/32875	N60	17'9" - 18'9"	HUM	L	shaft frag	BOV II
S94-1231	N63	12'9" - 13'9"	HUM	R	dist. shaft frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-8049	N63	13'7" - 14'7"	HUM	R	dist. shaft frag	BOV II
S94-10145	N64	12'8" - 13'8"	HUM	R	dist. shaft frag	BOV II
BP/3/16862	O60	17'0" - 18'0"	HUM	R	dist. shaft frag	BOV II
BP/3/16895	O60	20'0" - 21'0"	HUM	L	dist. shaft frag	BOV II
BP/3/16896	O60	20'0" - 21'0"	HUM	L	prox. shaft frag	BOV II
BP/16797	O60	22'0" - 23'0"	HUM	R	dist. shaft frag	BOV II
S94-6466	O61	14'8" - 15'8"	HUM	L	shaft frag	BOV II
S94-6581	O62	15'9" - 16'9"	HUM	L	dist. shaft frag	BOV II
BP/3/32497	O63	13'6" - 14'6"	HUM	L	dist. shaft frag	BOV II
BP/3/33385	O63	13'6" - 14'6"	HUM	R	dist. shaft frag	BOV II
S94-6861	P58	23'10" - 24'10"	HUM		dist. shaft frag	BOV II
S94-6720	P58	25'10" - 26'10"	HUM	R	dist. shaft frag	BOV II
BP/3/34670	P60	15'4" - 16'4"	HUM	L	prox. shaft frag	BOV II
S94-6634B	P61	15'10" - 16'10"	HUM	L	dist. shaft frag	BOV II
S94-13404	Q58	15'3" - 16'3"	HUM	R	dist. Frag	BOV II
S94-7805	Q59	15'0" - 16'0"	HUM	L	shaft frag	BOV II
BP/3/32638	L62	15'5" - 16'5"	HUM	R		BOV II
S94-7666	M62	14'11" - 15'11"	HUM	L	head	BOV II
BP/3/32748	N59	21'0" - 22'0"	HUM		head	BOV II
S94-10045	N60	12'9" - 13'9"	HUM	L	head	BOV II
S94-6489	O61	15'8" - 16'8"	HUM		head frag	BOV II
S94-10108	P64	10'8" - 11'8"	HUM	R	head	BOV II
BP/3/33083	N59	21'0" - 22'0"	HUM	L	shaft	BOV II
BP/3/32670	J62	16'10" - 17'10"	HYO		Frag	BOV II
BP/3/34646	J62	20'10" - 21'10"	HYO		Frag	BOV II
S94-1725	M63	10'10" - 11'10"	I	L	Frag	BOV II
BP/3/33235	N60	21'9" - 22'9"	I		whole	BOV II
S94-8047	N63	13'7" - 14'7"	I	R	Frag	BOV II
BP/3/34569	I63	15'10" - 16'10"	I1	L	Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32679	J62	16'10" - 17'10"	I1	R		BOV II
BP/3/32680	J62	16'10" - 17'10"	I1	R		BOV II
BP/3/34653	J62	20'10" - 21'10"	I1	L		BOV II
BP/3/34482	K62	17'10" - 18'10"	I1	R		BOV II
BP/3/18131	M62	16'11" - 17'11"	I1	R		BOV II
BP/3/18217	M62	17'11" - 18'11"	I1	R		BOV II
S94-1690	N62	10'10" - 11'10"	I1	L		BOV II
BP/3/34627	I62	18'10" - 19'10"	I2	R		BOV II
BP/3/34408	J63	13'10" - 14'10"	I2	L		BOV II
BP/3/34499	J63	16'10" - 17'10"	I2	R		BOV II
BP/3/34539	K62	18'10" - 19'10"	I2	L		BOV II
BP/3/34540	K62	18'10" - 19'10"	I2	R		BOV II
BP/3/32349	K63	15'10" - 16'10"	I2	L		BOV II
BP/3/34185	L63	15'6" - 16'6"	I2	L		BOV II
BP/3/18135	M62	16'11" - 17'11"	I2	L		BOV II
S94-6614	P61	16'10" - 17'10"	I2	R		BOV II
BP/3/34626	I62	18'10" - 19'10"	I3	R		BOV II
BP/3/34391	J62	14'10" - 15'10"	I3	R		BOV II
BP/3/34407	J63	13'10" - 14'10"	I3	L		BOV II
BP/3/34092	K63		I3	R	whole	BOV II
BP/3/17915	M62	17'11" - 18'11"	I3	L		BOV II
S94-8376	M63	13'9" - 14'9"	I3	L		BOV II
BP/3/32701	J62	17'10" - 18'10"	ILI	R	neck	BOV II
BP/3/32703	J62	17'10" - 18'10"	ILI	L	neck	BOV II
BP/3/34643	J62	20'10" - 21'10"	ILI	L	Frag	BOV II
BP/3/33103	M60	14'2" - 15'2"	ILI		blade frag	BOV II
BP/3/32933	M61	14'8" - 15'8"	ILI	L	Frag	BOV II
S94-14838	M61	16'8" - 17'8"	ILI	R	neck frag	BOV II
S94-7731	M62	10'11" - 11'11"	ILI		Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-7730	M62	10'11" - 11'11"	ILI	L	neck	BOV II
BP/3/18122	M62	16'11" - 17'11"	ILI	L	neck frag	BOV II
S94-7712	M64	8'8" - 9'8"	ILI	L	blade frag	BOV II
S94-9971	M64	9'8" - 10'8"	ILI	L	neck	BOV II
BP/3/32872	N59	13'0" - 14'0"	ILI	L	Frag	BOV II
BP/3/32829	N59	15'0" - 16'0"	ILI	R	Frag	BOV II
BP/3/32820	N59	15'0" - 16'0"	ILI	R	Frag	BOV II
BP/3/32823	N59	15'0" - 16'0"	ILI	R	blade frag	BOV II
BP/3/32818	N59	15'0" - 16'0"	ILI	R	Frag	BOV II
BP/3/32822	N59	15'0" - 16'0"	ILI	R	neck frag	BOV II
BP/3/32864	N59	16'0" - 17'0"	ILI	R	blade frag	BOV II
SWP-2672	N60	11'9" - 12'9"	ILI	L	Frag	BOV II
BP/3/32830	N61	18'11" - 19'11"	ILI	R	Frag	BOV II
BP/3/32627	O59	12'6" - 13'6"	ILI	L	neck	BOV II
S94-6588	O60	14'3" - 15'3"	ILI	L	neck	BOV II
S94-6487	O61	15'8" - 16'8"	ILI		neck	BOV II
BP/3/16804	O61	18'8" - 19'1"	ILI	R	blade frag	BOV II
BP/3/33068	P61	16'10" - 17'10"	ILI		Frag	BOV II
BP/3/33066	P61	17'10" - 18'5"	ILI	L	neck frag	BOV II
BP/3/34587	I62	18'10" - 19'10"	ISCH	L	Frag	BOV II
BP/3/34599	I62	18'10" - 19'10"	ISCH	R	Frag	BOV II
BP/3/34366	J63	15'10" - 16'10"	ISCH	L	Frag	BOV II
BP/3/33884	K62	15'10" - 16'10"	ISCH	R	Frag	BOV II
BP/3/34270	K62	19'10" - 20'10"	ISCH	R	Frag	BOV II
BP/3/34227	L63	15'6" - 16'6"	ISCH	R	Frag	BOV II
BP/3/34252	L63	15'6" - 16'6"	ISCH	R	Frag	BOV II
BP/3/33664	M62	16'11" - 17'11"	ISCH	R	Frag	BOV II
BP/3/18126	M62	16'11" - 17'11"	ISCH	R	Frag	BOV II
S94-7581	M63	11'9" - 12'9"	ISCH	R	Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32821	N59	15'0" - 16'0"	ISCH	L	Frag	BOV II
S94-1200	N63	13'10" - 14'10"	ISCH	L	Frag	BOV II
BP/3/33070	P61	16'10" - 17'10"	ISCH	L	Frag	BOV II
S94-6707	P61	17'10" - 18'5"	ISCH	R	Frag	BOV II
BP/3/34549	K62	18'10" - 19'10"	LAT MEL	L		BOV II
BP/3/34009	M61	11'3" - 12'3"	LAT MEL	R		BOV II
S94-14799	M61	16'8" - 17'8"	LAT MEL	R		BOV II
BP/3/32800	N59	19'0" - 20'0"	LAT MEL	R		BOV II
BP/3/32733	N59	21'0" - 22'0"	LAT MEL	L		BOV II
S94-6441	O63	15'10" - 16'10"	LAT MEL	R		BOV II
BP/3/34616	I62	18'10" - 19'10"	LUMB		centrum frag	BOV II
BP/3/34573	I63	15'10" - 16'10"	LUMB		centrum	BOV II
BP/3/32433	J62	19'10" - 20'10"	LUMB		neural arch + spine	BOV II
BP/3/34341	J63	15'10" - 16'10"	LUMB		centrum frag	BOV II
BP/3/34545	K62	18'10" - 19'10"	LUMB			BOV II
BP/3/33057	L62	13'5" - 14'5"	LUMB		Frag	BOV II
BP/3/33956	L62	16'5" - 17'5"	LUMB		centrum frag	BOV II
BP/3/33416	L62	17'5" - 18'5"	LUMB		Frag	BOV II
BP/3/28095	L63	12'6" - 13'6"	LUMB		centrum frag	BOV II
S94-14761	L63	12'6" - 13'6"	LUMB		centrum frag	BOV II
S94-14753	L63	12'6" - 13'6"	LUMB		neural arch + spine	BOV II
BP/3/33939	L63		LUMB		centrum frag	BOV II
BP/3/34052	M60	10'5" - 11'5"	LUMB		centrum frag	BOV II
BP/3/33981	M61	11'3" - 12'3"	LUMB		centrum frag	BOV II
S94-14990	M64	11'4" - 12'4"	LUMB		centrum	BOV II
BP/3/32740	N59	21'0" - 22'0"	LUMB			BOV II
S94-6452	O63	16'10" - 17'10"	LUMB		centrum frag	BOV II
BP/3/33887	K62	15'10" - 16'10"	LUN	L		BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32841	N59	18'0" - 19'0"	LUN	L		BOV II
BP/3/33246	N60	20'9" - 21'9"	LUN	L		BOV II
S94-9530	N60	21'9" - 22'9"	LUN	L		BOV II
BP/3/34638	H63	22'10" - 23'10"	M1	R		BOV II
BP/3/34574	I63	15'10" - 16'10"	M1	L		BOV II
BP/3/34652	J62	20'10" - 21'10"	M1	L		BOV II
BP/3/18934	L63	10'6" - 11'6"	M1	R		BOV II
BP/3/17217	L63	13'6" - 14'6"	M1	L		BOV II
BP/3/17315	L63	13'6" - 14'6"	M1	R		BOV II
BP/3/17221	L63	13'6" - 14'6"	M1	L		BOV II
BP/3/34196	L63	15'6" - 16'6"	M1	L		BOV II
BP/3/34208	L63	15'6" - 16'6"	M1		Frag	BOV II
BP/3/34212	L63	15'6" - 16'6"	M1	L		BOV II
BP/3/34206	L63	15'6" - 16'6"	M1	R	Frag	BOV II
BP/3/34207	L63	15'6" - 16'6"	M1	R	Frag	BOV II
BP/3/33999	M61	11'3" - 12'3"	M1			BOV II
S94-8045	N63	13'7" - 14'7"	M1			BOV II
S94-6865	P59	15'2" - 16'2"	M1		Frag	BOV II
S94-6612	P61	16'10" - 17'10"	M1	L		BOV II
BP/3/34225	L63	15'6" - 16'6"	M1+M2		Frag	BOV II
BP/3/34575	I63	15'10" - 16'10"	M2	L		BOV II
BP/3/34387	J62	14'10" - 15'10"	M2	R		BOV II
BP/3/34467	J63	17'10" - 18'10"	M2	L		BOV II
BP/3/34563	J63	18'10" - 19'10"	M2	R	Frag	BOV II
BP/3/34568	J63	18'10" - 19'10"	M2	R		BOV II
BP/3/34562	J63	18'10" - 19'10"	M2	L	Frag	BOV II
BP/3/34485	K62	17'10" - 18'10"	M2	L		BOV II
BP/3/34487	K62	17'10" - 18'10"	M2			BOV II
BP/3/34309	K62	21'10" - 22'10"	M2	R		BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34310	K62	21'10" - 22'10"	M2	R		BOV II
BP/3/33786	K63		M2	L		BOV II
BP/3/34098	K63		M2	R		BOV II
BP/3/34616	I62	18'10" - 19'10"	LUMB		centrum frag	BOV II
BP/3/34573	I63	15'10" - 16'10"	LUMB		centrum	BOV II
BP/3/32433	J62	19'10" - 20'10"	LUMB		neural arch + spine	BOV II
BP/3/34341	J63	15'10" - 16'10"	LUMB		centrum frag	BOV II
BP/3/34545	K62	18'10" - 19'10"	LUMB			BOV II
BP/3/33057	L62	13'5" - 14'5"	LUMB		Frag	BOV II
BP/3/33956	L62	16'5" - 17'5"	LUMB		centrum frag	BOV II
BP/3/33416	L62	17'5" - 18'5"	LUMB		Frag	BOV II
BP/3/28095	L63	12'6" - 13'6"	LUMB		centrum frag	BOV II
S94-14761	L63	12'6" - 13'6"	LUMB		centrum frag	BOV II
S94-14753	L63	12'6" - 13'6"	LUMB		neural arch + spine	BOV II
BP/3/33939	L63		LUMB		centrum frag	BOV II
BP/3/34052	M60	10'5" - 11'5"	LUMB		centrum frag	BOV II
BP/3/33981	M61	11'3" - 12'3"	LUMB		centrum frag	BOV II
S94-14990	M64	11'4" - 12'4"	LUMB		centrum	BOV II
BP/3/32740	N59	21'0" - 22'0"	LUMB			BOV II
S94-6452	O63	16'10" - 17'10"	LUMB		centrum frag	BOV II
BP/3/34110	K63		M2	R		BOV II
BP/3/33950	L62	16'5" - 17'5"	M2	L		BOV II
S94-14705	L63	12'6" - 13'6"	M2	R		BOV II
BP/3/34194	L63	15'6" - 16'6"	M2	R		BOV II
BP/3/34214	L63	15'6" - 16'6"	M2	R	Frag	BOV II
BP/3/33998	M61	11'3" - 12'3"	M2	L		BOV II
BP/3/18139	M62	16'11" - 17'11"	M2R		Frag	BOV II
BP/3/33227	N60	21'9" - 22'9"	M2	R		BOV II
S94-6834	P60	16'6" - 17'6"	M2		Frag	BOV II

