

**The analysis of ceramic material excavated from
two neighbouring Sotho-Tswana homesteads
located on the South African Highveld.**

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Science.

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

A handwritten signature in black ink, appearing to read 'Hodgson', written over a horizontal line.

Christopher Hodgson

4 day of November 2021 at Randburg

Abstract

Iron Age research has rarely focused on ceramic assemblages and spatial distribution patterns within and between homesteads to investigate intra and inter-site variation. This research aims to identify the ceramic assemblages and explain the distribution patterns of vessels within two neighbouring homesteads: Sun Shadow and Boschoek. This was achieved using a combination of ceramic analysis, statistical analysis, and GIS techniques, to investigate if there were significant differences within, and between the two homesteads. In the morphological comparison, there were no significant differences between the ceramic assemblages, however, there was a significant difference in the distribution of vessels both within and between the two homesteads. These results show that, overall, there was a strong likelihood that the two homesteads were similar in composition. From this, several research avenues can be identified to help us better understand the history of precolonial Gauteng.

GIS, Inter/Intra-site analysis, Late Iron Age, Kweneng

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Chapter 1 Introduction

The last 2000 years have seen great changes in the South African interior. The arrival of the Bantu farming communities onto the Highveld plateau around AD 1600 marked the highpoint of the period known as the Late Iron Age (AD 1300 - 1820) (Huffman 2007; Sadr 2020a). Iron Age research in southern Africa has been focused on the linking of stone-walled settlements to various cultural groups, and the social organisation and regional interactions between these groups (amongst others: Maggs 1976; Huffman 1986, 2007; Mason 1986; Lane 1998; S. Hall 1998; Boeyens 2000, 2003; Fredriksen 2007; Anderson 2009; Boeyens & Hall 2009). Research into the smaller-scale interactions within and between homesteads has received considerably less attention. This is an area of research that has the potential for revealing new information about how Late Iron Age homesteads interacted. In this research project, I attempt this, using the material culture from two neighbouring Sotho-Tswana homesteads located south of present-day Johannesburg.

Study site

The neighbourhood under investigation is located in the foothills of the Suikerbosrand within the mega-site known as Kweneng (Taylor 1984; Sadr 2019a). The two neighbouring homesteads are situated around a rocky ridge approximately 300 m west of the Suikerbosrand Nature Reserve boundary fence (Figure 1.1) on the farm *Schoongezicht Landbouhoewes 64*, 26°29'58.25"S 28° 8'59.72"E (Taylor 1984). Today the neighbourhood is covered in *Vachellia tortilis* trees obscuring many parts of the ancient ruins.

In Kweneng, several homesteads have been investigated since Revil Mason excavated Suikerbosrand 101-103/73 in 1973 (published in 1986). Mike Taylor (1984) noted the five homesteads that make up the neighbourhood under investigation and published the first map of the Sun Shadow homestead. In 1986

