CHAPTER 1

Background

1.1 Introduction

A major research question is 'how did livestock reach South Africa'? Was it abrupt, in the company of migrating groups of Khoekhoe herders as is commonly thought? (Ehret 1982; Walker 1983; Elphick 1985; Klein 1986; Smith & Ouzman 2004). Or was it gradual, by a down-the-line exchange and local adoption (Kinahan 1996; Reid *et al.* 1998; Sadr 2004)? The matter remains contested and it is possible that in different parts of the subcontinent both processes were important.

If livestock raising reached the far south coast of Africa by no later than the turn of the eras (2000 years ago) (Webley 1992; Sealy & Yates 1994; Henshilwood 1996), it must already have penetrated south of the Zambezi at least two or three centuries earlier, that would be by 200 or 300 BC or even earlier (Ehret 1982, 1998; Robbins *et al.* 2005). It has become clear that sheep and ceramics preceded any Iron Age advance southwards (Ehret 1982; Deacon 1984a; Sealy & Yates 1994; Mitchell 2002; Smith 2005; Sadr & Sampson 2006).

Ehret (1998, 2008) suggests that a now extinct 'Limpopo Khoe-speaking' population of Late Stone Age (LSA) herders would have been the first pastoralists in this general region. He suggests the Limpopo Khoekhoe migrated here in the last few centuries BC or around the turn of the eras. Smith and Ouzman's (2004) rock art research conceivably echoes Ehret's hypothesis. On this basis, an early immigration of LSA herders into the Makgabeng can be posited as a working hypothesis. The aim of this research project has been to test at least in part this working hypothesis by examining the faunal remains from five excavated shelters in the northern Makgabeng, Limpopo Province.

Many of these shelters contain rock paintings of sheep (Eastwood & Fish 1996; Eastwood *et al.* 2002; Smith & Ouzman 2004) and the occupations span the later Holocene, which is the period during which livestock and ceramics would have been introduced to this area.

Several research questions can be posed. Was there a gradual change to herding in the tested Makgabeng shelter, somewhat like that documented by Sadr and Plug (2001) in the Thamaga area? In which case one can suggest processes such as contact with a pastoral population and gradual adoption of the new way of life. Or was a herding way of life introduced abruptly, along with new material culture indicative of the arrival of LSA immigrants? Indeed, when did livestock herding reach the Makgabeng?

A forager society is one whose primary subsistence method involves the direct procurement of edible plants and animals from the wild, foraging and hunting without significant recourse to the domestication of either. Hunter-gatherers obtain most from gathering rather than hunting, up to 80% of the food is obtained by gathering. While herding is the act of bringing individual animals together into a group, maintaining the group and moving the group from place to place or any combination of those. Various attempts have been made to distinguish between foragers and herders on different grounds, including archaeological settlement and material culture, linguistics, rock art, genetics and biology. Difficulties to distinguish between the two has been experienced largely due to inherent socio-economic and cultural similarities of herding and foraging groups, as well as the history of close contact between the two groups (Ginter 2008). Witklip was identified by Smith *et al.* (1991) as a forager site based on the presence of fine microlithic stone tools, small diameter ostrich eggshell beads, very few potsherds and a faunal assemblage comprising mainly undomesticated local mammals. Kasteelberg, situated nearby, was identified as a herder site on the basis of the presence of pottery, a faunal assemblage composed largely of sheep and seal bones, large diameter ostrich eggshell beads and coarsely made stone tools (Smith *et al.* 1991; Boonzaier *et al.* 1996; Smith *et al.* 2000). Klein (1986) suggests that sites with low frequencies of sheep remains and pottery could be interpreted as forager sites, while those with higher frequencies could be herder sites. However, diet could have influenced these frequencies. If sheep were butchered and consumed, then a high quantity of skeletal remains would be present while if they were relied upon for blood and milk, few remains would be present. Voigt (1986) points out that even at Iron Age sites the remains of domestic stock are often less numerous than wild remains because being agriculturalists they sometimes relied heavily on foraging at certain times. Therefore, it is only possible to make tentative forager or herder assignments based on the presence and quantity of sheep bones. Acknowledging these practices, it is even more difficult to distinguish between hunter and herder sites, since sites with both herder and hunter signatures could reflect occupation by hunters who acquired stock, or seasonal occupations by herders who were practicing foraging behaviours (Ginter 2008).

Different patterns in the archaeological remains would provide different answers. A gradual introduction of livestock into the faunal assemblages of the Makgabeng rock shelter sequences should show proportionately few animals at first and evidence for more intensive herding later. Such a pattern would support the idea of a gradual change in adaptations. Livestock would appear as an addition to the existing material culture assemblage which would not be distinguishable from that of the preceding local foragers. Contrary to this, if livestock were introduced by a migration of herders, faunal changes in the sequence would be abrupt and the LSA material culture should differ noticeably from those of the local foragers. The quantities and composition of the animal bones at immigrant LSA herder sites should be clearly different to that at the forager sites. A third alternative is that livestock arrived in the Makgabeng much later, with the arrival of village dwelling, agropastoralist Iron Age communities.

To attempt answers to the many questions, the primary approach is through faunal analysis of archaeological bones. The standard faunal classification method will be used. Species and body parts will be identified wherever possible. Counts will be kept and quantified comparisons across time and space will help provide the answers to the questions posed.

Excavations in the Makgabeng plateau, Limpopo Province, stretched over a period of three years from 2005 to 2007 and five sites were excavated. Three of the sites were rock shelters while two had shallow overhangs. Samples sizes vary, but three of the five sites have adequate bone samples. The main site that straddles the pre-ceramic and ceramic LSA period is Mphekwane (MPK). Two other sites with good faunal remains are Seroromeng (SRR) and Leholamogoa (LMG). The remaining two sites Mamaetla (MM) and Ramodikitli (RMD) had disappointing samples. For analyses, the faunal material from the five sites was divided into diagnostic and non-diagnostic elements. The non-diagnostics were only weighed and counted. Features such as cut marks, chopping marks, burning, gnawing and weathering were identified. The diagnostics were identified with the help of Dr Ina Plug and the comparative collections of modern specimens housed in the Transvaal Museum, Pretoria. Skeletal parts were determined to the lowest possible taxonomic part: family, genus and species. Where such detail was possible to determine, the bones were grouped into taxonomic classes namely mammal, reptile, fish or bird. In some cases it was possible to go further and group the bone to a size class within these groups, such as small or large carnivores or Bov I, II, III and IV. The Bovid groups range from Bov I to IV, of which Bov I is the smallest (e.g., steenbok), Bov II is of medium size (e.g., springbok), Bov III is larger (e.g., kudu) and Bov IV would be the largest species (e.g., buffalo and eland) (Brain 1974). Among livestock sheep and goat fall within the Bov II group, while cattle fall into the Bov III group.

To determine periods of occupation at a site, one needs to look at various factors. Stratigraphy plays an important role as it can show different occupation layers visible in the wall of the excavation. Spits and layers can be used to look at the horizontal and vertical distribution of artefacts and thus give us an idea of how things changed. Radiocarbon dating is vital to ascribe dates to certain layers. Another factor is the presence or absence of key indicators like ceramics, beads, etc. Much of the sequence of occupation at Makgabeng is dated at the five sites. However, there are problematic gaps in our chronological control as well.

1.2 The history of faunal analyses

Archaeozoology can be described as a branch of archaeology which focuses on the recovery and analyses of faunal remains in order to examine their physiology and ecology in relation to cultural activities (Klein & Cruz-Uribe 1984). The first analyses of faunal remains was undertaken by Lartet and Christie during their investigation of Palaeolithic cave sites in France in the 1860's. In 1862 Rütimeyer was the first to distinguish between bones of domestic animals such as sheep, pigs and cattle from their wild ancestors (Davis 1987).

During the early 1900's a new development in faunal studies was to define the origins of domestic species (Voigt 1983). Until 1939, faunal studies in Europe were primarily concerned with the environmental interpretation of Palaeolithic sites and the study of domestic species on Neolithic or early farming sites. The origin and subsequent evolution of livestock breeds has for a long time been a major subject of study in Germany and since the 1950's Joachim Boessneck and his students have done pioneering work in archaeozoology (Davis 1987).

The archaeozoologists themselves can come from multidisciplinary backgrounds. They may be archaeologists, anthropologists, palaeontologists, biological anthropologists, veterinarians, zoologists, agricultural scientists, ecologists, geologists or geographers. Each of these people bring different methodologies, perspectives and research goals to the study of animal remains (Reitz & Wing 1999).

The International Council for ArchaeoZoology (ICAZ) was born in 1971 during the International Symposium on 'Domestikations-Forschung und Geschichte der Haustiere' held in Budapest. ICAZ was founded in 1976 in Nice (Davis 1987). ICAZ has the following goals, to develop and stimulate archaeozoological research, to strengthen cooperation among archaeozoologists, to foster cooperation with archaeologists and scientists working in related fields, and to promote high ethical scientific standards for archaeozoological work. Archaeozoology has been recognized as a major contributor to our understanding of human adaptation and interaction with the natural world and has brought it to the forefront of archaeology and paleo-environmental studies. Two terms can be used to describe the discipline, namely zooarchaeology or archeaozoology, both are recognized by ICAZ.

1.3 Faunal analyses in southern Africa

The study of animal bones from archaeological sites in southern Africa, grew out of the research on the early hominid and non-hominid bone accumulations such as the work of Raymond Dart (Voigt 1983). The link between palaeontology and archaeology, which developed during the 1960's and 1970's, was largely driven by shared interests in palaeontology and archaeology in the community of researchers (Davis 1987; Brink 2005). C.K. (Bob) Brain, a palaeontologist at the Transvaal Museum also did pioneering work in this regard and with his help a research program to study animal remains from archaeological sites was established at the Transvaal Museum in the late 1970's. His work on cave taphonomy is especially important (Brain 1974, 1980, 1981).

The early archaeozoological work of Liz Voigt (1979, 1986) and Ina Plug (1989, 1990, 1992, 1993) has been aimed at the study of mostly Holocene and Late Pleistocene material. Richard Klein (1976, 1977, 1984b) is a North American archaeologist who developed his interest in faunal analyses through collaboration with the Iziko South African Museum. The work of D.M. (Margaret) Avery (1981, 1982, 1997) on microfauna has also made vital contributions. Another contributor to the discipline is James Brink (1987, 1993, 2005) in Bloemfontein whose focus is mainly on fossil material.

Studies of Iron Age faunal assemblages were much less common than Stone Age studies because site-intensive studies on Iron Age sites were conducted so much later, so that few well-documented assemblages existed (Voigt 1977, 1978, 1983). Recently this has changed so that Iron Age faunal assemblages are fully documented. It is essential for the archaeologist to work closely with the faunal expert, as so much information can be obtained by just analysing the faunal assemblage. Diet, environment and seasonality, to name but a few, can be determined by the faunal analyses.

1.4 The transition from hunting and gathering to food production

1.4.1 South-west Asia and Near East

The dog was the first animal to be domesticated by humans, probably for hunting wild animals. The next to be domesticated were sheep and goat in southern and south-western Asia during the early Holocene. Sheep and goat remains found at sites older than 10 000 BP show no evidence of domestication but after 10 000 BP there was a shift towards greater abundance of skeletons of younger goat and sheep suggesting that by 9000 BP people were keeping herds of these animals (Gupta 2004). The range of the wild ancestor of the domesticated sheep extended from the Himalayan highland to Anatolia, but sheep were not found in the mountains of the Levant (Mt. Carmel) (Perkins 1973). The wild Asian goats' natural habitat extends from Anatolia to the Hindu Kush (including the Levant), usually at higher altitudes than that of sheep (Perkins 1973). The reason why sheep and goat were the first animals to be domesticated may be because if you start a population with two goats, it would take 24 years to reach a herd size of 100, while sheep will take 40 years and cattle 72 years (Alvard & Kuznar 2001). The earliest evidence for cattle domestication in South-west Asia is around 8000-7000 BP in Anatolia (Gifford-Gonzalez 2005).

The transition from hunting and gathering in human communities to animal husbandry and agriculture seems to have originated in the Near East. The adoption of the young of wild animals that were killed by hunters seems to have preceded the deliberate breeding of domesticated animals (Bökönyi 1976). Climatic change caused vast changes in the landscape which led to people adapting their lifestyles by collecting new foods, changing their technologies (Bökönyi 1976; Gupta 2004; Smith 2005). Human populations increased. The domestication of sheep and goat appears to have taken place in the Near East between 9000 and 7000 BP (Bökönyi 1976). Humans were taking the first step towards food production (Smith 2005). This was not an

Table 1.1: Table showing the major domestic animals (Amended from Reitz & Wing 1999; additional information from Boessneck 1983).

Domesticate	**Presumed wild ancestor**	**Region of domestication**	**Date, BP**
cat (*Felis catus*)	wild cat (*Felis sylvestris*)	southwestern Asia, Europe	8000
cattle (*Bos taurus, Bos indicus*)	aurochs (*Bos primigenius*)	southwestern Asia & India	8000
chicken (*Gallus gallus*)	red jungle fowl (*Gallus gallus*)	southwestern Asia	8000
dog (*Canis familiaris*)	wolf (*Canis lupus*)	Europe	14 000
goat (*Capra hircus*)	bezoar goat (*Capra aegagrus*)	southwestern Asia	9000
horse (*Equus caballus*)	wild horse (*Equus ferus*)	eastern Europe	6000
pig (*Sus scrofa*)	common wild boar (*Sus scrofa*)	Europe & Asia	9000
rabbit (*Oryctolagus cuniculus*)	wild rabbit (*Oryctolagus cuniculus*)	Europe	500
sheep (*Ovis aries*)	Asiatic mouflon (*Ovis orientalis*)	southwestern Asia	9000

overnight process (Bökönyi 1976), nor did all people follow this path, some remained foragers. Some did try food production, only to abandon it when conditions changed, thus returning to a foraging way of life once more. Although, once the first steps toward keeping game animals as stock were taken, it may have been difficult to dismantle this way of life because of the social and cultural changes that would have already arisen (Smith 2005).

1.4.2 North Africa and the Sahara

There are two views of how animal domestication started in North Africa. The first is that domestic cattle were part of the package of sheep and goats when they were introduced from the Near East about 7800 years ago (Smith 2005; Linseele 2006). The second is that *Bos primigenius* was independently domesticated in Africa about 9300 to 9000 years ago (Gautier 1980; Grigson 1991; Gifford-Gonzalez 2005; Smith 2005). Some archaeologists have argued for this second view and recent DNA studies have proven that most, if not all of the *Bos taurus* (pre-colonial) in southern Africa is exclusively of North Africa *Bos primigenius* genetic origin (Bradley *et al.* 1996; Hanotte *et al.* 2002).

The earliest indication of domesticated cattle is from the eastern Saharan site of Nabta Playa where stone-using people were keeping domesticated cattle and using pottery by about 9300 BP (Wendorf & Schild 1980; Wendorf *et al.* 1984; Connah 2004). Smith (2003) looked at the criteria for these large bovid remains and found the first criteria to be environmental conditions where the authors argue that cattle must have been domesticated because of the harsh conditions in which they would not have been able to survive without human care (Wendorf & Schild 1998). The second criteria are size, where there is a distinct decrease in the size of cattle bones after the beginning of domestication (Smith 1992; Wendorf & Schild 1998). The third criteria is the species spectrum where there is no wild ancestors for the ovicaprids found at Nabta Playa, so they would have come from somewhere else, presumably the Near East (Smith 2003). The fourth criterion is genetics, where recent DNA analyses (Bradley *et al.* 1996; Hanotte *et al.* 2002) of African cattle shows that they were independently domesticated in Africa, but Smith (2003) argues that with DNA analyses it is not possible to determine exactly when the African component was added to the DNA, it may only have been after domestic stock was introduced from the Near East.

There is also evidence for domesticated cattle at Enneri Bardagué, in northern Chad, before 7000 years ago, and before 6000 years ago at Uan Muhuggiag, in western Libya, Grotte Capeletti, in northern Algeria and at Adrar Bous in northern Niger (Connah 2004). Churcher (1972) compared specimens from the Nile Valley with European *Bos primigenius* and found that they were very similar in conformation and size but that there was a 20% variation in skull size of the largest and smallest specimens. Horn core differences were even greater at 33%. He attributed this to sexual dimorphism within a single population.

At Nabta there is evidence of at least one part of the Sahara where indigenous domestication took place through the increased intensive use of wild cattle (Connah 2004) by Early Holocene hunters and fishers. The possibility remains that these people may have had control over herds of wild cattle, but it is only with evidence of genetic manipulation and some physical changes of these animals that definite domestication can be seen together with the start of a pastoral way of life. Cattle size would have decreased rapidly as restricting the gene pool produces smaller animals within a few generations (Smith 1992). According to Ina Plug (pers. comm.) this may not necessarily be the case because it is not just the practice of husbandry that could be the determining factor e.g. only now are we reaching cattle sizes that can compare with Roman cattle. Zeder (2005) looked at goats from Zagros and found that a variety of factors unrelated to domestication had a profound effect on body size in both wild and domestic goats.

The earliest domestic sheep and goat remains in Africa come from the eastern Sahara and date to 8000 BP. Since there are no wild ancestors for sheep and goat in Africa, they almost certainly come from western Asia by way of the Nile Valley (Wendorf & Schild 1998). Because domestic cattle predates sheep and goat in North Africa it tends to support the idea of indigenous domestication of cattle in North Africa (Marshall & Hildebrand 2002; Connah 2004). Ovicaprids were present at Nabta Playa and Grotte Capeletti about 7000 years ago and most likely adapted rapidly to the Sahara because of their tolerance to dry conditions (Connah 2004).

At the site of Dhar Tichitt, in Mauritania, both cattle and goats were kept at about 3500 years ago. At the site of Merimde, in Egypt, stone-using village-dwellers were keeping cattle, sheep, goats, pigs and dogs from about 7000 years ago, while settlements in the Fayum Depression had a similar economy at about the same time (Connah 2004). In the Sudan, at the site of Esh Shaheinab, stone-using people had domesticated goats and cattle, while at Kadero they had goats, cattle and sheep around 6000 years ago (Connah 2004).

The only wild sheep of Africa is the Barbary sheep (*Ammotragus lervia*), but they did not contributed to the genetics of the domestic ovicaprids of Africa (Smith 2003). Di Lernia and Cremaschi (1996) found Barbary sheep remains and dung (Di Lernia 2001) at Uan Afuda cave (Libyan Sahara) that dates to 9765 ± 105 BP to 9260 ± 290 BP. The morphology of coprolites, presence of spherulites and areas with animal shelters all point to the dwelling of wild ovicaprids. Since there are no wild ancestors for domestic sheep in the area, they suggest the hypothesis of Barbary sheep taming (Di Lernia & Cremaschi 1996). It must be kept in mind that the management of animals does not necessarily mean domestication. The presence of rock art should also be taken into account. On the southern wall of the Uan Afuda cave, there are paintings of scenes with humans and Barbary sheep (Di Lernia & Cremaschi 1996). In all the recorded cases, barbary sheep is the preferential animal game (Holl 1998).

Cattle bones dating to 7000 BP onwards were found at the sites of Uan Muhuggiag, Fozzigiaren, Ti-n-Torha cave complex, and probably Ti-n-Hanakaten, which is the southernmost among the tested Tadrart Acacus sites and this area probably played the gateway role in the transfer of livestock from the Eastern Sahara to the Western part of Africa (Holl 1998).

1.4.3 West Africa

With the lakes in the southern Sahara drying up, the people had two choices: they could practice hunting-gathering full time, or they could move further south to better-watered areas formerly the exclusive territory of Later Stone Age hunter-gatherers (Stahl 1986; Smith 1992; Marshall & Hildebrand 2002; Linseele 2006). The earliest dates for livestock remains in West Africa comes from the sites of Adrar Bous and Arlit, located along the western edge of the Tenere and the Air Mountain range in modern Niger, and dates to 6000-5000 BP (Holl 1998). At the site of Karkarichinkat, in Mali, cattle herders were present who also kept sheep and goats by about 4000 years ago, and at Gajiganna, near Lake Chad, at about 3000 years ago, and at Daima, in the same part of Nigeria, by a little later (Connah 2004).

Definite indications of herding or cultivation in West Africa are surprisingly late in date. The earliest date is around the eighteenth century BC and comes from the Kintampo industry context in Ghana (Stahl 1985, 1986; D'Andrea & Casey 2002; Phillipson 2005). It was thought that the Kintampo culture shows a sharp discontinuity in material culture and economy with its predecessor known locally as the Punpun phase, which may have been due to influences from both the north and west (Stahl 1986; Phillipson 2005). After re-examining the K6 site Ann Stahl (1985, 1986) argues that there is an overlap in material culture between the two cultures, suggesting that there may be more diffusion at the Kintampo cultural sites than previously recognized.

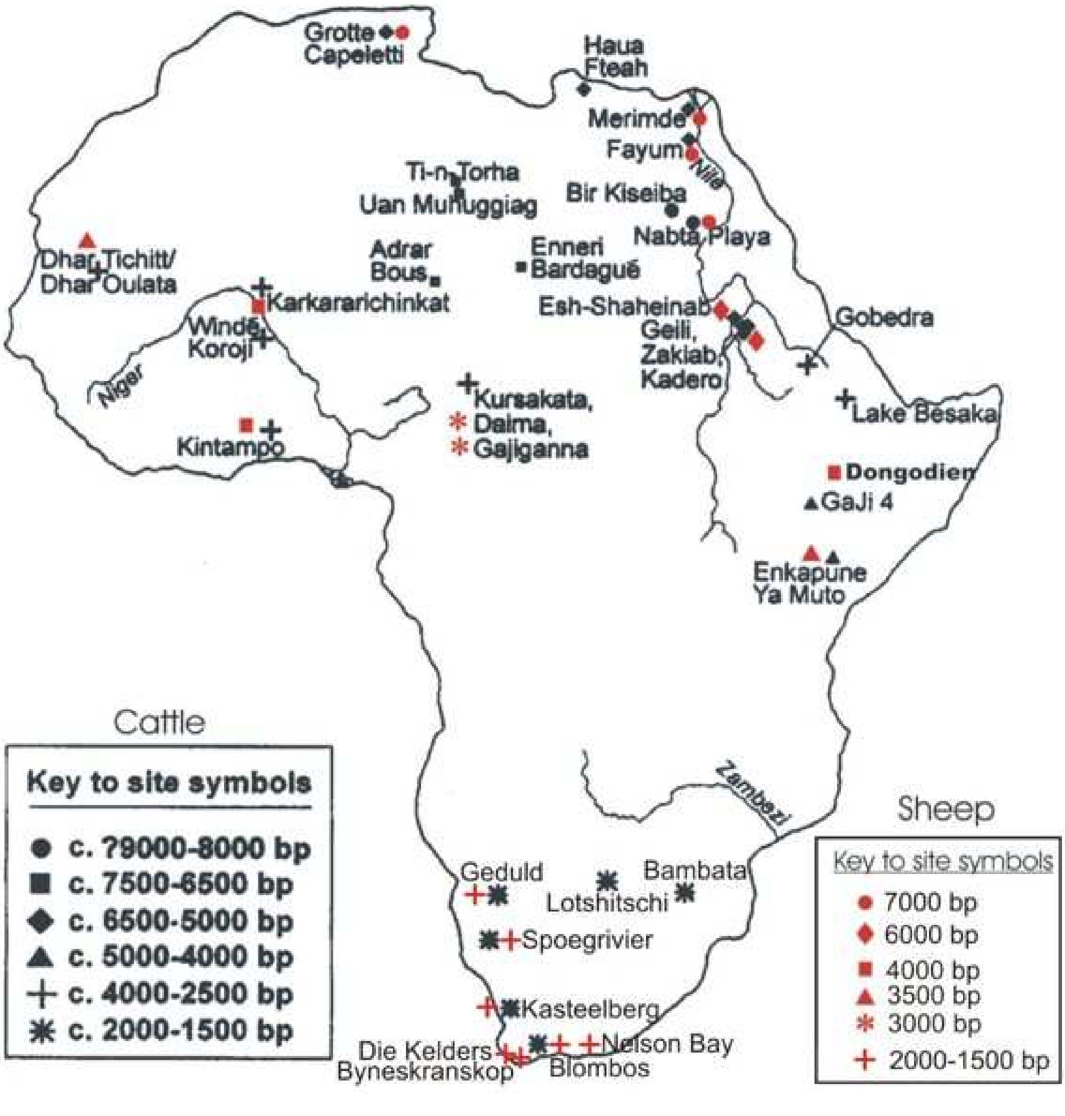


Figure 1.1: Distribution of sites with early domestic cattle and sheep. (Amended map taken from Marshall & Hildebrand 2002.)

Carter and Flight (1972) reported the presence of goat remains of a dwarf variety at both the Kintampo K6 and Ntereso sites. Gautier (1987) disputes the presence of dwarf goats. Similarly, the cattle remains are also of a smaller variety, but caution needs to be taken as the small African buffalo (*Syncerus caffer nanus*) is osteologically very similar. Wild animals are also present

(Carter & Flight 1972; Phillipson 2005). Stahl (1986) confirms the presence of domesticated ovicaprids at the K6 site with her 1982 excavation, but she and others (Stahl 1985, 1994; D'Andrea & Casey 2002) question the presence of domestic cattle in the Kintampo cultural contexts. Although wild species dominate the faunal remains at the K6 site for the 1982 excavation it does suggest a change in their exploitation over time.

Human manipulation of the environment might be one of the reasons why faunal exploitation shifted to species found in open, cleared areas. People remained longer in a specific area building villages and clearing space for agriculture. This led to wild animals found in more open spaces, like large rodents, being hunted (Stahl 1986; D'Andrea & Casey 2002).

1.4.4 East Africa

The best record of domestic stock in East Africa comes from the site of Dongodien, in Kenya, with a date of 4000 BP. Mostly ovicaprids, but also cattle date back to this time (Marean 1992; Ambrose 1998; Connah 2004; Lane 2004; Smith 2005). Sites with pottery usually associated with domestic animals have been dated to 5000 BP in northern Kenya, suggesting that pastoralism may have occurred even earlier. A huge gap in radiocarbon dates exists for the period between 6000 and 3300 BP in the southern highland of Kenya and northern Tanzania. Gifford-Gonzalez (1998) ascribes this gap to the extreme dry conditions which would have rendered the area less than optimal for livestock. This gap led to a lot of unanswered questions like, was the transition gradual or abrupt? The transition to food production in this area can be seen in the appearance of pottery and domestic animals for the sites that are younger than 3300 BP (Ambrose 1998; see Lane *et al.* 2007). Domesticated animals may not just have been important for food and wealth, but also for labour and transport (Phillipson 1993).

A closer look at the rock shelter site of Enkapune Ya Muto dating between 3000 and 6300 BP combined with faunal analyses, provided answers to these questions (Ambrose 1998). The faunal remains from Enkapune Ya Muto shows that small wild bovids were hunted and the complete carcasses were transported back to the site. Larger forest game was not hunted. The earliest caprine remains are few and may not have been herded but rather obtained by trade or theft. Between 3000 and 2700 BP the caprines came to dominate the assemblage to the extent that all other bovids were excluded. The same stone tools were being made throughout, suggesting that the resident hunter-gatherers were the ones to make the transition to caprine herding (Marean 1992).

The 5000 BP date for pottery in northern Kenya has been rejected by some, but Ambrose (1998) suggests that it be reconsidered since the earliest pastoral pottery at Enkapune Ya Muto are similar to those and date to 4860 BP. They were not associated with domestic animals. The faunal analyses for Enkapune Ya Muto demonstrates that domestic caprines are present at 3390 BP, some 870 years after pottery suggests contact with pastoralists from northern Kenya. This suggests that the adoption of pastoralism by the hunter-gatherer people of this area was thus gradual (Ambrose 1998; Lane 2004). Barthelme (1984) discovered Nderit ware pottery at GaJi 4 in the Lake Turkana region that was associated with a microlithic stone-tool assemblage and faunal remains of domestic ovicaprids and probably domestic cattle. Two charcoal samples yielded a date of 4000 BP for the site (Barthelme 1984).

Ambrose (1984) looked at four possible hypotheses for the introduction of food production in East Africa: first, independent domestication of local animal species; secondly, diffusion of the materials and techniques associated with pastoralism to the indigenous hunter-gatherer populations; thirdly, small-scale movement of populations with a food-producing economy into the area, merging with the local hunter-gathers who gradually abandoned their old lifestyle; and fourthly, large-scale movements of intrusive populations absorbing the hunter-gatherer groups. He found that the pastoralists adaptation to open grasslands did not place them in direct competition with the indigenous hunter-gatherers, allowing them to coexist for a long time (Ambrose 1984).

1.5 How livestock got to southern Africa

Through the years there have been various debates on how livestock reached the southern parts of Africa and it is still an ongoing debate. George W. Stow (1905) believed in a migration of pastoralists from eastern Africa into the south-western part of the continent where they lived independently. Cooke (1965) elaborated on the idea of a movement from the north-east across Zimbabwe and Botswana into Namibia and then southwards along the west coast to reach the Cape and finally eastwards from there. Then Westphal (1963) complicated this simple model by reclassifying the languages spoken by pastoralists and hunter-gatherers in southern Africa which he traced to an area of origin in northern Botswana which he called the Tshu-khwe group.

Bambata pottery further complicates the debate. Huffman (1978, 2005) believes that Bambata pottery was part of the Iron Age movement into southern Africa, but Walker (1983) re-excavated Bambata Cave and got dates of 150 BC for sheep remains and Bambata pottery. This date would be too early to be explained as simple contact with the Iron Age and it would be the latest possible date for the Tshu-khwe dispersal from nearby northern Botswana (Hall 1987).

More recently, we find that there are two different views of how food production was brought to southern Africa. Richard Elphick (1985), Cranmer Cooke (1965) and Andrew Smith (2005) support the idea that Bantu-speaking people brought livestock and pottery down from east Africa, to the middle Zambezi Basin. This is where local hunter-gatherers in turn adopted the livestock and learned to make pottery. Around 2000 years ago these people then migrated further south and west to reach the Cape. Their movement was probably stimulated mainly by the need to find and exploit new pastures, and is best described by the term ‘migratory drift’ (Elphick 1977). A later movement is also postulated by Elphick (1977) where he suggests a movement west along the Orange River to the Atlantic Coast and from there south to Namaqualand and north into Namibia (Fig. 1.2). If this route is correct, then we would expect to find domestic stock in the northern Cape archaeological sites with at least the same dates as in the southern and western Cape sites (Klein 1984a).

Some have been reluctant to attribute the origins of herding to a mass migration of Khoekhoe herders 2000 years ago (Klein 1986; Deacon 1984a; Phillipson 2005). Indeed Sadr (2003) and John Kinahan (1996) suggest that livestock and ceramics could have been passed along by trade and gift giving among hunter-gatherer neighbours.

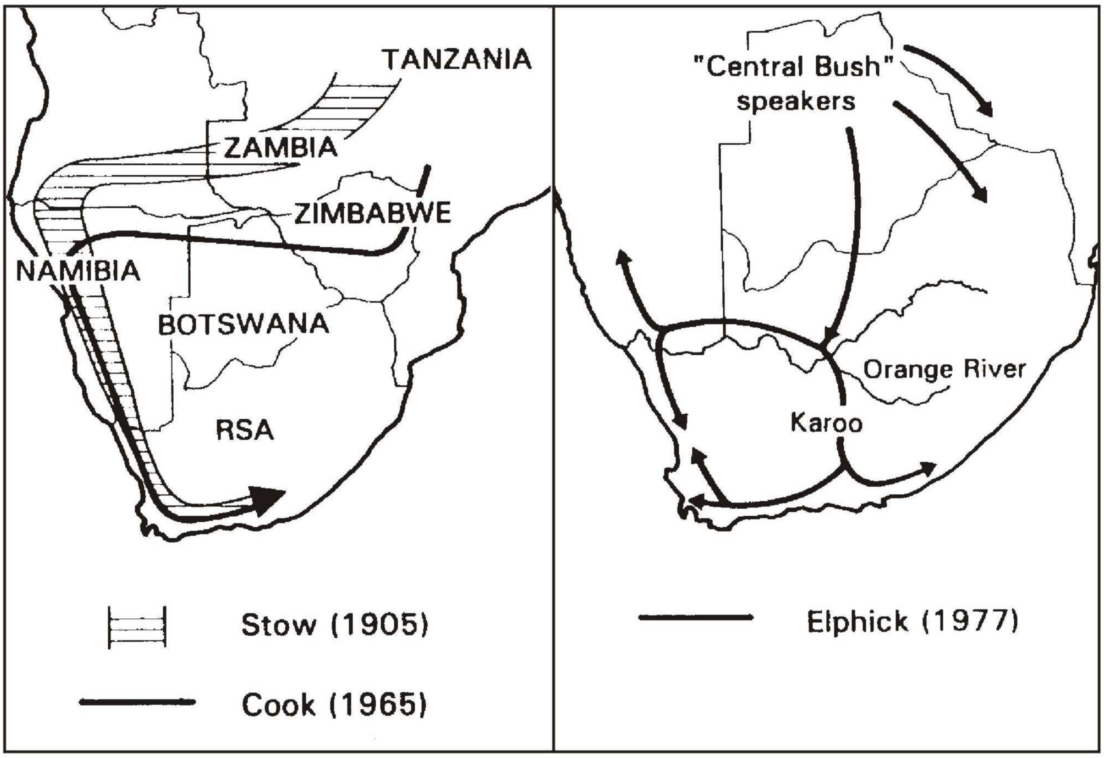


Figure 1.2: The routes suggested by Stow, Cooke and Elphick. (Map taken from Sealy & Yates 1994.)

To have reached the far south coast of Africa by no later than the turn of the Christian era, livestock raising must already have penetrated south of the Zambezi at least two or three centuries earlier, that would be by 200 or 300 BC or even earlier. Thus, stock keeping in southern Africa preceded the arrival of the Bantu-speakers as can be shown linguistically (Ehret 1967, 1982, 1998, 2008), and by AMS radiocarbon dates on livestock bones (Sealy & Yates 1994; Henshilwood 1996; Robbins *et al.* 2005). Northern Botswana may have served as a major gateway for the initial spread of domesticated livestock into southern Africa (Robbins *et al.* 2005).

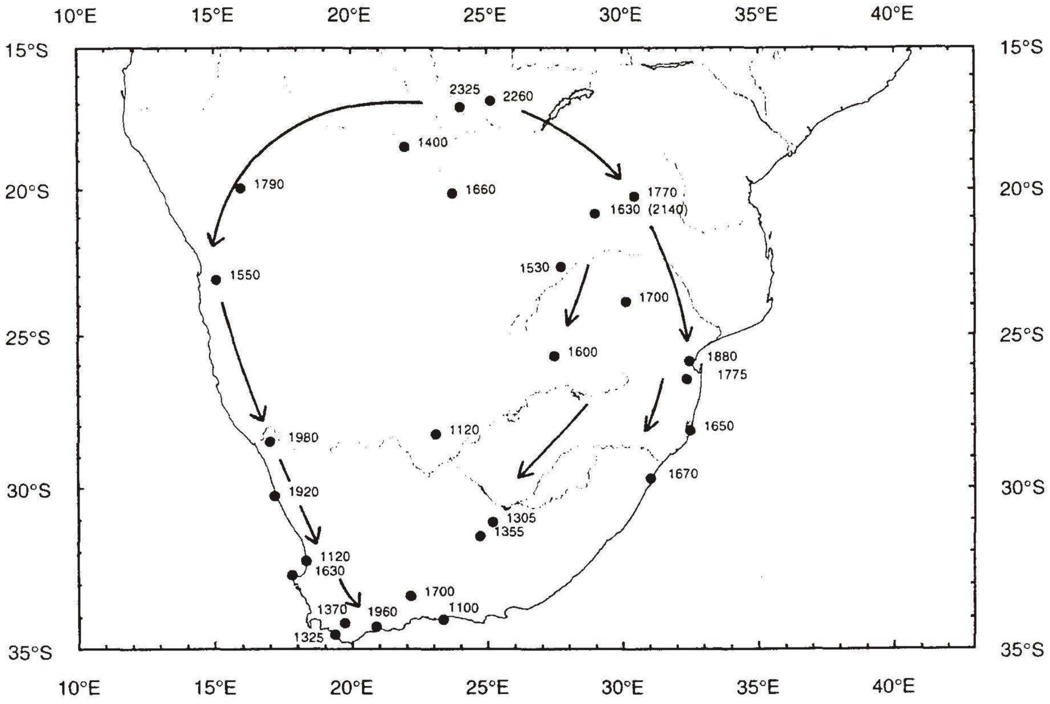


Figure 1.3: Bousman's (1998) suggestion of how livestock reached southern Africa.