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-6708	P61	17'10" - 18'5"	M2	R		BOV II
S94-8044	N63	13'7" - 14'7"	M2			BOV II
BP/3/34630	I62	18'10" - 19'10"	M3	L		BOV II
BP/3/32681	J62	16'10" - 17'10"	M3	L		BOV II
BP/3/32657	J62	16'10" - 17'10"	M3	L	Frag	BOV II
BP/3/33923	K62	15'10" - 16'10"	M3	L		BOV II
BP/3/34486	K62	17'10" - 18'10"	M3	R	Frag	BOV II
BP/3/34543	K62	18'10" - 19'10"	M3	R	Frag	BOV II
BP/3/34099	K63		M3	L		BOV II
BP/3/34106	K63		M3	L		BOV II
BP/3/33860	L63	16'6" - 17'6"	M3	L		BOV II
BP/3/34044	M60	10'5" - 11'5"	M3	R		BOV II
BP/3/33409	N60	22'9" - 23'9"	M3			BOV II
BP/3/19199	P60	10'5" - 11'5"	M3	R	Frag	BOV II
S94-6611	P61	16'10" - 17'10"	M3	L		BOV II
BP/3/33511	L62	14'5" - 15'5"	MAG	L		BOV II
BP/3/34062	M60	12'5" - 13'5"	MAG	L	Frag	BOV II
BP/3/34024	M61	11'3" - 12'3"	MAG	R	Frag	BOV II
BP/3/33247	N60	20'9" - 21'9"	MAG	R		BOV II
S94-1196	N63	13'10" - 14'10"	MAG	R		BOV II
BP/3/32338	K63	15'10" - 16'10"	1/2 MAX+M2-3	R	Frag	*Redunca fulvorufora*
BP/3/34466	J63	17'10" - 18'10"	LOWER DP4	R	whole	*RAedunca arundinum*
BP/3/33961	L62	16'5" - 17'5"	LOWER M2	R	whole	*R. arundinum*
BP/3/34357	J63	15'10" - 16'10"	LOWER P4	R	whole	*R. arundinum*
BP/3/34104	K63		LOWER P4	L	whole	*R. arundinum*
BP/3/33854	L63	16'6" - 17'6"	LOWER P4	L	whole	*R. arundinum*
BP/3/34541	K62	18'10" - 19'10"	UPPER DP		whole	*R. arundinum*
BP/3/34314	K62	21'10" - 22'10"	UPPER DP		whole	*R. arundinum*
BP/3/34655	J62	20'10" - 21'10"	UPPER DP1	R	whole	*R. arundinum*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34650	J62	20'10" - 21'10"	UPPER M1	R	whole	*Kobus ellipsyprimnus*
BP/3/34359	J63	15'10" - 16'10"	UPPER M1	L	whole	*K. ellipsyprimnus*
BP/3/34105	K63		UPPER M1	L	whole	*R. arundinum*
BP/3/34198	L63	15'6" - 16'6"	UPPER M1	L	whole	*R. arundinum*
BP/3/34647	J62	20'10" - 21'10"	P1	L		*Hippotragus equinus*
BP/3/33976	L62	16'5" - 17'5"	PHAL		prox. frag	*Damaliscus dorcas*
BP/3/32291	K63	17'0" - 18'0"	I1	R		*D. dorcas*
BP/3/34093	K63		I1	R		*D. dorcas*
BP/3/33263	L62	17'5" - 18'5"	I1	L		*D. dorcas*
BP/3/32471	H62	21'10" - 22'10"	I2	L		*D. dorcas*
BP/3/34184	L63	15'6" - 16'6"	I2	R		*D. dorcas*
BP/3/34386	J62	14'10" - 15'10"	M1	R		*D. dorcas*
BP/3/32423	J62	19'10" - 20'10"	M1			*D. dorcas*
BP/3/34500	J63	16'10" - 17'10"	M1	L		*D. dorcas*
BP/3/34494	K62	20'10" - 21'10"	M1	R		*D. dorcas*
BP/3/34495	K62	20'10" - 21'10"	M1	L		*D. dorcas*
BP/3/32357	K63	15'10" - 16'10"	M1	L		*D. dorcas*
BP/3/32399	K63	17'0" - 18'0"	M1	L		*D. dorcas*
BP/3/34031	M61	11'3" - 12'3"	M1		Frag	*D. dorcas*
BP/3/34639	H63	22'10" - 23'10"	M2	R		*D. dorcas*
BP/3/32377	I62	19'10" - 20'20"	M2	L		*D. dorcas*
BP/3/32678	J62	16'10" - 17'10"	M2	R		*D. dorcas*
BP/3/32366	J63	19'10" - 20'10"	M2	L		*D. dorcas*
BP/3/33932	K62	15'10" - 16'10"	M2	L		*D. dorcas*
BP/3/33934	K62	15'10" - 16'10"	M2	R		*D. dorcas*
BP/3/33154	L62	14'5" - 15'5"	M2	L		*D. dorcas*
BP/3/34197	L63	15'6" - 16'6"	M2	R		*D. dorcas*
BP/3/33064	M61	14'8" - 15'8"	M2	R		*D. dorcas*
BP/3/18204	M62	17'11" - 18'11"	M2	L		*D. dorcas*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32750	N59	21'0" - 22'0"	M2	L		*D. dorcas*
BP/3/33229	N60	21'9" - 22'9"	M2	R		*D. dorcas*
BP/3/33228	N60	21'9" - 22'9"	M2	R		*D. dorcas*
S94-6638	P61	15'10" - 16'10"	M2	L		*D. dorcas*
BP/3/32372	I62	19'10" - 20'20"	M3	R		*D. dorcas*
BP/3/32659	J62	16'10" - 17'10"	M3	R		*D. dorcas*
BP/3/34488	K62	17'10" - 18'10"	M3	R		*D. dorcas*
BP/3/32333	K63	15'10" - 16'10"	M3	L		*D. dorcas*
BP/3/34108	K63		M3	R	Frag	*D. dorcas*
BP/3/34154	K63		M3	R		*D. dorcas*
BP/3/33153	L62	14'5" - 15'5"	M3	L		*D. dorcas*
BP/3/33152	L62	14'5" - 15'5"	M3	R		*D. dorcas*
BP/3/32757	N59	21'0" - 22'0"	M3	R		*D. dorcas*
S94-6637	P61	15'10" - 16'10"	M3	R		*D. dorcas*
BP/3/33046	L62	13'5" - 14'5"	1/2 MAND +P4-M3	R	Frag	*D. dorcas*
BP/3/32289	K63	17'0" - 18'0"	1/2 MAX +DP4	L	Frag	*D. dorcas*
BP/3/32404	K63	17'0" - 18'0"	MTT	R	prox. shaft frag	*D. dorcas*
BP/3/33936	K62	15'10" - 16'10"	P2	L		*D. dorcas*
BP/3/34294	J63	14'10" - 15'10"	P3	R		*D. dorcas*
BP/3/34484	K62	17'10" - 18'10"	P3	L		*D. dorcas*
BP/3/34202	L63	15'6" - 16'6"	P3	R		*D. dorcas*
BP/3/34388	J62	14'10" - 15'10"	P4	R		*D. dorcas*
BP/3/34644	J62	20'10" - 21'10"	P4	L		*D. dorcas*
BP/3/32356	K63	15'10" - 16'10"	P4	L		*D. dorcas*
BP/3/34203	L63	15'6" - 16'6"	P4	R		*D. dorcas*
BP/3/33855	L63	16'6" - 17'6"	P4	L		*D. dorcas*
BP/3/32752	N59	21'0" - 22'0"	P4	R		*D. dorcas*
BP/3/34369	J63	15'10" - 16'10"	1/2 MAX +M1-2	R	Frag	*Damaliscus lunatus*
BP/3/32394	J63	20'10" - 21'10"	DP3	L		*Connochaetes* sp.