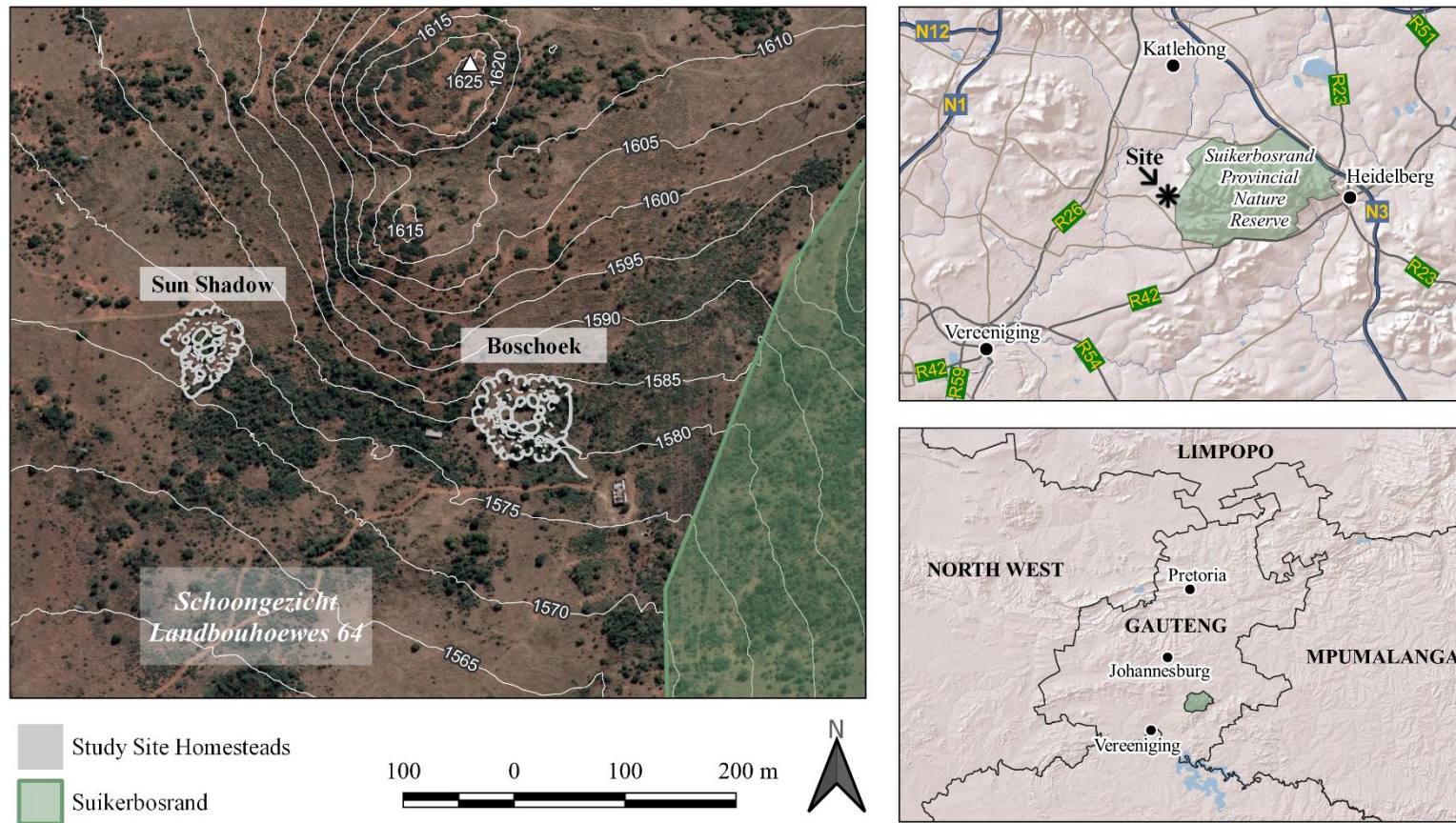


Figure 1.1: The two homesteads' location in relation to the Suikerbosrand Nature Reserve within Gauteng, South Africa. (Sources: SGSWS project, Google Earth, ESRI World Shaded Relief, OpenStreetMap).

the principal dwelling of Sun Shadow was excavated by three University of the Witwatersrand (Wits) archaeology Honours students (see Kaplan 1986; Sales 1986; de Wet 1987). In the same year, Tom Huffman (1986) published the first map of the neighbouring Boschoek homestead (also see Huffman 1988). Sun Shadow and Boschoek were both excavated again in five excavation seasons by Wits archaeology undergraduates between 1991 and 1994 with neither site being published in great detail. It is important to note that Boschoek was excavated more extensively than Sun Shadow. In 2019, the material collected during the 1994 Sun Shadow excavation was the subject of my Honours project (Hodgson 2019), which focused on the positioning of objects within each excavated hut and the quantity of objects per lobe. This dissertation builds on that project. Both homesteads under investigation conform to Maggs' (1976a) Type Z, Taylor's (1979) Group II, and Huffman's (2007: 38-41) Molokwane architectural style. Sadr & Mshuqwana (2020) and Sadr (2021) have noted that some of the homesteads within the wider Kweneng landscape can be a mixture of stone-walling styles. These homesteads may represent extended or multiple occupation periods. Ceramic sherds from Sun Shadow and Boschoek belong to the *Buispoort facies* of the *Icon Sub-branch* of the *Urewe Tradition* (Huffman 2002). More will be said about these ceramic identifications later in this report.

Following a research hiatus of about 15 years, a new round of Wits postgraduate investigations commenced under the leadership of the *Southern Gauteng Stone-Walled Structures (SGSWS) project* (See Sadr 2019a for the Kweneng layout and Sadr 2020b for publications relating to Kweneng and the SGSWS project). This research forms part of the SGSWS project.