Britt Bousman (1998) used uncalibrated radiocarbon dates to suggest two other routes of how livestock was brought into southern Africa. His first route would be away from southern Zambia, west through southern Angola, by passing Botswana, then south through Namibia and eventually to the southwest Cape (Fig. 1.3). The second route that was slightly later, extends south through Zimbabwe, the eastern Transvaal and Mozambique, into the western Transvaal.

He also suggests that Khoisan and Iron Age people were involved in the transmission of domestic stock into southern Africa (Bousman 1998).

Three major Neoglacial advances occurred at 4500-4200 BP, at 3400-2200 BP and in the last 1000 years, the last one being referred to as the “Little Ice Age” (Grove 1990) during which time the climate was slightly wetter and migration with sheep through drier areas may have been possible (Cooke 1965). The ‘Little Ice Age’ stretched from about 1300 AD to 1859 AD and was preceded by the variable Medieval Warm Epoch which appeared 900 AD to 1300 AD (Tyson & Lindesay 1992). There are indications of changes in sub continental vegetation and climatic conditions associated with the above mentioned Neoglacial episodes (Jerardino 1995).

The earliest evidence for cattle in southern Africa comes from Salumano, Zambia and dates back to ca. 380 BC (Plug 1996b). Early cattle remains have also been recorded at Nkope in Malawi, Broederstroom, Happy Rest and Kwagandaganda in South Africa that dates between 250-550 AD (Plug 1996b; Plug & Voigt 1985). Also, Early Iron Age cattle e.g. Bosutswe (Botswana) (Plug 1996a) and KwaGandaganda (KwaZulu Natal) (Plug 1996b) were very large approximating buffalo. There are no wild ancestors in Africa for the domestic sheep and goat found in southern Africa, so they would have come from somewhere else, probably the Near East (Sealy & Yates 1994; Smith 1998). The earliest occurrence for sheep in South Africa is at Spoegriver and dates to 2100 BP (Sealy & Yates 1994).

The faunal remains from sites in the Makgabeng could be used to test whether livestock in that area arrived with an influx of immigrant herders or whether it was gradually adopted into an existing hunting and gathering economy. As an example of such gradual change, Sadr & Plug (2001) examined the faunal remains from two sites near the village of Thamaga, Botswana. They found that the domestic stock proportions increased in comparison with wild game, while forager stone tools decreased and imported potsherds from agropastoralists increased. They also found that sheep replaced the small and relatively easily trapped and snared animals which were not, according to ethnographers such as Susan Kent (1993) subject to rules of sharing. This suggested a way around the egalitarian ethos of hunter-gatherers, which some consider an insurmountable obstacle to hunters becoming herders (Smith 1990).

1.6 The Makgabeng Plateau

1.6.1 The Landscape

The Makgabeng Plateau rises about 200 m above the surrounding plains and covers an area of 400 square kilometres (Eastwood & Van Schalkwyk 2003). It is located in the Senwabarawana and Seshego districts of the Limpopo Province of South Africa. The Makgabeng mountains are said to be two billion years old and part of the Waterberg Group (Eriksson *et al.* 2000).

Fine and medium grained sandstone rock largely forms the plateau while in some places younger, coarser sandstone and conglomerate outcrops form the steep-sided spires which can be seen in the northern part of the plateau. Representing the remains of a fossilised pre-Cambrian desert, the finer sediments are thought to be almost 2 billion years old (Brandl 1986).

The Makgabeng Plateau lies in southern Africa’s Savanna Biome forming part of the Kalahari vegetation and consists of Mixed Bushveld (Low & Rebelo 1996). More than 250 species of tree and shrubs have been identified, of which over 40 species have edible fruits or seeds (Eastwood & Van Schalkwyk 2003). The wide variety of edible plants could have led to the area being a rich foraging area for hunter-gatherers in the past (Eastwood & Van Schalkwyk 2003). Some plants could have been used for the making of ropes, bows, arrows, spears and even poisonous arrows (Moodley 2004).

Numerous small river valleys criss-cross the landscape to create a rugged terrain. Cutting through the terrain is the Masebe Gorge with the Masebe River (*Noka ya Masebe*) flowing through it. Water action was responsible for the forming of the usually large oval shaped caverns with their smooth rock faces in the Masebe Gorge. Subsidence of rock along horizontal and vertical joint planes of the aeolian sediment layers were responsible for the forming of shelters elsewhere on the plateau. The landscape of the Makgabeng is dominated by tall spirals and hills made up of horizontal conglomerates. The most impressive of these landscape features are the mountains known as *Thabananthlana* (Fig. 1.4)*, Pieta, Lerataupje* and *Ngwanantŝwana* (Eastwood & Van Schalkwyk 2003).

The Makgabeng Plateau has given rise to a variety of habitats not only for plant life but also for animals. The diverse plant communities range from *fynbos*, riverine forest, wetland, grassland and woodland which form ideal habitats for a variety of animal communities. Unfortunately, very few of the wild animals

Figure 1.4: The mountain Thabananthlana (Photo S.Holt 2006).

are still to be found in the area due to the presence of domestic stock and the practice of hunting. A wide range of the wild animals, indigenous to the area, are found in the game reserves in the nearby Blouberg, Waterberg and Limpopo Valley. Populations of elephant, rhinoceros, hyena, giraffe, sable antelope, gemsbok, lion, eland, hartebeest, leopard, kudu and various smaller animals were present on the plateau as can be seen in the rock art of the area (Eastwood & Van Schalkwyk 2003).

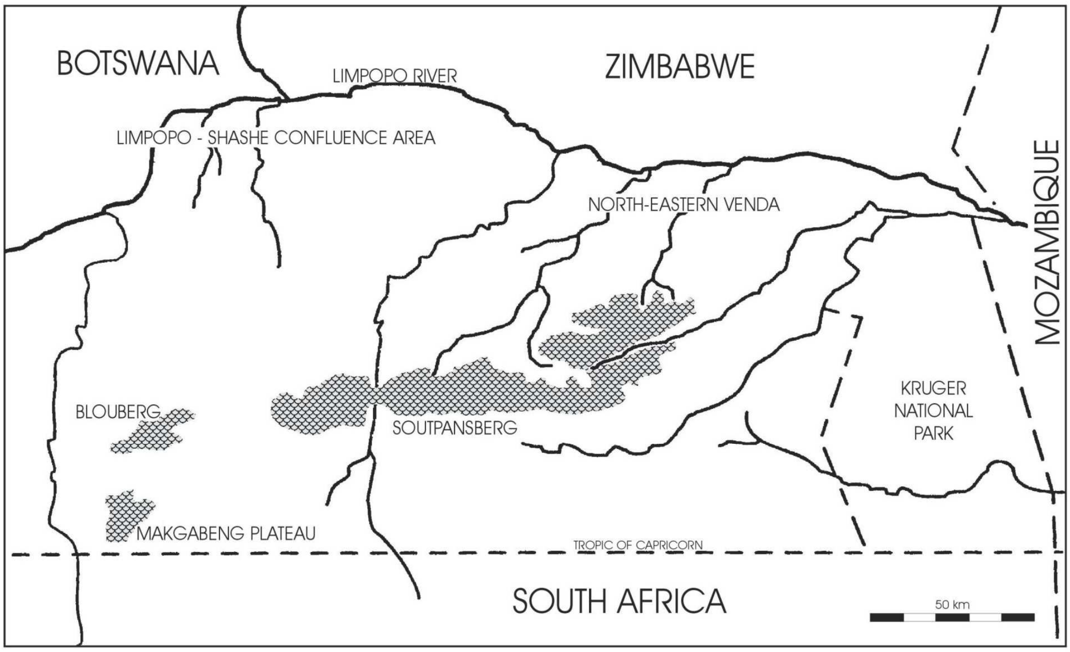


Figure 1.5: Location of the Makgabeng Plateau (Redrawn map from Eastwood & Van Schalkwyk 2003).

1.6.2 The Archaeology and History

The Reverend Noel Roberts was one of the first people to have excavated in the Makgabeng, and it was during one of his excavations of a painted rock shelter that he claimed to have unearthed a store of San paints (Roberts 1916). Very little research has been done on the Early and Middle Stone Age of the Makgabeng Plateau.

During the 1950s Jean Humphreys excavated the Makgabengberg Shelter where she found typical Smithfield lithics which were dated from about 1020 ±

150 BP (Mason 1962; Sampson 1974; Eastwood & Van Schalkwyk 2003). Her findings were of particular interest to Revil Mason because his Smithfield series from Olieboompoort, situated 100 miles southeast of the Makgabengberg Shelter, was very similar to the stone tool industries that she found. The Olieboompoort assemblage was dated to 820 ± 150 BP (Mason 1962; Sampson 1974). These dates suggested to Sampson (1974) that the Smithfield technology was already present in this area at the time when Ceramic Wilton groups existed in Zimbabwe to the north and in the Orange River Valley to the south.

1.6.3 Human Occupation

Van Doornum (2005, 2007) and Hall & Smith (2000) have examined hunter-gatherer and farmer interactions in the Shashe-Limpopo Confluence region and found that the interaction is more complex than previous researches have suggested. The hunter-gatherer sequence in the Shashe-Limpopo area extends back almost to 6000 BP (Van Doornum 2007). Early farmer settlements were found in adjacent areas such as the Soutpansberg from about 350 AD (Prinsloo 1974; Huffman 2002).

It is uncertain why, during the LSA, the Limpopo Province was very sparsely occupied (Van der Ryst 1998) when compared with areas further south. It could be due to the lack of research or due to regional climatic differences during the Late Stone Age as described by Deacon (1984a). According to Mason (1962) the Olieboompoort people must have been descendants of the Makgabeng people, perhaps five or six generations later. The Late Stone Age occupants were almost certainly Khoisan people.

It is only during the arrival of the early farming communities in the plains that Khoisan activity in the Makgabeng and the Central Limpopo Basin starts to show in the ground deposits. Early Iron Age farmers were newcomers that occupied the Blouberg-Makgabeng area about 700 AD. Their sites are to be found on the southern side of Blouberg and the northern side of the Makgabeng Plateau. Archaeological evidence suggests that the Iron Age farming communities did not replace the Stone Age Khoisan, but co-existed in an interdependent relationship with them (Eastwood & Van Schalkwyk 2003).

When these farmers started moving into the areas occupied by hunter-gatherers, contact at first may have been welcomed. However when greater numbers of farmers appeared decreases in available space, mobility and resource access may have led to hostility (Hall & Smith 2000; Van Doornum 2005). It may not always have been hostile, as several trading relationships have occurred between hunter-gatherers and Bantu-speaking farmers, involving the trade of ceramics, beads, metal, meat, skins and other manufactured goods (Van Doornum 2005.) Hall & Smith (2000) found that the most intensive period of overlap between foragers and farmers, in the Soutpansberg, occurred in the period up to about 350 to 600 AD.

Early Iron Age people settled in permanent villages, practiced mixed farming while also hunting wild animals and collecting plant foods. Evidence for pottery production and iron working has been found at sites in both the Makgabeng and southern parts of the Blouberg. These Early Iron Age people were replaced or absorbed by Later Iron Age groups about 1300 AD. Communities speaking Venda, Ndebele, Tswana and Sotho languages entered the Blouberg-Makgabeng area at different times between about 1350 AD to 1850 AD. The Hananwa were part of the last phase of the Late Iron Age occupation in the Blouberg. By the middle of the nineteenth century the Hananwa were firmly established, but this situation changed with the arrival of white settlers (Eastwood & Van Schalkwyk 2003).

1.6.4 The Rock Art

Paintings of fat-tailed sheep have been found at various sites in the Makgabeng area (Eastwood & Fish 1996). Christopher Ehret (1998, 2008) proposed on linguistic grounds that the 'Limpopo Khoikhoi' were already settled in the Limpopo Province by the close of the last century BC. Although first decribed by Hall and Smith (2000), Ed Eastwood, Johnny van Schalkwyk & Benjamin Smith (2002) elaborated on the three distinct styles of rock art, namely, Northern Sotho, Khoekhoe herder and San hunter-gatherer paintings. The three painting traditions occur together and share some common image classes, which suggest cultural interaction between the three groups (Eastwood *et al.* 2002, Smith & Ouzman 2004).

Eastwood and Smith (2005) suggest that the so called Geometric Tradition comprising geometric images, dots, strokes and handprints can be ascribed to a Khoekhoen presence in the Central Limpopo Basin (CLB), an idea which fits Elphick's and Ehret's hypothese. They see the Khoekhoen as migrating people who came from south-central Africa to South Africa with a herding way of life and who reached the CLB some 2000 years ago. The proposed date is suggested by the stratigraphy of the paintings where San fine-line paintings are overlain by geometric finger paintings, which in turn are again overlain by San forager paintings (Hall & Smith 2000; Smith & Ouzman 2004). Linguistic data with the support of rock art data suggests that interaction occurred between the Khoekhoen and San in the CLB, at the beginning of the first millennium AD (Ehret 1998; Eastwood & Smith 2005). By implication, these authors thus take the rock art to indicate that livestock and ceramic technology reached the Makgabeng by a migration of Khoekhoe herders.

Paintings of sheep have also been found in the Waterberg, situated to the south of the Makgabeng. The site of Dwaalhoek in the western Waterberg contains a frieze of large, white fat-tailed animals (Manhire *et al.* 1986). Almost all of the sheep paintings in the Waterberg are painted in white but there is one in the Makgabeng of a fat-tailed sheep that was done with yellow pigment (Van der Ryst 1998).

1.7 Discussion

With the development of the discipline of archaeozoology it has become clear how important it is to analyse faunal remains and how much information can be obtained through this discipline. The spread of livestock in Africa took several thousands of years to reach the southern parts of the continent, having to bear different pushes and pulls according to environmental hazards. In some instances, as with East and Southern Africa, livestock would have expanded along with migrating groups while in the case of Namibia and most likely the largest part of the Cape Province, domestic animals would have initiated transformations of previous prehistoric hunter-gatherer societies.

Various factors can lead to changes in faunal assemblages, this could be due to culture contact, or outright displacement and change of populations (Van Doornum 2005). Taphonomic factors could also lead to the mixing of the deposit. Burrowing animals are probably the main cause of this problem, seeing as the ashier areas are easier to dig into. Natural weathering could lead to the finer sediments being washed away. The occupants themselves could have dug into the earth to make large fires in pits, or they could have dug sleeping hollows. Natural vegetation could also be a cause for disturbance.

Another factor that can lead to the change in a faunal assemblage can be environmental changes. Due to environmental changes the open grasslands of the late Pleistocene were replaced by the Fynbos Biome of the Holocene, this lead to smaller, browsing antelope being replaced by large, gregarious grazers and as can be seen at Elands Bay Cave. There were shifts in the relative proportions of grysbok to steenbok which suggest a more subtle change in the mix of browse plants were also at work. This lead to some ungulate taxa becoming extinct (Mitchell 2002). Sampson (2000) looked at tortoise remains in the Seacow River valley where there are eight different taxa present, some of them desert adapted and others endemic to regions with higher rainfall. He hoped that if past climatic fluctuations caused any of these distributions to fluctuate, it follows that stratified tortoise remains from archaeological sites may reflect these changes (Sampson 1998).

There is a tendency for late hunter-gatherers to go for smaller packages of meat, sometimes called the Broad Spectrum Revolution (Edwards 1989; Stiner 2001). At Rose Cottage Cave and Tloutle the mid/later Holocene faunas were diverse but had stronger components of small and small-medium bovids than their Pleistocene predecessors (Mitchell 2002). A reason for this could be that large bovids tend to migrate from the high mountains in the summer to lower elevations in the winter, something small bovids do not do.

The Makgabeng plateau with its numerous rock shelters, rich rock art traditions and gathering cultures is a very suitable area to examine which factors have affected the faunal compositions, looking at both change through time and space within the Makgabeng. The faunal remains of five sites in this area will be examined to investigate the changes and continuity and I will attempt through my analysis to see what the changes and continuity can be attributed to and compare it to a few nearby, contemporary sites.

CHAPTER 2

Methodology

2.1 Introduction

The Makgabeng plateau is rich with rock shelters containing rock art and archaeological remains. It would be difficult to sample all the sites, so sites with sheep paintings were selected in line with our aim to shed light on two key issues concerning the Neolithic of southern Africa: when and how did sheep reach this part of the sub-continent? The five sites that were excavated are Mphekwane, Seroromeng, Leholamogoa, Mamaetla and Ramodikitli.

2.2 Excavation methods

The principal investigator follows Sampson *et al.* (1989) in excavation method. The standard excavating unit is the 1 m square taken down to bedrock. This square is subdivided into 16 parts or quads of 250 x 250 mm. Each quad is excavated in layers between 20-50 mm thick. The excavated block is removed and sieved, and the artifacts, bones, etc. are sorted, bagged and marked as a unit (Sampson *et al.* 1989). This method allows individual finds to be plotted to within 25 cm horizontally and within a few cm vertically of their true position. This allows high resolution reconstruction on paper of the cultural stratigraphy, independently of the visible natural strata (Sadr 2007a).

2.3 Field work methods

Hand picking is the worst possible method to be used as it guarantees complete or near complete loss of small rodent, bird, fish, frog, mollusks and small bones of bovids, carnivores, etc. (Plug pers. comm.). A mesh of 1 mm was used to sieve all material retrieved. This was deemed necessary as mesh sizes of 3 mm and more will lead to the loss of about 90% of small rodents and virtually all fish, birds, eye lenses of birds, small mammal sesamoids, many teeth, particularly deciduous teeth of small and medium bovids and other small bones. Local workers sieved and sorted the excavated material. They had been employed for several seasons and were quite skilled in identifying faunal remains, ceramics, beads and lithics. Untrained sorters tend to miss a large variety of small bones of all sorts of animals as well as large bones of animals they are not familiar with.

2.4 Faunal identification

The fauna was identified with the help of Dr Ina Plug, previously of the Transvaal Museum. Time was also spent at the Transvaal Museum using their collection for comparative purposes. A fine-haired brush was used to clean all the material. Each bone was then identified, weighed and put into individual bags with a tag containing the site information.

2.5 Quantification methods

There are many different quantification methods (Klein & Cruz-Uribe 1984) that can be used with the analyses of a faunal sample, of which only the two most frequently used will be discussed here. Different quantification methods have their own advantages as well as disadvantages. The person doing the faunal analyses chooses a specific method depending on the nature and condition of the sample. The best method needs to be used to obtain the best results for that specific sample. The quantification method is not necessarily influenced by the quality of the material, but this could determine which method would be more suitable to apply to the faunal sample (O'Connor 2000). Quantification methods are used to determine the relative abundance of identified species. Using quantification methods can help the analyst to determine hunting, gathering, snaring and herding strategies (Klein & Cruz-Uribe 1984). It will also allow insight into taphonomic processes such as burning, gnawing and butchering techniques. Methods are applied differently by individual researchers which results in a variety of interpretations which makes comparisons difficult (Plug 1988; Reitz & Wing 1999; Hutten 2005).

2.5.1 Number of identifiable skeletal parts (NISP)

The simplest way of quantifying a faunal sample is using the number of identifiable skeletal parts (NISP) method. The NISP of a sample is determined by counting all the diagnostic bone of a particular species present in the sample. Most subsequent calculations can be made from the NISP list. Using the calculations of the NISP, the minimum number of individuals (MNI) can be calculated. One of the advantages of this method is that calculations can be done from the listed information and this is the reason why this method was chosen for this study (Klein & Cruz-Uribe 1984; Plug 1988; Hutten 2005).

One of the disadvantages of this method is that individual researchers use it in different ways. The researcher determines the outcome; for example, a mandible with two teeth may be counted as one or three. This method thus counts each specimen as a separate entity, although the whole sample may come from an individual animal. In this study a mandible with two teeth would have been counted as one NISP and not three. The NISP can also be influenced by cultural practices such as butchering, transporting of the specimen and distribution (Klein & Cruz-Uribe 1984; Plug 1988, Reitz & Wing 1999; Hutten 2005).

2.5.2 Minimum number of individuals (MNI)

The minimum number of individuals (MNI) can be used to determine animal abundance, age, sex and dietary consumption and is based on the calculation of the NISP method. The MNI is determined on the frequency of the most abundant skeletal part present in the sample. Teeth preserve very well and is often used in this method, but other skeletal parts can also be used. The species with the most abundant skeletal elements are then sorted into left and right-sided specimens. The highest of the left and right side counts is then taken as the smallest number of individual animals present in the sample (Klein & Cruz-Uribe 1984; Reitz & Wing 1999; Hutten 2005).

Plug & Plug (1990) discuss four problems associated with MNI counts. The first is that MNI counts exaggerate the abundance of species represented by small NISP counts. Secondly, it has been found that the sum of MNI counts on two samples almost invariably exceeds an MNI count on the combined sample. Thus, an MNI abundance ratio is affected by the often arbitrary aggregation of excavated units. Thirdly, it was found that computer simulations indicate that MNI counts are less accurate, and more variable than other estimates of species abundance, particularly on small samples. Fourthly, the general form of the 'growth curve' of MNI counts is known to approximate a power function and the specific form of the growth curve has been found to differ for various sites and taxa for reasons that are not always clear (Plug & Plug 1990). It was deemed unnecessary to determine the MNI counts for this study used mostly for comparisons of the same species.

2.6 Faunal categories

The diagnostic bone was divided into eight size categories, as Sadr & Plug (2001) did for the Thamaga sites in Botswana. The reason for using these size categories is to see if any change in hunting strategies can be documented at these sites. According to the ethnography, large animals were hunted by men with the bow and arrow (Tanaka 1976; Wadley 1987; Sadr & Plug 2001) while smaller animals were trapped, snared or clubbed and others were simply gathered. In the past pittfall traps were also used to capture large animals but they have not been used by more recent San (Tanaka 1996; Smith *et al.* 2000). Animals like springhare had to be dug out of their burrows which would have required considerable effort (Tanaka 1976; Sadr & Plug 2001).

The very large (>1000kg) faunal category contains Bov IV, Bov III/IV, buffalo and giraffe, while the large (100-1000kg) category contains Bov III, Bov II/III, alcelaphine, equid and kudu remains. The medium (30-100kg) category includes Bov II, Bov I/II as well as large/medium sized carnivore, sheep/goat, impala and suid. The small (5-30kg) category includes Bov I, canid, mountain reedbuck, grey duiker, klipspringer, monitor lizard, pangolin, primate, caracal and steenbok. The very small (0.5-5kg) category includes small carnivore, dassie, hare, mongoose, tortoise, large reptile, large lizard, large/medium rodent, small mammal and springhare. The tiny category includes birds, crab, fish, frog, shrew, small lizard, microfauna, small reptile and small rodent. The last category named ‘other’ includes *Achatina*, bird eggshell, ostrich eggshell, freshwater mussel, cowrie, mollusc, rhytididae, snail, *Spathopsis*, terrestrial gastropod and *Tropidophora*.

2.7 Discussion

With excavations stretching from 2005 to 2007 a lot of material was excavated and retrieved from the five sites. This included not just the fauna, but ceramics and lithics as well. Charcoal was also collected and used for dating purposes. My goal was to clean, sort, analyze and identify the faunal remains in order to asses change and continuity in the faunal remains through time. This should shed some light on change and continuity in the subsistence practices of the shelter inhabitants and whether (and to what extent) the arrival of livestock into this area affected traditional hunting and gathering diets.

CHAPTER 3

Site Descriptions

3.1 MPHEKWANE

The site of Mphekwane (Fig. 3.1) is located on the farm Mont Blanc (Fig. 3.17) on the Makgabeng plateau at 28°49’50E / 23°16’20S. The site comprises a large cavern with two adjoining, smaller shelters.

Figure 3.1: Photo of the Mphekwane shelter (Photo: K. Sadr 2007).

In June 2004, May 2006 and July 2007 a team of local residents and archaeologists from Wits University excavated three 1 x 3 m trenches at the site. The 2004 excavation numbered squares 1 to 3, the 2006 excavation numbered 4 to 6 while the 2007 excavation are represented by square numbers 7 to 9 (Fig. 3.2). All three 1 x 3 m trenches were dug to a depth of 20-25 cm without reaching bedrock. Only the A-line of square 4 was dug to bedrock in

2007. The trenches are located in the northwest corner of the shelter at the edge of a large ashy patch.

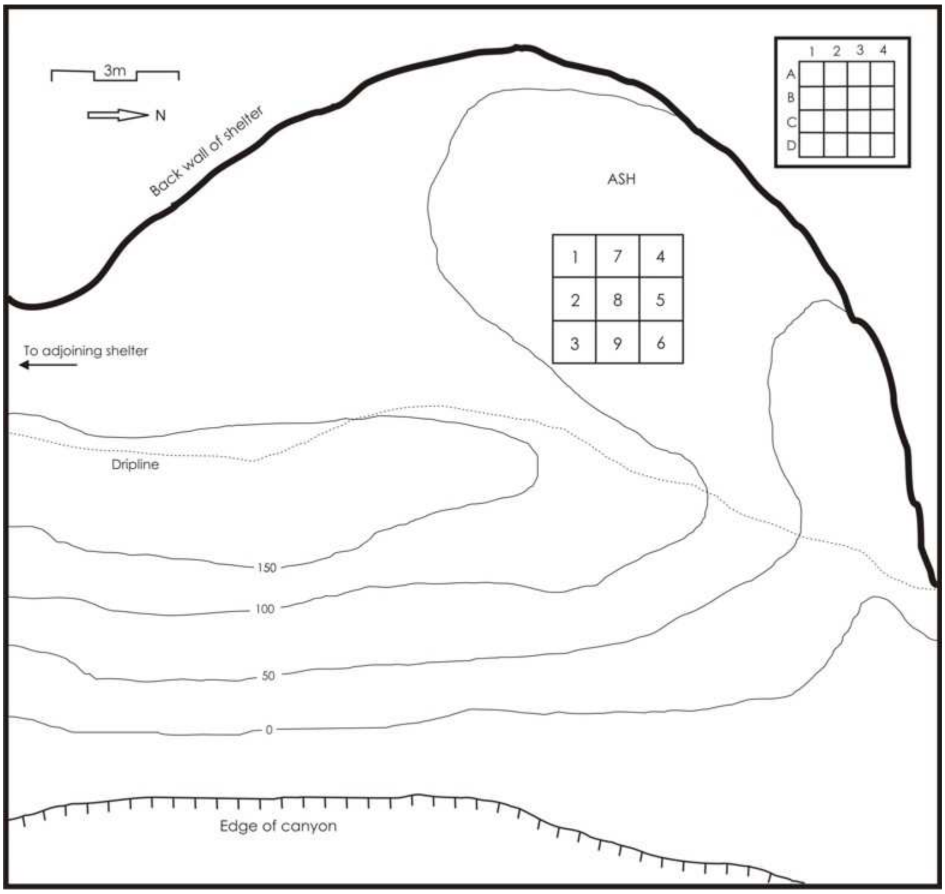


Figure 3.2: Map of Mphekwane shelter showing excavated area (Redrawn from Sadr 2007a).

3.1.1 Stratigraphy

The visible natural stratigraphy was limited, and the strata could not always be traced along the entire length of the profiles. In the north wall of square 1 (Fig. 3.3, left hand third of the lower profile), two strata could be distinguished, a grey upper and a gravely orange lower one. In the west wall of the same square, the grey stratum could be subdivided into a upper ashier grey with a couple of clear ash lenses, and a lower darker grey. In square 2 (Fig. 3.3, middle portion of lower profile), the grey stratum could be likewise subdivided into a more gravely upper portion and a finer matrix lower part. These overlie the continuation of the orange gravely layer, except that in square 2 the colour gradually changed to grey.

In square 3 no distinct strata could be seen at all in the undifferentiated grey sediments. In the south profile of trench 4-5-6, an upper light grey and a lower grey stratum could be identified. In square 4 these were separated by an orange-yellow ashy layer (Fig. 3.3, left third of the upper profile). Here, the lower dark grey layer, which included a few clear charcoal lenses, overlay a gravely red/pink layer (Sadr 2007a).

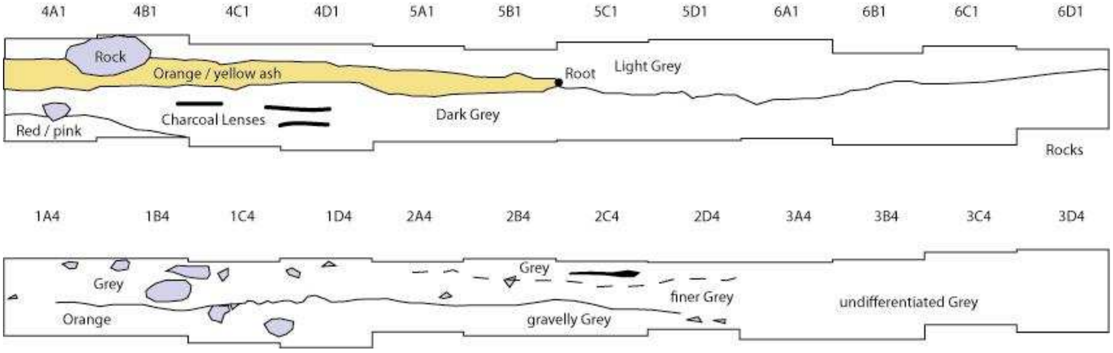


Figure 3.3. North profile of trench 1-2-3 (below) and South profile of trench 4-5-6 (above). West is to the left of both profiles (Sadr 2007a).

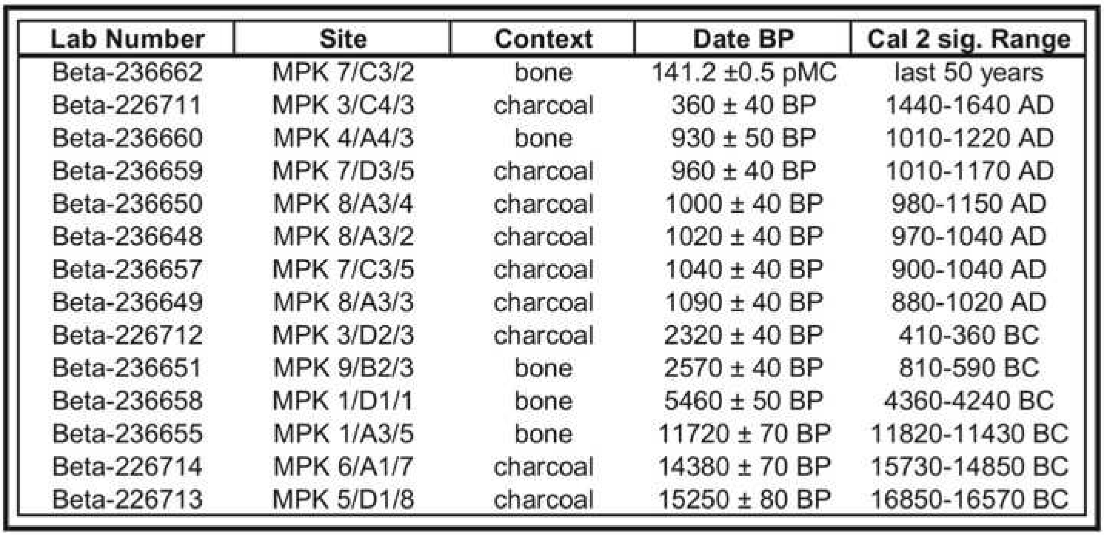
The matrix in the excavated squares at Mphekwane shelter is a lag deposit. The finer sediments have been washed away. Excavated layers contain masses of stone tools that probably represent several centuries of accumulated material. The integrity of the compacted stratigraphy may be further affected by various factors. Burrowing animals have probably caused some damage. The occupants themselves apparently dug hollows to make large fires or to sleep in. Natural vegetation and root action could also be a cause for disturbance.

To be able to see if any of the above mentioned factors had an impact, the remains were plotted over the nine squares to get a clearer view of the horizontal distribution. The horizontal distribution of the different classes were examined and revealed significant patterns. The vertical distribution was also significant and the details will be given in the next chapter.

3.1.2 Dating

There were fourteen dates obtained for the site of which one was found to date to the last 50 years (Table 3.1). The second youngest dates to 1440-1640 AD. Then there are six dates that ranges from 880 to 1220 AD, which could suggest that the site may have been frequently visited during this stretch of time. Two dates from the 3rd millennium BP and one date of 4360-4240 BC were obtained. The oldest three dates range from 11430 to 16850 BC show that this site was occupied in the late Pleistocene after the Last Glacial Maximum.

Table 3.1: Dates obtained for Mphekwane.



Lab Number	Site	Context	Date BP	Cal 2 sig. Range
Beta-236662	MPK 7/C3/2	bone	141.2 ±0.5 pMC	last 50 years
Beta-226711	MPK 3/C4/3	charcoal	360 ± 40 BP	1440-1640 AD
Beta-236660	MPK 4/A4/3	bone	930 ± 50 BP	1010-1220 AD
Beta-236659	MPK 7/D3/5	charcoal	960 ± 40 BP	1010-1170 AD
Beta-236650	MPK 8/A3/4	charcoal	1000 ± 40 BP	980-1150 AD
Beta-236648	MPK 8/A3/2	charcoal	1020 ± 40 BP	970-1040 AD
Beta-236657	MPK 7/C3/5	charcoal	1040 ± 40 BP	900-1040 AD
Beta-236649	MPK 8/A3/3	charcoal	1090 ± 40 BP	880-1020 AD
Beta-226712	MPK 3/D2/3	charcoal	2320 ± 40 BP	410-360 BC
Beta-236651	MPK 9/B2/3	bone	2570 ± 40 BP	810-590 BC
Beta-236658	MPK 1/D1/1	bone	5460 ± 50 BP	4360-4240 BC
Beta-236655	MPK 1/A3/5	bone	11720 ± 70 BP	11820-11430 BC
Beta-226714	MPK 6/A1/7	charcoal	14380 ± 70 BP	15730-14850 BC
Beta-226713	MPK 5/D1/8	charcoal	15250 ± 80 BP	16850-16570 BC

The vertical distribution suggests that the youngest dates are situated above the oldest dates, but the middle range seems to be out of place. From the profiles in Figure 3.3 it is noted that square 3 has undifferentiated strata which could suggest that the deposit was mixed up at some time, while square 9 had a lot of root disturbance.