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32430	J62	19'10" - 20'10"	I	R		*Connochaetes* sp.
BP/3/33255	N60	20'9" - 21'9"	M1	R		*Connochaetes* sp.
S94-14992	M64	11'4" - 12'4"	MOLAR			*Connochaetes* sp.
BP/3/33257	N60	20'9" - 21'9"	P4	L		*Connochaetes* sp.
BP/3/32412	J63	19'10" - 20'10"	TOOTH		Frag	*Connochaetes* sp.
BP/3/34107	K63		M^1	L	whole	*K. leche*
BP/3/34067	M60	12'5" - 13'5"	M^1	R	whole	*K. leche*
BP/3/34295	J63	14'10" - 15'10"	M^2	R	whole	*K. leche*
BP/3/33764	K63		ATLAS		whole	BOV III
BP/3/32437	H62	21'10" - 22'10"	BONE Frag			BOV III
BP/3/33119	L62	13'5" - 14'5"	BONE frag			BOV III
S94-14956	L63	12'6" - 13'6"	BONE frag			BOV III
BP/3/17137	L63		BONE frag			BOV III
BP/3/32746	N59	21'0" - 22'0"	BONE frag			BOV III
BP/3/32747	N59	21'0" - 22'0"	BONE frag			BOV III
S94-2036	P60	14'4" - 15'4"	BONE frag			BOV III
BP/3/33139	L62	14'5" - 15'5"	CALC	R	Frag	BOV III
BP/3/33140	L62	14'5" - 15'5"	CALC	R	frag	BOV III
BP/3/33987	M61	11'3" - 12'3"	CALC	R	caudal frag	BOV III
BP/3/33825	K63		CERV		frag	BOV III
BP/3/33041	M61	15'8" - 16'8"	CERV		centrum rag	BOV III
BP/3/34595	I62	18'10" - 19'10"	CERV		frag	BOV III
BP/3/33876	K62	15'10" - 16'10"	CERV		frag	BOV III
S94-14751	L63	12'6" - 13'6"	CERV		frag	BOV III
S94-14754	L63	12'6" - 13'6"	CERV		frag	BOV III
S94-14762	L63	12'6" - 13'6"	CERV		frag	BOV III
BP/3/33938	L63		CERV		frag	BOV III
S94-6455	O63	16'10" - 17'10"	CERV		frag	BOV III
BP/3/33765	K63		CERV		transverse process frag	BOV III

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-14902	M63	MIXED	MTT		shaft frag	BOV III
BP/3/33115	N60	13'9" - 14'9"	CRAN		frag	BOV III
BP/3/33287	M63	15'9" - 16'9"	CUN	L	frag	BOV III
BP/3/19104	O61	10'0" - 11'5"	CALC	R	dist. frag	BOV III
BP/3/32282	K63	17'0" - 18'0"	FEM		dist. condyle frag	BOV III
BP/3/32344	K63	15'10" - 16'10"	FEM	R	dist. frag	BOV III
BP/3/32371	I62	19'10" - 20'20"	FEM	L	dist. shaft frag	BOV III
BP/3/34457	J63	16'10" - 17'10"	FEM	L	dist. shaft frag	BOV III
BP/3/33724	K63		FEM	R	dist. shaft frag	BOV III
BP/3/33660	M62	16'11" - 17'11"	FEM	L	dist. shaft frag	BOV III
BP/3/32993	L62	13'5" - 14'5"	HUM	R	dist.	BOV III
BP/3/33894	K62	15'10" - 16'10"	HUM	L	dist. condyle	BOV III
BP/3/33730	K63		HUM		dist. condyle frag	BOV III
BP/3/34161	K63		HUM	L	dist. condyle frag	BOV III
S94-7672	M62	14'11" - 15'11"	HUM	R	dist. condyle frag	BOV III
S94-14911	L-M63	MIXED	HUM	L	dist. + shaft frag	BOV III
BP/3/32685	J62	17'10" - 18'10"	HUM	R	dist. shaft frag	BOV III
BP/3/33774	K63		HUM		dist. shaft frag	BOV III
BP/3/34122	K63		HUM	R	dist. + shaft	BOV III
BP/3/32894	M61	14'8" - 15'8"	MTC		dist.	BOV III
S94-7541	M63	11'9" - 12'9"	MTP		dist.	BOV III
BP/3/34162	K63		MTP		dist. frag	BOV III
BP/3/34167	K63		MTP		dist. condyle frag	BOV III
S94-10018	M64	11'8" - 12'8"	MTP		dist. condyle frag	BOV III
BP/3/33182	N60	22'9" - 23'9"	MTP		dist. condyle frag	BOV III
BP/3/33183	N60	22'9" - 23'9"	MTP		dist. condyle frag	BOV III
BP/3/33145	L62	14'5" - 15'5"	MTT		dist.	BOV III
S94-14827	M61	16'8" - 17'8"	MTT		dist.	BOV III
BP/3/32526	M61	19'8" - 20'9"	MTT		dist.	BOV III

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-6450	O63	12'6" - 13'10"	MTT		dist.	BOV III
S94-1692	N61	10'10" - 11'10"	PHAL I		dist. frag	BOV III
S94-7680	M62	13'11" - 14'11"	RAD	R	dist.	BOV III
BP/3/34554	K62	18'10" - 19'10"	RAD	L	dist. shaft frag	BOV III
BP/3/33148	L62	14'5" - 15'5"	RAD-ULNA	L	dist.frag	BOV III
BP/3/34121	K63		RAD-ULNA	L	dist. shaft frag	BOV III
BP/3/33144	L62	14'5" - 15'5"	TIB	L	dist.	BOV III
BP/3/32893	M61	14'8" - 15'8"	TIB		dist.	BOV III
BP/3/18924	L63	10'6" - 11'6"	TIB	R	dist. + shaft	BOV III
BP/3/34224	L63	15'6" - 16'6"	TIB	L	dist. frag	BOV III
BP/3/16681	L-M63	MIXED	TIB	R	dist. shaft frag	BOV III
BP/3/33142	L62	14'5" - 15'5"	TIB	R	dist. +CALC+ASTR	BOV III
BP/3/33186	N60	22'9" - 23'9"	DP		whole	BOV III
BP/3/32457	H62	21'10" - 22'10"	DP4	R	whole	BOV III
BP/3/32470	H62	21'10" - 22'10"	DP4	L	whole	BOV III
BP/3/32449	H62	21'10" - 22'10"	ENAMEL		Frag	BOV III
BP/3/33944	L62	16'5" - 17'5"	FEM		head	BOV III
BP/3/34334	J63	15'10" - 16'10"	FEM		shaft frag	BOV III
BP/3/33658	M62	16'11" - 17'11"	FEM	L	shaft frag	BOV III
S94-7569	M63	11'9" - 12'9"	FEM		shaft frag	BOV III
S94-7573	M63	11'9" - 12'9"	FEM		shaft frag	BOV III
S94-6705	P61	17'10" - 18'5"	HORN		core Frag	BOV III
BP/3/19507	P59	19'4" - 20'2"	HORN		core frag	BOV III
BP/3/33223	N59	22'0" - 23'0"	HORN		core frag	BOV III
BP/3/34316	J62	15'10" - 16'10"	HORN		core frag	BOV III
BP/3/33818	L63	15'6" - 16'6"	HORN	R	core frag	BOV III
BP/3/33819	L63	15'6" - 16'6"	HORN	L	core frag	BOV III
BP/3/33820	L63	15'6" - 16'6"	HORN		core frag	BOV III
S94-14994	M64	11'4" - 12'4"	HORN		core frag	BOV III

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-7277	O63	15'9" - 16'9"	HUM	L	whole	BOV III
S94-6636B	P61	15'10" - 16'10"	HUM	L	dist. Epyph.	BOV III
BP/3/33039	M61	15'8" - 16'8"	HUM	L	head	BOV III
BP/3/19108	O61	10'0" - 11'7	HUM	R	head frag	BOV III
BP/3/33562	H62	21'10" - 22'10"	HUM	R	shaft frag	BOV III
BP/3/34588	I62	18'10" - 19'10"	HUM	R	shaft frag	BOV III
BP/3/32687	J62	17'10" - 18'10"	HUM	R	shaft frag	BOV III
BP/3/34335	J63	15'10" - 16'10"	HUM	L	shaft frag	BOV III
BP/3/32358	K63	15'10" - 16'10"	I		whole	BOV III
BP/3/33914	K62	15'10" - 16'10"	I		frag	BOV III
BP/3/33187	N60	22'9" - 23'9"	I1	L	whole	BOV III
BP/3/19109	O61	10'0" - 11'8	ILI	R	frag	BOV III
BP/3/34330	J62	15'10" - 16'10"	1/2 PEL	R	frag	BOV III
BP/3/19242	Q61	10'5" - 11'9"	ISCH	R	frag	BOV III
BP/3/34596	I62	18'10" - 19'10"	ISCH	L	frag	BOV III
BP/3/34598	I62	18'10" - 19'10"	ISCH	L	frag	BOV III
BP/3/33728	K63		ISCH	L	frag	BOV III
BP/3/33729	K63		ISCH		frag	BOV III
BP/3/33337	J62	16'10" - 17'10"	LBSF			BOV III
BP/3/34095	K63		DP_2	R	whole	BOV III
BP/3/33857	L63	16'6" - 17'6"	DP_2	R	whole	BOV III
BP/3/34199	L63	15'6" - 16'6"	DP_3		whole	BOV III
BP/3/34498	J63	16'10" - 17'10"	I_1	L	whole	BOV III
BP/3/32754	N59	21'0" - 22'0"	I_1	R	whole	BOV III
BP/3/32767	N59	21'0" - 22'0"	I_1	R	whole	BOV III
BP/3/32704	J62	17'10" - 18'10"	M_3	R	whole	BOV III
BP/3/34190	L63	15'6" - 16'6"	M_3	R	whole	BOV III
BP/3/33762	K63		LUMB		frag	BOV III
BP/3/34448	K62	17'10" - 18'10"	LUMB		neural arch/spine	Frag BOV III

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/32428	J62	19'10" - 20'10"	LUMB		whole	BOV III
BP/3/33179	L62	14'5" - 15'5"	LUN	R	whole	BOV III
BP/3/33178	L62	14'5" - 15'5"	MAGN	R	whole	BOV III
BP/3/34572	I63	15'10" - 16'10"	1/2 MAND	L	frag	BOV III
BP/3/33601	L62	14'5" - 15'5"	1/2 MAND F+MS	R	frag	BOV III
BP/3/33398	J62	16'10" - 17'10"	1/2 MAND	R	frag	BOV III
BP/3/33784	K63		1/2 MAX F+MS	R	frag	BOV III
BP/3/32671	J62	16'10" - 17'10"	1/2 MAX	L	frag	BOV III
BP/3/33602	L62	14'5" - 15'5"	1/2 MAX +M2+3	R	frag	BOV III
BP/3/18140	M62	16'11" - 17'11"	MOLAR		frag	BOV III
BP/3/32755	N59	21'0" - 22'0"	MOLAR		frag	BOV III
BP/3/32756	N59	21'0" - 22'0"	MOLAR		frag	BOV III
BP/3/33189	N60	22'9" - 23'9"	MOLAR		frag	BOV III
BP/3/32386	J63	20'10" - 21'10"	MTC		frag	BOV III
S94-10057	N60	13'9" - 14'9"	MTC		shaft frag	BOV III
S94-11255	P61	17'10" - 18'5"	MTP		dist. Condyle	BOV III
S94-2023	P61	14'10" - 15'10"	MTP		shaft frag	BOV III
BP/3/34410	J63	13'10" - 14'10"	MTT		shaft frag	BOV III
BP/3/32387	J63	20'10" - 21'10"	MTT		shaft frag	BOV III
BP/3/34383	K62	19'10" - 20'10"	MTT		shaft frag	BOV III
BP/3/18091	M62	16'11" - 17'11"	MTT		shaft frag	BOV III
BP/3/18190	M62	17'11" - 18'11"	MTT		shaft frag	BOV III
S94-7568	M63	11'9" - 12'9"	MTT		shaft frag	BOV III
S94-1243	N63	12'9" - 13'9"	MTT	R	shaft frag	BOV III
BP/3/19237	P59	8'1" - 9'1"	MTT		shaft frag	BOV III
BP/3/18193	M62	17'11" - 18'11"	VERT		neural spine frag	BOV III
BP/3/32414	J63	19'10" - 20'10"	OS PET	L	whole	BOV III
BP/3/32304	K63	15'10" - 16'10"	OS PET		whole	BOV III
BP/3/32948	M60	15'2" - 16'2"	OS PET	L	whole	BOV III