Aims & objectives

This research aims to identify the ceramic vessel assemblage and explain the distribution patterns within two neighbouring homesteads in Kweneng. This is accomplished through reconstructing all the vessels excavated at the two homesteads through temporary refitting, profile drawing and photography; establishing an appropriate vessel morphological classification using size and shape

as the main attributes; mapping of the vessel type distribution patterns in the two homesteads; and analysing the vessel assemblage and spatial distribution with GIS and statistical analysis. Finally, I test the null hypothesis that there is no significant difference in the pottery assemblages and distribution patterns between and within the homesteads. Any variations from this expected pattern are investigated and explained, if possible.

Research problem and rationale

Rarely has Iron Age research focused on ceramic assemblage and spatial distribution patterns within and between homesteads to investigate intra and inter-site variation. The rationale is, firstly, to contribute to a better understanding of the ceramic diversity in Late Iron Age homesteads on the South African Highveld; and secondly, to investigate and report on the under-analysed archaeological collections stored in the Wits University archaeological repository.

Outline of dissertation

Chapter 2: Literature review

This chapter focuses on the spread of Iron Age communities on the Highveld and the development of Iron Age research, as well as ceramic and intra-site analysis.

Chapter 3: Methods

This chapter describes the methodology used to address the research questions.

Chapter 4: Results

This chapter presents the findings of the research, in five sections. Section 1 describes the ceramic samples recovered from Sun Shadow and Boschoek. Sections 2 and 3 present the results of the intra-site and statistical analysis for both homesteads. Section 4 presents the results of the inter-site and statistical analysis of the Schoongezicht neighbourhood. Finally, section 5 looks briefly at the non-ceramic material recovered from both homesteads.

Chapter 5: Discussion

Here I evaluate the null hypothesis and then discuss the anomalies as well as the limitations identified during the project.

Chapter 6: Conclusion

In the final chapter, I summarise the finding of the research and recommend possible future research directions.

Chapter 2 Literature Review

Introduction

This review is divided into two parts: the first looks at the spread of Iron Age communities and the development of Iron Age research on the South African Highveld; the second focuses on the two research methods, ceramic, and intra-site analysis, which are used in this study.

Highveld and Iron Age archaeology

The area that makes up the South African Highveld varies according to which criteria are used: topography or ecology. For this research, I use ecological criteria. The Highveld is the interior region bounded by the Bushveld to the north and northwest, the Mpumalanga Lowveld to the northeast, the Lesotho and Eastern Cape highlands to the south, KwaZulu-Natal to the east, and the Great Karoo to the west (Low & Rebelo 1996). Early Iron Age sites have been recorded on the northern edge of the Highveld most notably at Broederstroom (Mason 1986; Huffman 1993).

Research in the Late Iron Age history of the Highveld was facilitated by advancements in aerial surveying technology during World War II. This provided archaeologists with the means to analyse vast stretches of land in a relatively short time (W. Miller 1957; Mason 1968). Iron Age research intensified between 1965 and the early 1990s through the efforts of archaeologists such as Revil Mason, Tim Maggs, Mike Evers, Kobus Dreyer, and Tom Huffman. The main focus was on categorising the architectural style of the many stone-walled structures. Three main classification systems were developed during the 1960s and 70s based on different visual and architectural methods. In the northern part of the Highveld, Mason developed a classification system using visual aspects to divide settlements into nine classes, later expanded to 11 classes in 1986 (Mason 1968, 1986: 335-343). In the southern Highveld, Maggs used the position of primary and secondary walling to divide settlements into four Types (Maggs 1976a, 1993a). In 1979, Mike Taylor used a variation of Maggs' (1976a) classification system for the Vredefort Dome area creating three Groups (classes) of different settlement types (Taylor 1979).

Huffman (2007: 31-54) attempted to streamline the different systems to create one classification system, divided into the Central Cattle Pattern and Zimbabwe Pattern, of which the Schoongezicht neighbourhood homesteads belong to the Molokwane style in the Central Cattle Pattern.