3.1.3 Ceramics

On the surface of the shelter, mingled with numerous flaked stone artifacts, were thin-walled potsherds of a type known as Bambata ware, thought to date to the early first millennium AD (Robbins *et al.* 2005; Sadr & Sampson 2006; Sadr 2008). There is still an ongoing debate about the relation of Bambata pottery and the spread of pastoralism and mixed farming and Huffman (2007) suggests three hypothesis: (1) Bambata pottery represents the vanguard of the Iron Age; (2) it was acquired by hunter-gatherers through trade; (3) it represents full pastoralists or sedentary LSA people with domestic stock who had their own ceramic tradition. Huffman (2007) then distinguishes between a Bambata A, which he ascribes to hypothesis 2 and Bambata B which he associates with hypothesis 1.

A total of 40 potsherds were obtained from this site. Two types of potsherd were distinguished. The first being a thin-walled ware, often with smooth or burnished exterior surfaces and secondly, a thick-walled ware, with a generally coarser exterior surface. Each ware contained a few decorated sherds. Among the 25 thin-walled sherds, three are tightly comb-stamped in a manner typical of what is known as Bambata pottery. Another of the thin walled sherds is decorated with incised lines. Among the 13 thick-walled sherds, one is stamped with a larger, square toothed comb, and two others sport incised lines. A third incised sherd and one decorated with individual stylus impressions were among a few thick-walled sherds surface collected from outside the excavated area (Sadr 2007a).

3.1.4 Rock Art

The shelter contains many rock paintings, among which a procession of four fat-tailed sheep are located in the adjoining shelter (Fig. 3.4). According to Eastwood & Eastwood (2006) there are more than 40 known sites with images of fat-tailed sheep in the Limpopo basin. They also suggest that because of the association of these fat-tailed sheep with certain other San imagery, that the

San considered these animals to have supernatural potency. Eastwood and Fish (1996) looked at the distribution of fat- and thin-tailed sheep in the Limpopo and Soutpansberg region and concluded that the thin-tailed sheep can be associated with the Early Iron Age farmers while the fat-tailed sheep of the Limpopo and Makgabeng can be associated with the Khoekhoen.

Figure 3.4: The procession of four fat-tailed sheep in the adjoining shelter at Mphekwane (Photo: S Holt 2007).

3.2 SEROROMENG

The site of Seroromeng (Fig. 3.5) is located on the farm Nieuwe Jerusalem (Fig. 3.17) at 28°52'149E / 23°14'767S. The site is a fairly shallow but wide overhang on which there is some rock art present. A spring is found not too far away from the shelter.

In May 2006 and July 2007 a team of local residents and archaeologists from Wits University excavated three 1 x 1 m squares in the centre of the wide and shallow shelter. The 2006 excavations included squares 1 and 2, while the 2007 excavation concerned square 3 (Fig. 3.6). On the surface, the western part of square 2 and the eastern part of square 3 showed a dense concentration of ash and charcoal from a recent fire.

Figure 3.5: Photo of the Seroromeng site (Photo: S.Holt 2006).

The thin layer of loose brown surface soil was underlain by a layer containing much roof spall. In square 1, this touches the uppermost part of a thick ashy layer. Beneath the ash, and in most of square 2, a rocky light brown soil extends down to bedrock. Bedrock was reached at a depth of 20-35 cm. In slice A of square 2, bedrock is quite close to the surface, while bedrock in slice D of square 1 is about 25 cm deep (Sadr 2007b).

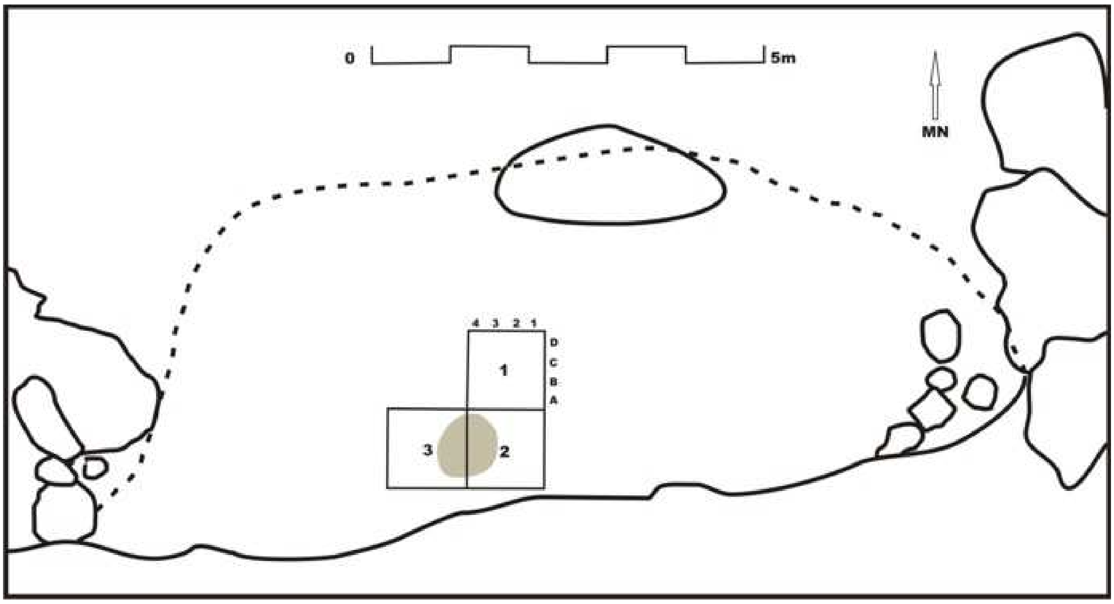


Figure 3.6: Map of Seroromeng shelter showing excavated area (Redrawn from Sadr 2007b).

3.2.1 Stratigraphy

The distribution of finds suggests three cultural horizons. The lowest horizon is found directly on bedrock and is rich in LSA lithics and faunal remains, but contains no ceramics. A date in the 7th millennium BC could refer to this occupation. The upper lithic and bone-rich horizon may be associated with the ash layer and the numerous ostrich eggshell beads found within it. Some of the ceramics may also be associated with it. An early second millennium AD date may refer to this occupation. The third cultural horizon is mainly confined to the layer that is rich in roof spall and contains most of the pottery and all the glass and seed beads (Sadr 2007b).

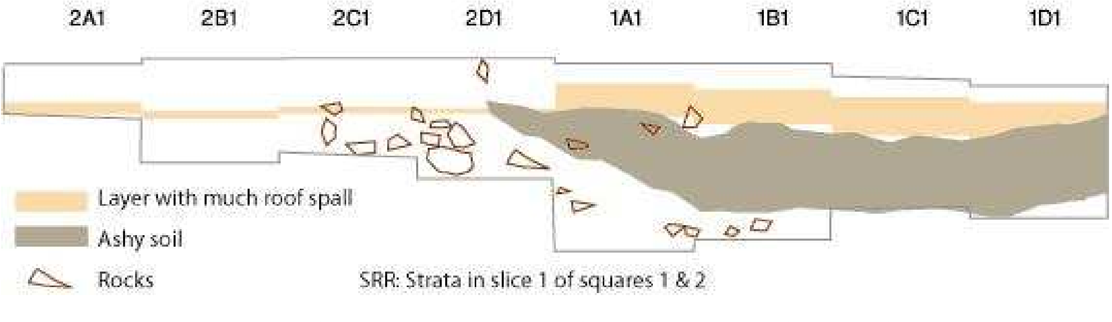


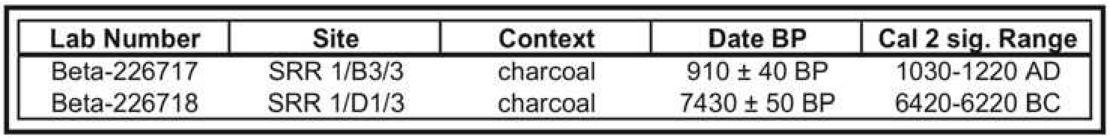
Figure 3.7: Stratigraphy in squares 1 and 2, slice 1 (Sadr 2007b).

The faunal remains were plotted over the three squares to look at their horizontal distribution pattern. Looking at the vertical distribution at Seroromeng, the highest number of tortoise remains was plotted on the profile view showing all layers and quads for each row.

3.2.2 Dating

Various bone samples were sent for dating, but unfortunately they were too burned to be able to give accurate dates. Two charcoal samples from the lower lying layers were sent to the Beta Analytical Laboratory in Florida for dating (Table 3.2). The younger date of 1030-1220 AD could refer to the ceramic and non-ostrich eggshell bead period of the site, or the upper lithic and bone-rich horizon, while the older date of 6420-6220 BC, may refer to the lower lithic and bone rich occupation (Sadr 2007b).

Table 3.2: Dates obtained for Seroromeng.



Lab Number	Site	Context	Date BP	Cal 2 sig. Range
Beta-226717	SRR 1/B3/3	charcoal	910 ± 40 BP	1030-1220 AD
Beta-226718	SRR 1/D1/3	charcoal	7430 ± 50 BP	6420-6220 BC

3.2.3 Ceramics

A total of 59 potsherds were recovered from squares 1 and 2. Four of these are thin-walled, while the rest are either thick-walled sherds, or fragments with only one surface intact. Two of the thick-walled sherds have an incised line each. Most of the sherds come from square 1 and largely overlie the upper lithic and bone-rich horizon.

3.2.4 Rock Art

The site contains many rock paintings (Fig. 3.8) in different styles, of which one image may be that of a sheep. Various other animals like elephant, giraffe and ostrich can be distinguished in the photograph. Human figures are also visible and in the bottom right-hand corner there seems to be a train track that has several coaches on it.

Figure 3.8: Some of the rock art present in the Seroromeng shelter (Photo: S.Holt 2006).

3.3 LEHOLAMOGOA

The site of Leholamogoa (Fig. 3.9) is located on the farm Mont Blanc (Fig. 3.17) at 28°49’531E / 23°16’064S. The site comprises a small cavern and is located on a ridge adjacent to a tributary of the Masebe. The site is located about 2 km away from the Mphekwane shelter.

In July 2007 a team of local residents and archaeologists from Wits University excavated a 1 x 1 m test pit in the central part of the rock shelter (Fig. 3.10).

Figure 3.9: Location of the Leholamogoa shelter (Photo: K Sadr 2007d).

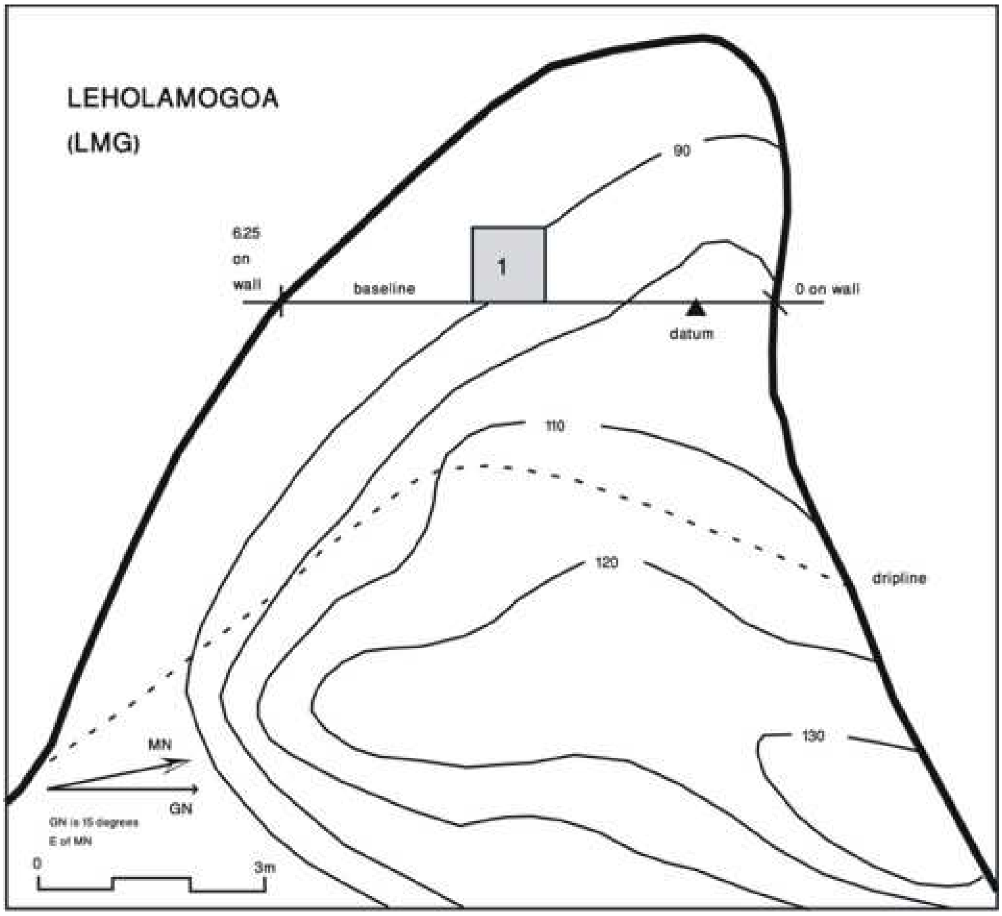


Figure 3.10: Map of the Leholamogoa shelter showing the excavated area (From Sadr 2007d).

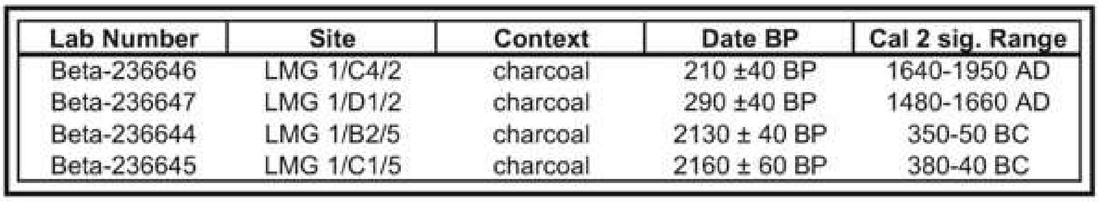
3.3.1 Stratigraphy

Due to the soft and powdery deposit, the excavation was abandoned at a depth of 50 cm as the walls were beginning to collapse. Bedrock was not reached. The floor of the shelter consists of small tabular fragments of rock spalls from the walls and the ceiling, lying on fine powdery silt soil. The soil remained powdery silt throughout the 50cm of excavated deposit and showed no natural stratigraphic breaks. The artefact density was relatively low, suggesting a rapid build-up of soil, and little loss of matrix to wind and water erosion (Sadr 2007d).

3.3.2 Dating

Four charcoal samples were sent to the Beta Analytic Laboratories (Florida, USA) for AMS dating (Table 3.3). The dates from layer two suggest a very recent date for the top of the excavation. A piece of magnetic iron-stone or iron slag was found in layer 3 which would suggest that the top layers may date to the period after contact with ‘Iron Age’ farmers (Sadr 2007d). The lower layers gave dates ranging from 2130 to 2160 BP. Two distinct horizons are then indicated.

Table 3.3: Dates obtained for Leholamogoa.



Lab Number	Site	Context	Date BP	Cal 2 sig. Range
Beta-236646	LMG 1/C4/2	charcoal	210 ±40 BP	1640-1950 AD
Beta-236647	LMG 1/D1/2	charcoal	290 ±40 BP	1480-1660 AD
Beta-236644	LMG 1/B2/5	charcoal	2130 ± 40 BP	350-50 BC
Beta-236645	LMG 1/C1/5	charcoal	2160 ± 60 BP	380-40 BC

3.3.3 Ceramics

The ceramic distribution suggests two principal horizons as well. An upper LSA ceramic horizon through layers 1-3, and a pre-ceramic horizon towards the base of the excavation. Thirty potsherd were recovered of which 28 occurred in the top 3 layers, one in layer 4 and one in layer 6. It may be possible that only two vessels are represented. A few rim sherds were recovered but no decorated pieces were found. According to Sadr the potsherds are not typical ‘Iron Age’, nor are they the typical thin-walled LSA ware (Sadr 2007d).

3.3.4 Rock Art

There is no rock art present in the main shelter, but at the lower end of the ridge, close to the shelter, are white finger paintings typical of the northern Sotho style.

3.4 MAMAETLA

The site of Mamaetla (Fig. 3.11) is located on the farm Gallashiels (Fig. 3.17) at 28°52’10E / 23°14’03S. The site comprises a wide and shallow overhang. A recent stock pen was erected against the shelter wall.

Figure 3.11: Photo of the Mamaetla shelter (Photo: K Sadr 2005).

In July 2005 a team of locals and archaeologists from Wits University excavated the shelter. A 1½ x 1 m test square was excavated in the centre of a wide and shallow shelter (Fig. 3.12).

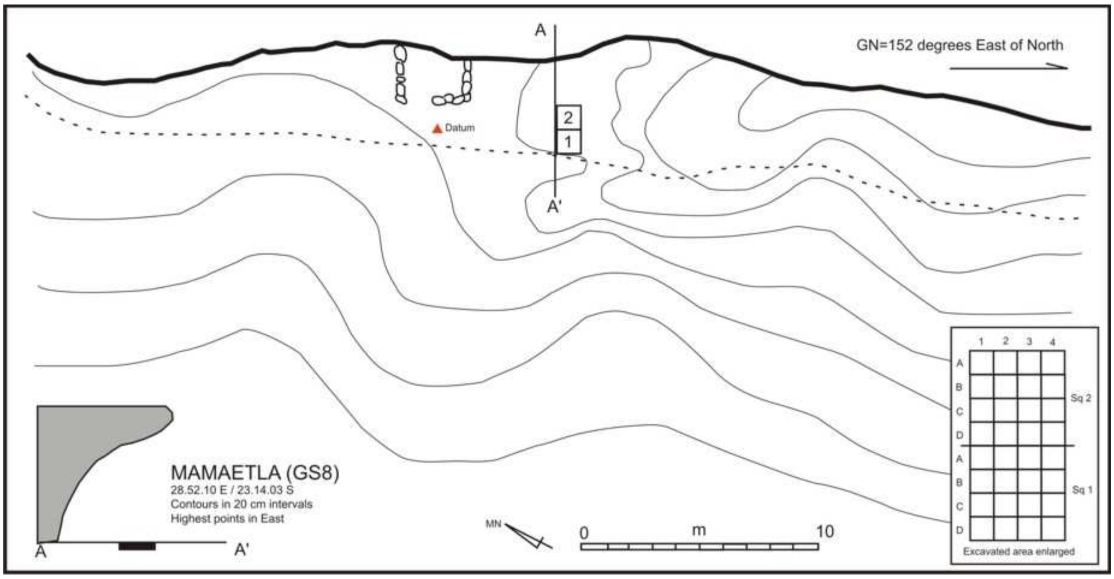


Figure 3.12: Map of the Mamaetla shelter showing the excavated area (Redrawn from Sadr 2005).

3.4.1 Stratigraphy

Bedrock was reached at an average depth of 15-20 cm. The distribution of finds, especially lithics and ceramics suggest that there are two main archaeological layers present at the site. The upper layer contained some charcoal, potsherds, pieces of clay figurines, metal slag, very little bone and macro botanical remains. Flaked stones are more numerous in the lower layer, but with only a few potsherds. Metal slag is also present in the lower layers (Sadr 2005).

3.4.2 Dating

Two charcoal samples were sent to the Beta Analytic Laboratories (Florida, USA) for AMS dating (Table 3.4). Both seem to date the recent occupation at the site.

Table 3.4: Dates obtained for Mamaetla.

Lab Number	Site	Context	Date BP	Cal 2 sig. Range
Beta-226710	MM 1/A4/5	charcoal	160 ± 40 BP	1660-1960 AD
Beta-236653	MM 2/C4/4	charcoal	190 ± 40 BP	1650-1950 AD

3.4.3 Ceramics

Very few ceramics were found at this site (Sadr 2005).

3.4.4 Rock Art

There are many different styles of rock paintings (Fig. 3.13) in the shelter of which one may be of a sheep.

Figure 3.13: Some of the rock art present in the Mamaetla shelter (Photo: K. Sadr 2005).

3.5 RAMODIKITLI

The site of Ramodikitli (Fig. 3.14) is located on the farm Nieuwe Jerusalem (Fig. 3.17) at 28°52’158E / 23°14’334S. The site is a small cavern that has two entrances, both walled off to a height of about half a meter. The site was recently used as a cattle pen, as seen by the thick dung crust and the walling at the entrances.

Figure 3.14: Photo of the Ramodikitli shelter (Photo: S.Holt 2006).

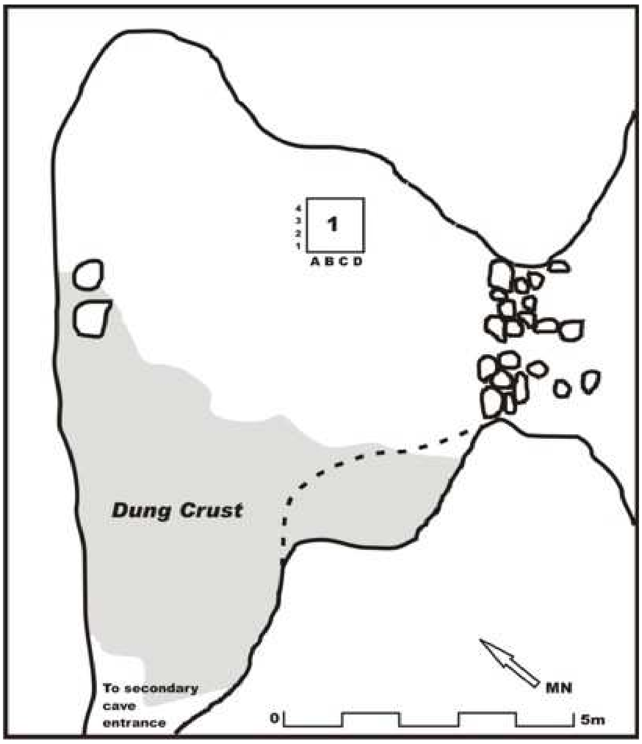


Figure 3.15: Map of the Ramodikitli shelter showing the excavated area (Redrawn from Sadr 2007c).

In May 2006 a team of local residents and archaeologists from Wits University excavated one 1 x 1 m square at the site. The square is located in the northeastern part of the cave (Fig. 3.15).

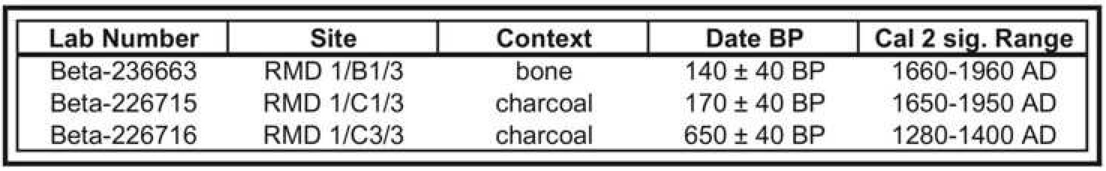
3.5.1 Stratigraphy

The excavation was abandoned at a depth of 20 cm without reaching bedrock because of a lack of faunal remains. The soil was quite dark in the upper half of the excavated deposits and contained much charcoal. Charcoal became scarcer in the lower half and the soil color lightened to a reddish brown (Sadr 2007c).

3.5.2 Dating

Two charcoal and one bone sample was submitted for dating to the Beta Analytic Laboratory in Florida, USA (Table 3.5). The distribution of lithics possibly suggests two horizons. The upper one has relatively few lithics while the lower one has much denser accumulations. Unfortunately, most of the charcoal was found in the layers overlying the lithic-rich horizon at the base of the pit. The lower layers did not have sufficient charcoal or bone for radiocarbon dating (Sadr 2007c).

Table 3.5: Dates obtained for Ramodikitli.



Lab Number	Site	Context	Date BP	Cal 2 sig. Range
Beta-236663	RMD 1/B1/3	bone	140 ± 40 BP	1660-1960 AD
Beta-226715	RMD 1/C1/3	charcoal	170 ± 40 BP	1650-1950 AD
Beta-226716	RMD 1/C3/3	charcoal	650 ± 40 BP	1280-1400 AD

3.5.3 Ceramics

Forty potsherds were retrieved from the excavation of which all but two were evenly distributed in the top three layers. They are thus probably not associated with the lithic-rich level at the base of the pit, but rather with the upper occupation. All the sherds are thick-walled except for one. Four of the potsherds have red and black coloring on the outer surface, separated by an incised line or a series of impressed dots. These sherds belong to the Moloko type, which is a Late Iron Age ceramic style. Taking into consideration the ceramic style and the radiocarbon dates, it is clear that the upper three layers at this site represent a second millennium occupation (Sadr 2007c).

3.5.4 Rock Art

On the cave walls there are several paintings (Fig. 3.16). This rock art tradition is referred to as the "late white" tradition and is attributed to Sotho agropastoralists. The Makgabeng plateau has 90% of all Bantu-speakers' rock art known in South Africa which consists predominantly of white finger paintings (Eastwood & Eastwood 2006).

Figure 3.16: Some of the rock art present in the Ramodikitli shelter (Photo: S. Holt 2006).

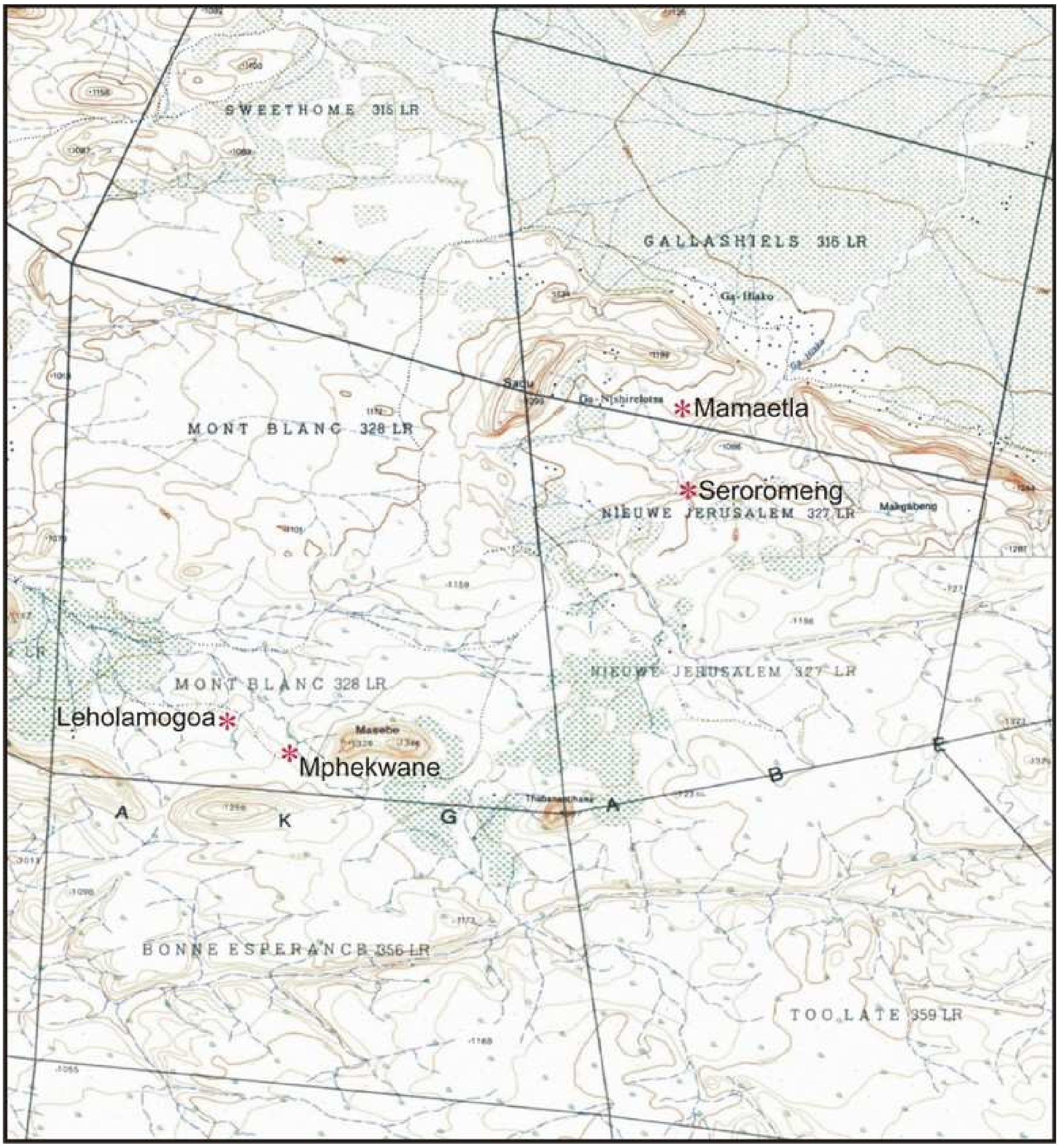


Figure 3.17: Location map of the sites in the Makgabeng (1:50 000, 2328 BB Addney & 2328 BD Treves).

CHAPTER 4

Data presentation and analyses

4.1 Introduction

In this chapter the results of the faunal analyses from the five excavated sites in the Makgabeng plateau will be presented. The diagnostic material will be plotted to reveal any changes through time. The skeletal elements of the identified animals are not listed here, but are available on request if and when they are needed.

4.2 Faunal analyses

A total of 80 231 pieces of bone, eggshell and shell, with a weight of 19.2 kg, were sorted and cleaned. All the material was cleaned using a fine-haired brush. It was then sorted into diagnostic and non-diagnostic categories. The non-diagnostic pieces were further sorted into categories of enamel, skull, vertebra, rib, miscellaneous and bone flakes. At the same time each bone was checked for damage caused by percussion, cutting, chopping or chiselling. Material was then checked for burning and placed in categories of calcinated, blackened or scorched, if indeed burning had occurred. Gnawing by rodents or carnivores was also noted and whether any weathering had occurred, either by water erosion or encrustation. The material was then counted and weighed and put into individual bags labelled according to the category of bone represented.

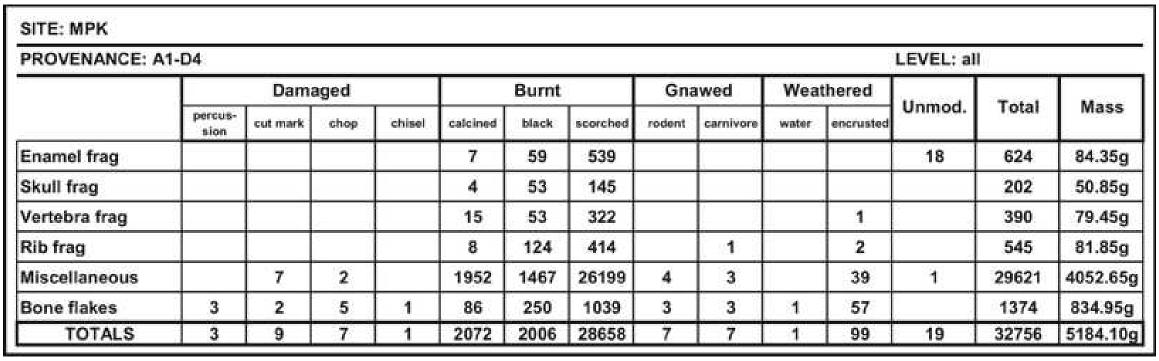
The diagnostic material was identified with the help of Dr Ina Plug. Each bone was identified, weighed and listed. Only the number of identified specimens (NISP) were recorded and not the minimum number of individuals (MNI).

4.3 MPHEKWANE FAUNA

4.3.1 Non-diagnostic remains

A total of 39 334 pieces of bone, shell and eggshell with a total weight of 7 kg was retrieved from the site of Mphekwane. The non-diagnostic pieces amounted to 32 756 pieces (Table 4.1).

Table 4.1: All non-diagnostic bone from Mphekwane: all squares and layers.



SITE: MPK

PROVENANCE: A1-D4 LEVEL: all

	Damaged				Burnt			Gnawed		Weathered		Unmod.	Total	Mass
	percussion	cut mark	chop	chisel	calcined	black	scorched	rodent	carnivore	water	encrusted			
Enamel frag					7	59	539					18	624	84.35g
Skull frag					4	53	145						202	50.85g
Vertebra frag					15	53	322				1		390	79.45g
Rib frag					8	124	414		1		2		545	81.85g
Miscellaneous		7	2		1952	1467	26199	4	3		39	1	29621	4052.65g
Bone flakes	3	2	5	1	86	250	1039	3	3	1	57		1374	834.95g
TOTALS	3	9	7	1	2072	2006	28658	7	7	1	99	19	32756	5184.10g

As can be seen from the above table, almost all the non-diagnostic bone had some degree of burning. Of these 87.5% are scorched while 6.1% are burned black and 6.3% are calcinated. The remaining 1% is made up by unmodified pieces (19) and weathered bone, mostly encrusted (99). The bone with damage due to percussion, cut, chop and chisel marks may also have been counted as burned.

A total of 14 bones had gnaw marks on them, 7 made by rodents and 7 made by carnivores. Amongst the diagnostic fauna (Table 4.2), both carnivore and rodent remains have been identified.

4.3.2 Diagnostic remains

This site was the most extensively excavated of all the sites and contains the most number of diagnostic bones. A total of 6578 pieces of bone, eggshell and shell were identified for the site with a total weight of 1815.9 g. To facilitate viewing change through time, the data were listed according to layers and not by the squares (Table 4.2). Tortoise and ostrich eggshell (OES) vastly outnumber other bone, and so have been left out of some of the charts to allow other patterns to become visible.

Layer 8 contains too small a sample and will be ignored here. As can be seen in Figure 4.1 the most significant change through time occurred in the 'other' category. It started off with a steep decline and then climbed. This is mostly *Achatina* numbers fluctuating through time. The remaining categories are quite evenly spread throughout and do not show change of more than 10%. Essentially what we see is continuity in all classes except a dip and then an increase of *Achatina*.

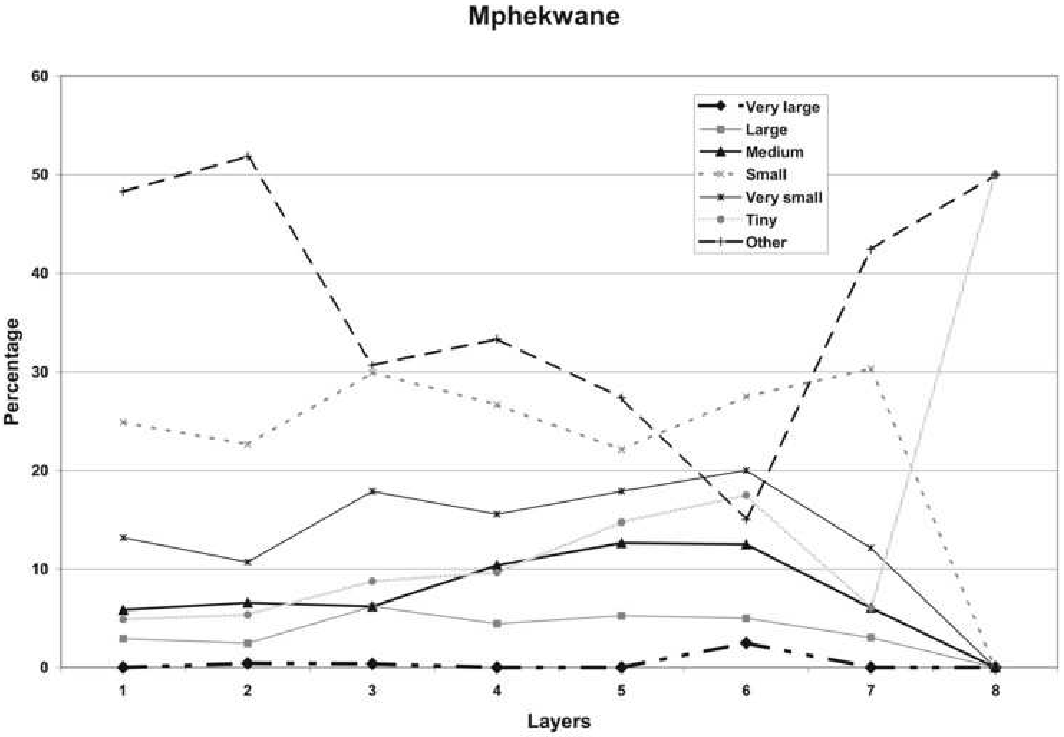


Figure 4.1: MPK faunal remains, excluding tortoise and OES, plotted by layer.