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34155	K63		OS PET	L	frag	BOV III
BP/3/34237	L63	15'6" - 16'6"	1/2 PEL		frag	BOV III
BP/3/17010	L63	11'6" - 12'6"	VERT		frag	BOV III
BP/3/33286	M63	15'9" - 16'9"	VERT		frag	BOV III
BP/3/33288	M63	15'9" - 16'9"	VERT		frag	BOV III
BP/3/33289	M63	15'9" - 16'9"	VERT		frag	BOV III
BP/3/33290	M63	15'9" - 16'9"	VERT		frag	BOV III
BP/3/32351	K63	15'10" - 16'10"				BOV III
BP/3/32353	K63	15'10" - 16'10"				BOV III
BP/3/34507	I63	15'10" - 16'10"	RAD	R	dist.+shaft frag	BOV III-IV
BP/3/34272	J63	14'10" - 15'10"	SCAP	R	dist. frag	BOV III-IV
BP/3/34275	J63	14'10" - 15'10"	MTC	R	whole	BOV III-IV
BP/3/34508	I63	15'10" - 16'10"	PHAL I		frag	BOV III-IV
BP/3/34509	I63	15'10" - 16'10"	PHAL II		whole	BOV III-IV
BP/3/34235	L63	15'6" - 16'6"	PHAL II		whole	BOV III-IV
BP/3/34663	J62	17'10" - 18'10"	TOOTH		Frag	BOV III-IV
BP/3/32625	O61	11'5" - 12'5"	BONE		Frag	BOV IV
BP/3/32601	M60	17'2" - 18'2"	BONE		Frag	BOV IV
BP/3/33008	L62	13'5" - 14'5"	CALC	L	Frag	BOV IV
S94-2021	P60	15'4" - 16'4"	CALC	R	Frag	BOV IV
BP/3/18926	L63	10'6" - 11'6"	CERV		Frag	BOV IV
BP/3/17012	L63	11'6" - 12'6"	CERV		Frag	BOV IV
BP/3/17013	L63	11'6" - 12'6"	CERV		frag	BOV IV
BP/3/17014	L63	11'6" - 12'6"	CERV		Frag	BOV IV
BP/3/33466	M61	19'8"-20'8"	CERV		Frag	BOV IV
S94-2017	P60	15'4" - 16'4"	MTT		dist.	BOV IV
S94-10056	N60	13'9" - 14'9"	MTC		dist.	BOV IV
S94-7735	M62	9'11" - 10'11"	MTP		dist.	BOV IV
BP/3/32944	M61	14'8" - 15'8"	MTP		MTP	BOV IV

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/19059	P60	13'7" - 14'4"	RAD	R	dist.	BOV IV
S94-9975	M64	9'8" - 10'8"	SCAP	L	dist. frag	BOV IV
S94-7673	M61	13'8" - 14'8"	SCAP	L	dist. frag	BOV IV
S94-7631	M62	15'11" - 16'11"	SCAP	R	dist. frag	BOV IV
BP/3/32714	J62	17'10" - 18'10"	HUM	R	shaft frag	BOV IV
S94-14842	M63	7'9" - 8'9"	MAG	R	whole	BOV IV
S94-10058	N60	13'9" - 14'9"	MTC		shaft frag	BOV IV
BP/3/32903	M61	14'8" - 15'8"	MTT		shaft frag	BOV IV
S94-1230	N63	12'9" - 13'9"	MTT	R	shaft frag	BOV IV
S94-1242	N63	12'9" - 13'9"	MTT	R	shaft frag	BOV IV
BP/3/33004	L62	13'5" - 14'5"	PHAL I		whole	BOV IV
S94-2333	P60	2'9" - 5'6"	PHAL I		Frag	BOV IV
BP/3/32427	J62	19'10" - 20'10"	PREMAX		Frag	BOV IV
BP/3/32686	J62	17'10" - 18'10"	MTT	L	prox.	BOV IV
S94-14823	M61	16'8" - 17'8"	MTT		prox.	BOV IV
S94-9966	M64	9'8" - 10'8"	MTT	L	prox	BOV IV
S94-1224	N63	12'9" - 13'9"	MTT	R	prox.	BOV IV
S94-1239	N63	12'9" - 13'9"	MTT	R	prox. frag	BOV IV
S94-7662	M62	14'11" - 15'11"	PHAL I		prox. frag	BOV IV
S94-1726	N61	11'10" - 12'10"	RAD-ULNA	R	prox.	BOV IV
BP/3/32904	M61	14'8" - 15'8"	RAD-ULNA	R	prox. frag	BOV IV
BP/3/33009	M61	15'8" - 16'8"	TIB	R	prox.	BOV IV
BP/3/33000	L62	13'5" - 14'5"	PUB	R	Frag	BOV IV
S94-7807	Q59	15'0" - 16'0"	RIB		Frag	BOV IV
S94-7806	Q59	15'0" - 16'0"	RIB		head	BOV IV
BP/3/33606	L62	14'5" - 15'5"	SCAP	R	blade frag	BOV IV
BP/3/33607	L62	14'5" - 15'5"	SCAP	R	blade frag	BOV IV
BP/3/33608	L62	14'5" - 15'5"	SCAP		blade frag	BOV IV
S94-6619	P60	17'6" - 18'6"	SCAP	R	glenoid cavity	BOV IV

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/16693	L63	10'6" - 11'6"	THOR		Frag	BOV IV
BP/3/32306	K63	15'10" - 16'10"	TIB	L	shaft frag	BOV IV
BP/3/32623	P59	14'8" - 15'2"	TIB	R	shaft frag	BOV IV
S94-6829	P60	16'6" - 17'6"	TOOTH		Frag	BOV IV
S94-6835	P60	16'6" - 17'6"	TOOTH		Frag	BOV IV
S94-6857	P58	23'10" - 24'10"	TOOTH		Frag	BOV IV
S94-6801	P59	18'4" - 19'4"	UPPER M1	L	Frag	BOV IV
S94-6727	P59	22'2"-.	UPPER P4	R	Frag	BOV IV
BP/3/32434	H62	21'10" - 22'10"	VERT		Frag	BOV IV
BP/3/32443	H62	21'10" - 22'10"	VERT		Frag	BOV IV
BP/3/16659	L63	10'6" - 11'6"	VERT		centrum frag	BOV IV
BP/3/17015	L63	11'6" - 12'6"	VERT		Frag	BOV IV
S94-14747	L63	12'6" - 13'6"	VERT		centrum frag	BOV IV
S94-14746	L63	12'6" - 13'6"	VERT		Frag	BOV IV
S94-14748	L63	12'6" - 13'6"	VERT		Frag	BOV IV
S94-14750	L63	12'6" - 13'6"	VERT		Frag	BOV IV
S94-14764	L63	12'6" - 13'6"	VERT		Frag	BOV IV
S94-14766	L63	12'6" - 13'6"	VERT		Frag	BOV IV
BP/3/33467	M61	19'8"-20'8"	VERT		Frag	BOV IV
BP/3/33469	M61	19'8"-20'8"	VERT		Frag	BOV IV
BP/3/33470	M61	19'8"-20'8"	VERT		Frag	BOV IV
BP/3/33973	L62	16'5"- 17'5"	RAD	L	dist.+shaft frag	*LEPUS capensis*
BP/3/19166	O60	9'3" - 9'11"	FEMUR			*L. capensis*
BP/3/34117	K63		I		whole	*L. capensis*
BP/3/34015	M61	11'3" - 12'3"	HUM	R	prox. shaft frag	*L. capensis*
BP/3/34577	I62	18'10" - 19'10"	TIB	L	prox. shaft frag	*L. capensis*
BP/3/34434	K62	17'10" - 18'10"	TIB	L	shaft frag	*L. capensis*
BP/3/34021	M61	11'3" - 12'3"	TIB	L	shaft frag	*L. capensis*
BP/3/34560	J63	18'10" - 19'10"	1/2 MAND		Frag	*Procavia capensis*

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
BP/3/34561	J63	18'10" - 19'10"	1/2 MAND		Frag	*P. capensis*
BP/3/32271	K63	17'0" - 18'0"	1/2 PEL		whole	*P. capensis*
BP/3/32765	N59	21'0" - 22'0"	I		Frag	*Hystrix africaeaustralis*
BP/3/32766	N59	21'0" - 22'0"	I		Frag	*H. africaeaustralis*
BP/3/33313	P59	14'1" - 15'1"	I		Frag	*H. africaeaustralis*
BP/3/34419	J63	13'10" - 14'10"	ISCH	R	Frag	*H. africaeaustralis*
BP/3/32683	J62	16'10" - 17'10"	M1	R		*H. africaeaustralis*
BP/3/34096	K63		M1	R	Frag	*H. africaeaustralis*
BP/3/34219	L63	15'6" - 16'6"	M1	L		*H. africaeaustralis*
BP/3/34220	L63	15'6" - 16'6"	M1	L		*H. africaeaustralis*
BP/3/33113	M61	14'8" - 15'8"	M1	L		*H. africaeaustralis*
BP/3/34492	K62	20'10" - 21'10"	M2	R		*H. africaeaustralis*
BP/3/34479	K62	20'10" - 21'10"	M2	R		*H. africaeaustralis*
BP/3/32621	M63	7'9" - 8'9"	M3			*H. africaeaustralis*
BP/3/32622	M63	7'9" - 8'9"	M3			*H. africaeaustralis*
BP/3/34633	I62	18'10" - 19'10"	M4	R		*H. africaeaustralis*
BP/3/32869	N59	16'0" - 17'0"	M4	R		*H. africaeaustralis*
BP/3/33600	L62	14'5" - 15'5"	1/2 MAND + TEETH	L		*H. africaeaustralis*
BP/3/32682	J62	16'10" - 17'10"	MOLAR			*H. africaeaustralis*
BP/3/34566	J63	18'10" - 19'10"	MOLAR			*H. africaeaustralis*
BP/3/33597	K63	15'10" - 16'10"	MOLAR		Frag	*H. africaeaustralis*
BP/3/33114	M60	15'2" - 16'2"	MOLAR			*H. africaeaustralis*
BP/3/33996	M61	11'3" - 12'3"	MOLAR			*H. africaeaustralis*
BP/3/34666	K62	19'10" - 20'10"	SCAP		dist. frag	*H. africaeaustralis*
BP/3/33926	K62	15'10" - 16'10"	TOOTH			*H. africaeaustralis*
BP/3/18228	M62	17'11" - 18'11"	BONE		frag	SMALL MAMMAL
BP/3/33410	N60	22'9" - 23'9"	BONE		frag	SMALL MAMMAL
S94-7540	M63	11'9" - 12'9"	HUM		dist.	SMALL MAMMAL
S94-7553	M63	11'9" - 12'9"	HUM		dist.	SMALL MAMMAL

Catalogue No.	Square	Level	Element	Side	Portion	Taxon
S94-7650	M62	15'11" - 16'11"	FEM		shaft frag	SMALL MAMMAL
S94-9532	N60	20'9" - 21'9"	FEM		shaft frag	SMALL MAMMAL
BP/3/32637	L62	15'5" - 16'5"	LBSF		frag	SMALL MAMMAL
S94-14816	M61	16'8" - 17'8"	LBSF		frag	SMALL MAMMAL
BP/3/18252	M62	17'11" - 18'11"	LBSF		Frag	SMALL MAMMAL
BP/3/18253	M62	17'11" - 18'11"	LBSF		Frag	SMALL MAMMAL
S94-9974	M64	9'8" - 10'8"	LBSF		Frag	SMALL MAMMAL
S94-10845	N61	11'10" - 12'10"	LBSF		Frag	SMALL MAMMAL
S94-10140	N64	12'8" - 13'8"	LBSF		Frag	SMALL MAMMAL
S94-2028	P62	15'0" - 16'0"	LBSF		Frag	SMALL MAMMAL
BP/3/18182	M62	16'11" - 17'11"	PHAL		whole	SMALL MAMMAL
S94-6901	P61	16'10" - 17'10"	PHAL		dist. Frag	SMALL MAMMAL
S94-9973	M64	9'8" - 10'8"	TIB		prox.	SMALL MAMMAL
S94-14773	L63	12'6" - 13'6"	ULNA		prox.	SMALL MAMMAL
S94-7643	M62	15'11" - 16'11"	RAD		shaft frag	SMALL MAMMAL
BP/3/32554	M61	18'8" - 19'8"	VERT		whole	SMALL MAMMAL