Table 4.2: The NISP counts for Mphekwane by layers.

SPECIES	MPK1	MPK2	MPK3	MPK4	MPK5	MPK6	MPK7	MPK8	MPK9	TOTAL
Very large (>1000kg)										
Bov III/IV	1		1							**2**
Buffalo/Giraffe								1		**1**
Large (100-1000kg)										
Bov III	4	4	7	2		3	3	3	3	**29**
Bov III (non-dom)							1		5	**6**
Bov II/III	1	1								**2**
Alcelaphine				1				1		**2**
Equid			1				1			**2**
Kudu (*Tragelaphus strepsiceros*)				2						**2**
Medium (30-100kg)										
Bov II	9	6	6	8	1	10	9	2	9	**60**
Bov II (non-dom)									2	**2**
Bov I/II		1	2		2		1	1	2	**9**
Carnivore (medium)									2	**2**
Sheep/goat (*Ovis/Capra*)									1	**1**
Suid			1			1	1		1	**4**
Small (5-30kg)										
Bov I	42	56	34	17	7	11	32	8	20	**227**
Canid (Jackal)	1									**1**
Grey duiker (*Sylvicapra grimmia*)		1		2			2	1		**6**
Klipspringer (*Oreotragus oreotragus*)			5							**5**
Monitor lizard	2	2	1	1		1	4		1	**12**
Pangolin (*Manis temminckii*)						1				**1**
Primate			1				2		7	**10**
Steenbok (*Raphicerus campestris*)	2	1	1							**4**
Very small (0.5-5kg)										
Carnivore (small)	5	2	5	2	1	4	3	4	11	**37**
Dassie	2	5	3	3		2	8	1	9	**33**
Dassie/Hare							2			**2**
Hare	6	7	5	2		3	18	6	4	**51**
Mongoose									1	**1**
Reptile (large)									1	**1**
Rodent (large)	1									**1**
Small mammal	5	5		1		1	4	2	1	**19**
Springhare (*Pedetes capensis*)	2		1		2				2	**7**
Tortoise										
Tortoise carapace/plastron	1015	558	496	134	102	175	676	144	375	**3675**
Tortoise limbs	32	13	21	8	5	2	60	10	25	**176**
Tiny										
Bird		2	7				1			**10**
Frog (bullfrog)	3		1				1		2	**7**
Lizard	5		1		2		1			**9**
Microfauna			1							**1**
Reptile	19	15	5	1		3	1		2	**46**
Rodent	3	2	2			2	1		1	**11**
Other										
Achatina	10	58	98	11	12	68	7	20	64	**348**
Eggshell (bird)	2									**2**
Ostrich eggshell	314	384	299	124	85	108	100	85	201	**1700**
Freshwater mussel	1	1	8			2	2			**14**
Mollusc			6							**6**
Rhytididae		1								**1**
Snail		3	7						1	**11**
Spathopsis cf. *Wahlbergi*	2									**2**
Tropidophora		1	11		3				2	**17**
TOTAL	**1489**	**1129**	**1037**	**319**	**222**	**397**	**941**	**289**	**755**	**6578**

Adding tortoise and OES remains, Mphekwane was split into three horizons and the frequencies of faunal remains plotted in Figure 4.2. It is clear that tortoise remains make out the highest proportion of the faunal sample in all three horizons. This is followed by the ‘other’ category, (which includes OES now) which makes up the second highest proportion of the remains. The remaining categories represent very small percentages of the total remains, but they are all very evenly spread throughout. The major changes are a dip and then a rise in the proportion of other (mostly OES) and a rise followed by a fall in proportion of tortoise. The OES thus shows a similar pattern to the *Achatina*.

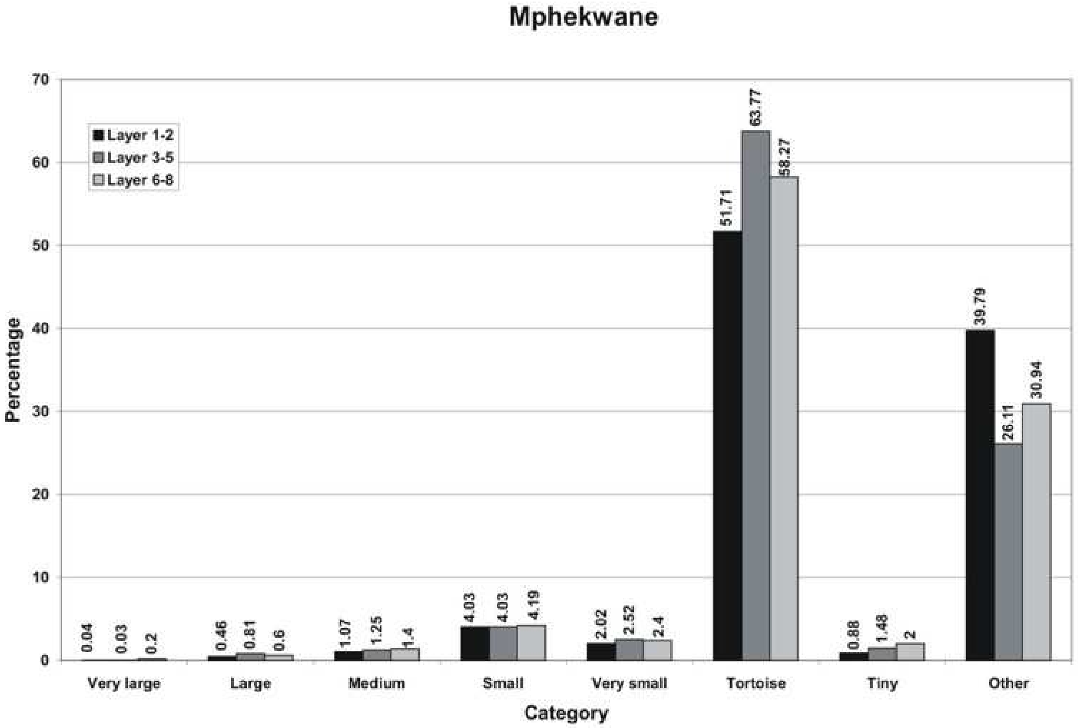


Figure 4.2: Mphekwane showing the difference in total counts of diagnostic faunal remains when split into three horizons.

4.3.3 Tortoise and OES remains

Tortoise and OES remains are found in all the squares and layers. Their frequencies are plotted in Figure 4.3. They seem to be mirror images of one another. While tortoise seems to peak in layer 5, this is where OES is at its lowest. The fluctuation within tortoise remains at its maximum and minimum seems to be about 20%, while for OES it is about 23%. Towards the final stage of occupation they both seem to level out, tortoise at 53% and OES at 33%. Once again the dip that is seen for OES could be because of the cooler period that was experienced as described by Van Zinderen Bakker and Butzer (1973) and Scott and Thackeray (1987).

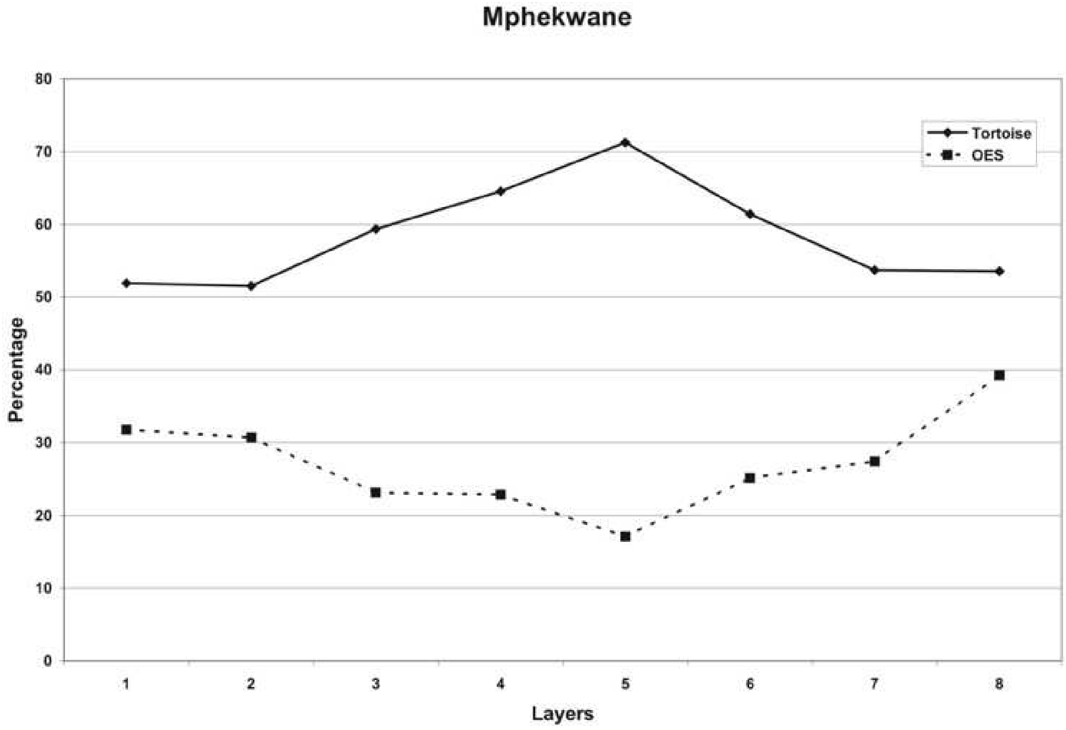
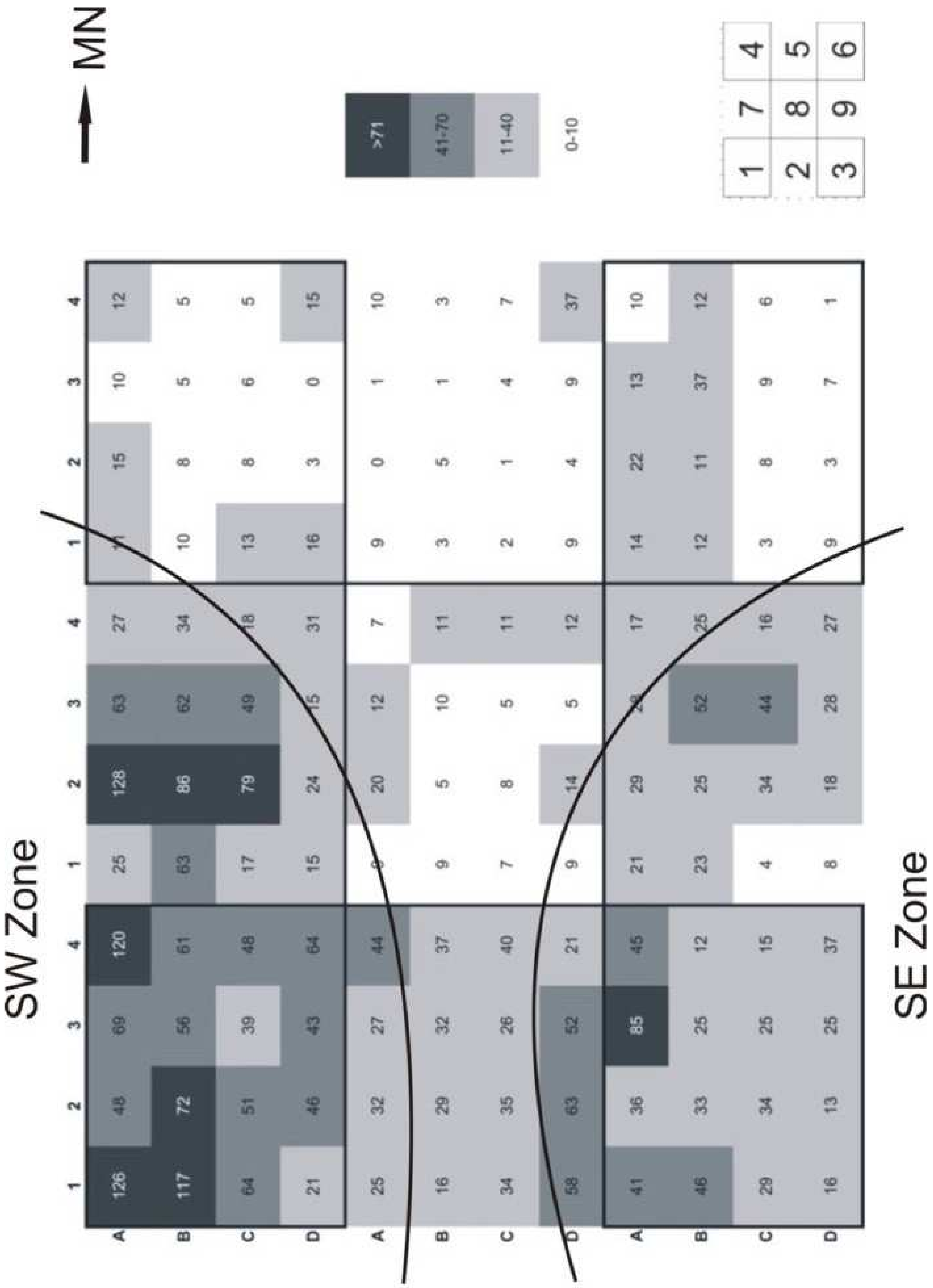


Figure 4.3: Mphekwane tortoise and OES remains by layers.

To look at the horizontal distribution, the different remains were plotted and each cell represents an entire stack of the selected fauna. The tortoise remains were plotted and as can be seen in Figure 4.4, they tend to cluster together in certain areas and are not evenly spread throughout the nine squares. The tortoise remains can be grouped into two zones, a SW Zone and a SE Zone. In Figure 4.5 the tortoise remains were plotted by splitting the layers into three horizons. The top layers (1-2) shows clustering in the SW Zone while the middle layers (3-5) tortoise is clustered in two zones, the SW Zone and the SE Zone. The lower layers have few tortoise bones and clustering occurs in the SE

Zone. In general, it seems tortoise bones were mainly discarded in the SE Zone in earlier times and in the SW Zone in later times.



	1	2	3	4	1	2	3	4	1	2	3	4
A	126	48	69	120	25	128	63	27	11	15	10	12
B	117	72	56	61	63	86	62	34	10	8	5	5
C	64	51	39	48	17	79	49	18	13	8	6	5
D	21	46	43	64	15	24	15	31	16	3	0	15
A	25	32	27	44	8	20	12	7	9	0	1	10
B	16	29	32	37	9	5	10	11	3	5	1	3
C	34	35	26	40	7	8	5	11	2	1	4	7
D	58	63	52	21	9	14	5	12	9	4	9	37
A	41	36	85	45	21	29	28	17	14	22	13	10
B	46	33	25	12	23	25	52	25	12	11	37	12
C	29	34	25	15	4	34	44	16	3	8	9	6
D	16	13	25	37	8	18	28	27	9	3	7	1

Figure 4.4: Mphekwane showing the tortoise remains distribution, each cell represents an entire stack.

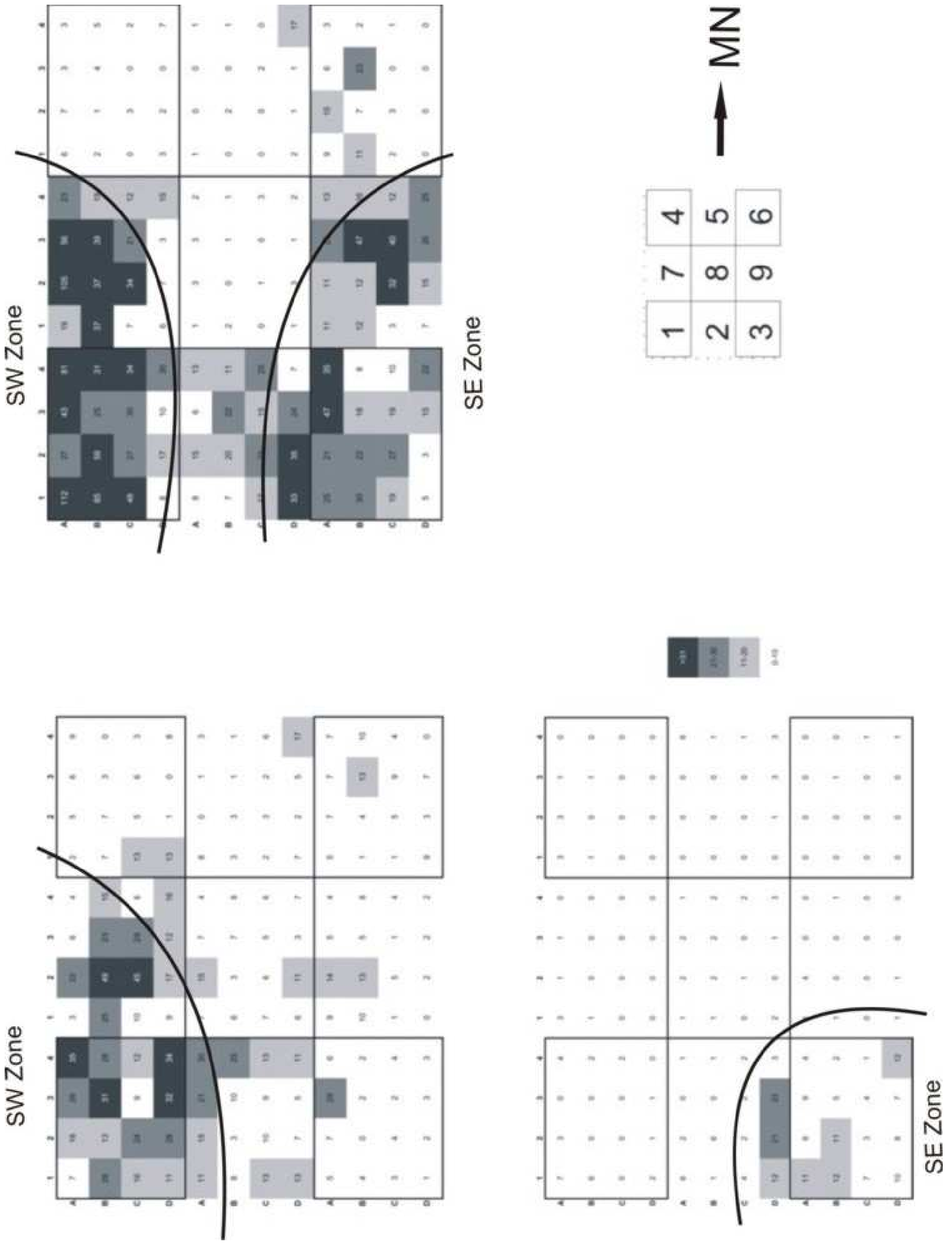


Figure 4.5: Mphekwane showing the tortoise remains when split into three horizons. Figure in top left (layers 1-2), top right (layers 3-5) & lower left (layers 6-8).

The same analysis was done with the OES remains. They cluster towards the SC Zone (Fig. 4.6). When split into three horizons (Fig. 4.7), the recent OES cluster more in the SW Zone, while the middle layers tend towards the SE Zone. The lower layers contained too few OES to be significant.

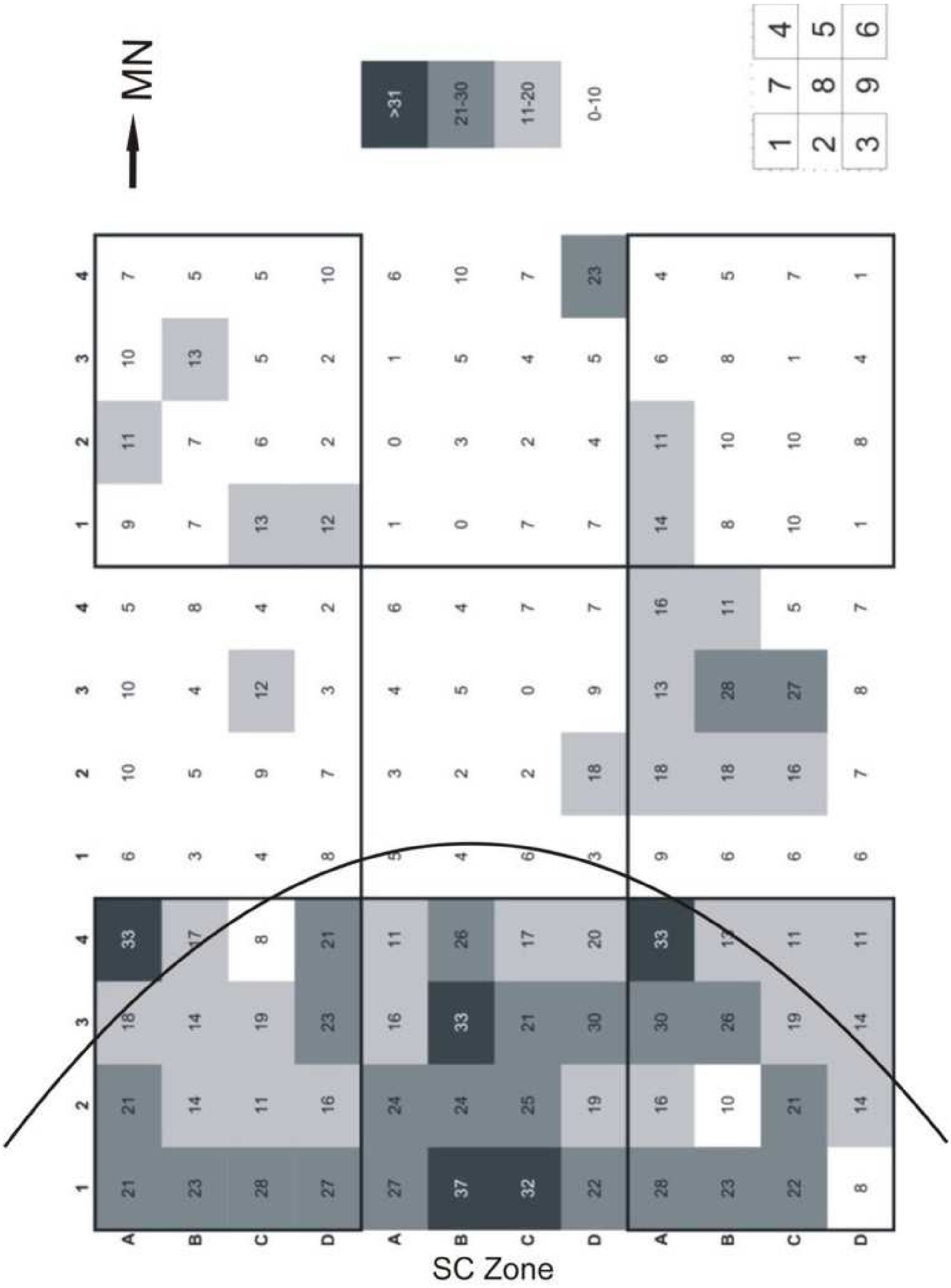


Figure 4.6: Mphekwane showing the OES remains distribution, each cell represents and entire stack.

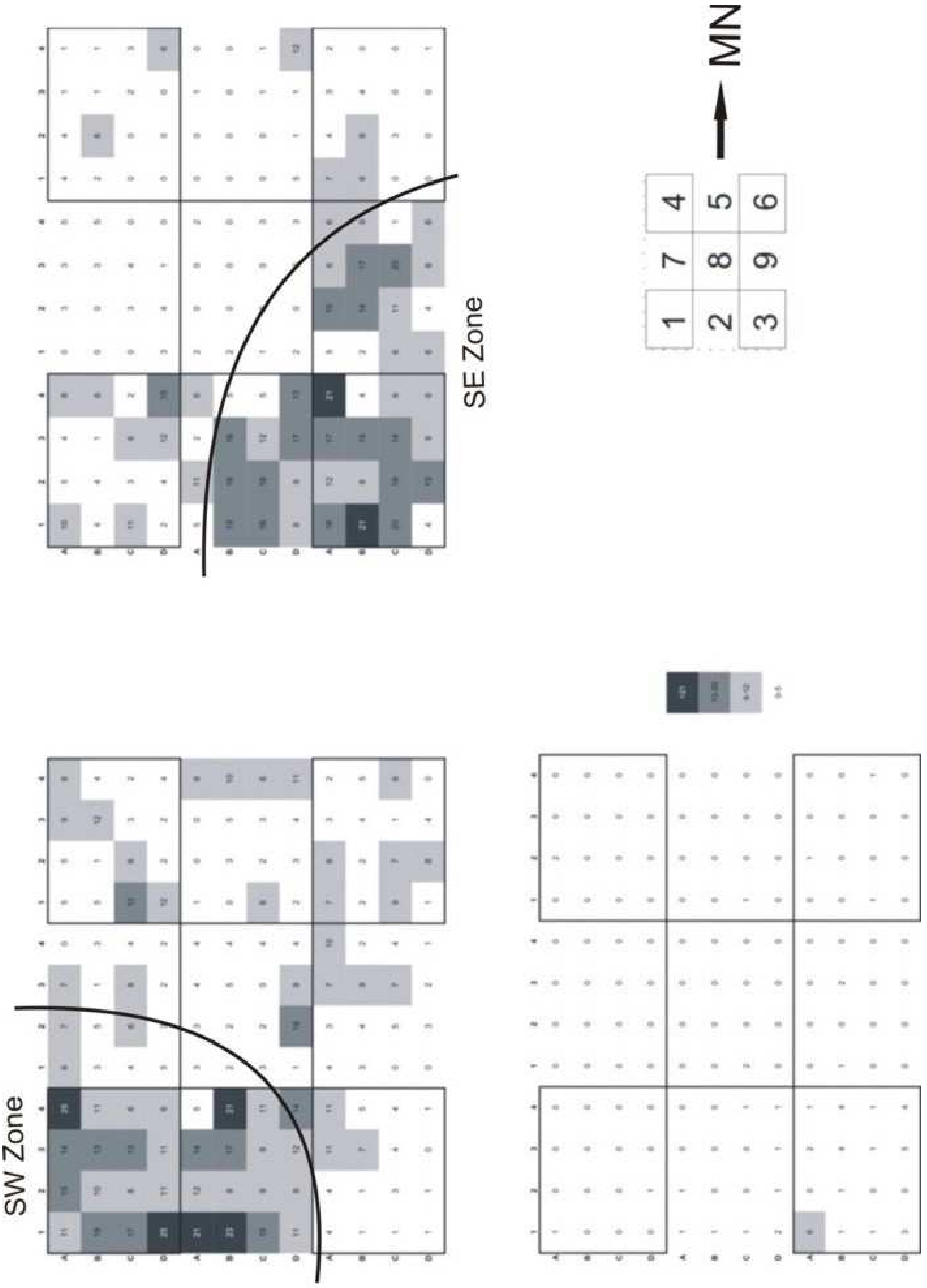
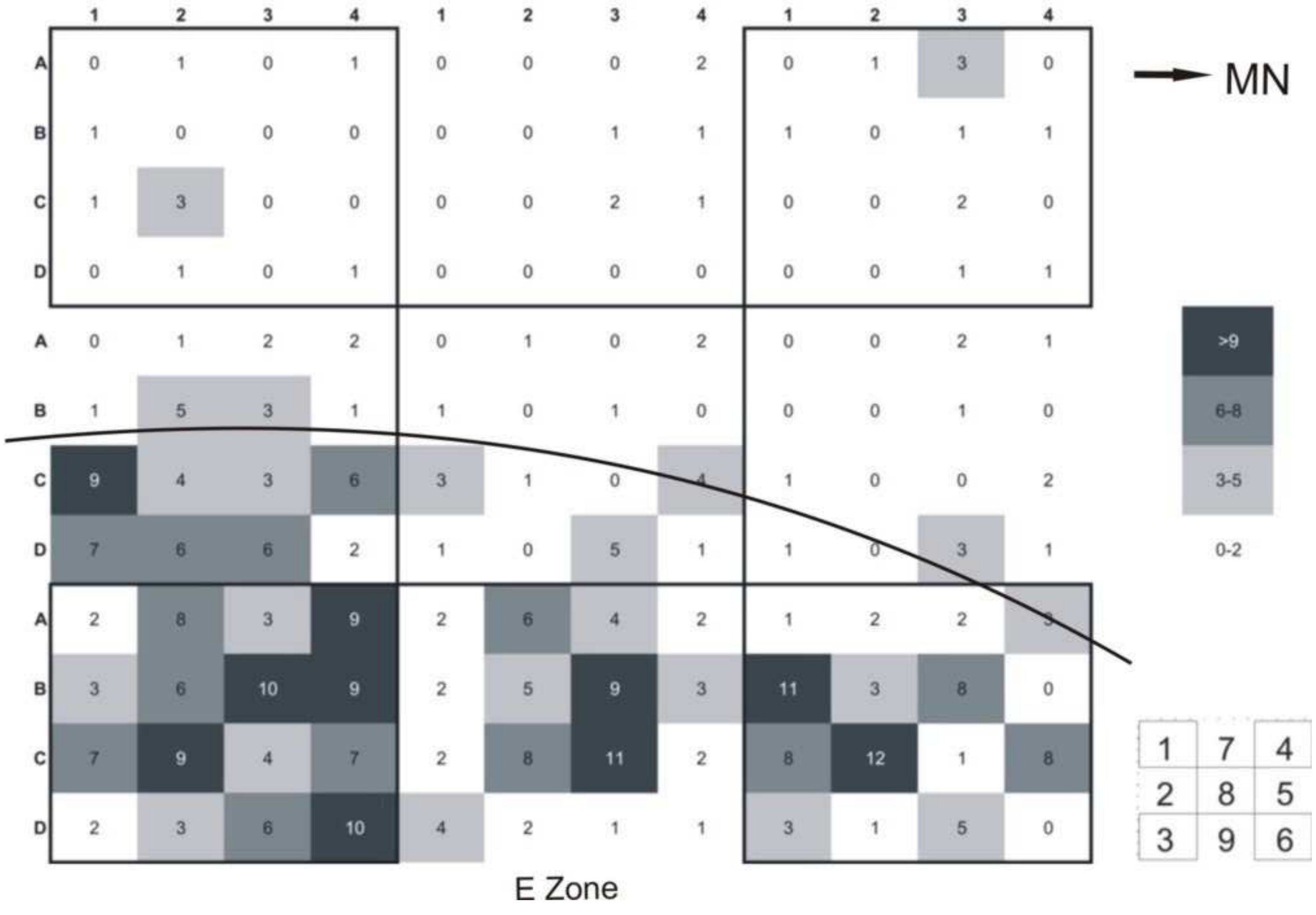


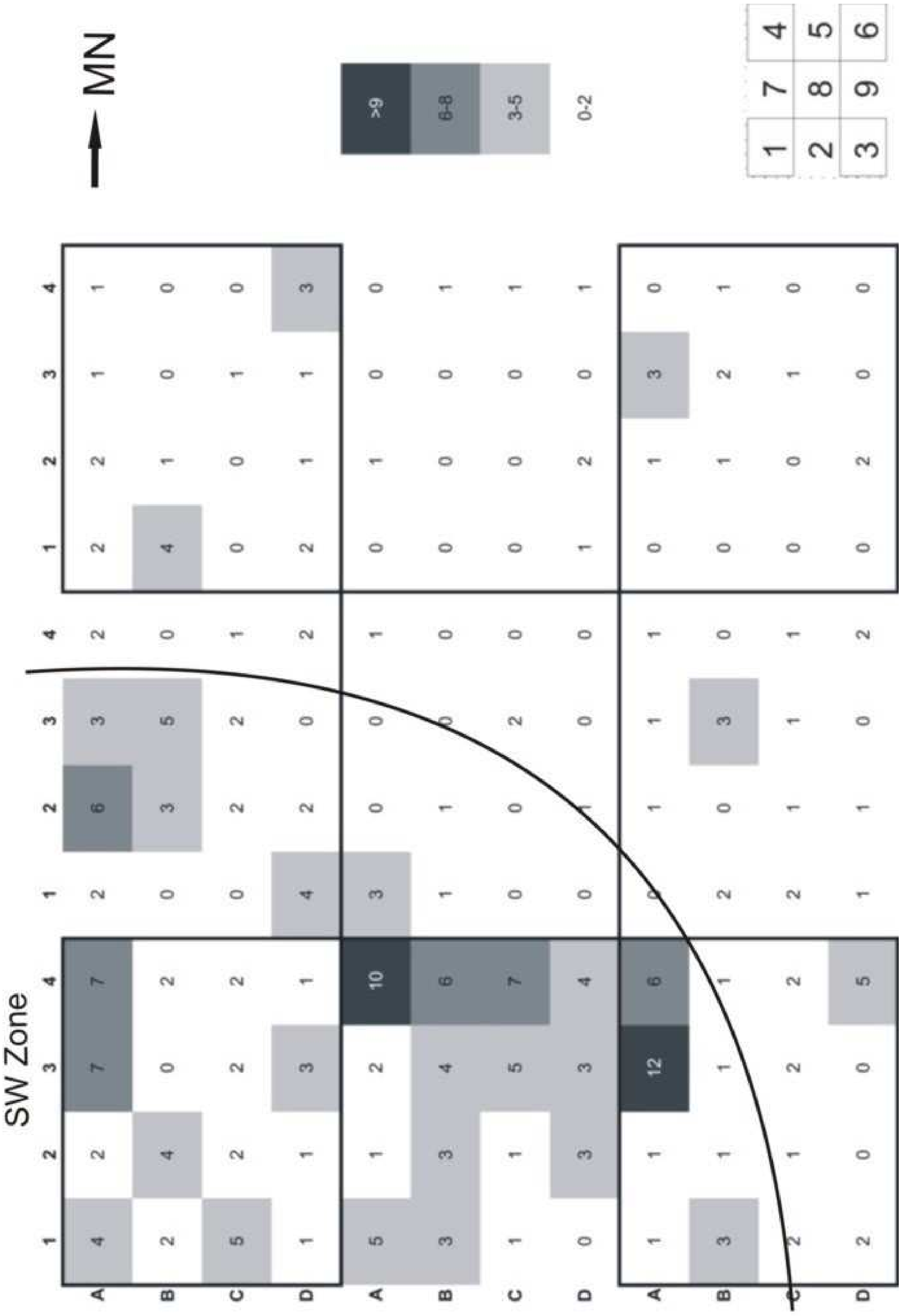
Figure 4.7: Mphekwane showing the OES remains when split into three horizons. Figure in top left (layers 1-2), top right (layers 3-5) & lower left (layers 6-8).

A similar analysis on *Achatina* remains (Fig. 4.8) shows a totally different area (E Zone) of clustering when compared with the tortoise and OES remains. The Bov I remains were also plotted (Fig. 4.9) and they show one area (SW Zone) of clustering, but their numbers are few.



	1	2	3	4	1	2	3	4	1	2	3	4
A	0	1	0	1	0	0	0	2	0	1	3	0
B	1	0	0	0	0	0	1	1	1	0	1	1
C	1	3	0	0	0	0	2	1	0	0	2	0
D	0	1	0	1	0	0	0	0	0	0	1	1
A	0	1	2	2	0	1	0	2	0	0	2	1
B	1	5	3	1	1	0	1	0	0	0	1	0
C	9	4	3	6	3	1	0	4	1	0	0	2
D	7	6	6	2	1	0	5	1	1	0	3	1
A	2	8	3	9	2	6	4	2	1	2	2	3
B	3	6	10	9	2	5	9	3	11	3	8	0
C	7	9	4	7	2	8	11	2	8	12	1	8
D	2	3	6	10	4	2	1	1	3	1	5	0

Figure 4.8: Mphekwane showing the Achatina remains distribution, each cell represents and entire stack.



	1	2	3	4	1	2	3	4	1	2	3	4
A	4	2	7	7	2	6	3	2	2	2	1	1
B	2	4	0	2	0	3	5	0	4	1	0	0
C	5	2	2	2	0	2	2	1	0	0	1	0
D	1	1	3	1	4	2	0	2	2	1	1	3
A	5	1	2	10	3	0	0	1	0	1	0	0
B	3	3	4	6	1	1	0	0	0	0	0	1
C	1	1	5	7	0	0	2	0	0	0	0	1
D	0	3	3	4	0	1	0	0	1	2	0	1
A	1	1	12	6	0	1	1	1	0	1	3	0
B	3	1	1	1	2	0	3	0	0	1	2	1
C	2	1	2	2	2	1	1	1	0	0	1	0
D	2	0	0	5	1	1	0	2	0	2	0	0

Figure 4.9: Mphekwane showing the Bov I remains distribution, each cell represents and entire stack.

Looking at the vertical distribution at Mphekwane, the boxes with the highest number of tortoise remains per stack were plotted in profile. In Mphekwane squares 1, 2 and 3 were plotted together (Fig. 4.10). Mphekwane 1 at the western end of the profile has a high number of the tortoise remains, then there is a gap and towards the eastern end in Mphekwane 2 and also at Mphekwane 3 the tortoise totals rise again. Mphekwane 7, 8 and 9 were plotted (Fig. 4.11) and there seem to be continuation of tortoise remains in Mphekwane 7, but numbers drop towards Mphekwane 9 and no high numbers occur at Mphekwane 8. Mphekwane 4, 5 and 6 were plotted together and tortoise numbers do not fall within the range of Mphekwane 1, 2, 3, 7, 8 & 9. Only numbers exceeding 41 in total were plotted and none of the stacks of Mphekwane 4, 5 or 6 reached this total.

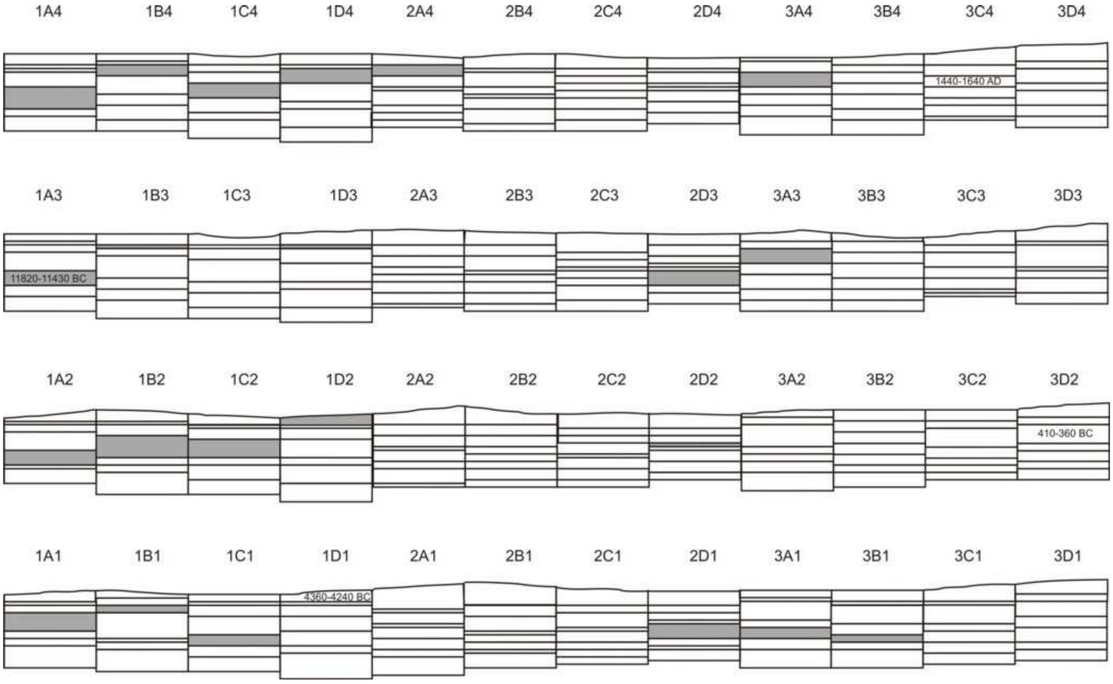


Figure 4.10: Tortoise remains plotted for Mphekwane 1, 2 and 3.

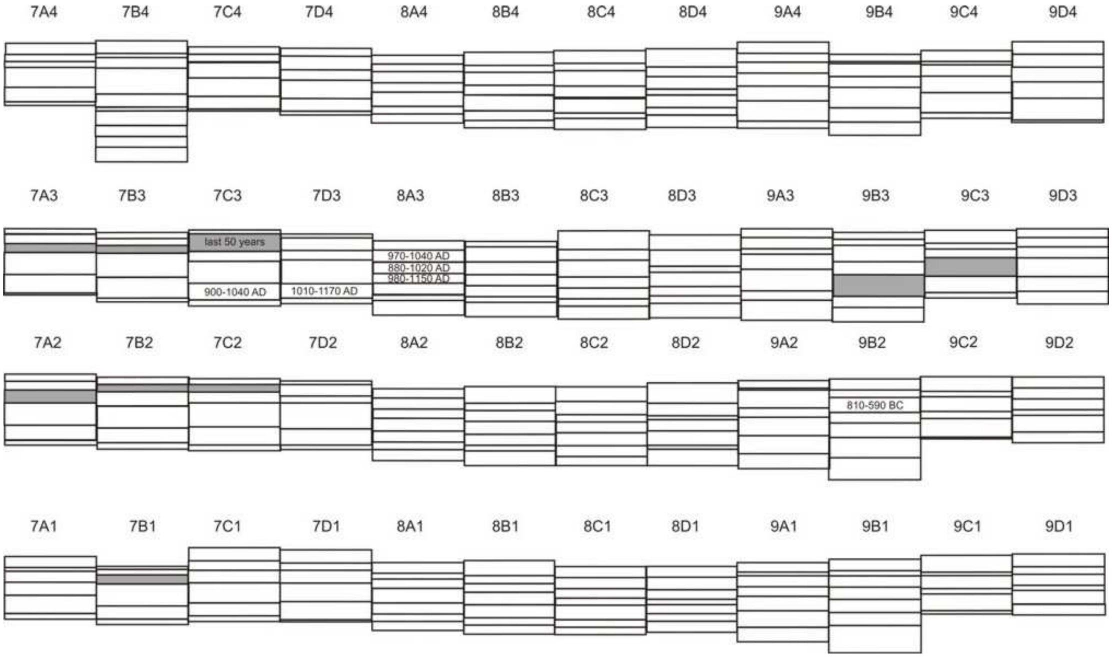


Figure 4.11: Tortoise remains plotted for Mphekwane 7, 8 and 9.

The same was done with the highest numbers of OES remains. Mphekwane 1, 2 and 3 were plotted (Fig. 4.12) and the high totals seem to run right through the 1 line of Mphekwane 1, 2 and 3, while the 3 line also has high numbers

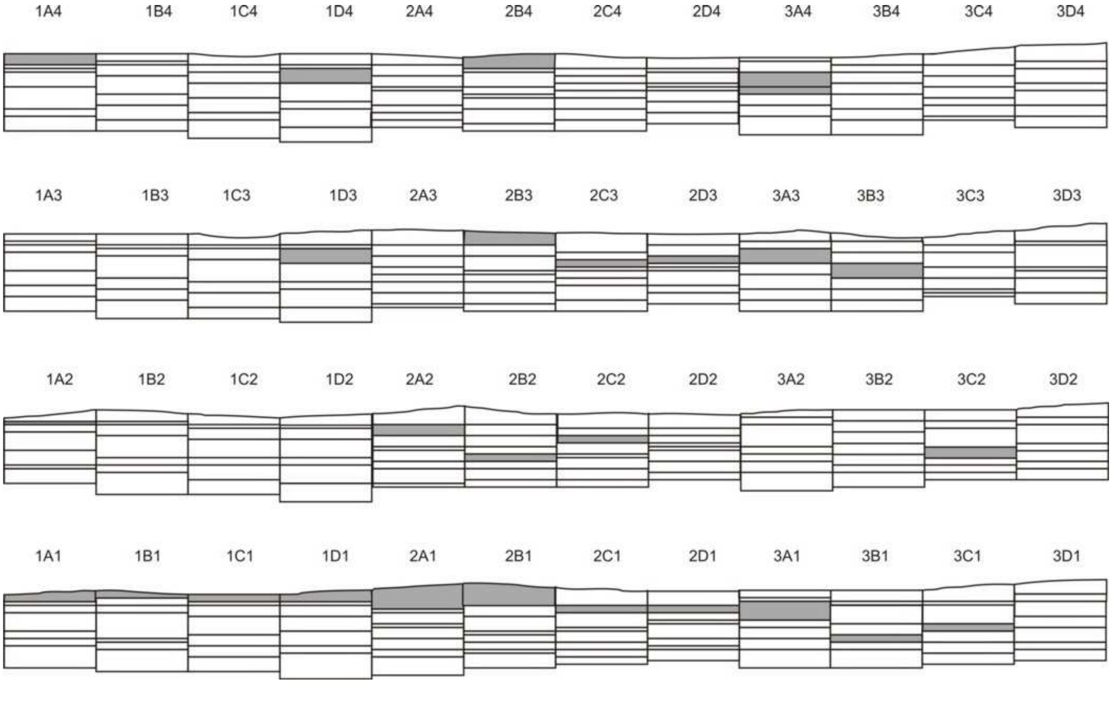


Figure 4.12: OES remains plotted for Mphekwane 1, 2 and 3.

present. Mphekwane 7, 8 and 9 were plotted (Fig. 4.13) and only Mphekwane 9's 3 line have high numbers. Mphekwane 4, 5 and 6 were plotted together and only in Mphekwane 5D4 are the tortoise numbers high enough to fall within the range of Mphekwane 1, 2, 3, 7, 8 & 9.

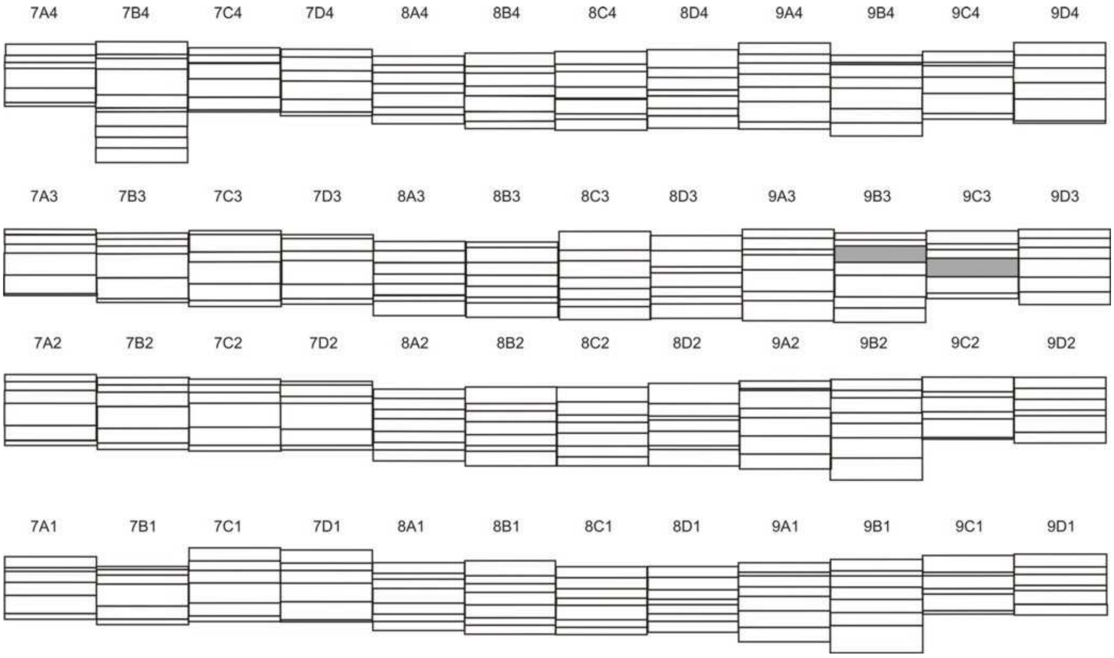


Figure 4.13: OES remains plotted for Mphekwane 7, 8 and 9.

These profiles show us that there are not a lot of faunal remains present in the lower layers, but there is a clear distinction between the upper and middle bone-rich layers. The west end of the excavation seems to be containing the more recent material while the east end contains the older material.

4.3.4 Conclusion

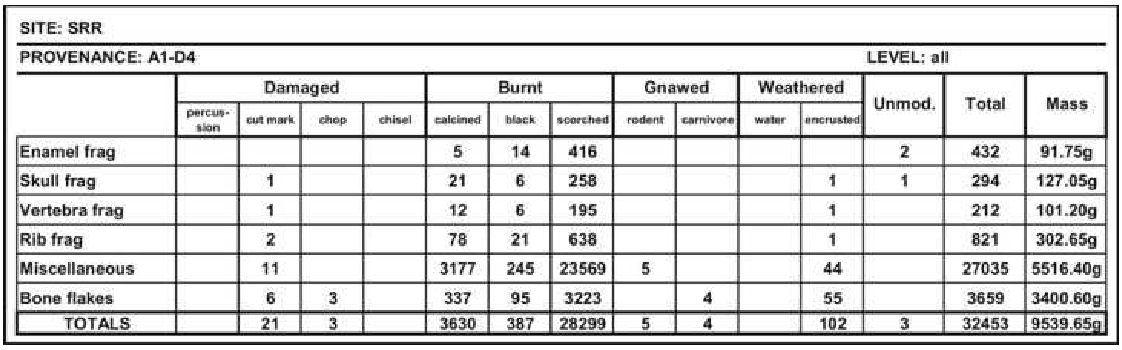
Fourteen dates were obtained for this site, they included bone and charcoal samples. These dates suggest that the site can be split in three chronological horizons: the youngest from AD 880-1640; the middle horizon from 360-4360 BC; and the oldest from 11430-16850 BC. Given the deflated and compacted nature of the deposit, it is not easy to separate the youngest and middle materials. Nonetheless, it may be valid to suggest that the rise and fall in tortoise and OES reflects a three-phase sequence of change that matches the chronological sequence. It could be possible that the tortoise and OES fluctuations are correlated to climate changes noted by Tyson and Lindesay (1992) and Huffman (1996). The only domestic animal remain, a sheep/goat bone (the proximal end of a first phalanx) occurs from layer 4, i.e. possibly associated with the middle phase of occupation, but a direct date is the only way to tell (*cf.* Sealy & Yates 1994).

4.4 SEROROMENG FAUNA

4.4.1 Non-diagnostic remains

A total of 35 031 pieces of bone, shell and eggshell with a total weight of just over 11 kg was retrieved from the site of Seroromeng. The non-diagnostic pieces amounted to 32 453 of which most were burned (Table 4.3).

Table 4.3: All non-diagnostic bones from Seroromeng: all squares and layers.



SITE: SRR

PROVENANCE: A1-D4 LEVEL: all

	Damaged				Burnt			Gnawed		Weathered		Unmod.	Total	Mass
	percus-sion	cut mark	chop	chisel	calcined	black	scorched	rodent	carnivore	water	encrusted			
Enamel frag					5	14	416					2	432	91.75g
Skull frag		1			21	6	258				1	1	294	127.05g
Vertebra frag		1			12	6	195				1		212	101.20g
Rib frag		2			78	21	638				1		821	302.65g
Miscellaneous		11			3177	245	23569	5			44		27035	5516.40g
Bone flakes		6	3		337	95	3223		4		55		3659	3400.60g
TOTALS		21	3		3630	387	28299	5	4		102	3	32453	9539.65g

As can be seen from the above table, almost all the non-diagnostic bone had some degree of burning on them. Of these 87.2% are scorched while 1.2% are burned black and 11.2% are calcinated. The remaining 0.6% is made up by unmodified pieces (3) and weathered bone, mostly encrusted (102). The bone with damage due to percussion, cut, chop and chisel marks as well as the gnawed bone may also have been counted as burned. A total of 9 bones had gnaw marks on them, 5 made by rodents and 4 made by carnivores. Amongst the diagnostic fauna (Table 4.4), both carnivore and rodent remains have been identified.

4.4.2 Diagnostic remains

A total of 2578 pieces of diagnostic bone were identified with a total weight of 1486.15 g. To be able to see if any change occurred through time the data was listed by layer (Table 4.4).

Because tortoise and OES vastly outnumber other faunal remains at the site, they were plotted separately and Figure 4.14 only shows the other, less numerous bones.

Layer 8 contains too small a sample and will be ignored here. As can be seen in Figure 4.14 clear changes are visible through time. The most significant change was in the 'other' category which remained low until level 5 and then climbed to a high of 37% in level 2. As in MPK, the rise in 'other' is mostly accounted for by *Achatina* (since OES is not counted here).

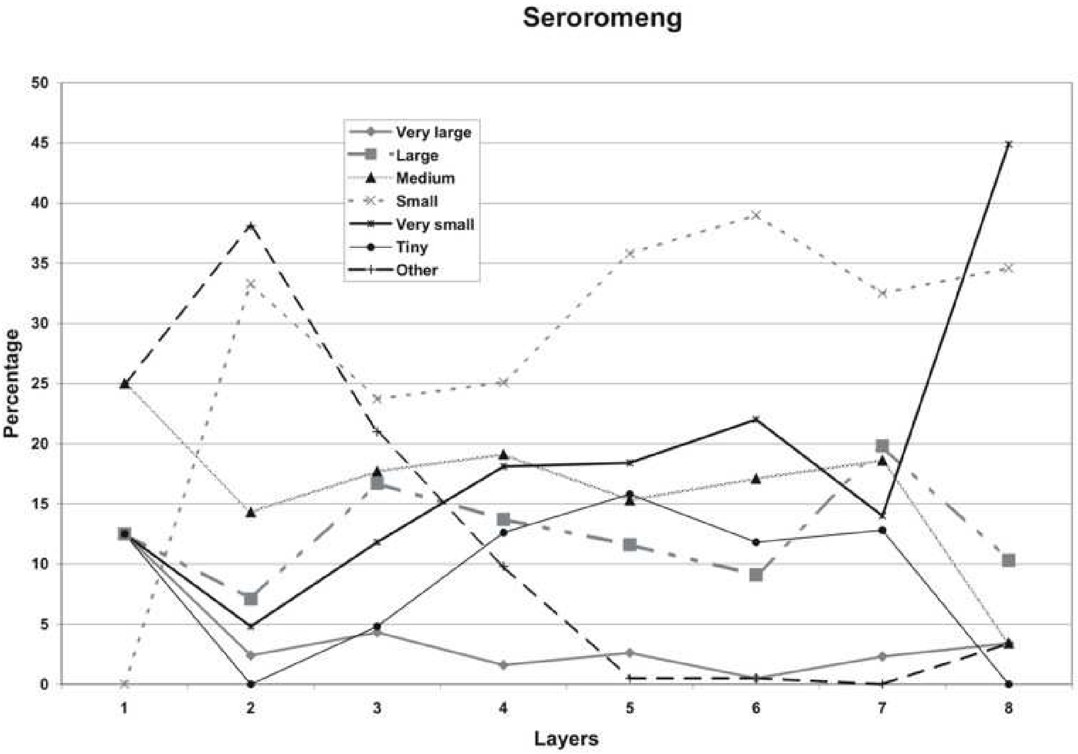


Figure 4.14: Seroromeng faunal remains, excluding tortoise and OES, plotted by layer.

Table 4.4: The NISP counts for Seroromeng by layers.

SPECIES	1	2	3	4	5	6	7	8	9	Total
Very large (>1000kg)										
Bov IV	1	1	5	2	2		1			**12**
Bov III/IV			3				1			**4**
Buffalo *(Syncerus caffer)*				1	2	1				**4**
Giraffe *(Giraffa camelopardalis)*					1			1		**2**
Large (100-1000kg)										
Bov III	1	2	28	21	18	16	15		1	**102**
Bov III (non-dom)			2	4	3	1	2	2		**14**
Equid		1								
Bov II/III			1		1					**2**
Medium (30-100kg)										
Bov II		6	28	26	23	22	10	1		**116**
Bov II (non-dom)			3	5	3	2	3			**16**
Carnivore (large)			2			1				**3**
Impala *(Aepyceros melampus)*				1	2	3				**6**
Sheep/goat *(Ovis/Capra)*				1						**1**
Suid	2			2		3	1			**8**
Bov I/II					1	1	2			**4**
Small (5-30kg)										
Bov I		12	39	40	63	64	27	9		**254**
Caracal *(Felis caracal)*					1			1		**2**
Grey duiker *(Sylivicapra grimmia)*		1	1		2	2				**6**
Klipspringer *(Oreotragus oreotragus)*						2				**2**
Primate							1			**1**
Steenbok *(Raphicerus campestris)*			2	2	2	1				**8**
Monitor lizard *(Varanus* sp.)		1	2	4		4				**11**
Very small (0.5-5kg)										
Carnivore (small)			1	2	6	5	1	4	1	**20**
Dassie *(Procavia capensis)*			4	6	5	3	3			**21**
Dassie or hare					3					**3**
Hare		1	7	10	5	9	2	1		**35**
Lizard (large)				2	2					**4**
Mongoose (medium)			3		2		1			**6**
Small mammal		1	2	7	4	5	1	1		**21**
Springhare *(Pedetes capensis)*	1		5	6	8	19	4	4	2	**49**
Tortoise										
Tortoise carapace/plastron	5	47	267	269	245	321	117	24	5	**1300**
Tortoise limbs	2	6	32	29	18	22	3	2	2	**116**
Tiny										
Bird			1	2	3	1	1			**8**
Crab			1	2						**3**
Fish			1	1	2					**4**
Frog	1		2	10	9	13	5			**40**
Lizard			2	5	3	3	2			**15**
Reptile			1	3	12	5	2			**23**
Rodent (small)			1		1		1			**3**
Other										
Achatina	1	15	32	18	1	1		1		**69**
Cowrie	1									**1**
Freshwater mussel		1	6							**7**
Ostrich eggshell	5	42	113	66	22	2	1			**251**
Terrestrial gastropod (small)			1							**1**
TOTALS	**20**	**137**	**598**	**547**	**475**	**532**	**207**	**51**	**11**	**2578**

According to Sadr (2007b) this site can be divided into three cultural horizons. The lowest sits on bedrock and is rich in LSA lithics and faunal remains but has no ceramics. The upper lithic and bone-rich horizon may be associated with the ash layer and the many ostrich eggshell beads found within and may also be associated with some of the pottery. The third horizon is confined mainly to the layer rich in roof spall, and contains most of the pottery and all the glass and seed beads (Sadr 2007b).

As can be seen in Figure 4.15, tortoise dominates the faunal remains at Seroromeng. In contrast with Mphekwane, here the remaining categories make up bigger percentages of the total faunal remains and OES is only significant in the upper half of the stratigraphy.

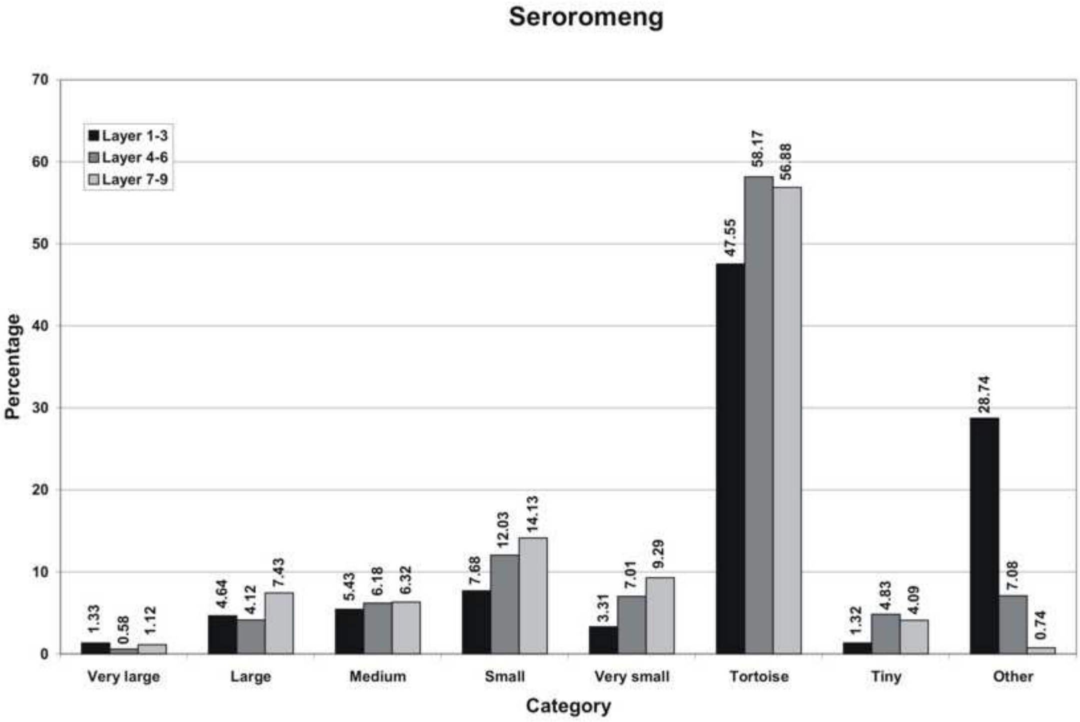


Figure 4.15: Seroromeng showing the difference in total counts of diagnostic faunal remains when split into three horizons.

There are similarities with Mphekwane when looking at Figure 4.15. The smaller animals increase while larger ones drop a little. OES and tortoise numbers are always high and form background noise.

4.4.3 Tortoise and OES remains

During the earliest stage of occupation, both tortoise and OES remains declined (Fig. 4.16), but then gradually started rising. Tortoise peaks in layer 5 and then gradually starts to decline, while OES keeps rising steadily until the final layer (Fig. 4.16). Tortoise remains show a decline from a maximum of 74% to 46% in the final stage, while OES remains climb from 12% at its lowest to 40% in the final stage.

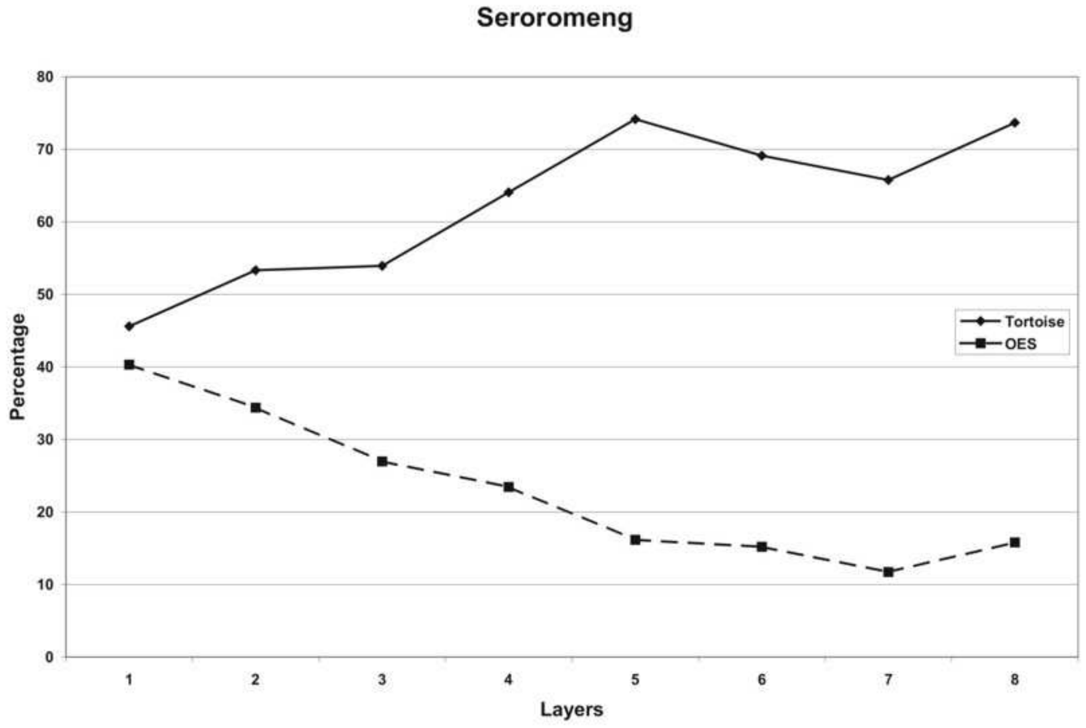
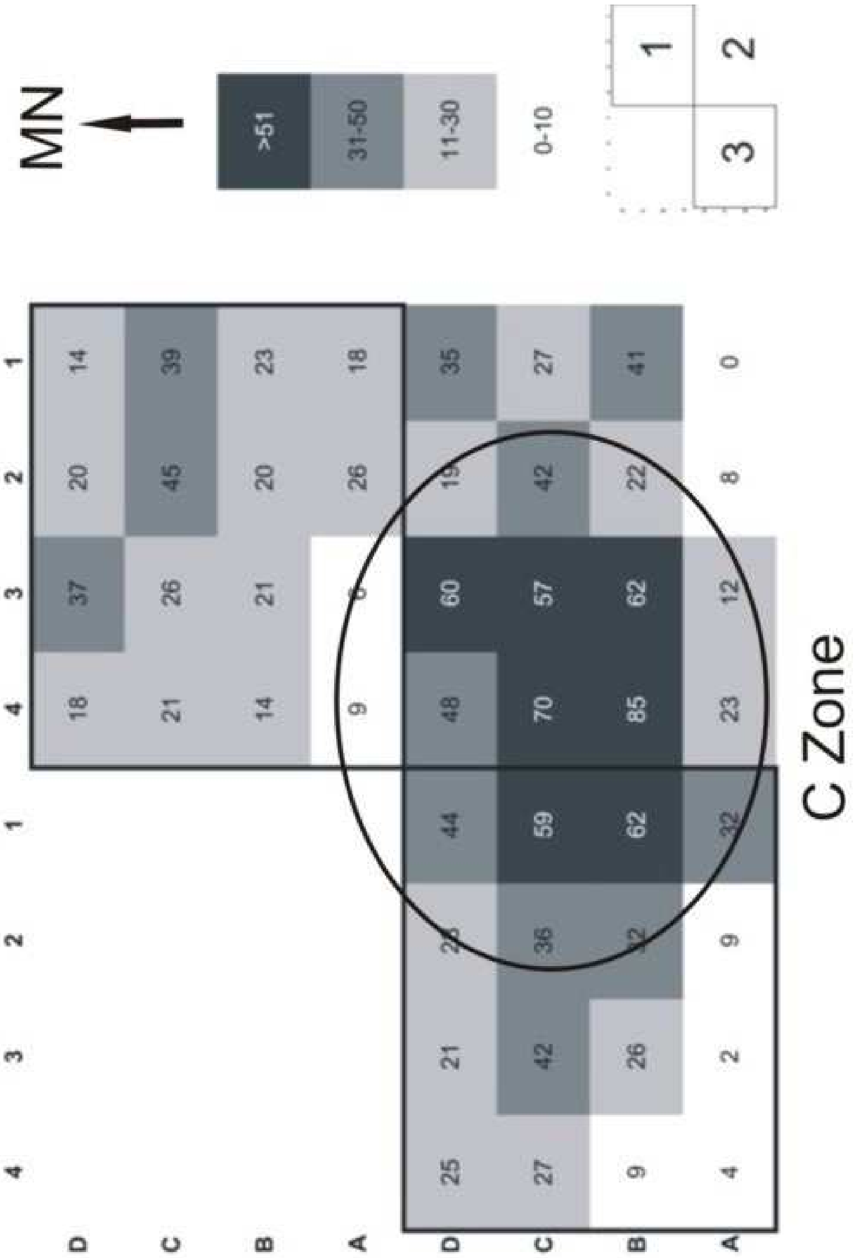


Figure 4.16: Seroromeng tortoise and OES remains by layer.

The different remains were plotted and each cell represents an entire stack of the selected fauna. The tortoise remains were plotted and as can be seen in Figure 4.17, they tend to cluster together in one area (Central Zone) where the hearth occurred and are not evenly spread throughout the three squares. In

Figure 4.18 the tortoise remains were plotted by splitting the layers into three horizons. The top layers shows clustering in a totally different position (NC Zone) as in Figure 4.17, but the middle layers shows that the distribution is spread out in a wider area (SE Zone), but still clustered together. The lower layers have small numbers, but clustering does occur in one specific area (SE Zone).



	1	2	3	4	1	2	3	4
A	0	8	12	23	32	9	2	4
B	41	22	62	85	62	32	26	9
C	27	42	57	70	59	36	42	27
D	35	19	60	48	44	28	21	25
A	18	26	6	9				
B	23	20	21	14				
C	39	45	26	21				
D	14	20	37	18				

Figure 4.17: Seroromeng showing the tortoise remains distribution, each cell represents an entire stack.