Appendix D

Post-Member 6 Infill lithic artefacts

D.1 Post-Member 6 Infill artefacts

Table D.1: Post-Member 6 Infill artefacts

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
198	N60	17'9"-18'9"	Q	SW	22	INCOMPLETE FLAKE	
633	O62	16'9"-17'9"	Q	F	21	INCOMPLETE FLAKE	
638	M63	14'10"-15'10"	QZE		99	MANUPORT	
675	O60	9'3"-9'11"	QZE	W	107	CHOPPER CORE	
677	N61	17'11"-18'11"	QZE	W	67	MANUPORT	
679	P60	15'4"-16'4"	Q	SW	25	INCOMPLETE FLAKE	
682	N63	13'0"-14'0"	Q	SW	24	INCOMPLETE FLAKE	
740	N60	18'9"-19'9"	C	SW	42	INCOMPLETE FLAKE	
837	N60	17'9"-18'9"	Q	F	47	DENTICULATE	
847	P60	9'5"-10'5"	Q	F	25	INCOMPLETE FLAKE	
852	M60	18'2"-19'2"	Q	F	47	INCOMPLETE FLAKE	
859	P59	14'1"-15'1"	Q	F	27	INCOMPLETE FLAKE	
864	M61	17'8"-18'8"	Q	W	21	INCOMPLETE FLAKE	
875	N60	18'0"-19'9"	Q	F	18	CHIP	
888	N61	14'11"-15'11"	Q	W	33	INCOMPLETE FLAKE	
925	M60	16'2"-17'2"	Q	F	27	INCOMPLETE FLAKE	
942	M60	16'2"-17'2"	Q	F	32	INCOMPLETE FLAKE	
971	M60	19'2"-20'2"	Q	F	17	CHIP	
972	M61	17'8"-18'8"	Q	SW	11	CHIP	
973	N59	16'0"-17'0"	Q	F	15	CHIP	
981	N60	16'9"-17'9"	Q	SW	19	CHIP	
990	M61	17'8"-18'8"	Q	F	20	INCOMPLETE FLAKE	
1006	N60	14'9"-15'9"	Q	F	23	CHUNK	
1008	M60	17'2"-18'2"	Q	W	29	CHUNK	
1016	N60	16'9"-17'9"	Q	SW	32	CHUNK	
1026	N61	16'11"-17'11"	Q	F	30	BIPOLAR CORE REMAIN	
1040	N60	15'9"-16'9"	Q	SW	23	CHUNK	
1049	N61	16'11"-17'11"	Q	F	33	BIPOLAR CORE REMAIN	
1068	P59	12'1"-13'1"	Q	W	40	CHUNK	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
1072	M60	19’2”-20’2”	Q	W	28	CHUNK	
1080	M61	13’10”-14’10”	Q	F	31	INCOMPLETE FLAKE	
1083	N61	16’11”-17’11”	Q	SW	27	INCOMPLETE FLAKE	
1090	N61	18’11”-19’11”	Q	W	102	POLYHEDRON	
1102	M60	19’2”-20’2”	Q	F	35	CORE	
1126	N61	11’10”-12’10”	QZE	F	84	CORE	
1153	N60	11’9”-12’9”	Q	W	47	CHUNK	
1171	M60	15’2”-16’2”	Q	W	29	CHUNK	
1172	M61	19’8”-20’8”	Q	F	32	CHUNK	
1173	M61	16’8”-17’8”	Q	SW	33	CHUNK	
1193	M60	14’8”-15’8”	Q	F	35	CHUNK	
1217	M61	15’0”-16’0”	Q	F	50	BO-POLAR CORE REMAIN	
1218	M60	15’2”-16’2”	Q	SW	43	POLYHEDRON	
1226	N61	14’11”-15’11”	Q		46	COBBLE	
1232	M60	17’2”-18’2”	Q	F	46	CHUNK	
1247	M62	15’11”-16’11”	Q	W	73	POLYHEDRON	
1403	N61	16’11”-17’11”	QZE	W	122	CORE	
1420	P61	11’11”-12’11”	QZE	W	75	CORE	
1518	N63	14’10”-15’10”	QZE		77	MANUPORT	
1567	T56		Q	F	51	INCOMPLETE FLAKE	
1743	N63	11’10”-12’10”	QZE	VW	64	POLYHEDRON	
1744	N63	11’10”-12’10”	QZE		69	MANUPORT	
1746	M61	10’8”-11’8”	QZE	W	106	MANUPORT	
1747	M61	10’8”-11’8”	DIAB		79	MANUPORT	
1763	N62	14’0”-15’0”	Q	W	48	CORE	
1786	P58	16’10”-17’10”	Q		86	COBBLE	
1803	P60	9’5”-10’5”	QZE	F	55	COMPLETE FLAKE	
1816	N60	11’8”-12’8”	QZE	W	108	CHUNK	
1820	N59	11’10”-12’10”	QZE	F	36	INCOMPLETE FLAKE	
1824	N60	18’9”-19’9”	DIAB		67	MANUPORT	
1827	P61	13’1”-14’10”	QZE	W	49	CHUNK	
1828	M61	14’8”-15’8”	QZE	W	76	CHOPPER CORE	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
1834	N61	13’10”-14’10”	QZE	F	52	CHUNK	
1836	P61	13’1”-14’10”	QZE	F	42	CHUNK	
1838	N60	19’9”-20’9”	QZE	W	113	CASUAL CORE	
1843	P61	13’1”-14’10”	QZE	F	38	CHUNK	
1849	P59	15’2”-16’2”	QZE		65	MANUPORT	
1850	M61	15’8”-16’8”	QZE	W	60	MANUPORT	
1851	P59	13’0”-14’0”	QZE	W	59	CORE ON FLAKE	
1914	N59	14’0”-15’0”	IG?	W	55	NATURAL	
1916	N60	17’9”-18’9”	DIAB	W	70	CHUNK	
1919	M60	17’2”-18’2”	DIAB		62	MANUPORT	
1920	N60	18’9”-19’9”	DIAB	W	30	COMPLETE FLAKE	
1975	N61	16’11”-17’11”	Q	W	16	NATURAL	
2064	M61	13’8”-14’8”	QZE	SW	99	DISCOIDAL CORE	
2098	M62	14’11”-15’11”	Q		66	MANUPORT	
2111	N61	13’10”-14’10”	Q	W	88	CORE	
2118	M60	11’2”-12’2”	DIAB	VW	66	POLYHEDRON	
2387	P59	15’2”-16’2”	QZE		70	MANUPORT	
2787	O59	17’6”-18’6”	Q	F	14	CHIP	
2788	O59	17’6”-18’6”	Q	F	16	CHIP	
4259	P60	16’6”-17’6”	QZE		100	MANUPORT	
4261	P60	16’6”-17’6”	Q	F	62	MANUPORT	
4262	P60	16’6”-17’6”	Q		53	NATURAL	
4263	P60	16’6”-17’6”	QZE	F	36	INCOMPLETE FLAKE	
4264	P60	16’6”-17’6”	DIAB	W	75	COMPLETE FLAKE	
4265	P61	16’6”-17’6”	DIAB	W	38	COMPLETE FLAKE	
4266	P62	16’6”-17’6”	Q	SW	32	CHUNK	
4267	P63	16’6”-17’6”	Q	F	40	INCOMPLETE FLAKE	
4268	P64	16’6”-17’6”	Q	F	25	INCOMPLETE FLAKE	
4269	P65	16’6”-17’6”	Q	F	21	CHUNK	
4270	P66	16’6”-17’6”	Q	F	20	COMPLETE FLAKE	
4271	P67	16’6”-17’6”	Q	F	10	CHIP	
4272	P68	16’6”-17’6”	Q	F	7	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
4273	P69	16'6"-17'6"	Q	F	7	CHIP	
4274	O59	18'6"-19'6"	QZE		69	HAMMERSTONE	
4275	O59	18'6"-19'6"	Q	F	33	CHUNK	
4276	O59	18'6"-19'6"	Q	F	21	INCOMPLETE FLAKE	
4278	O59	18'6"-19'6"	Q	F	16	CHIP	
4279	O59	18'6"-19'6"	Q	SW	10	CHIP	
4280	O59	18'6"-19'6"	Q	SW	14	CHIP	
4281	O59	18'6"-19'6"	Q	F	11	CHIP	
4282	O59	18'6"-19'6"	Q	F	13	CHIP	
4283	O59	18'6"-19'6"	Q	F	6	CHIP	
4284	P59	15'2"-16'2"	QZE		90	CASUAL CORE	
4367	P60	17'6"-18'6"	Q		86	SPLIT COBBLE	
4368	N60	22'9"-23'9"	Q	F	38	CHUNK	
4369	N60	22'9"-23'9"	Q	F	28	CORE	
4371	P60	17'6"-18'6"	QZE		78	COBBLE FRAGMENT	
4372	P60	17'6"-18'6"	QZE	W	91	COMPLETE FLAKE	X
4373	P60	17'6"-18'6"	C	F	10	CHIP	
4374	P60	17'6"-18'6"	Q	F	13	CHIP	
4375	P60	17'6"-18'6"	IG	W	15	CHIP	
4376	P60	17'6"-18'6"	C	F	10	CHIP	
4377	P60	17'6"-18'6"	Q	SW	17	CHIP	
4378	P60	17'6"-18'6"	Q	F	16	CHIP	
4379	P60	17'6"-18'6"	Q	F	10	CHIP	
4380	P60	17'6"-18'6"	Q	F	9	CHIP	
4381	P60	17'6"-18'6"	Q	SW	16	CHIP	
4382	P60	17'6"-18'6"	QZE	F	22	INCOMPLETE FLAKE	
4383	P60	17'6"-18'6"	Q	F	9	CHIP	
4384	P60	17'6"-18'6"	Q	F	15	CHIP	
4385	P60	17'6"-18'6"	Q	W	10	CHIP	
4386	P60	17'6"-18'6"	Q	F	17	CHIP	
4387	P60	17'6"-18'6"	Q	SW	9	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
4539	N63	11'4"	QZE	W	141	POLYHEDRON	
4826	O61	18'8"-19'8"	Q	SW	71	BIPOLAR CORE	
4827	O61	18'8"-19'8"	Q	F	56	BIPOLAR PIECE	
4828	O61	18'8"-19'8"	Q	F	68	CHUNK	
4829	O61	18'8"-19'1"	C	SW	12	CHIP	
4830	O61	18'8"-19'1"	Q	SW	10	CHIP	
4831	O61	18'8"-19'1"	Q	F	8	CHIP	
4832	O61	18'8"-19'1"	Q	F	18	CHIP	
4833	O61	18'8"-19'1"	Q	F	11	CHIP	
4834	O61	18'8"-19'1"	Q	F	9	CHIP	
4835	O61	18'8"-19'1"	Q	F	13	CHIP	
4859	N63	12'10"-13'10"	Q	F	28	INCOMPLETE FLAKE	
4860	N63	12'10"-13'10"	Q	F	28	INCOMPLETE FLAKE	
4861	N63	12'10"-13'10"	Q	F	28	INCOMPLETE FLAKE	
4862	N63	12'10"-13'10"	Q	F	32	INCOMPLETE FLAKE	
4937	P58	18'10"-19'10"	Q		68	CORE	
4946	P58	17'10"-18'10"	QZE		102	SINGLE PLATFORM CORE	
5164	O59	15'6"-16'6"	Q	F	17	CHIP	
5165	O59	15'6"-16'6"	Q	F	13	CHIP	
5166	O59	15'6"-16'6"	Q	F	9	CHIP	
5167	O59	15'6"-16'6"	Q	F	61	POLYHEDRON	
5168	O59	15'6"-16'6"	Q	F	51	CHUNK	
5169	O59	15'6"-16'6"	Q	F	19	CHIP	
5170	O59	15'6"-16'6"	Q	SW	18	CHIP	
5171	O60	17'0"-18'0"	Q	F	58	CASUAL CORE	
5172	O60	17'0"-18'0"	QZE		121	COBBLE	
5173	O60	17'0"-18'0"	Q	F	22	CHUNK	
5174	O60	17'0"-18'0"	Q	F	16	CHIP	
5175	O60	17'0"-18'0"	Q	F	14	CHIP	
5176	O60	17'0"-18'0"	Q	F	11	CHIP	
5177	O60	17'0"-18'0"	Q	F	13	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5178	O60	17'0"-18'0"	Q	F	17	CHIP	
5179	O60	17'0"-18'0"	Q	F	13	CHIP	
5236	O60	16'0"-17'0"	Q	F	7	CHIP	
5236	O60	16'0"-17'0"	C	F	71	INCOMPLETE FLAKE	
5237	O60	16'0"-17'0"	Q	F	41	CHUNK	
5238	O60	16'0"-17'0"	Q	F	11	CHIP	
5239	O60	16'0"-17'0"	Q	F	23	INCOMPLETE FLAKE	
5240	O60	16'0"-17'0"	Q	F	14	CHIP	
5241	O60	16'0"-17'0"	Q	F	21	INCOMPLETE FLAKE	
5242	O60	16'0"-17'0"	Q	F	17	CHIP	
5243	O60	16'0"-17'0"	Q	SW	12	CHIP	
5244	O60	16'0"-17'0"	Q	F	20	INCOMPLETE FLAKE	
5245	O60	16'0"-17'0"	Q	F	23	COMPLETE FLAKE	
5246	O60	16'0"-17'0"	Q	F	15	CHIP	
5247	O60	16'0"-17'0"	Q	F	14	CHIP	
5333	O60	18'0"-19'0"	QZE		65	MANUPORT	
5334	O60	18'0"-19'0"	Q	SW	42	BIFACIAL RETOUCH PIECE	