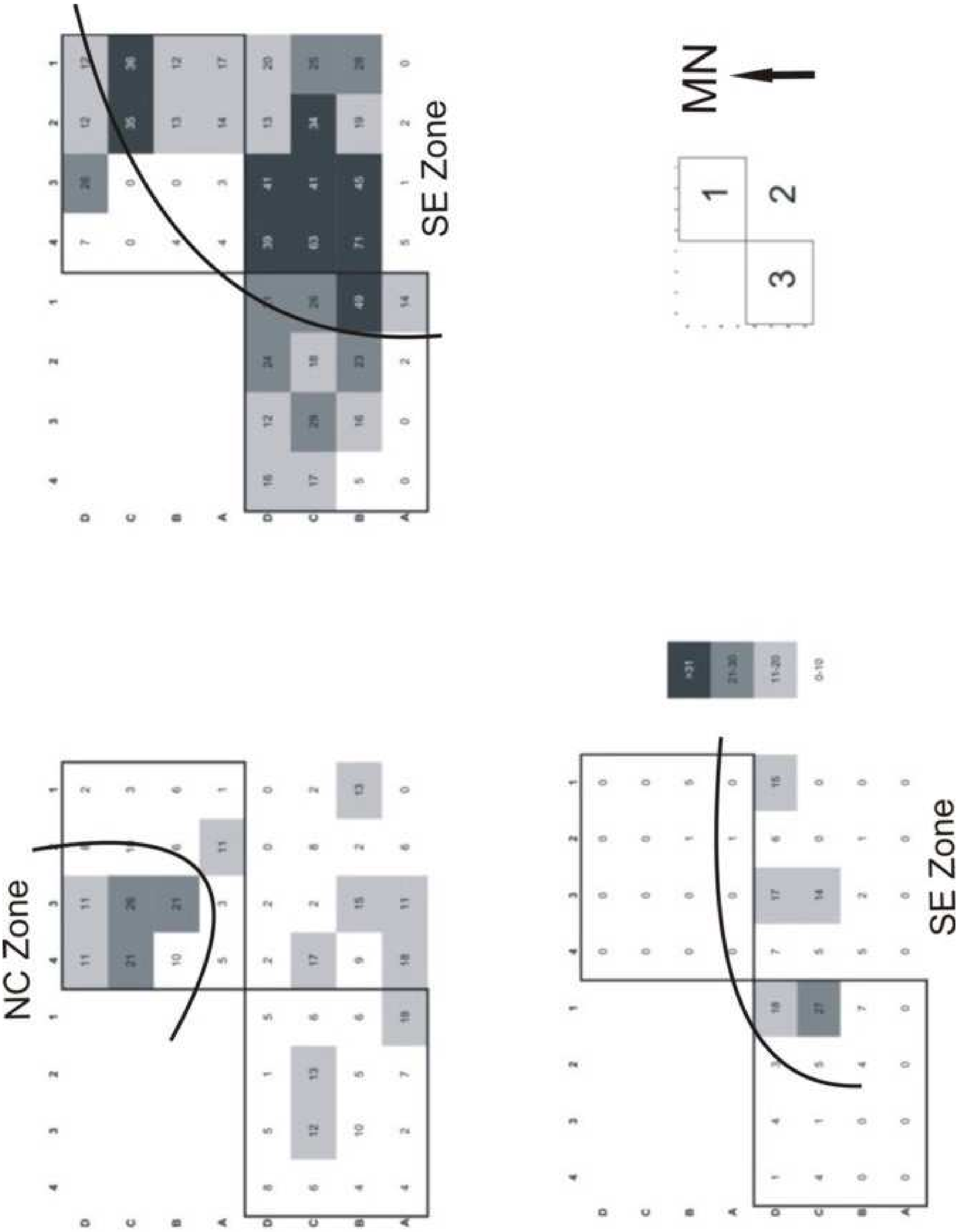
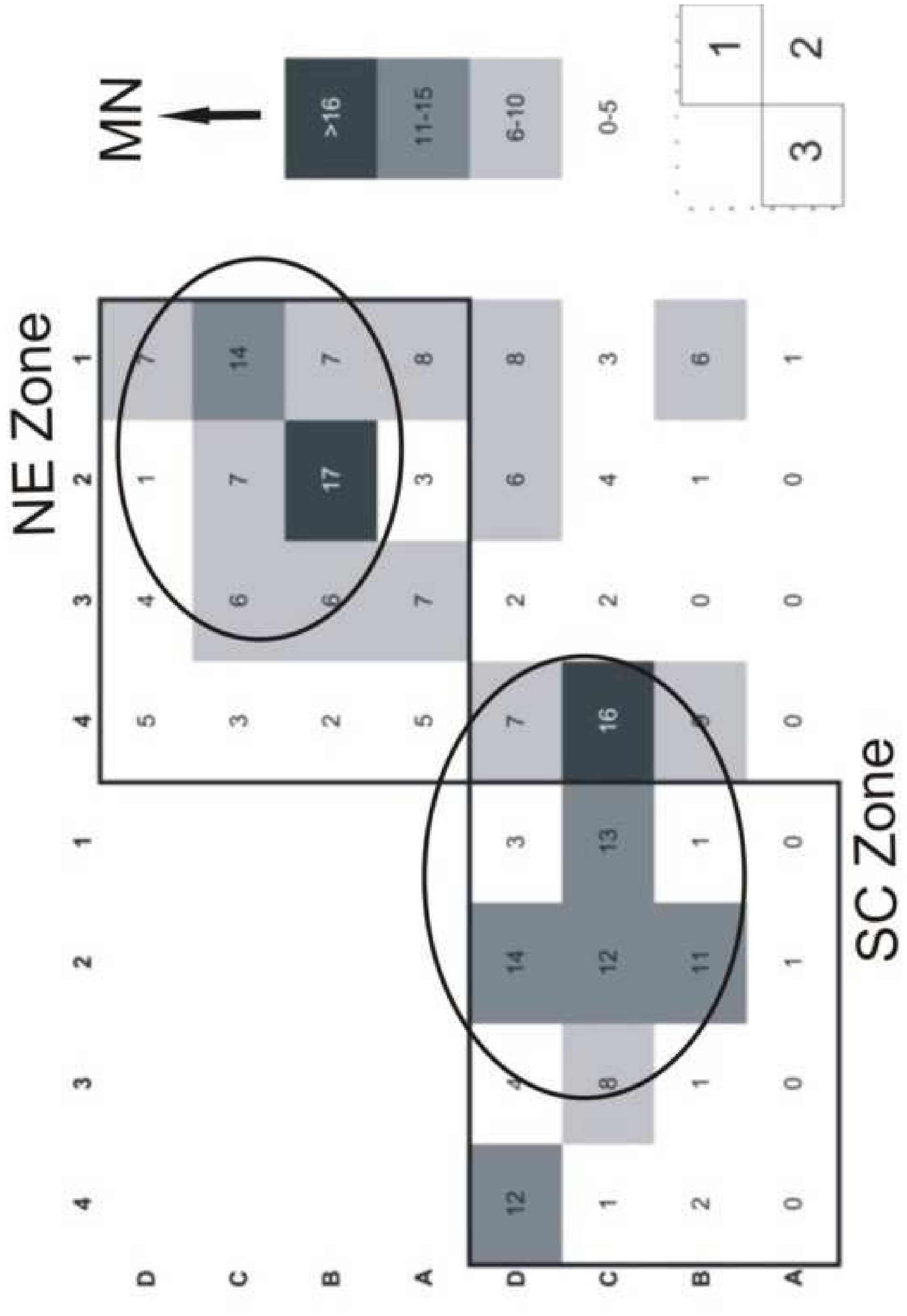


Figure 4.18: Seroromeng showing the tortoise remains when split into three horizons. Figure in top left (layers 1-3), top right (layers 4-6) & lower left (layers 7-9).

The same was done with the OES remains, and they also seem to cluster together in two areas, the NE Zone and the SC Zone (Fig. 4.19). When split into three horizons (Fig. 4.20), the top layers are clustered together in one area (NE Zone), while the middle layers show a different area (SC Zone) of clustering. The lower layers contained too few OES numbers to be significant.



	4	3	2	1	4	3	2	1
D					5	4	1	7
C					3	6	7	14
B					2	6	17	7
A					5	7	3	8
D	12	4	14	3	7	2	6	8
C	1	8	12	13	16	2	4	3
B	2	1	11	1	[illegible]	0	1	6
A	0	0	1	0	0	0	0	1

Figure 4.19: Seroromeng showing the OES remains distribution.

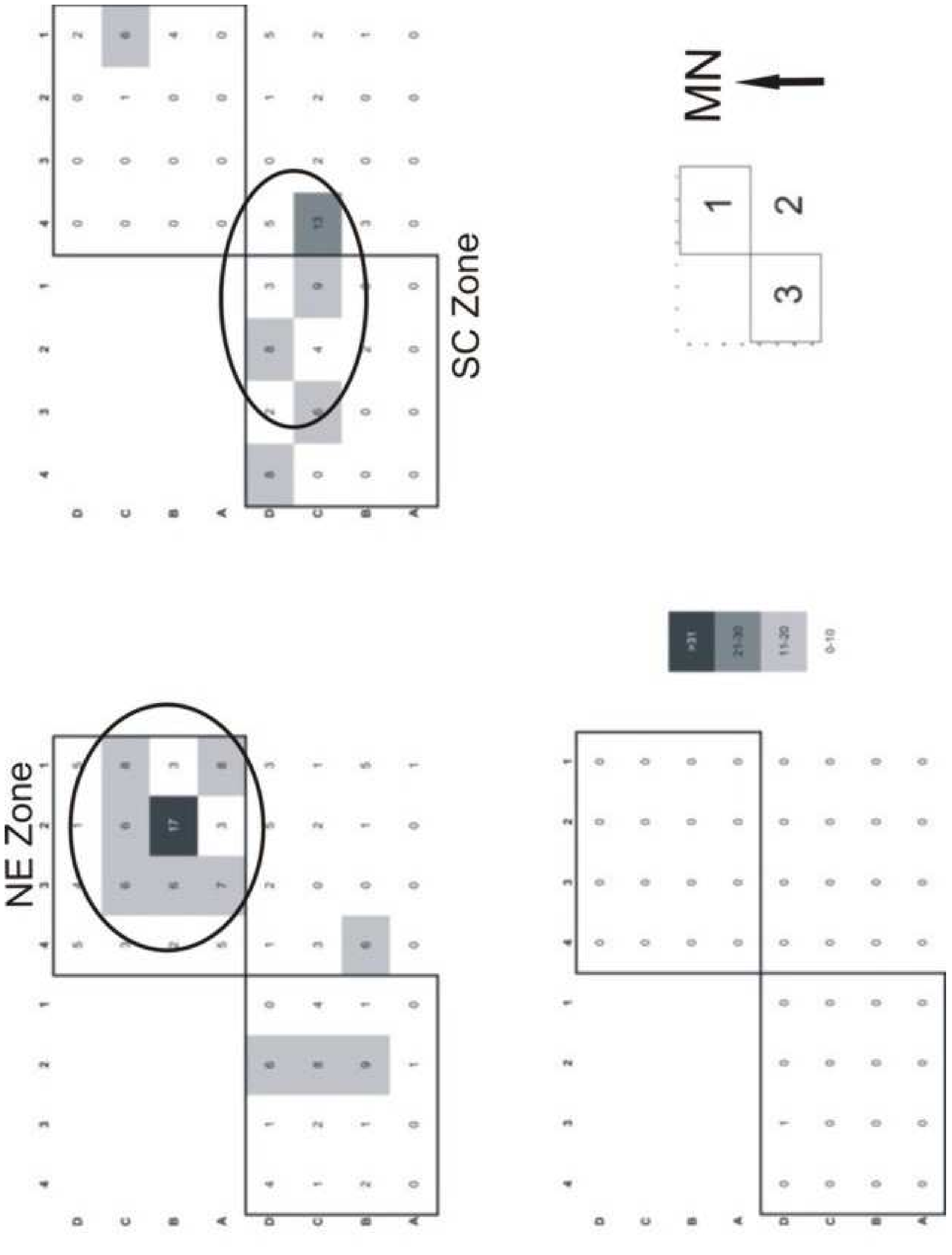
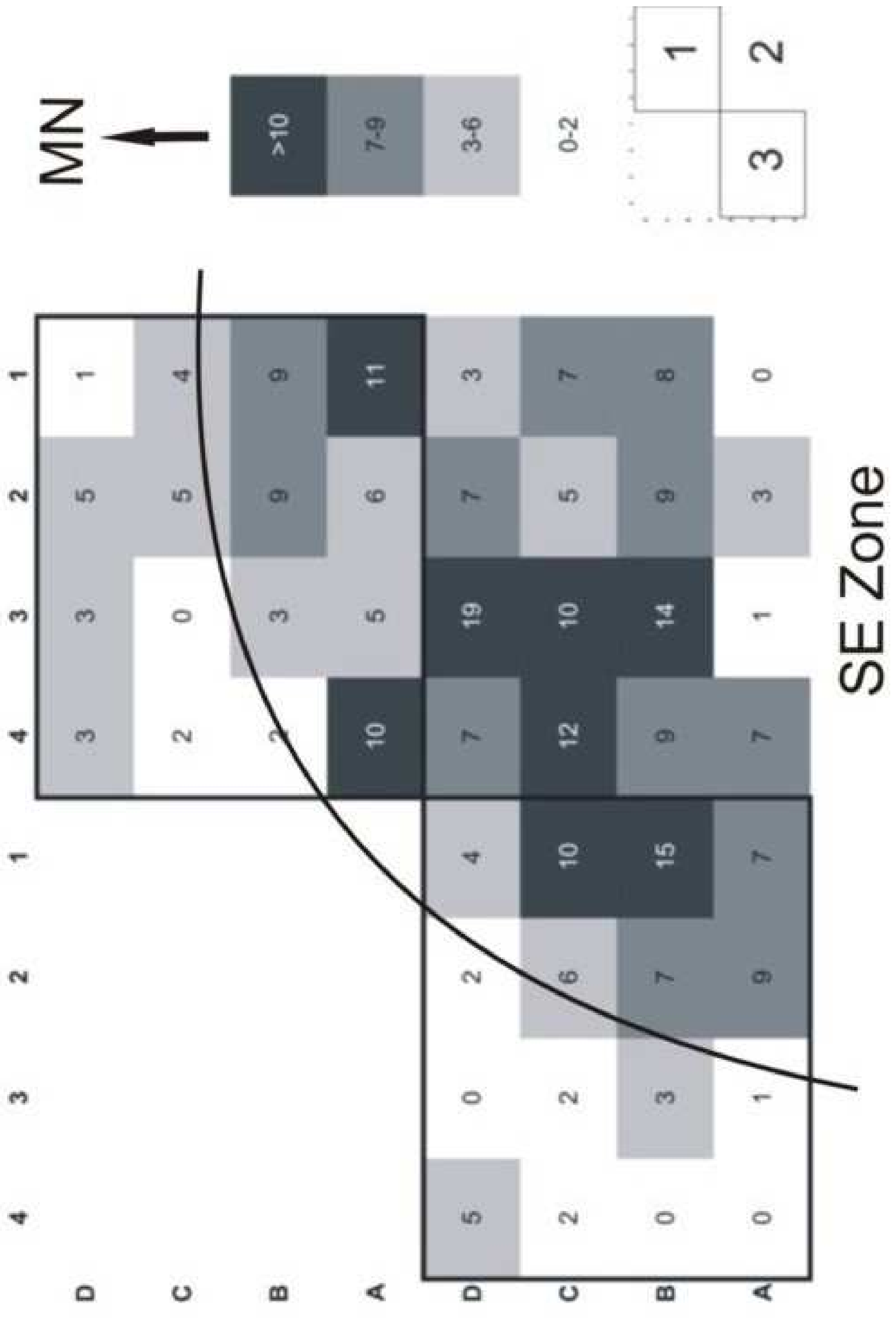


Figure 4.20: Seroromeng showing the tortoise remains when split into three horizons. Figure in top left (layers 1-3), top right (layers 4-6) & lower left (layers 7-9).

The Bov I remains were also plotted (Fig. 4.21) and they show clustering in the area (SE Zone) of the hearth.



	1	2	3	4	1	2	3	4
D	1	5	3	3				
C	4	5	0	2				
B	9	9	3	2				
A	11	6	5	10				
D	3	7	19	7	4	2	0	5
C	7	5	10	12	10	6	2	2
B	8	9	14	9	15	7	3	0
A	0	3	1	7	7	9	1	0

Figure 4.21: Seroromeng showing the Bov I remains distribution, each cell represents an entire stack.

When we look at the vertical distribution at Seroromeng, the highest number of tortoise remains was plotted on the profile view showing all layers and quads for each row. Seroromeng 1 and 2 were plotted together (Fig. 4.22) and a definite continuation of high numbers can be seen in the 3 and 4 line of Seroromeng 2. Seroromeng 2 and 3 were also plotted (Fig. 4.23) and here the high numbers occur in the central section of B, C and D lines of Seroromeng 2 and Seroromeng 3.

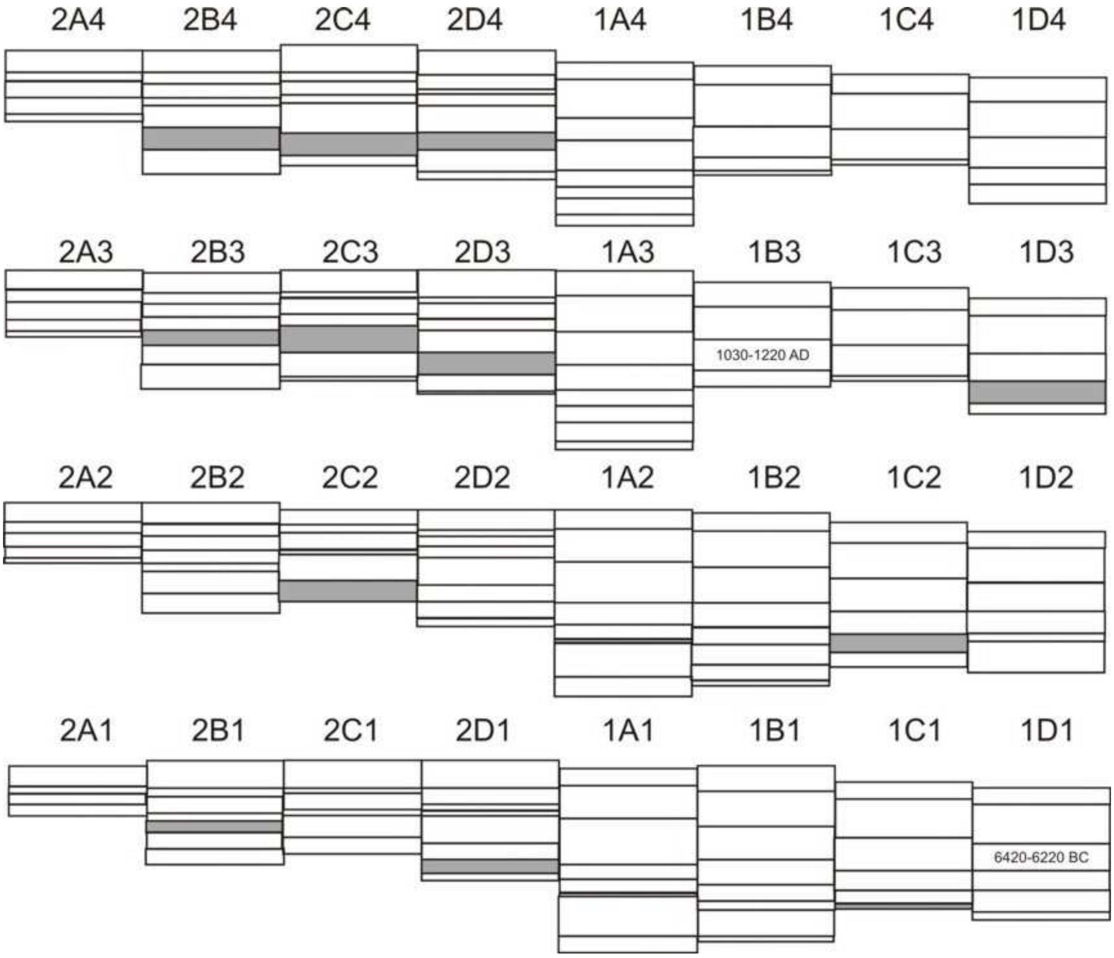


Figure 4.22: Tortoise remains plotted for Seroromeng 1 and 2.

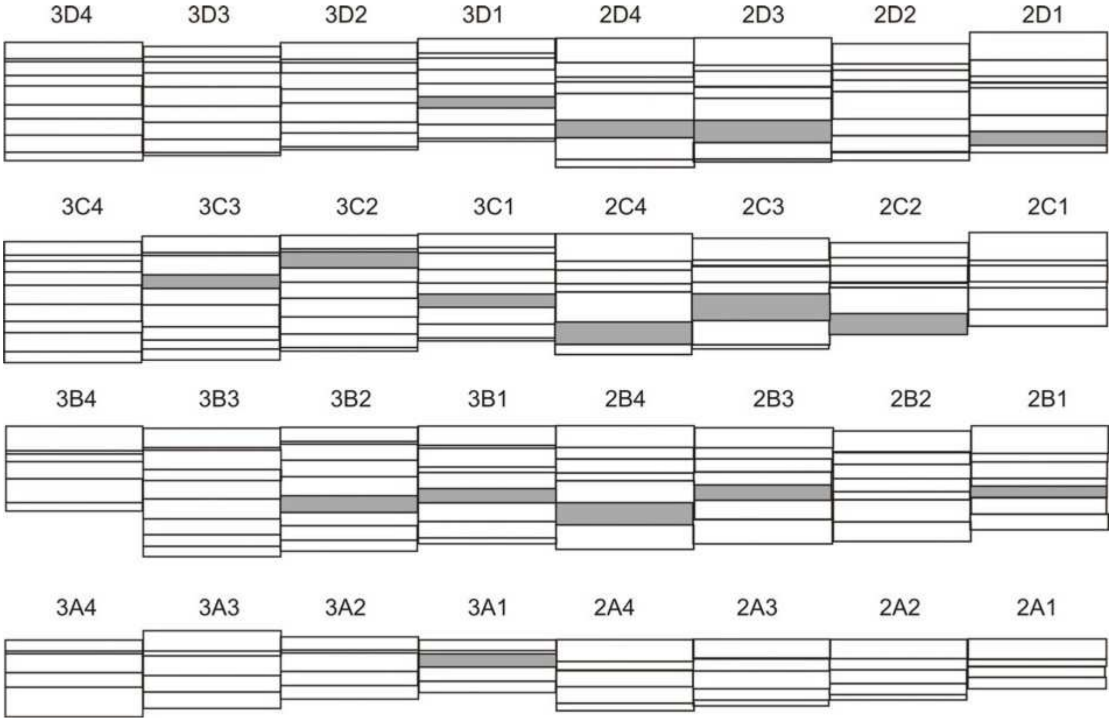


Figure 4.23: Tortoise remains plotted for Seroromeng 2 and 3.

The same was done for the OES remains and Seroromeng 1 and 2 were plotted together (Fig. 4.24) and the numbers are spread out over the two squares. Seroromeng 2 and 3 were also plotted (Fig. 4.25) and the highest numbers seem to occur in the beginning of the D line, and the centre of the C line.

4.4.4 Conclusion

Because of the bone being too burned to use for dating, we have to rely solely on the charcoal for dates. The two dates (1030-1220 AD and 6420-6220 BC) obtained for this site would suggest that the site was used over a long period. The younger of the two dates may refer to the top layers containing ceramics while the older date may refer to the lower lithic and bone rich pre-ceramic occupation layer. With such a vast stretch between the dates, it seem likely that the site can be divided into three occupation horizons, with the middle portion representing the period between the two above mentioned dates.

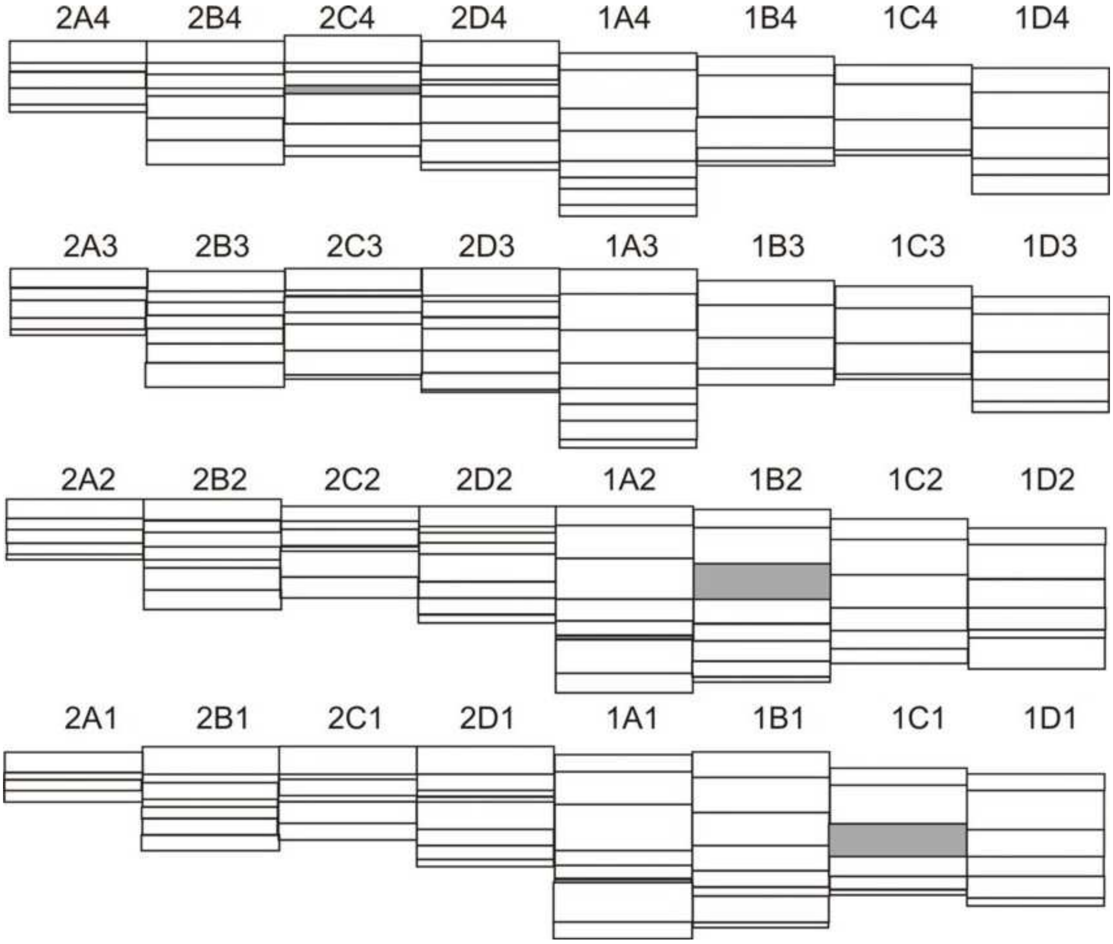


Figure 4.24: OES remains plotted for Seroromeng 1 and 2.

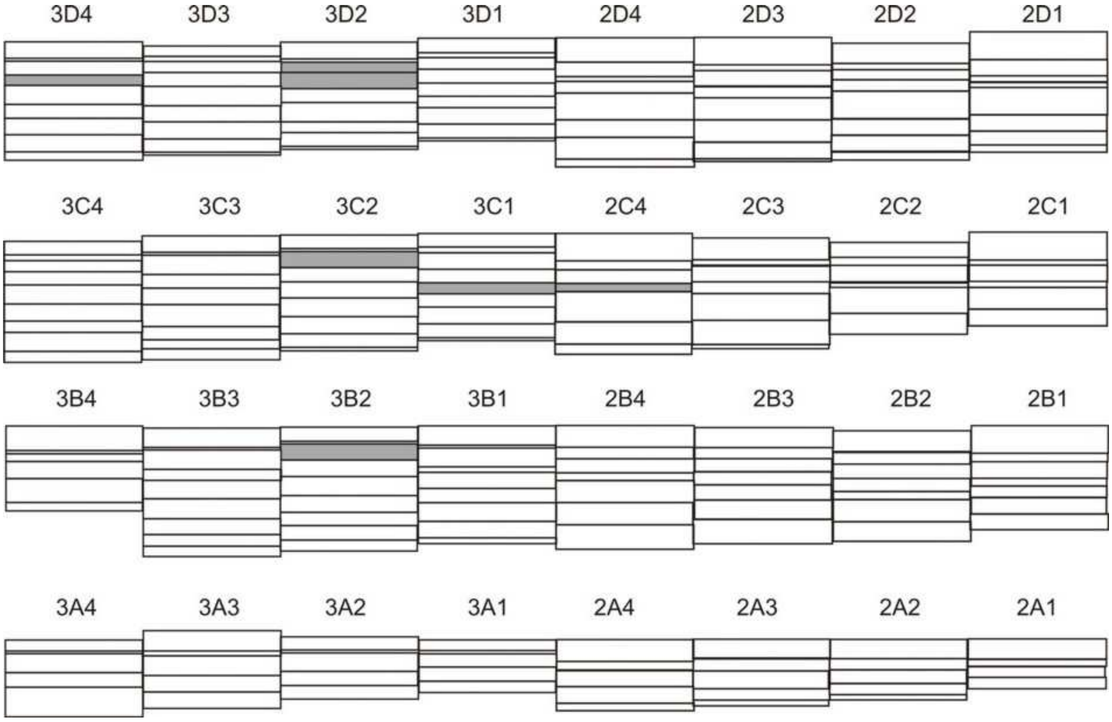


Figure 4.25: OES remains plotted for Seroromeng 2 and 3.

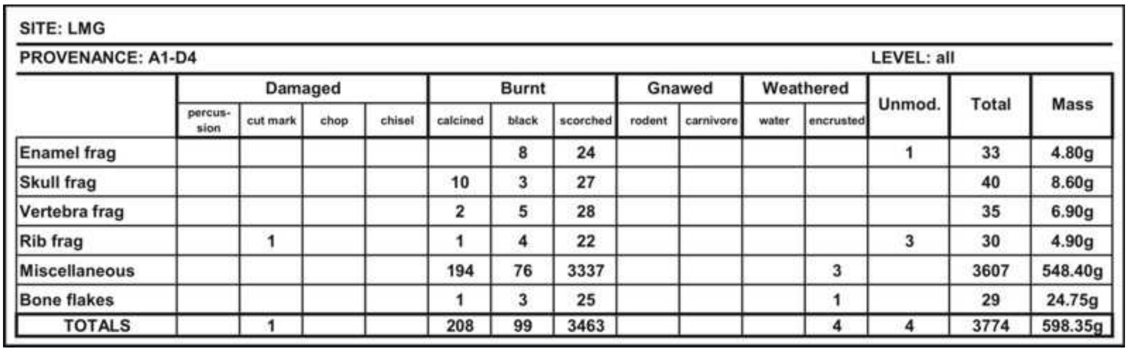
Out of the four Bovid categories (Table 4.4) Bov I dominates in counts. There is a drop in smaller animals that are fairly significant. There is a definite change through time when it comes to tortoise and OES. During the later part of occupation at the site OES seems to have become more important and tortoise less important. A reason for this might be that OES beads were manufactured as trade goods.

4.5 LEHOLAMOGOA FAUNA

4.5.1 Non-diagnostic remains

A total of 4964 pieces of bone, shell and eggshell with a weight of 966.25 g was retrieved from the Leholamogoa site. The non-diagnostic pieces amounted to 3774 of which almost everything was burned to various stages (Table 4.5). Of these 91.8% are scorched while 2.6% are burned black and 5.5% are calcinated. The remaining 0.1% is made up by unmodified pieces (4) and weathered bone, all encrusted (4). Only one bone had a cut mark on it.

Table 4.5: All non-diagnostic bone from Leholamogoa: all squares and layers.



SITE: LMG

PROVENANCE: A1-D4 LEVEL: all

	Damaged				Burnt			Gnawed		Weathered		Unmod.	Total	Mass
	percus-sion	cut mark	chop	chisel	calcined	black	scorched	rodent	carnivore	water	encrusted			
Enamel frag						8	24					1	33	4.80g
Skull frag					10	3	27						40	8.60g
Vertebra frag					2	5	28						35	6.90g
Rib frag		1			1	4	22					3	30	4.90g
Miscellaneous					194	76	3337				3		3607	548.40g
Bone flakes					1	3	25				1		29	24.75g
TOTALS		1			208	99	3463				4	4	3774	598.35g

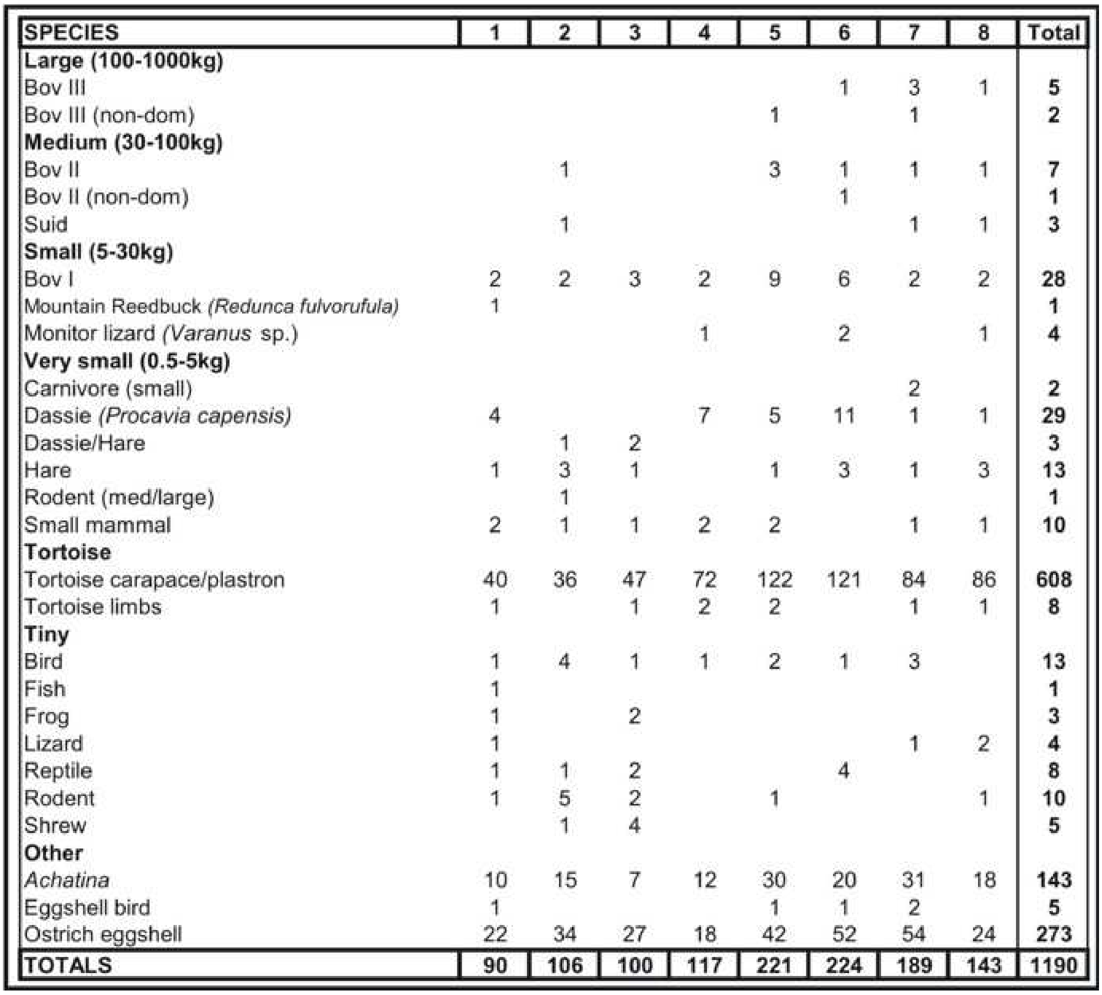
No bones had gnaw marks on them, but amongst the diagnostic fauna (Table 4.6), both carnivore and rodent remains have been identified. So, in contrast with Mphekwane and Seroromeng where gnawed bone were found with remains of carnivore and rodent present, it seems that rodents and carnivores did not have any impact on the bone at this site.

4.5.2 Diagnostic remains

A total of 1190 pieces of diagnostic bone were identified with a total weight of 367.9 g. To be able to see if any change occurred through time the data was listed by layer (Table 4.6).

Because tortoise and OES dominate at the site, they were not plotted in Figure 4.26. While all the fauna was taken into account to draw up Figure 4.28.

Table 4.6: The NISP counts for Leholamogoa by layers.



SPECIES	1	2	3	4	5	6	7	8	Total
Large (100-1000kg)									
Bov III						1	3	1	**5**
Bov III (non-dom)					1		1		**2**
Medium (30-100kg)									
Bov II		1			3	1	1	1	**7**
Bov II (non-dom)						1			**1**
Suid		1					1	1	**3**
Small (5-30kg)									
Bov I	2	2	3	2	9	6	2	2	**28**
Mountain Reedbuck *(Redunca fulvorufula)*	1								**1**
Monitor lizard *(Varanus* sp.)				1		2		1	**4**
Very small (0.5-5kg)									
Carnivore (small)							2		**2**
Dassie *(Procavia capensis)*	4			7	5	11	1	1	**29**
Dassie/Hare		1	2						**3**
Hare	1	3	1		1	3	1	3	**13**
Rodent (med/large)		1							**1**
Small mammal	2	1	1	2	2		1	1	**10**
Tortoise									
Tortoise carapace/plastron	40	36	47	72	122	121	84	86	**608**
Tortoise limbs	1		1	2	2		1	1	**8**
Tiny									
Bird	1	4	1	1	2	1	3		**13**
Fish	1								**1**
Frog	1		2						**3**
Lizard	1						1	2	**4**
Reptile	1	1	2			4			**8**
Rodent	1	5	2		1			1	**10**
Shrew		1	4						**5**
Other									
Achatina	10	15	7	12	30	20	31	18	**143**
Eggshell bird	1				1	1	2		**5**
Ostrich eggshell	22	34	27	18	42	52	54	24	**273**
TOTALS	**90**	**106**	**100**	**117**	**221**	**224**	**189**	**143**	**1190**

In Figure 4.26 it can be seen that the large and medium categories drop a little through time although they do not have very high numbers. The absence of the large category in the upper half seems to be significant. The small category stays stable, while the very small category fluctuates but has higher numbers in the pre-ceramic horizon and the other category drops. The tiny category shows a rise of about 40% from layer 4 to 3. The medium category has larger numbers in the pre-ceramic horizon.

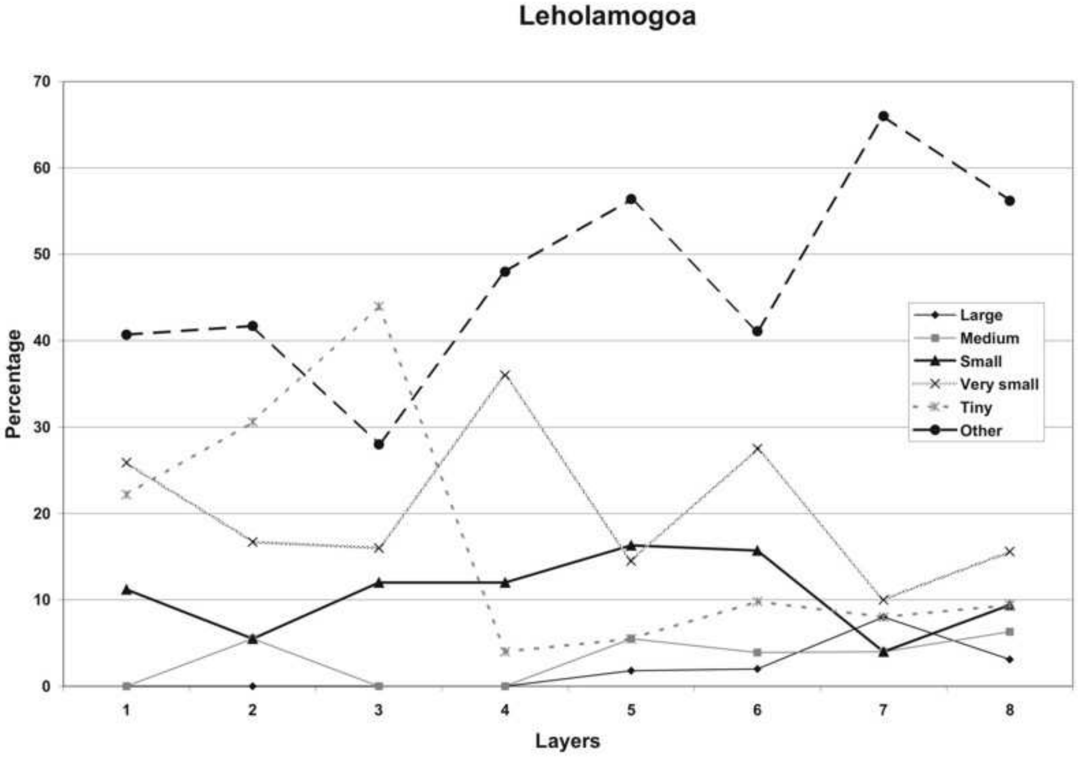


Figure 4.26: Leholamogoa faunal remains, excluding tortoise and OES, plotted by layer.

Sadr (2007d) suggests that there are two principal horizons at this site. A ceramic LSA in layers 1-3 and a pre-ceramic one in layers 4-8. The pre-ceramic layers also contain higher densities of lithics. The dates obtained for the site, a 290±40 BP date for layer 2 and a 2160±60 BP for layer 5, seem to support the two horizon theory. The site was split into two horizons, the older would include layers 4 to 8 while the younger horizon will comprise layers 1 to 3 (Fig. 4.27).

As can be seen in Figure 4.27, tortoise remains make up the largest proportion of faunal remains for the site in both horizons. The 'other' category includes OES and make up the second highest proportion. The large category has no remains in the top horizon. The ‘other’, tiny and very small categories show a rise towards the end of the occupation of the site, while the tortoise, small, medium and large categories show a drop towards recent times.

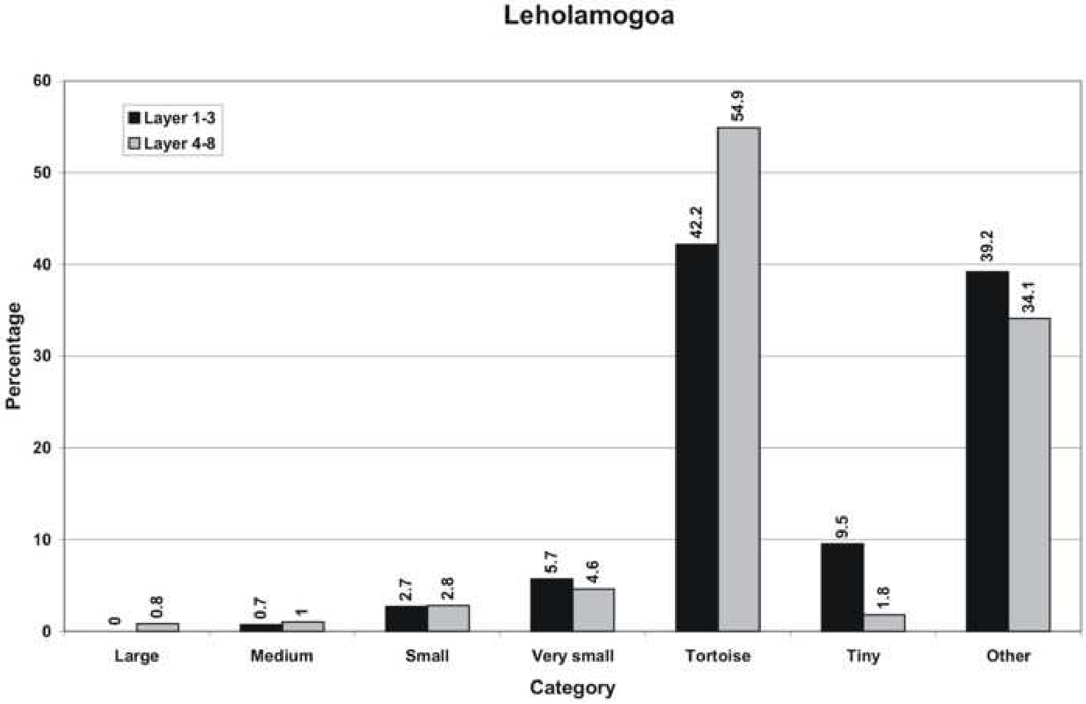


Figure 4.27: Leholamogoa showing the difference in total counts of diagnostic faunal remains when split into two horizons.

4.5.3 Tortoise and OES remains

Once again the tortoise and OES remains seem to mirror one another (Fig. 4.28). As mentioned before, according to Wadley (1987) ostriches tend to be nomadic and even practice seasonal aggregation and dispersal, and this could explain why the OES drop at certain times. As can be seen in the figure below, tortoise remains seem to drop, while OES rises, then tortoise seems to start climbing at a moderate rate while OES declines at almost the same rate.

Tortoise reaches its highest totals in layer 4 at 64%, while OES reaches its lowest numbers at 16% in this layer. From here tortoise declines at a steep rate, from 64% to 34% while OES starts rising. Finally tortoise starts rising again while OES declines towards the final stage.

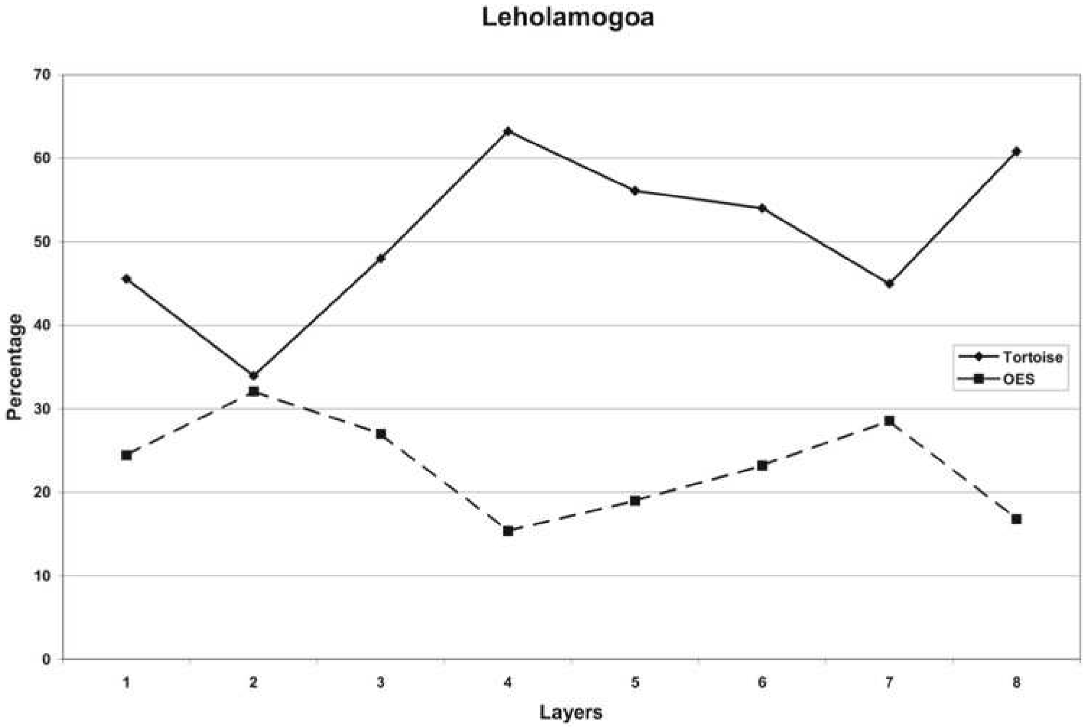


Figure 4.28: Leholamogoa tortoise and OES remains by layer.

4.5.4 Conclusion

Four dates were obtained for this site, two from layer 5 and two from layer 2, ranging between 350-40 BC for layer 5 and 1480-1960 AD for layer 2. On the basis of the two ranges of dates, the site was split into two cultural horizons. The dates suggest that the site was used over a long period, and there are significant changes that can be spotted in the faunal remains.

The trends in the faunal remains are that the large and medium categories drop, the small category remains stable while the very small category fluctuates. The tiny category rises and the other category drops. It is clear that the older horizon contains more material and that there is a drop in all size categories towards the end. The patterns also show that tortoise and OES proportions mirror one another. When one rose, the other declined.

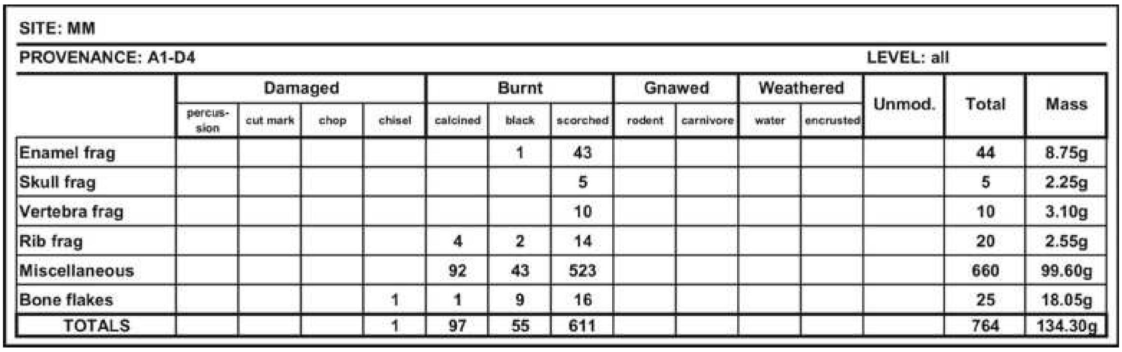
Mphekwane's and Seroromeng's tortoise and OES showed the same mirroring. When comparing the size categories of the three sites, it can be seen that the large and medium categories dropped for LMG and MPK. The very small category fluctuated for LMG and MPK.

4.6 MAMAETLA FAUNA

4.6.1 Non-diagnostic remains

A total number of 844 pieces of bone, shell and eggshell with a total weight of 165.30 g was retrieved from the site of Mamaetla. The non-diagnostic pieces amounted to 764 of which all were burned to various degrees (Table 4.7).

Table 4.7: All non-diagnostic bone from Mamaetla: all squares and layers.



SITE: MM

PROVENANCE: A1-D4 **LEVEL: all**

	Damaged				Burnt			Gnawed		Weathered		Unmod.	Total	Mass
	percus-sion	cut mark	chop	chisel	calcined	black	scorched	rodent	carnivore	water	encrusted			
Enamel frag						1	43						44	8.75g
Skull frag							5						5	2.25g
Vertebra frag							10						10	3.10g
Rib frag					4	2	14						20	2.55g
Miscellaneous					92	43	523						660	99.60g
Bone flakes				1	1	9	16						25	18.05g
TOTALS				1	97	55	611						764	134.30g

As can be seen from the above table, all the non-diagnostic bone had some degree of burning on them. Of these 80% are scorched while 7.2% are burned black and 12.7% are calcinated. Only one bone had a chisel mark on it. There are no bones with gnaw marks on them, nor are there any carnivore remains identified amongst the diagnostic material. The only rodent is the springhare that is present in the diagnostic material.

4.6.2 Diagnostic remains

A total of 80 bones, shell and eggshell, with a weight of 30.9 g, were identified for this site (Table 4.8).

Because the numbers for Mamaetla are so small I have not removed tortoise and OES from Figure 4.29. There was a drop in the large, small, very small

Table 4.8: The NISP counts for Mamaetla by layers.

SPECIES	1	2	3	4	5	MM1	1	2	3	4	5	MM2
Large (100-1000kg)												
Bov III										1		**1**
Medium (30-100kg)												
Bov II		1				**1**			2	1		**3**
Bov I/II							1					**1**
Small (5-30kg)												
Bov I	1	1	1			**3**				4	2	**6**
Very small (0.5-5kg)												
Dassie *(Procavia capensis)*				3		**3**			2			**2**
Hare (Lagomorph)		1	2		1	**4**			2	1	1	**4**
Small mammal	1		1			**2**						
Springhare *(Pedetes capensis)*					1	**1**						
Tortoise												
Tortoise carapace/plastron	1	3	1		2	**7**	1			1	1	**3**
Tiny												
Lizard			1	3		**4**						
Other												
Achatina		1	3			**4**		2	2	6	2	**12**
Freshwater mussel				2		**2**		1				**1**
Ostrich eggshell	3	1				**4**	1	1	3	3		**8**
Snail			1			**1**						
Tropidophora	1	1	1			**3**						
TOTALS	**7**	**9**	**11**	**8**	**4**	**39**	**3**	**4**	**11**	**17**	**6**	**41**

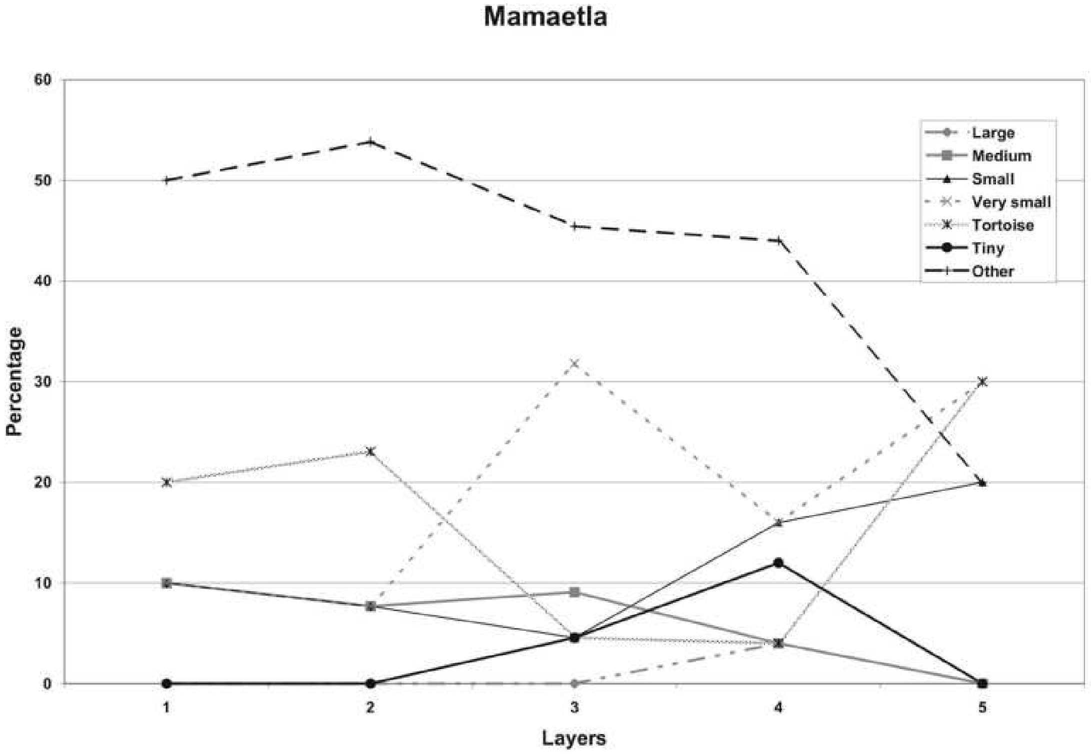


Figure 4.29: Mamaetla faunal remains plotted by layer.

and tiny categories. The other, tortoise and medium categories show a rise. The large category is absent in the top layers. The tortoise category seems to run parallel with the other category. All the samples are small and they may give a distorted view. Tortoise remains initially dropped by more than 25%, then seem to have little change and then rose by about 20% and then started to decline towards the final stage (Fig. 4.29).

The distribution of finds, especially lithics and ceramics, suggested two main archaeological layers. If the site is taken and split into two horizons as suggested by Sadr (2005) it gives the view represented in Figure 4.30. The 'other' category makes up the largest proportion of the faunal remains at this site for both horizons. There is a rise in the other, medium and tortoise categories. The large and tiny categories are not present in the top layers. The large, small, very small and tiny categories drop.

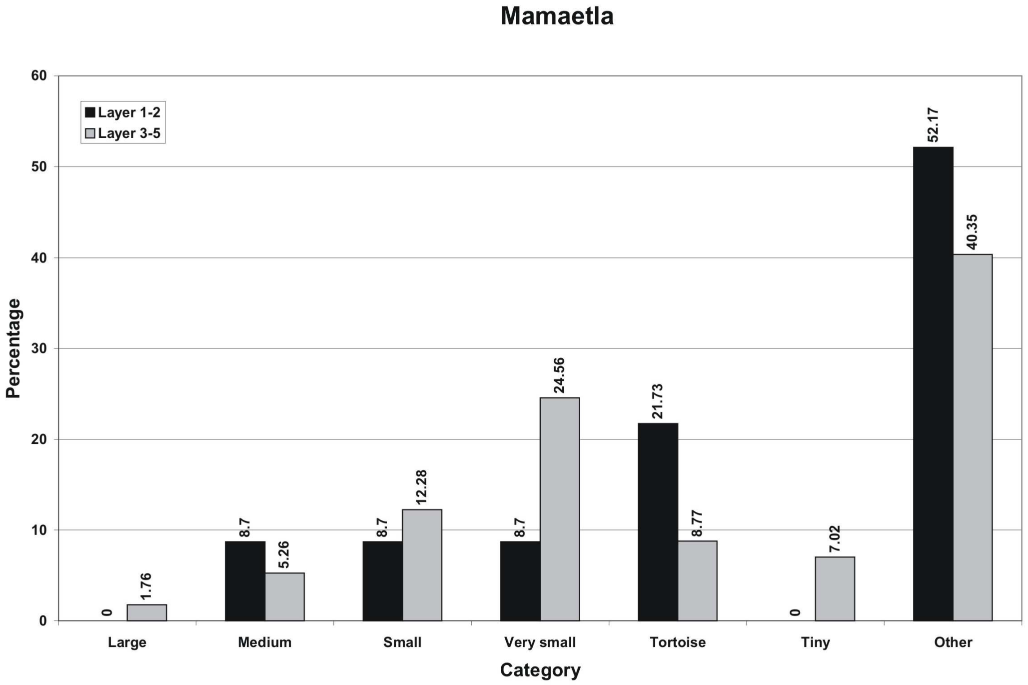


Figure 4.30: Mamaetla showing the difference in total counts of diagnostic faunal remains when split into two horizons.

4.6.3 Conclusion

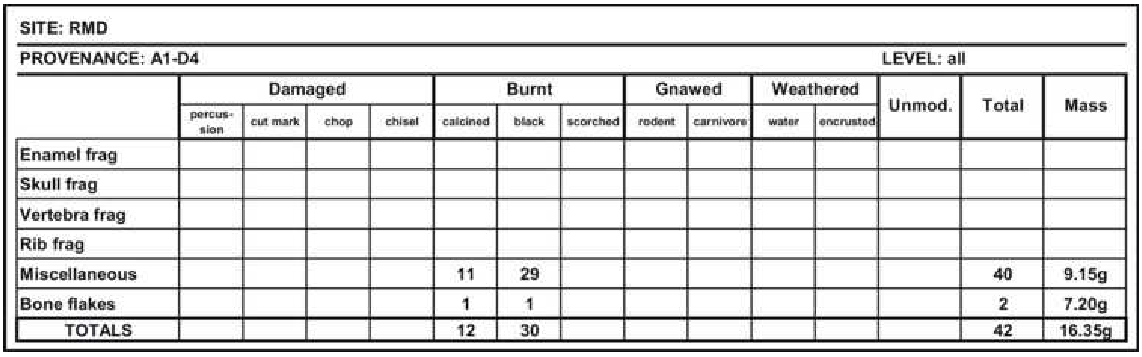
The two dates (1660-1960 AD and 1650-1700 AD) obtained for the site suggests a recent occupation and as can be seen in Table 4.8 the faunal numbers for this site are small and thus statistically unreliable. Nonetheless there is a difference in faunal composition between top and bottom layers. This site differs from the previous sites in the fact that tortoise remains do not dominate here. The upper layers of Mamaetla had many clay figurines and was used in historic times as an initiation site.

4.7 RAMODIKITLI FAUNA

4.7.1 Non-diagnostic remains

A total number of 58 pieces of bone and shell with a total weight of 25.30 g was retrieved from the site of Ramodikitli. The non-diagnostic pieces amounted to 42 of which all were burned (Table 4.9).

Table 4.9: All non-diagnostic bone from Ramodikitli: all squares and layers.



SITE: RMD

PROVENANCE: A1-D4 LEVEL: all

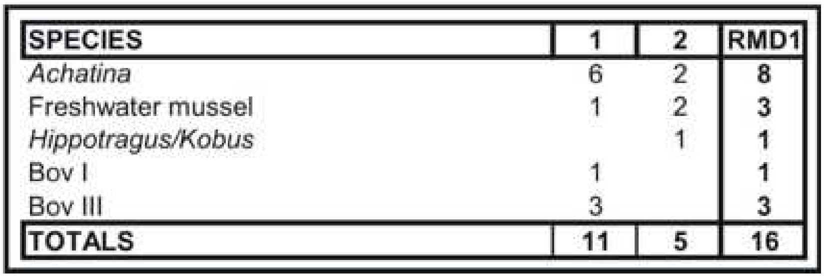
	Damaged				Burnt			Gnawed		Weathered		Unmod.	Total	Mass
	percus-sion	cut mark	chop	chisel	calcined	black	scorched	rodent	carnivore	water	encrusted			
Enamel frag														
Skull frag														
Vertebra frag														
Rib frag														
Miscellaneous					11	29							40	9.15g
Bone flakes					1	1							2	7.20g
TOTALS					12	30							42	16.35g

As can be seen from the above table, all the non-diagnostic bone had some degree of burning on them. Of these 71.5% are burned black and 28.5% are calcinated. Only one bone had a chisel mark on it.

4.7.2 Diagnostic remains

Only 16 bones and shell, with a total weight of 8.95 g were identified from the two layers at Ramodikitli (Table 4.10). The cave and the deposits were quite humid, which might explain the scarcity of faunal remains. Unfortunately, due to very small numbers, little can be said about this sample.

Table 4.10: The NISP counts for Ramodikitli by layers.



SPECIES	**1**	**2**	**RMD1**
Achatina	6	2	**8**
Freshwater mussel	1	2	**3**
Hippotragus/Kobus		1	**1**
Bov I	1		**1**
Bov III	3		**3**
TOTALS	**11**	**5**	**16**

4.8 Conclusion

It is clear that there occurred a significant change in tortoise and OES remains through time at Mphekwane, Seroromeng and Leholamogoa. Where tortoise increased, the OES remains would decrease and vice versa. Comparing the size categories of the three sites, the very large category is absent at LMG, stable at SRR and drops for MPK. The large category drops for LMG and MPK but show a drop then a rise and another drop for SRR. The medium category drops for LMG and MPK but remains stable for SRR. The small category remains stable for LMG, drops for SRR and fluctuates for MPK. The very small category fluctuates for LMG and MPK and drops for SRR. The tiny category rises for LMG but drops at SRR and MPK, while the other category drops for LMG but rises at both SRR and MPK. Mamaetla and Ramodikitli yielded too small numbers to be able to see distinctive patterns in faunal change.

The bone flakes category in the non-diagnostic remains section comprises all the long bones (femur, tibia, humerus & radius) of the animal remains found at the sites. At MPK and SRR they make up the second largest total of bones sorted in the non-diagnostic remains category. Many of these bones were smashed to bits to obtain the protein rich marrow. Very large and large animals can thus be underrepresented at the sites due to the fact that only fragments were left behind that can not be identified. Foragers throughout the Stone Age smashed these large bones while the Iron Age mixed farmers had other sources of protein and would not have smashed these bones to such a large extent.

In the next chapter I shall attempt to interpret these patterns by comparing the results with other LSA sites.

CHAPTER 5

Discussion and conclusions

The five sites in the Makgabeng that were excavated represent a vast time span that stretches from the late Pleistocene right up to the Iron Age. It is expected that in such a long period changes would have occurred in the faunal assemblages. As shown in the previous chapter, surprisingly, there is rather little change. In this final chapter I shall summarize the main faunal patterns from the Makgabeng and their interpretation. I will also compare these patterns to fauna from other sites in the region.

5.1 Quantification method used

As previously mentioned, the number of identifiable skeletal parts (NISP) method was chosen for this study. The disadvantage with this method, counting each specimen as a separate entity although it could represent only one individual can distort the outcome of results. Although a mandible with two teeth was only counted as one, it must be kept in mind that the numbers mentioned in this study does not calculate to as many individual species as reflected.

5.2 Taphonomy

Only Mphekwane and Seroromeng yielded bones with gnaw marks on them. A total of 23 bones came from the two sites of which 12 had rodent and 11 had carnivore gnaw marks on them. Taking into account that the total amount of bones from MPK and SRR is 74397, the gnawed bones add to a very low percentage which would suggest that animals came into these shelters and probably chewed on the food remains left behind by the humans. Contrary to the low number of gnawed bones at the Makgabeng sites, 86.8% of all the bones from the five sites have some degree of burning on them. This would also support the idea of the bones being brought to the shelters by the humans occupying these shelters.

5.3 Fauna at the Makgabeng sites

Not all the fauna will be discussed here, only those that made up the largest numbers at the sites and the domesticates that were found.

5.3.1 Tortoise

The different tortoise species present today in the Makgabeng area are the Leopard tortoise (*Stigmochelys pardalis*), Kalahari tent tortoise (Serrated) (*Psammobates oculiferus*) and Speke's hinged tortoise (*Kinixys spekii*) (Branch 1994; Boycott & Bourquin 2000). It is interesting that the Speke's hinged tortoise also feeds on *Achatina* (Branch 1994). The San of the Kalahari will eat tortoise and other reptiles (Yellen & Lee 1976; Smith *et al.* 2000). It is not that easy to kill a tortoise and they would have been roasted alive being placed upside down on the fire. This would suggest that more of the carapace would be burnt than the plastron, and still fewer skeletal parts, but Sampson (1998) found this not to be so at Haaskraal and contributes this to tortoises being placed in huge fires or re-charring of food waste. One of the characteristic artefacts of LSA people, according to Deacon and Deacon (1999), is tortoiseshell bowls like the ones found at Oakhurst Cave and Robberg.

5.3.2 Ostrich eggshell

Ostrich eggs are used for food and for technological purposes. The unbroken egg makes an excellent container for storing and carrying water, while the broken fragments are used to make beads (Smith *et al.* 2000). They were also used to store other substances like food (Morris 1994), specularite and ochre (Humphreys 1974) as well as OES fragments for making beads (Sandelowsky 1971). If the rainfall did increase (Huffman 1996, 2008) during 1000 to 1300 AD in the Limpopo region, it could have led to the favourable ostrich habitat displacement into more marginal areas further to the west (Hall & Smith 2000).

5.3.3 *Achatina*

Hall and Smith (2000) found that *Achatina* displayed an increase at Little Muck in the layers dated to a range between 1040 and 1220 AD. They ascribe this as simply indicating a more intensive subsistence focus on A*chatina*. No complete *Achatina* shells were found which, according to Hall and Smith (2000) is indicative of the animals being eaten and not self introduced. *Achatina* beads (Plug 1982; Hall & Smith 2000) are found at some sites, but few were found at the Makgabeng sites. Pleistocene and Holocene sediments from the Orange River system, studied by Van Zinderen Bakker and Butzer (1973) and pollen studies by Scott and Thackeray (1987) from two sites dated between 14000 and 2000 BP shows that South Africa was affected by a cooler period. This could be the cause for the dip in the *Achatina* numbers at some of the sites.

5.3.4 Sheep

Hunters found it easy to steal domestic stock from herders and often sheep bones are found at sites occupied by hunter-gatherers (Boonzaier *et al.* 1996). The dating of the earliest sheep is problematic. Many sheep bones from supposedly early contexts were shown to be considerably younger than the layers they were found in through accelerator dating (Sealy & Yates 1994). Only Blombos (Henshilwood 1996) and Spoegriver (Sealy & Yates 1994) yielded bones significantly preceding 1600 BP, but see Vogel, Plug and Webley (1997) and also Robbins *et al.* (2005). Very few sheep bones from further north have been dated and it is believed that the early remains from South Africa’s interior are only a few centuries old (Sealy & Yates 1994). This evidence tends towards Cooke’s model rather than that of Elphick (Mitchell 2002). Environmental conditions may have been instrumental in facilitating the dispersal of sheep and their owners along southern Africa’s western coast (Mitchell 2002).

5.4 Diagnostic vs. non-diagnostic remains

It must be mentioned that because tortoise, OES and Achatina are so easily identifiable amongst the faunal remains, they tend to dominate and because the other bones, especially large bones containing marrow were smashed to fine bits to extract the contents, they would be impossible to identify and would thus seem absent, but indeed they are there (Plug pers. comm.). When the tortoise, OES, *Achatina*, diagnostic and non-diagnostic bone are compared it is clear that other patterns emerges (Table 5.1 & 5.2). The very large and large animal remains would be most likely represented amongst the non-diagnostic bone which make up the largest percentage of remains at all the sites that can be seen in Figures 5.1 through 5.4.

Table 5.1: Tortoise, OES, Achatina, ID-Bone & Non ID-Bone by weight.

Site	Tortoise	OES	*Achatina*	ID-Bone	Non ID-Bone	Total
MPK	998.80g	374.70g	79.65g	363.40g	5184.10g	7000.65g
SRR	425.55g	78.95g	17.65g	964.00g	9539.65g	11025.80g
LMG	138.65g	99.50g	35.40g	94.35g	598.35g	966.25g
MM	3.10g	2.95g	3.90g	20.95g	134.30g	165.20g

Table 5.2: Tortoise, OES, Achatina, ID-Bone & Non ID-Bone by NISP.

Site	Tortoise	OES	*Achatina*	ID-Bone	Non ID-Bone	Total
MPK	3848	1700	349	732	32756	39385
SRR	1426	250	69	878	32453	35076
LMG	616	273	143	159	3774	4965
MM	10	12	16	42	764	844

At Mphekwane it is clear that tortoise remains still dominate the diagnostic categories making up 14.3% of the total weight of bone (Fig. 5.1), but now the non-diagnostic category shows just how many other mammal remains were found, and tortoise now reflects a more realistic picture. The non-diagnostic remains which are almost all of mammalian origin makes up 74% of the total weight of the remains found. The OES remains comprise of 5.4% of the total weight of remains at the site and this is more that the total weight of the diagnostic remains at 5.2%. *Achatina* remains in the minority position regarding weight (1.1%) and NISP (0.9%).

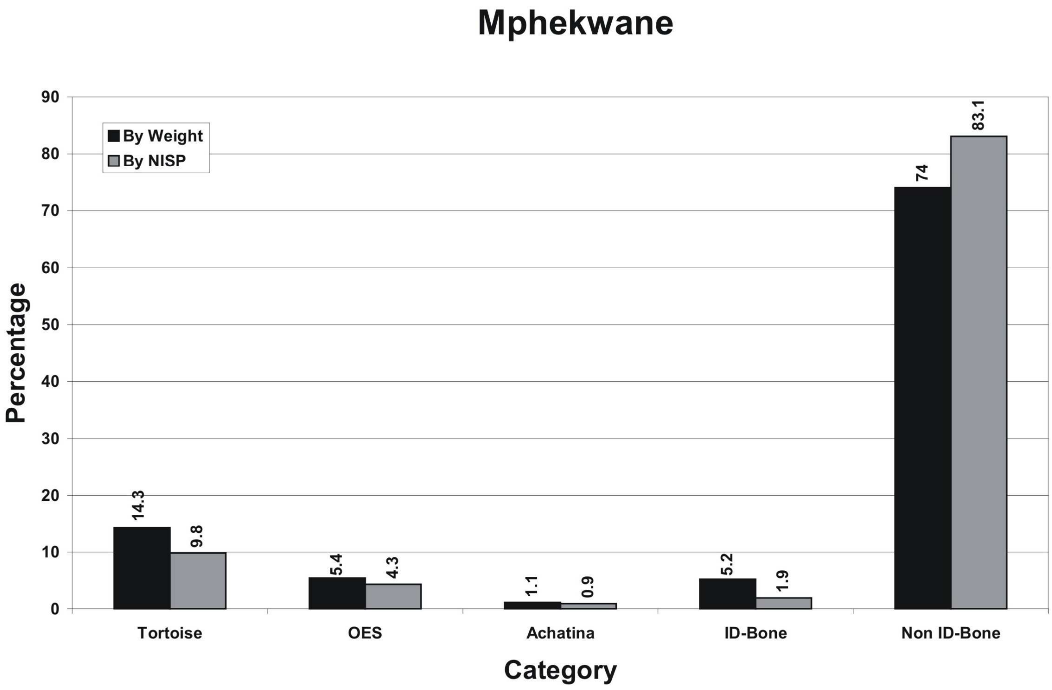


Figure 5.1: Tortoise, OES & Achatina compared to the diagnostic & non-diagnostic remains at Mphekwane.