5335	O60	18'0"-19'0"	Q	SW	34	CHUNK	X
5336	O60	18'0"-19'0"	Q	F	31	CHUNK	
5337	O60	18'0"-19'0"	Q	F	23	CHUNK	X
5338	O60	18'0"-19'0"	Q	F	14	CHIP	
5339	O60	18'0"-19'0"	QZE	F	15	CHIP	
5340	O60	18'0"-19'0"	Q	F	19	CHIP	
5341	O60	18'0"-19'0"	Q	F	17	CHIP	
5342	O60	18'0"-19'0"	Q	F	14	CHIP	
5343	O60	18'0"-19'0"	Q	F	14	CHIP	
5344	O60	18'0"-19'0"	Q	SW	23	CHUNK	
5345	O60	18'0"-19'0"	Q	SW	14	CHIP	
5346	O60	18'0"-19'0"	Q	F	16	CHIP	
5347	O60	18'0"-19'0"	Q	SW	17	CHIP	
5348	O60	18'0"-19'0"	Q	F	20	CHUNK	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5349	O60	18’0”-19’0”	Q	F	16	CHIP	
5350	O60	18’0”-19’0”	Q	F	10	CHIP	
5351	O60	18’0”-19’0”	Q	F	12	CHIP	
5352	O60	18’0”-19’0”	Q	SW	18	CHIP	
5498	P61	17’10”-18’10”	Q	F	12	CHIP	
5499	P61	17’10”-18’10”	Q	F	9	CHIP	
5500	P61	17’10”-18’10”	Q	F	14	CHIP	
5501	P61	17’10”-18’10”	Q	F	8	CHIP	
5502	P61	17’10”-18’10”	Q	F	7	CHIP	
5503	P61	17’10”-18’10”	Q	F	9	CHIP	
5505	P61	17’10”-18’10”	Q	F	57	CORE FRAGMENT	
5506	P61	17’10”-18’5”	QZE	F	48	CHUNK	
5507	P61	17’10”-18’10”	Q	F	28	CORE TRIMMING FLAKE	
5508	P61	17’10”-18’10”	Q	F	16	CHIP	
5509	P61	17’10”-18’10”	Q	SW	15	CHIP	
5510	P61	17’10”-18’10”	Q	F	12	CHIP	
5511	P61	17’10”-18’10”	Q	F	10	CHIP	
5658	O60	19’0”-20’0”	Q	SW	10	CHIP	
5659	O60	19’0”-20’0”	Q	F	15	CHIP	
5660	O60	19’0”-20’0”	Q	F	13	CHIP	
5661	O60	19’0”-20’0”	Q	F	12	CHIP	
5662	O60	19’0”-20’0”	Q	F	12	CHIP	
5663	O60	19’0”-20’0”	Q	SW	10	CHIP	
5664	O60	19’0”-20’0”	Q	F	7	CHIP	
5665	O60	19’0”-20’0”	QZE	VW	48	INCOMPLETE FLAKE	
5666	O60	19’0”20’0”	QZE	SW	120	INCOMPLETE FLAKE	X
5667	O60	19’0”20’0”	Q	F	64	CHOPPER CORE	
5668	O60	19’0”-20’0”	C	W	82	SINGLE PLATFORM	
5669	O60	18’0”-19’0”	Q	F	10	CHIP	
5670	O60	18’0”-19’0”	Q	SW	8	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5671	O60	18'0"-19'0"	QZE	SW	75	CHUNK	
5672	O60	18'0"-19'0"	Q	F	25	CHUNK	
5672	O60	18'0"-19'0"	Q	F	32	COMPLETE FLAKE	
5673	O60	18'0"-19'0"	Q	F	20	CHUNK	
5674	O60	17'0"-18'0"	Q	F	15	CHIP	
5675	O60	17'0"-18'0"	Q	F	14	CHIP	
5676	O60	17'0"-18'0"	Q	F	11	CHIP	
5677	O60	17'0"-18'0"	Q	F	12	CHIP	
5678	O60	17'0"-18'0"	Q	F	16	CHIP	
5679	O60	17'0"-18'0"	Q	F	13	CHIP	
5686	O60	20'0"-21'0"	QZE	F	29	INCOMPLETE FLAKE	
5687	O60	20'0"-21'0"	QZE	F	31	INCOMPLETE FLAKE	
5688	O60	20'0"-21'0"	Q	F	15	CHIP	
5689	O60	20'0"-21'0"	Q	F	14	CHIP	
5690	O60	20'0"-21'0"	Q	W	13	CHIP	
5691	O60	20'0"-21'0"	Q	SW	15	CHIP	
5692	O60	20'0"-21'0"	Q	F	14	CHIP	
5693	O60	20'0"-21'0"	Q	F	24	INCOMPLETE FLAKE	
5694	O60	20'0"-21'0"	Q	F	16	CHIP	
5695	O60	20'0"-21'0"	Q	F	12	CHIP	
5696	O60	21'0"-22'0"	Q	F	12	CHIP	
5697	O60	21'0"-22'0"	Q	F	14	CHIP	
5698	O60	21'0"-22'0"	Q	F	11	CHIP	
5699	O60	21'0"-22'0"	Q	F	12	CHIP	
5700	O60	21'0"-22'0"	Q	SW	16	CHIP	
5701	O60	21'0"-22'0"	C	SW	8	CHIP	
5701	O60	21'0"-22'0"	QZE		82	COBBLE FRAGMENT	
5702	O60	21'0"-22'0"	C	SW	11	CHIP	
5705	O60	21'0"-22'0"	QZE	SW	49	COMPLETE FLAKE	
5706	O60	21'0"-22'0"	QZE	F	18	CHIP	
5707	O60	21'0"-22'0"	Q	F	17	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5708	O59	22'6"-23'6"	Q	F	16	CHIP	
5708	O59	22'6"-23'6"	Q	F	9	CHIP	
5709	O59	22'6"-23'6"	Q	F	11	CHIP	
5710	O59	22'6"-23'6"	Q	SW	15	CHIP	
5711	O59	22'6"-23'6"	Q	W	13	CHIP	
5712	O59	22'6"-23'6"	Q	W	44	CHUNK	
5713	O59	22'6"-23'6"	Q	F	16	CHIP	
5714	O59	22'6"-23'6"	Q	F	16	CHIP	
5715	O59	22'6"-23'6"	Q		58	NATURAL	
5716	O59	22'6"-23'6"	Q		67	MANUPORT	
5741	O60	22'0"-23'0"	Q	F	51	INCOMPLETE FLAKE	X
5742	O60	22'0"-23'0"	Q	SW	40	CHUNK	
5743	O60	22'0"-23'0"	Q	W	33	CHUNK	
5744	O60	22'0"-23'0"	Q	F	18	CHIP	
5745	O60	22'0"-23'0"	Q	F	25	CHUNK	
5752	P59	18'4"-19'4"	QZE		86	MANUPORT	
5753	P59	18'4"-19'4"	QZE		131	CASUAL CORE	
5778	O59	22'6"-23'6"	C	W	9	CHIP	
5779	O59	22'6"-23'6"	C	F	16	CHIP	
5780	O59	22'6"-23'6"	C	F	16	CHIP	
5781	O59	22'6"-23'6"	C	F	10	CHIP	
5782	O59	22'6"-23'6"	C	F	9	CHIP	
5783	O59	22'6"-23'6"	Q	F	7	CHIP	
5784	O59	22'6"-23'6"	Q	F	8	CHIP	
5785	O59	22'6"-23'6"	Q	SW	10	CHIP	
5786	O59	22'6"-23'6"	Q	SW	9	CHIP	
5787	O59	22'6"-23'6"	Q	W	11	CHIP	
5788	O59	22'6"-23'6"	Q	SW	11	CHIP	
5789	O59	22'6"-23'6"	Q	W	7	CHIP	
5799	N60	21'9"-22'9"	MSTONE	W	5	CHIP	
5800	N60	21'9"-22'9"	C	W	9	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5801	N60	21’9”-22’9”	C	F	6	CHIP	
5802	N60	21’9”-22’9”	QZE	F	10	CHIP	
5803	N60	21’9”-22’9”	C	SW	10	CHIP	
5804	N60	21’9”-22’9”	Q	F	6	CHIP	
5805	N60	21’9”-22’9”	Q	F	13	CHIP	
5806	N60	21’9”-22’9”	Q	F	12	CHIP	
5807	N60	21’9”-22’9”	Q	SW	10	CHIP	
5808	N60	21’9”-22’9”	Q	F	8	CHIP	
5809	N60	21’9”-22’9”	C	F	6	CHIP	
5810	N60	21’9”-22’9”	Q	SW	9	CHIP	
5811	N60	21’9”-22’9”	Q	F	13	CHIP	
5812	N60	21’9”-22’9”	Q	SW	15	CHIP	
5813	N60	21’9”-22’9”	Q	SW	12	CHIP	
5814	N60	21’9”-22’9”	Q	SW	10	CHIP	
5815	N60	21’9”-22’9”	Q	F	12	CHIP	
5816	N60	21’9”-22’9”	Q	F	16	CHIP	
5817	N60	21’9”-22’9”	Q	F	8	CHIP	
5818	N60	21’9”-22’9”	C	F	11	CHIP	
5819	N60	21’9”-22’9”	Q	F	27	INCOMPLETE FLAKE	
5820	N60	21’9”-22’9”	Q	SW	20	CHUNK	
5821	N60	21’9”-22’9”	Q	F	26	INCOMPLETE FLAKE	
5822	N60	21’9”-22’9”	Q	F	16	CHIP	
5823	N60	21’9”-22’9”	Q	SW	16	CHIP	
5824	N60	21’9”-22’9”	Q	F	26	INCOMPLETE FLAKE	
5825	N60	21’9”-22’9”	Q	SW	25	INCOMPLETE FLAKE	
5826	N60	21’9”-22’9”	QZE	F	32	COMPLETE FLAKE	
5827	N60	21’9”-22’9”	Q	F	42	BIPOLAR CORE FRAGMENT	
5828	N60	21’9”-22’9”	Q	F	33	BIPOLAR CORE FRAGMENT	
5829	N60	21’9”-22’9”	Q	F	26	CHUNK	
5830	N60	211’9”-22’9”	Q	SW	96	CORE	
5831	N60	22’9”-23’9”	Q	F	20	INCOMPLETE FLAKE	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
5832	N60	22’9”-23’9”	Q	F	14	CHIP	
5833	N60	22’9”-23’9”	Q	F	15	CHIP	
5834	N60	22’9”-23’9”	Q	W	12	CHIP	
5835	N60	22’9”-23’9”	Q	F	14	CHIP	
5836	N60	22’9”-23’9”	Q	SW	13	CHIP	
5837	N60	22’9”-23’9”	Q	F	11	CHIP	
5838	N60	22’9”-23’9”	Q	F	11	CHIP	
5839	N60	22’9”-23’9”	Q	F	11	CHIP	
5840	N60	22’9”-23’9”	Q	F	13	CHIP	
5841	N60	22’9”-23’9”	Q	F	14	CHIP	
5842	N60	22’9”-23’9”	Q	F	11	CHIP	
5843	N60	22’9”-23’9”	Q	F	9	CHIP	
5844	N60	22’9”-23’9”	Q	F	7	CHIP	
5845	N60	22’9”-23’9”	Q	F	8	CHIP	
5846	N60	22’9”-23’9”	Q	F	8	CHIP	
5847	N60	22’9”-23’9”	Q	F	8	CHIP	
5848	N60	22’9”-23’9”	Q	F	9	CHIP	
5849	N60	22’9”-23’9”	C	F	13	CHIP	
5850	N60	22’9”-23’9”	C	F	10	CHIP	
5851	N60	22’9”-23’9”	C	F	12	CHIP	
5852	N60	22’9”-23’9”	C	F	7	CHIP	
5853	N60	22’9”-23’9”	C	F	11	CHIP	
5854	N60	22’9”-23’9”	C	F	8	CHIP	
5855	N60	22’9”-23’9”	C	F	8	CHIP	
5856	N60	22’9”-23’9”	C	F	12	CHIP	
5857	N60	22’9”-23’9”	C	F	13	CHIP	
5858	N60	22’9”-23’9”	C	F	8	CHIP	
5859	N60	22’9”-23’9”	C	F	8	CHIP	
5860	N60	22’9”-23’9”	QZE	W	115	COMPLETE FLAKE	X
5861	N60	22’9”-23’9”	QZE		65	COBBLE	
5862	N60	22’9”-23’9”	QZE		94	CHOPPER CORE	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
6255	O59	23'6"-24'6"	Q	F	14	CHIP	
6256	O59	23'6"-24'6"	Q	F	12	CHIP	
6262	O59	25'6"-26'6"	Q		18	CHIP	
6309	O59	20'6"-21'6"	Q	F	18	CHIP	
6310	O59	20'6"-21'6"	Q	F	12	CHIP	
6311	O59	20'6"-21'6"	Q	F	15	CHIP	
6315	O59	21'6"-22'6"	Q	F	7	CHIP	
6316	O59	21'6"-22'6"	Q	F	7	CHIP	
6317	O59	21'6"-22'6"	C	SW	14	CHIP	
6318	O59	21'6"-22'6"	QZE		76	MANUPORT	
6319	O59	21'6"-22'6"	C	SW	40	INCOMPLETE FLAKE	
6355	O59	23'6"-24'6"	Q	F	14	CHIP	
6356	O59	23'6"-24'6"	Q	SW	12	CHIP	
6395	O59	19'6"-20'6"	Q	F	9	CHIP	
6396	O59	19'6"-20'6"	Q	F	9	CHIP	
6397	O59	19'6"-20'6"	Q	F	9	CHIP	
6398	O59	19'6"-20'6"	Q	F	8	CHIP	
6399	O59	19'6"-20'6"	Q	F	6	CHIP	
6400	O59	19'6"-20'6"	QZE	SW	34	INCOMPLETE FLAKE	
6408	N60	20'9"-21'9"	Q	W	56	POLYHEDRON	
6409	N60	20'9"-21'9"	Q	F	30	RADIAL CORE	
6410	N60	20'9"-21'9"	Q	F	29	INCOMPLETE FLAKE	
6412	N60	20'9"-21'9"	Q	F	15	CHIP	
6413	N60	20'9"-21'9"	Q	SW	14	CHIP	
6414	N60	20'9"-21'9"	Q	F	27	INCOMPLETE FLAKE	
6415	N60	20'9"-21'9"	Q	F	9	CHIP	
6416	N60	20'9"-21'9"	Q	F	11	CHIP	
6417	N60	20'9"-21'9"	Q	F	9	CHIP	
6418	N60	20'9"-21'9"	Q	SW	12	CHIP	
6419	N60	20'9"-21'9"	Q	F	9	CHIP	
6420	N60	20'9"-21'9"	Q	SW	11	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
6421	N60	20’9”-21’9”	Q	F	9	CHIP	
6422	N60	20’9”-21’9”	Q	SW	11	CHIP	
6423	N60	20’9”-21’9”	Q	F	10	CHIP	
6424	N60	20’9”-21’9”	Q	SW	10	CHIP	
6425	N60	20’9”-21’9”	C	F	26	COMPLETE FLAKE	
6426	N60	20’9”-21’9”	Q	F	17	CHIP	
6427	N60	20’9”-21’9”	Q	F	19	CHIP	
6428	N60	20’9”-21’9”	Q	F	26	INCOMPLETE FLAKE	
6429	N60	20’9”-21’9”	Q	SW	13	CHIP	
6430	N60	20’9”-21’9”	Q	F	10	CHIP	
6431	N60	20’9”-21’9”	Q	F	16	CHIP	
6432	N60	20’9”-21’9”	Q	F	18	CHIP	
6433	N60	20’9”-21’9”	Q	SW	14	CHIP	
6434	N60	20’9”-21’9”	Q	F	12	CHIP	
6435	N60	20’9”-21’9”	Q	F	13	CHIP	
6436	N60	20’9”-21’9”	Q	F	13	CHIP	
9316	N60	12’9”-13’9”	Q	F	32	INCOMPLETE FLAKE	
9317	N60	12’9”-13’9”	Q	F	54	BIPOLAR CORE	
9324	O61	15’8”-16’8”	Q	F	31	INCOMPLETE FLAKE	
9325	O61	15’8”-16’8”	Q	F	31	CHUNK	
9334		LIMBO PROV	Q	F	22	INCOMPLETE FLAKE	
9491	N63	13’7”-14’7”	Q	F	19	CHIP	
9491	N63	13’7”-14’7”	Q	F	19	CHIP	
9491	N63	13’7”-14’7”	Q	F	24	CHUNK	
9491	N63	13’7”-14’7”	Q	F	79	CORE	
9493		NOT AVAILABLE	Q	F	14	CHIP	
9494	N63	13’7”-14’7”	Q	W	11	CHIP	
9495	N63	13’7”-14’7”	Q	F	12	CHIP	
9496		NOT AVAILABLE	Q	F	15	CHIP	
9497	N63	13’7”-14’7”	Q	F	14	CHIP	
9498	N63	13’7”-14’7”	Q	F	11	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
9499	N63	13’7”-14’7”	Q	F	15	CHIP	
9500	N63	13’7”-14’7”	Q	F	13	CHIP	
9501	N63	13’7”-14’7”	Q	F	14	CHIP	
9502		NOT AVAILABLE	Q	SW	12	CHIP	
9506	N63	13’7”-14’7”	Q	F	8	CHIP	
9506	N63	13’7”-14’7”	QZE		89	CORE FRAGMENT	
9507	N63	13’7”-14’7”	QZE		95	MANUPORT	
9731	N63	13’7”-14’7”	Q	F	20	INCOMPLETE FLAKE	
9735	M63	14’10”-15’10”	Q	F	13	CHIP	
9749	N59	11’10”-12’10”	Q	F	21	INCOMPLETE FLAKE	
9758	M60	14’2”-15’2”	Q	SW	20	CHUNK	
9761	M60	14’2”-15’2”	Q	F	32	BIPOLAR CORE REMAIN	
9764	N61	16’11”-17’11”	Q	W	17	CHIP	
9765	N61	16’11”-17’11”	Q	F	15	CHIP	
9766	N61	16’11”-17’11”	Q	SW	22	CHUNK	
9932	N59	14’0”-15’0”	Q	F	13	CHIP	
10131	M62	16’11”-17’11”	QZE	SW	36	COMPLETE FLAKE	
10132	M62	16’11”-17’11”	C	SW	15	CHIP	
10133	M62	16’11”-17’11”	Q	SW	34	INCOMPLETE FLAKE	X
10134	M62	16’11”-17’11”	Q	F	11	CHIP	
10135	M62	16’11”-17’11”	QZE		107	SPLIT COBBLE	
10467	O59	17’6”-18’6”	Q	F	16	CHIP	
10468	O59	17’6”-18’6”	Q	F	15	CHIP	
10469	O59	17’6”-18’6”	Q	F	11	CHIP	
10470	O60	17’0”-18’0”	Q	W	16	CHIP	
10471	O60	17’0”-18’0”	Q	SW	14	CHIP	
10472	O59	22’6”-23’6”	Q	F	15	CHIP	
10473	N60	20’9”-21’9”	Q	SW	13	CHIP	
10474	O60	18’8”-19’1”	QZE	SW	20	COMPLETE FLAKE	
10475	P61	15’10”-16’10”	QZE	F	48	CHUNK	
10476	P61	15’10”-16’10”	Q	F	25	CHUNK	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
10477	P61	15’10”-16’10”	Q	F	21	INCOMPLETE FLAKE	
10478	P61	15’10”-16’10”	Q	F	18	CHIP	
10479	P61	15’10”-16’10”	Q	SW	16	CHIP	
10480	P61	15’10”-16’10”	Q	F	14	CHIP	
10481	P61	15’10”-16’10”	Q	F	14	CHIP	
10482	P61	15’10”-16’10”	Q	W	12	CHIP	
10483	P61	15’10”-16’10”	Q	W	10	CHIP	
10484	P61	15’10”-16’10”	Q	F	12	CHIP	
10485	P61	15’10”-16’10”	Q	W	11	CHIP	
10486	P61	15’10”-16’10”	Q	F	7	CHIP	
10487	P61	16’10”-17’10”	C	F	9	CHIP	
10488	P61	16’10”-17’10”	Q	F	13	CHIP	
10489	P61	16’10”-17’10”	Q	F	14	CHIP	
10490	P61	16’10”-17’10”	Q	F	11	CHIP	
10491	P61	16’10”-17’10”	Q	F	12	CHIP	
10492	P61	16’10”-17’10”	Q	F	11	CHIP	
10493	P61	16’10”-17’10”	Q	F	16	CHIP	
10494	P61	16’10”-17’10”	Q	F	12	CHIP	
10495	P61	16’10”-17’10”	Q	F	11	CHIP	
10496	P61	16’10”-17’10”	Q	F	9	CHIP	
10498	O60	17’8”-18’8”	QZE	W	92	CHUNK	
10499	O60	20’0”-21’0”	Q	F	14	CHIP	
10500	O60	20’0”-21’0”	Q	F	12	CHIP	
10501	O60	20’0”-21’0”	Q	F	9	CHIP	
10502	O60	20’0”-21’0”	Q	F	9	CHIP	
10503	O60	20’0”-21’0”	Q	W	10	CHIP	
10504	O60	20’0”-21’0”	Q	F	11	CHIP	
10505	O60	20’0”-21’0”	Q	F	9	CHIP	
10506	O60	20’0”-21’0”	Q	F	11	CHIP	
10507	O60	20’0”-21’0”	Q	F	7	CHIP	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
10508	O60	20’0”-21’0”	Q	F	7	CHIP	
10509	O60	20’0”-21’0”	Q	F	9	CHIP	
10510	O60	20’0”-21’0”	C	F	8	CHIP	
10511	O60	20’0”-21’0”	Q	SW	20	CHUNK	
10512	O60	20’0”-21’0”	Q	F	9	CHIP	
10513	O60	20’0”-21’0”	Q	SW	12	CHIP	
10514	O60	20’0”-21’0”	Q	SW	14	CHIP	
10515	O60	20’0”-21’0”	Q	W	14	CHIP	
10516	O60	20’0”-21’0”	Q	SW	12	CHIP	
10517	O60	20’0”-21’0”	Q	F	14	CHIP	
10518	O60	20’0”-21’0”	Q	F	9	CHIP	
10519	O59	7’6”-8’6”			36	NATURAL	
	O60	17’8”-18’8”	QZE	F	91	NATURAL	
1881	P61	11’11”-12’11”	QZE	F	48	CHUNK	
	O59	22’6”-23’6”	Q		70	COBBLE	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
856	M63	14’9”-15’9”	Q	SW	29	COMPLETE FLAKE	
904	M63	15’9”-16’9”	Q	SW	29	INCOMPLETE FLAKE	
908	M63	15’9”-16’9”	Q	F	20	INCOMPLETE FLAKE	
951	M63	9’9”-10’9”	Q	SW	32	COMPLETE FLAKE	
1095	M63	13’9”-14’9”	Q	SW	14	CHIP	
1170	M63	11’9”-12’9”	Q	W	27	NATURAL	
1894	M63	7’9”-8’9”	QZE	W	57	MANUPORT	
1922	M63	11’9”-12’9”	QZE	W	71	MANUPORT	
2075	M63	13’9”-14’9”	QZE	SW	48	INCOMPLETE FLAKE	
3387	M63	15’9”-16’9”	Q	F	22	INCOMPLETE FLAKE	
5600	M63	15’9”-16’9”	Q	F	12	CHIP	
5602	M63	15’9”-16’9”	Q	W	10	CHIP	
5603	M63	15’9”-16’9”	Q	F	13	CHIP	
5604	M63	15’9”-16’9”	Q	F	12	CHIP	
9552	M63	13’9”-14’9”	QZE	W	38	MANUPORT	
9555	M63	13’9”-14’9”	C	W	58	SPLIT COBBLE	
9556	M63	13’9”-14’9”	QZE	W	81	MANUPORT	
9557	M63	13’9”-14’9”	QZE	W	95	MANUPORT	
9558	M63	13’9”-14’9”	Q	W	82	CORE	
9559	M63	13’9”-14’9”	Q	F	71	COMPLETE FLAKE	
9560	M63	15’9”-16’9”	Q	SW	32	INCOMPLETE FLAKE	
9561	M63	13’9”-14’9”	QZE	W	49	SPLIT COBBLE	
9563	M63	11’9”-12’9”	QZE	W	22	INCOMPLETE FLAKE	
9564	M63	11’9”-12’9”	Q	W	17	CHIP	
9565	M63	11’9”-12’9”	Q	F	17	CHIP	
9566	M63	11’9”-12’9”	Q	F	17	CHIP	
9567	M63	11’9”-12’9”	Q	F	20	INCOMPLETE FLAKE	
9568	M63	11’9”-12’9”	Q	F	14	CHIP	
9569	M63	11’9”-12’9”	Q	F	14	CHIP	
9635	M63	14’10”-15’10”	Q	F	14	CHIP	
9730	M63	14’10”-15’10”	Q	F	23	CHUNK	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
9767	M63	14'10"-15'10"	Q	W	23	INCOMPLETE FLAKE	
10118	L63	13'6"-14'6"	QZE	SW	39	INCOMPLETE FLAKE	
10119	L63	13'6"-14'6"	QZE	SW	33	INCOMPLETE FLAKE	
10121	L63	11'6"-12'6"	C	SW	44	INCOMPLETE FLAKE	
10122	L63	11'6"-12'6"	C	F	26	COMPLETE FLAKE	
10123	L63	11'6"-12'6"	Q	F	24	INCOMPLETE FLAKE	
10124	L63	11'6"-12'6"	Q	F	27	INCOMPLETE FLAKE	
10125	L63	11'6"-12'6"	Q	F	11	CHIP	
10126	L63	11'6"-12'6"	Q	F	19	CHIP	
10127	L63	11'6"-12'6"	Q	F	11	CHIP	
10128	L63	11'6"-12'6"	Q	F	17	CHIP	
10129	L63	9'6"-10'6"	Q	F	14	CHIP	
10130	L-M63	MIXED	Q	F	8	CHIP	
10136	L63	12'6"-13'6"	Q	SW	17	CHIP	
10137	L63	12'6"-13'6"	Q	F	24	INCOMPLETE FLAKE	
10138	L63	12'6"-13'6"	Q	F	20	INCOMPLETE FLAKE	
10139	L63	12'6"-13'6"	Q	F	11	CHIP	
10140	L63	12'6"-13'6"	Q	F	14	CHIP	
10141	L63	12'6"-13'6"	Q	F	10	CHIP	
10142	L63	12'6"-13'6"	Q	F	10	CHIP	
10143	L63	12'6"-13'6"	QZE	W	86	MANUPORT	
10364	P60	11'5"-12'17"	Q	F	39	INCOMPLETE FLAKE	
10365	O60	8'3"-9'3"	Q	F	23	BIPOLAR CORE REMAIN	
10366	Q58	18'3"-19'3"	Q	F	29	CORE FRAGMENT	
10367	Q59	12'6"-13'6"	Q	F	68	BIPOLAR CORE	
10368	Q58	14'6"-15'6"	Q	F	17	CHIP	
10370	Q58	10'3"-11'3"	QZE	W	24	BIPOLAR CORE REMAIN	
10371	Q58	16'3"-17'3"	Q	F	22	INCOMPLETE FLAKE	
10372	Q58	16'3"-17'3"	Q	F	12	CHIP	
10373	J62	19'10"-20'10"	Q	F	43	CORE FRAGMENT	
10374	I62	19'10"-20'10"	Q	F	40	INCOMPLETE FLAKE	X