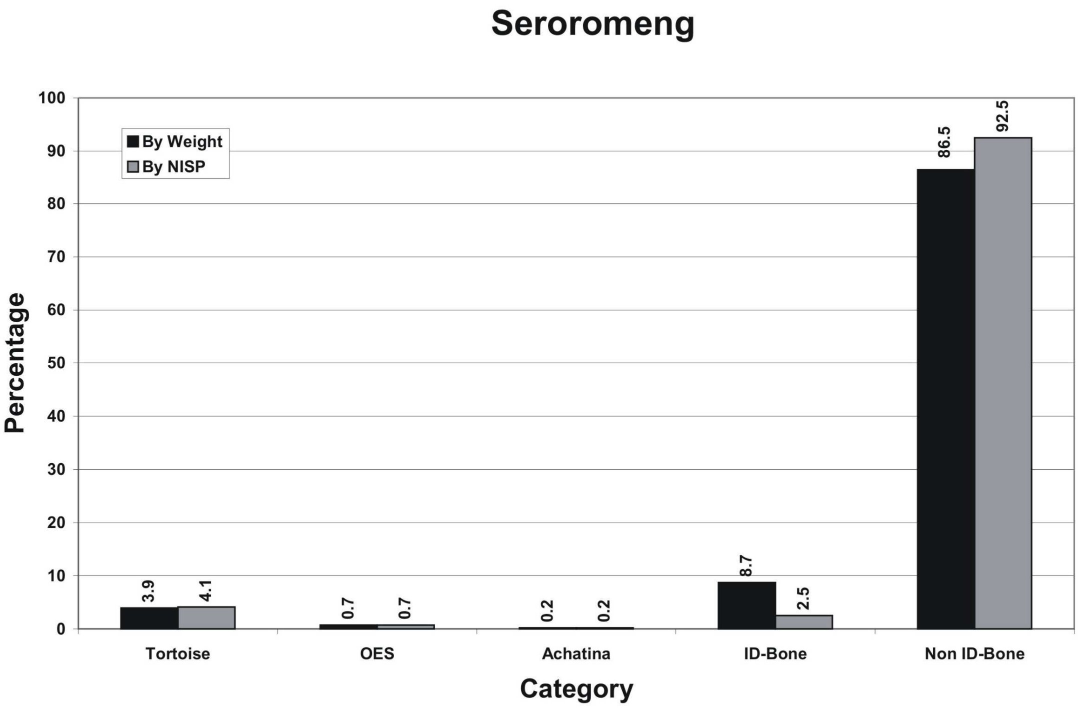


Figure 5.2: Tortoise, OES & Achatina compared to the diagnostic & non-diagnostic remains at Seroromeng.

At Seroromeng a different picture emerges. It can be seen in Figure 5.2 that tortoise remains are significantly less in weight than the diagnostic bone, representing only 3.9% of the total weight of remains found at the site, although they still dominate the diagnostic remains by NISP. The non-diagnostic remains constitute a very high percentage, at 86.5%, of the weight of the remains found at the site. OES as well as *Achatina* represent low percentages. OES comprises of 0.7% for both weight and NISP, while *Achatina* represents 0.2% for weight and NISP totals.

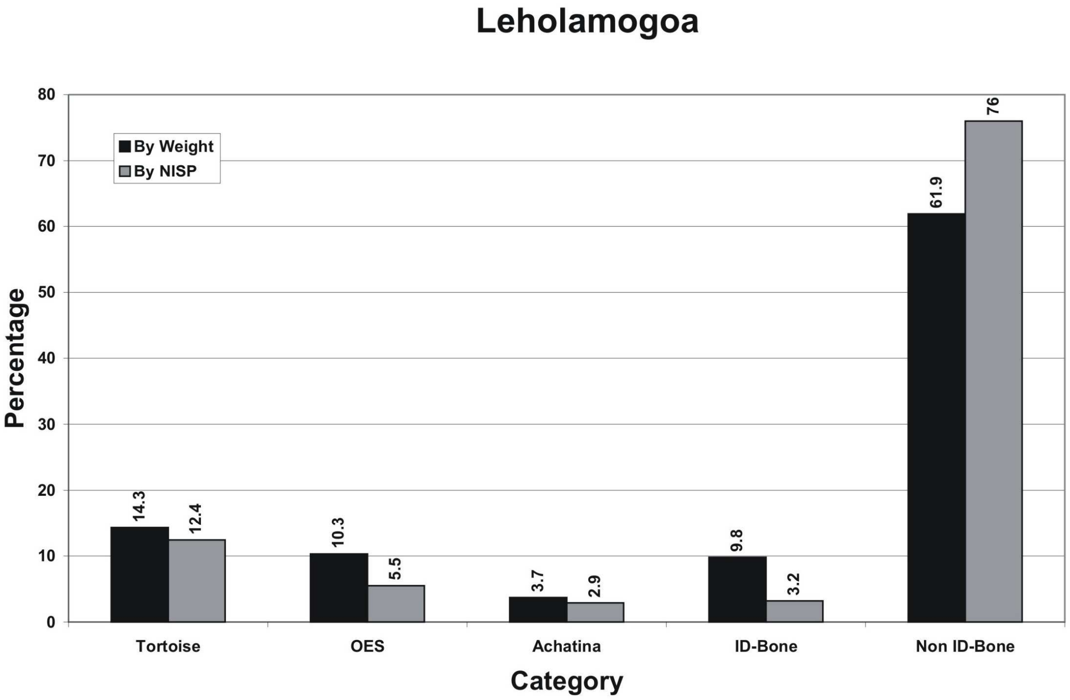


Figure 5.3: Tortoise, OES & Achatina compared to the diagnostic & non-diagnostic remains at Leholamogoa.

At Leholamogoa tortoise once again shows a dominant picture regarding weight and NISP over the other diagnostic categories (Fig. 5.3). At this site it is noticeable that the non-diagnostic remains only represents 61.9% of the total weight of remains found at the site. The OES remains also represent a high total of the weight, at 10.3% of the total weight for the entire site. *Achatina* is once again in the minority position, but does represent 3.7% of the total weight of remains found at the site.

At Mamaetla the tortoise remains does not dominate at all. The weight of the tortoise remains, at 1.9% of the total weight are even less than the weight of the *Achatina* remains at 2.4% (Fig. 5.4). As can be seen in Table 5.2, very few remains were found at Mamaetla and thus can not contribute any significant patterns.

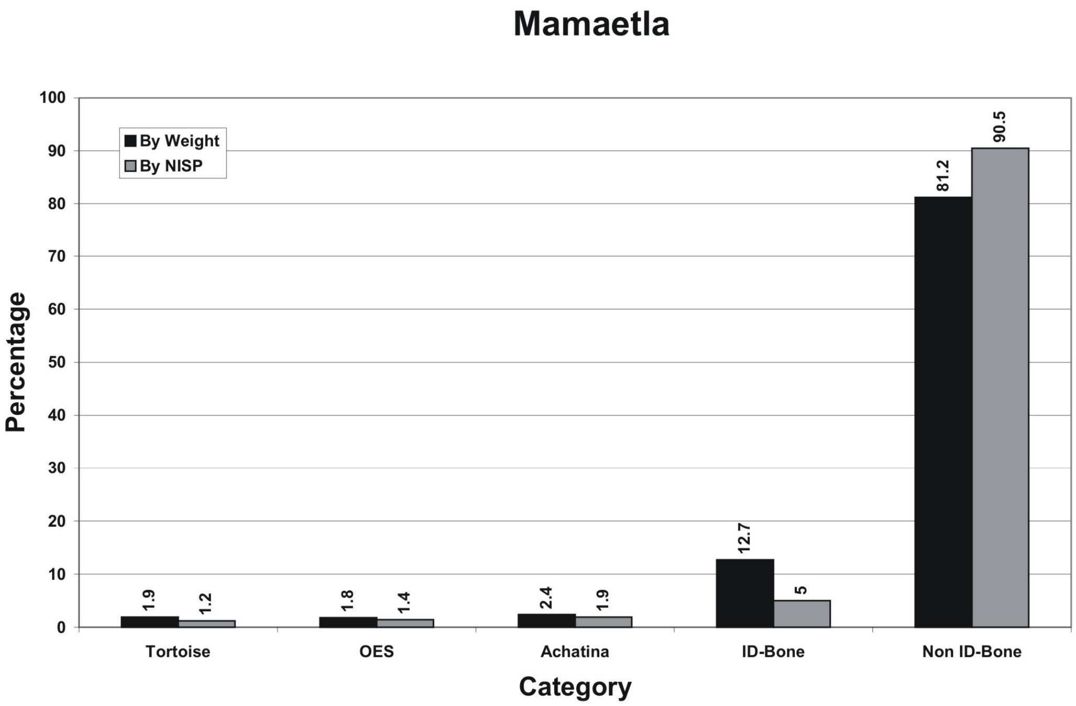


Figure 5.4: Tortoise, OES & Achatina compared to the diagnostic & non-diagnostic remains at Mamaetla.

5.5 Hunting strategies

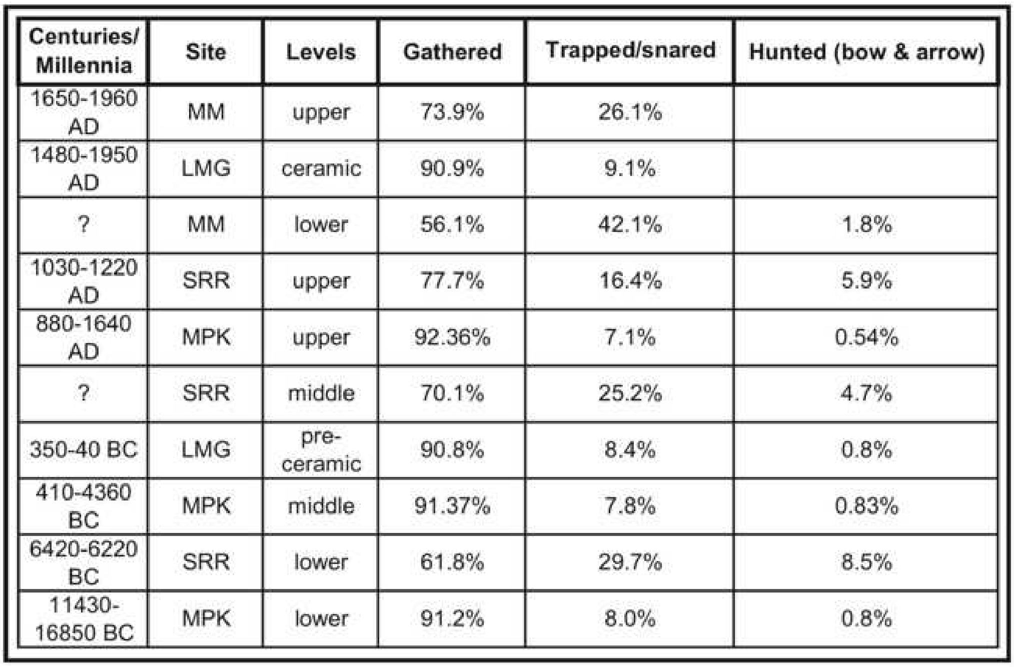
The faunal remains of the five sites were divided into size categories and these categories can be divided into animals that are gathered, trapped/snared or hunted with a bow and arrow (Tanaka 1976). A chronological chart (Table 5.3) was drawn up to see if acquisition strategies changed through time. The very small category animals could have been gathered or trapped/snared and could fall within either range but it was decided to place them within the trapped/snared category. The medium category animals could also have been trapped/snared or hunted with a bow and arrow, but were placed within the trapped/snared category. The reason for placing the very small and medium category animals within the trapped/snared category was because a test was done, placing these animals first in the one category and then the other and looking at the results. It was concluded that they showed a more realistic result when placed in the trapped/snared category.

According to the ethnography (Silberbauer 1996) a bow and arrow were used to hunt the very large and large antelope and giraffe. A rope snare was used to trap small antelopes, small carnivores, and birds. While the long pole and hook were used to hold springhare while another person digs down to the animal in its burrow. Sometimes fires are lit at the burrow entrance to half-suffocate the animal and drive it from the burrow. When they had dogs to help with the hunt, antelopes, small carnivores and warthogs were hunted with spears. Small animals were sometimes killed by clubbing, while young animals can be run down on foot (Tanaka 1976; Yellen & Lee 1976).

Gathered and trapped/snared animals are found right through the sequence in the Makgabeng and played an important role in the hunting strategies of the people. The gathering and trapping/snaring method of obtaining food can be done by all individuals, male and female, young and old. But hunting with a bow and arrow would only have been done by adult men (Wadley 1987). The very small, small and medium category animals that would have been trapped or snared are also represented throughout although their percentages fluctuate.

During the latter part of the LSA, the Wilton complex is associated with a move to hunting smaller more mobile animals presumably with bow and arrow or traps (Mitchell 2005). As can be seen in Table 5.3, no large or very large animals were hunted during the more recent times (last 600 years) in the area. The absence of these large bovids in the latter stages may indicate a depleted environment or, most probably, an improvement in trapping methods (Turner 1986). Aside from the absence of large animals in recent times, it is hard to see

Table 5.3: Chronological chart showing the percentage of hunting strategies.



Centuries/ Millennia	Site	Levels	Gathered	Trapped/snared	Hunted (bow & arrow)
1650-1960 AD	MM	upper	73.9%	26.1%	
1480-1950 AD	LMG	ceramic	90.9%	9.1%	
?	MM	lower	56.1%	42.1%	1.8%
1030-1220 AD	SRR	upper	77.7%	16.4%	5.9%
880-1640 AD	MPK	upper	92.36%	7.1%	0.54%
?	SRR	middle	70.1%	25.2%	4.7%
350-40 BC	LMG	pre-ceramic	90.8%	8.4%	0.8%
410-4360 BC	MPK	middle	91.37%	7.8%	0.83%
6420-6220 BC	SRR	lower	61.8%	29.7%	8.5%
11430-16850 BC	MPK	lower	91.2%	8.0%	0.8%

any clear patterns. A reason for this could be because the patterns are not chronological but indeed spatial. Spatially, Mamaetla and Seroromeng are situated close together (Fig. 5.5) in one drainage basin (Ga-Hlako) while Mphekwane and Leholamogoa are also close together but in a different drainage basin (Masebe). There seems to be a significant spatial distinction in their faunal numbers. Mphekwane and Leholamogoa consistently have fewer trapped and snared fauna than Mamaetla and Seroromeng. Such a spatial pattern could be because of sites being occupied during different seasons, different distribution resources, aggregation vs. dispersal sites or different people using the sites.

Wadley (1987) suggested in her Jubilee Shelter research (and based on Kalahari ethnographies) that communal big game hunts with poisoned arrows were only carried out in the aggregation phase of the hunter gatherers settlement cycle. In the dispersal phase only small animals were trapped and snared. The question can then be asked, whether we are looking at dispersal phase sites in the late phase of Makgabeng, or can some of the site components and occupation layers be thought of as aggregation phase? Wadley (1987) suggests distinguishing between an aggregation and dispersal site you need to look at the composition of the lithics, then the non-lithic artefacts and finally at objects or artefacts that may have religious connotations. Bradfield (2008) who examined all the remains of Leholamogoa found that because of the focus on small animals, the expedient technology with few formal tools and the absence of clear signs of ritual activity, the site was being used as a dispersal phase site albeit, one that saw decreasing use over time.

Seroromeng has the highest percentage of large animals (Table 5.3), and according to Sadr (2007b) there are obvious similarities between the distribution of lithics and the bone rich layers at the site. According to Wadley (1987) there will also be high numbers of beads at an aggregation site. At Seroromeng a total of 138 OES beads of which some were complete, others were complete but broken, while some were whole but unfinished and some were broken but unfinished were found. It could be that the site was used as an aggregation phase site in earlier times.

5.6 Relations to other sites in the vicinity

A few Late Stone Age sites were chosen to compare with the Makgabeng sites. The Thamaga sites from Botswana were used as much of this study was done on the same basis as those sites. All the other sites are situated in the area which was known as the Transvaal.

5.6.1 Thamaga Rock Shelters

Two sites in the Thamaga area were excavated, the Ostrich Shelter and the Radiepolong Shelter. Sadr and Plug (2001) found that the large and medium game fluctuated but made up about 20-30% of the remains through time, and their numbers were not effected by the introduction of domestic animals. At Mphekwane the large game were consistent throughout while the medium game rose and then dropped and levelled out towards the end. At Seroromeng both the large and medium game fluctuated and both showed a rise towards the end. At Leholamogoa the large game showed a slight rise and then dropped away being totally absent during the later occupation. The medium game displayed consistency during the earlier occupation, but then disappeared completely only to resurface once again, but they disappeared at the end. At Mamaetla the large game are only present in the earlier occupation while the medium game show a rise in the earlier stages and then level out towards the end. The large and medium game at the Makgabeng sites is definitely not as consistent as they are at the Thamaga sites.

Sadr and Plug (2001) found that small and very small game first rose and then dropped through time, dropping dramatically when domestic animals were introduced. At Mphekwane the small and very small game show a different pattern, while they also first rose and then dropped through time, they show a slight rise towards the end of the occupation. At Seroromeng, both small and very small game show a rise and then a drop, but while the very small game rise at the end, the small game drops to zero. At Leholamogoa the very small game fluctuates throughout, with a rise at the end and the small game show a rise and then a drop, but rises again at the end. At Mamaetla the very small game fluctuates but show a rise towards the end, while the small game drops and then rise towards the end. Except for the very small game at Seroromeng dropping towards the end, all the other sites in the Makgabeng show a rise in the small and very small game towards the end of the occupations which differs from the Thamaga sites.

Sadr and Plug (2001) found that tortoise remains were relatively constant, but dropped with the introduction of domestic animals. At Mphekwane tortoise remains show a rise, then a drop but levelled out towards the end. At Seroromeng tortoise initially show a drop then a rise and dropping again towards the end. At Leholamogoa tortoise drop initially, but then rise and drop

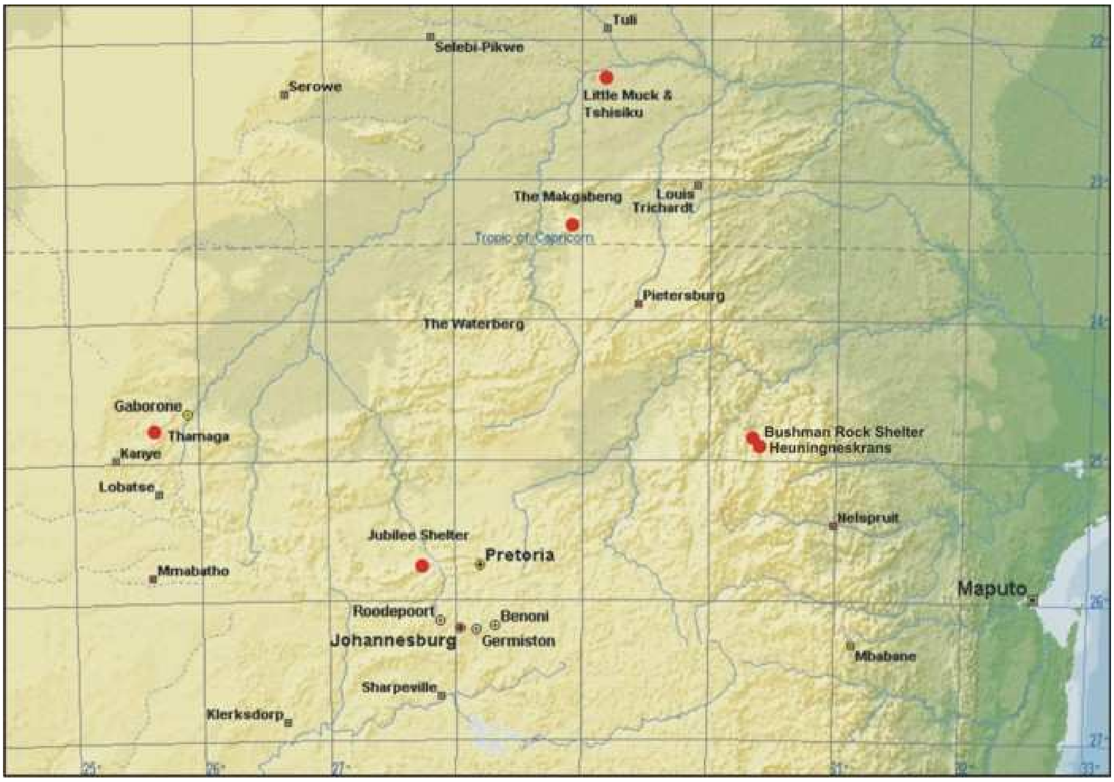


Figure 5.5: Location map of the sites in the vicinity (Amended map taken from Bradfield 2008).

again, but show a rise towards the end. At Mamaetla tortoise remains show a drop then level out, rising again and then drops towards the end. Only at Seroromeng and Mamaetla do tortoise remains drop like at the Thamaga sites.

Sadr and Plug (2001) found that the tiny animals, presumably introduced by humans, showed little change throughout the sequence. At Mphekwane the tiny animals show an initial rise, but then drop steadily towards the end. At Seroromeng the tiny animals at first drop a little then they rise but disappear to rise again towards the end. At Leholamogoa the tiny animals seem to be consistent but then there is a rise, after which they drop towards the end. At Mamaetla the tiny animals show a rise but then drop, being totally absent at the end. There is no such consistency at the Makgabeng sites as is present at the Thamaga sites.

5.6.2 Bushman Rock Shelter

This site covers the late Pleistocene and early Holocene and is dated between 9500 BP for the youngest level to 12 950 BP for the oldest level (Plug 1981). Animals were hunted, trapped or snared and gathered with zebras, warthogs and bovids being the most important food animals. Tortoises and *Achatina* were gathered in large quantities to supplement the protein supply. There was a change in the hunting techniques during the LSA occupation at the site. The large animals occur in all levels which would have been projectile hunted, while small territorial and nocturnal browsers only occur in the top layers, suggesting that trapping and snaring techniques were now used to enable hunters to obtain a larger variety of animals (Plug 1981). At Mphekwane, which is the only site that has such old dates as BRS, very large and large game also occur throughout, but so too do medium, small and very small animals, though it does seem that their numbers increase towards the top levels. As in the case of BRS, tortoise and *Achatina* occur throughout.

5.6.3 Heuningneskrans

This site indicates a time span of 9 000 BP to 23 000 BP (Beaumont 1981; Klein 1984b). Except for OES not being present in the lowest layer, OES and *Achatina* are found throughout all the layers, while tortoise seem to be absent in the very old layers, except one, but does eventually appear towards the top layers and continues throughout (Beaumont 1981). Klein (1984b) re-examined the faunal remains from Heuningneskrans and indicated the MNI and NISP's for the site, but unfortunately he omits the OES, *Achatina* and tortoise numbers. But he does suggest that there are no significant faunal change through time, nor that there was a substantial environmental change through time. He found that large mammal bones were found throughout the Heuningneskrans deposit.

He also suggests that the absence of the largest available ungulates could be because the smaller animals were easier to catch and that if the larger animals were obtained, they would have left most bones at the kill/butchery site (Klein 1984b). Once again, at Mphekwane, which is the only site that has such old dates as Heuningneskrans, large game also occur throughout, but so too do medium, small and very small animals, though it does seem that their numbers increase towards the top levels. As in the case of Heuningneskrans, OES and *Achatina* occur throughout. Tortoise remains occur throughout at Mphekwane, while they tend to surface later at Heuningneskrans.

5.6.4 Tshisiku Shelter

Van Doornum (2005) found at her Tshisiku Shelter site that OES showed an increase from the early pre-ceramic period and then decreased in the late pre-ceramic period (1220-1010 BC) and from there they remained stable during the contact period. *Achatina* showed a similar pattern up to the late pre-contact period, but then a slight increase occurred from the pre-contact period to the contact period before the masses decreased quite sharply towards the surface. The frequency of tortoise collected at the Tshisiku shelter show an increase from the lowest levels of the pre-contact occupation, but with one sharp decrease. The tortoise bone decreased again in the next spit (1220-1010 BC), but increased again in the contact period. However the frequencies decrease again towards the surface (Van Doornum 2005).

When comparing the Tshisiku Shelter site with the Makgabeng sites, we note the OES remains show a rise towards the end at Makgabeng, while the Tshisiku site shows a decline. This is not so for Leholamogoa where OES numbers also show a decline at the end. The *Achatina* from the Tshisiku site resemble the pattern found at the Makgabeng sites where there is a rise during the middle phase and then a drop towards the end of the occupation of the sites. As with the Tshisiku site it seems that at the Makgabeng sites the tortoise remains start with a rise, reaching a peak and then decreasing towards the end of the occupation. It is only at Leholamogoa where the tortoise remains starts to rise again towards the end of the occupation.

5.6.5 Little Muck

At this site there is a relatively strong continuity in forager residues during the 1st millennium AD, followed by a radical decline in the 2nd millennium AD. Excavations in the drip line area shows a clear increase in the frequencies of OES and *Achatina* between the pre-ceramic deposits and those above (Hall & Smith 2000). From here there is a steep decline in both OES and *Achatina* and keeps on declining to the upper layers. They attribute to the increase in shell at Little Muck as simply a more intense subsistence focus on ostrich and *Achatina*.

At the Makgabeng sites the OES rises towards the upper layers at Mphekwane and Seroromeng, while they dip at Leholamogoa and Mamaetla. *Achatina* also dips at Mphekwane, Seroromeng and Mamaetla but levelling out at Leholamogoa towards the end of the occupation. Hall and Smith (2000) mention that tortoise remains dominate the bone count at Little Muck but they do not give a thorough description to use as comparison.

5.6.6 Jubilee Shelter

Hunter-gatherers occupied the Jubilee Shelter over a period stretching from the Late Pleistocene to the 7th century AD. Small to medium-sized bovids were the basis of the economy with gathered and snared animals contributing throughout the sequence. There were only minor changes over time in the species composition, except in the top pottery levels when small bovids are more abundant than medium to large ones (Turner 1986). It seems that tortoise remains increased from the earliest layers but then declined towards the end of the occupation. Only one piece of *Achatina* was identified (Turner 1986). The OES has low numbers in the early period, but then rises sharply, dips, rises again and then dips towards the end (Wadley 1987).

In the case of the Makgabeng sites, gathered and trapped/snared animals also contributed throughout the sequence and it is clear that large and very large animals decline towards the end of the occupation. Tortoise remains seem to show a similar pattern at Mphekwane, Seroromeng and Mamaetla. A big difference between Jubilee Shelter and the Makgabeng sites is the almost total absence of *Achatina* at Jubilee, while large numbers occur at Makgabeng. The OES at Makgabeng also displays a different pattern to those described for the Jubilee Shelter.

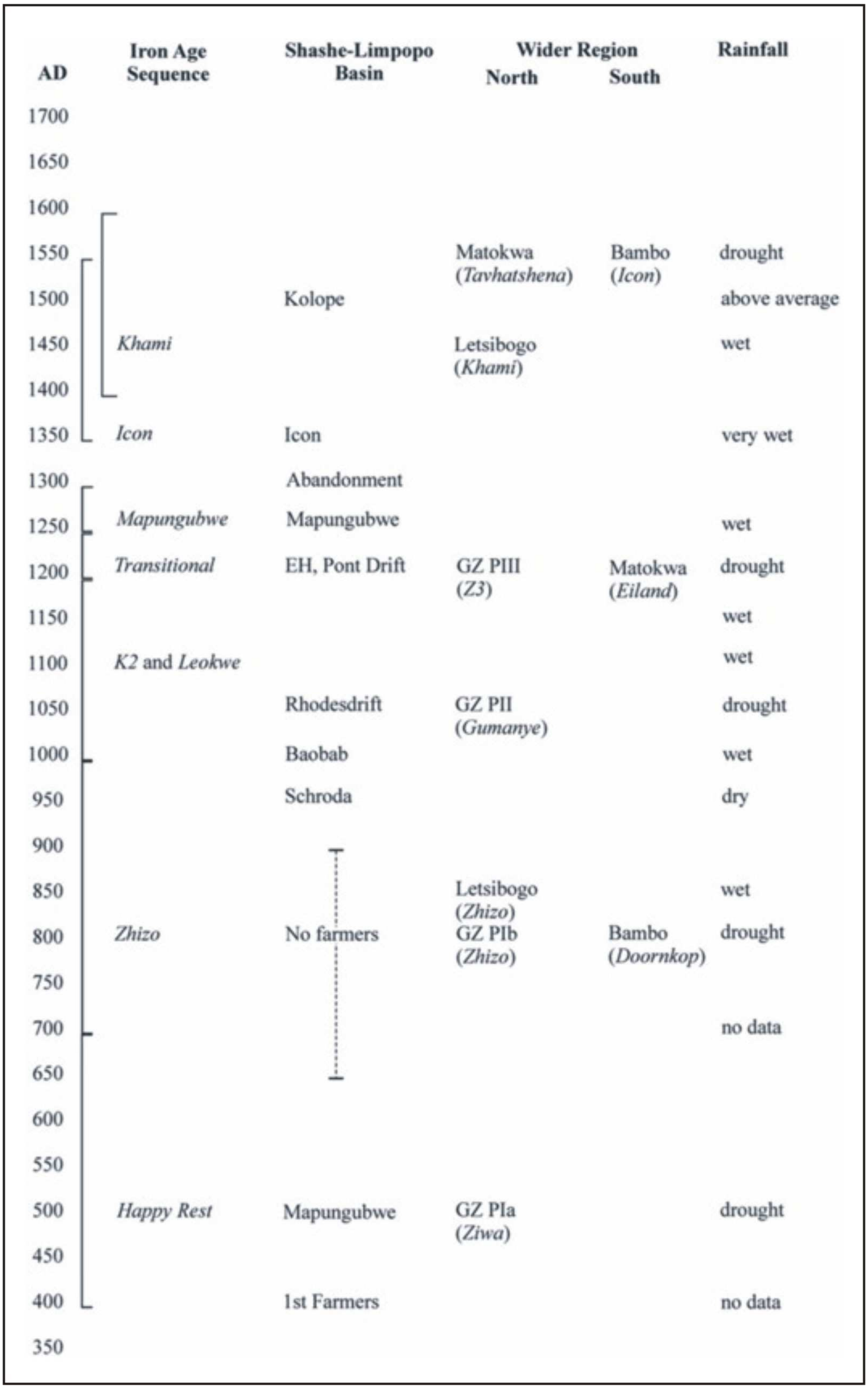
5.7 Conclusion

Previous excavations in the Makgabeng have shown that hunter-gatherers living there were not influenced by the farming communities living in the surrounding area at the same time (Mason 1962; Sampson 1974). They base their evidence on the lack of grindstones, grooved stones and pottery between AD 900-1000. The fact that there is a general decline in material culture in the upper layers would suggest that sites were less intensely occupied during this time.

Some of the Makgabeng sites have a long sequence of occupation, stretching over thousands of years and climate and environmental changes occurred during this time e.g., Huffman 1996, 2008; Tyson *et al.* 2002; Holmgren *et al.* 2003. As can be seen in Table 5.2, changes in the rainfall pattern occurred on a regular basis. This would have led to changes in the faunal species and abundance of some of the animals. It could also have led to some of the sites being abandoned for a number of years before the occupants returned or newcomers inhabited the sites. It is thus surprising that there is so little change in the faunal composition at the Makgabeng sites through time. This would lead me to conclude that the occupants of these sites were hunter-gatherers that only in later times came into contact with herders and Iron Age farmers and that the contact lead to these rock shelters being abandoned.

In later times when the hunter-gatherers came into contact with herders and even Iron Age farmers it would have lead to more changes. It would now be

Table 5.4: Climatic changes and rainmaking activity, based on new isotopic and archaeological data (From Huffman 2008).



AD	Iron Age Sequence	Shashe-Limpopo Basin	Wider Region		Rainfall
			North	South	
1700					
1650					
1600					
1550			Matokwa (*Tavhatshena*)	Bambo (*Icon*)	drought
1500		Kolope			above average
1450	*Khami*		Letsibogo (*Khami*)		wet
1400					
1350	*Icon*	Icon			very wet
1300		Abandonment			
1250	*Mapungubwe*	Mapungubwe			wet
1200	*Transitional*	EH, Pont Drift	GZ PIII (*Z3*)	Matokwa (*Eiland*)	drought
1150					wet
1100	*K2* and *Leokwe*				wet
1050		Rhodesdrift	GZ PII (*Gumanye*)		drought
1000		Baobab			wet
950		Schroda			dry
900					
850			Letsibogo (*Zhizo*)		wet
800	*Zhizo*	No farmers	GZ PIb (*Zhizo*)	Bambo (*Doornkop*)	drought
750					
700					no data
650					
600					
550					
500	*Happy Rest*	Mapungubwe	GZ PIa (*Ziwa*)		drought
450					
400		1st Farmers			no data
350					

possible for them to obtain domesticated animals, either to eat or to start herding them. Domesticated animals could have been obtained through exchange or having a working relationship with the supplier. Having such a meat supply nearby would have led to less animals being hunted, especially the larger animals as can clearly be seen in the faunal remains from the Makgabeng during the late phase (AD 1700-1900). Smaller animals that could be trapped or snared would still have been hunted, so too gathered animals to supplement their food supply.

Is it possible for us to determine if we can connect Ehret's Limpopo Khoekhoe with any of the sites in the Makgabeng? The Limpopo Khoekhoe would have brought sheep/goat with them which would have shown a rapid and abrupt change from hunting-gathering to herding like Sadr and Plug (2001) found at the Thamaga sites. The lack of large numbers of sheep/goat remains at all the sites would suggest that the sites were not occupied by herders. But then there are indeed small changes that are visible in the faunal remains like the fact that Mpkekwane and Leholamogoa seem to have fewer trapped and snared fauna than Seroromeng and Mamaetla. This could suggest two populations in the two different valleys, MPK and LMG having been occupied by hunter-gatherers, while SRR and MM being occupied by herders. The dates and ceramics would suggest that sheep/goats were brought into the area before the arrival of the Iron Age farmers.

It is clear that a hunter-gatherer way of life was present in the Makgabeng. The fact that sheep/goat remains were found amongst the faunal remains and the numerous rock art depictions of sheep prove that the animals were also present. Whether they were in fact kept or stolen and eaten, remains unclear. It would be important that future research in this area find more sheep/goat remains with more accurate dates.

To address the questions posed in chapter one, of was there a gradual change to herding which would suggest diffusion, or was there a abrupt introduction to livestock being brought in by migrating groups of people. The faunal analyses would suggest a gradual introduction into the area because of the lack of sheep/goat remains. Given the spatial distinction in faunal numbers between Seroromeng and Mamaetla on the one hand and Mphekwane and Leholamogoa on the other, one can argue, following Sadr and Plug (2001), that in one area or the other, the hunter-gatherers may have had more access to livestock.

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