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
10375	Q61	13’10”-14’10”	Q	F	35	CHUNK	
10376	L62	15’5”-16’5”	Q	F	33	BIPOLAR CORE REMAIN	
10382	Q58	18’3”-19’3”	Q	W	21	COMPLETE FLAKE	
10383	Q58	18’3”-19’3”	Q	F	16	CHIP	
10384	Q58	18’3”-19’3”	C	F	15	CHIP	
10385	P60	10’5”-11’5”	QZE	F	40	MANUPORT	
10386	O59	7’6”-8’6”	QZE	SW	45	COMPLETE FLAKE	
10387	Q58	17’3”-18’3”	Q	F	22	COMPLETE FLAKE	
10388	Q58	17’3”-18’3”	Q	W	17	CHIP	
10389	L63	13’6”-14’6”	Q	F	22	COMPLETE FLAKE	
10404	P60	14’4”-15’10”	Q	F	32	INCOMPLETE FLAKE	
10405	P60	14’4”-15’1O”	Q	F	20	CHUNK	
10406	P62	11”7”-12’7”	QZE	F	19	CHIP	
10407	O61	12’5”-1’7”	SS	F	112	MANUPORT	
10408	O61	12’5”-13’7”	Q	F			
10409	J63	20’10”-21’10”	Q	F	36	CHUNK	
10410	P62	17’0”-117’9”	Q	F	28	CORE TRIMMING FLAKE	
10411	K63	15’10”-16’10”	Q	F	30	INCOMPLETE FLAKE	
10412	N59	16’0”-17’0”	QZE	F	16	CHIP	
10413	N59	16’0”-17’0”	QZE	W	14	CHIP	
10414	N59	21’0”-22’0”	Q	F	8	CHIP	
10415	L63	10’6”-11’0”	IG	W	93	MANUPORT	
10416	L63	13’6”-14’6”	Q	F	17	CHIP	
10417	L63	13’6”-14’6”	Q	F	13	CHIP	
10418	L63	13’6”-14’6”	Q	F	13	CHIP	
10419	L63	13’6”-14’6”	Q	F	12	CHIP	
10420	L63	13’6”-14’6”	Q	F	12	CHIP	
10421	L63	13’6”-14’6”	Q	F	9	CHIP	
10422	L63	13’6”-14’6”	Q	F	9	CHIP	
10423	L63	13’6”-14’6”	Q	F	7	CHIP	
10424	M61	11’3”-12’3”	Q	W	32	CHUNK	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
10425	M61	11’3”-12’3”	Q	F	19	CHIP	
10426	M60	12’5”-13’5”	QZE	W	45	COMPLETE FLAKE	X
10427	L63	16’8”-17’8”	Q	F	22	INCOMPLETE FLAKE	
10428	L63	16’8”-17’8”	Q	F	49	BIPOLAR CORE REMAIN	
10429	L63	16’8”-17’8”	Q	F	39	BIPOLAR CORE REMAIN	
10430	L63	16’8”-17’8”	Q	F	22	CHUNK	
10431	L63	16’8”-17’8”	Q	W	17	CHIP	
10432	L63	16’8”-17’8”	Q	F	11	CHIP	
10433	L63	16’8”-17’8”	QZE	W	69	MANUPORT	
10434	K63		Q	F	29	INCOMPLETE FLAKE	
10435	M61	10’5”-11’5”	Q	SW	21	COMPLETE FLAKE	
10436	M61	10’5”-11’5”	Q	W	14	CHIP	
10437	M61	10’5”-11’5”	Q	W	14	CHIP	
10438	M61	10’5”-11’5”	Q	W	11	CHIP	
10439	M61	10’5”-11’5”	Q	W	18	CHIP	
10440	M61	10’5”-11’5”	C	W	25	CHUNK	
10441	M61	10’5”-11’5”	C	W	21	CHUNK	
10442	M61	10’5”-11’5”	C	W	15	CHIP	
10443	J63	15’10”-17’10”	Q	SW	94	CORE	
10444	K62	18’10”-19’10”	QZE	VW	84	CORE	
10445	J63	13’10”-14’10”	Q	SW	56	BIPOLAR CORE	
10446	J63	13’10”-14’10”	QZE	VW	89	MANUPORT	
10447	J63	13’10”-14’10”	Q	F	18	CHIP	
10448	K62	17’10”-18’10”	QZE	W	97	MANUPORT	
10449	M60	11’5”-12’5”	D	F	91	NATURAL	
10450	M60	11’5”-12’5”	QZE	W	87	CASUAL CORE	

No.	Sq.	Level	Raw Mat.	Condition	M/L	Type	Retouch
10451	K63		QZE	W	114	MANUPORT	
10452	K63		QZE	W	49	CORE TRIMMING FLAKE	
10453	K63		Q	F	21	NATURAL	
10454	K63		D	SW	26	INCOMPLETE FLAKE	X
10455	K63		Q	F	22	INCOMPLETE FLAKE	
10456	K63		Q	W	16	CHIP	
10457	Q60	10'8"-11'8"	DIAB	W	56	NATURAL	
10458	M61	17'10"-18'10"	Q	SW	30	CHUNK	
10459	N59	20'0"-21'0"	Q	SW	45	CHUNK	
10460	M63	13'9"-14'9"	Q	F	28	INCOMPLETE FLAKE	
10461	I63	18'10"-19'10"	C	SW	27	NATURAL	
10462	N59	18'0"019'0"	Q	SW	13	CHIP	
10463	L63	15'10"-16'10'	Q	SW	24	CHUNK	
10464	K64		QZE	W	22	NATURAL	
10465	K64		QZE	W	20	NATURAL	