In the 1980s, new approaches towards Iron Age research began to emerge with Huffman's (1980) assessment of ceramic analyses to determine the best procedure for defining stylistic entities identifying cultural sequences. Huffman based his early migration models on the historical linguistics of the time (see Huffman 1970; also see Phillipson 1974, 1977). In Huffman's (1989) adaption of the model, the migration of Bantu speakers from the Great Lakes areas occurred in three streams. The main idea for the migration model was that by examining the changes in ceramic traditions, the movements of immigrants could be traced as they interacted with other cultural groups (Huffman 1989). During this time, excavations conducted around the country were primarily focused on establishing ceramic sequences. By the mid-1990s, research began to shift to other regions of South Africa with little being conducted on the Highveld (Mitchell & Whitelaw 2005). With developments in remote sensing technology, there has been a revived interest in Highveld Iron Age research, most notably by Karim Sadr and his Southern Gauteng Stone-Walled Structures (SGSWS) project (Sadr 2012, 2016a, 2016b, 2016c, 2017, 2019a, 2019b, 2019c, 2020b, 2021; Sadr & Rodier 2012; Hunt & Sadr 2014; Sadr & Mshuqwana 2020).

It is generally accepted that the Late Iron Age (LIA) in southern Africa began around AD 1300 (Huffman 2007: xi). Some Iron Age researchers start the LIA around AD 1000 (e.g. Vogel & Fuls 1999: 97). The end of the LIA is around AD 1840 with the arrival of the Voortrekkers in the modern-day region of Gauteng (Huffman 2007: xi). During the LIA when the ancestors of the Sotho-Tswana people migrated into modern-day South Africa from modern-day Kenya and Tanzania during the 14th century AD, introducing the Moloko ceramic tradition to southern Africa (Huffman 2002, 2020; Mitchell 2002: 344; Boeyens 2003; Mitchell & Whitelaw 2005). By the early seventeenth century AD the Sotho-Tswana had migrated into the Bankenveld and Bushveld regions to the west and north of the Highveld (S. Hall 2007, 2009; Legassick 2010). The expansion into the southern

interior by LIA communities took place around AD 1640, during a warmer and wetter period within the 'little Ice-Age' (Ellenberger 1912; Mason 1968; Maggs 1974; 1976a, 1976b; 1993; Rasmussen 1975; Taylor 1979; Mason 1986; Vogel & Fuls 1999; Huffman 2002; Mitchell & Whitelaw 2005; S. Hall 2007, 2009; Legassick 2010).

The move out of the Bankenveld region and into the Highveld areas of southern Gauteng and the Free State by the Sotho-Tswana is believed to have been caused by population growth or political pressure for access to arable land for grazing and for cultivating crops (Maggs 1976b; S. Hall 1995: 312-313; Mitchell 2002: 360). 360The Kwena lineage of the Sotho-Tswana dispersed from the Bankenveld in three clusters: one moved up the Marico River, another down the Crocodile River in the area around Brits, and a third across the Vaal River to Ntsuanatsatsi in the Free State and as far south as the Caledon River (Maggs 1976b: 308; Legassick 2010). The oral tradition of the Kwena people states that the takeover of the Fokeng cluster south of the Vaal River was legitimised by intermarriage with the Fokeng inhabitants (Legassick 2010). The Kwena/Fokeng chiefdom migrated back north across the Vaal River into the southern Gauteng area occupying the Heidelberg region (Ellenberger 1912; Rasmussen 1975; Maggs 1976a; Huffman 2002; Legassick 2010).

The dispersal out of the Bankenveld region by the Sotho-Tswana coincides with the increased use of dry-stone walling as a substitute for wood used in the construction of cattle kraals and boundaries of individual homesteads. Towards the end of the 18th century, political centralisation by the Kwena and Hurutshe resulted in the aggregation of settlements into larger towns, consisting of large populations. These towns or 'mega sites' were constructed out of many individual homesteads conforming to the Molokwane layout, this style of construction is frequently used throughout all three sectors of the Kweneng landscape, including the study area (Hall 2012:307). These pre-*Difaqane* communities were laid out according to the Central Cattle Pattern (Huffman 1986, 1989a, 2001, 2007: 31-45; Mason 1986; Dreyer 1990; S. Hall 2007, 2009).

The development of the Central Cattle Pattern model was first observed in the ethnographic work of Schapera (1935) which was then formulated by Kuper (1980; 1982) who imposed a structuralist perspective on traditional South African space and the role of women within these traditional spaces (Kuper 1982). The model aimed to account for the “number of underlying similarities in the social structure, marriage practices, kinship terminology and settlement layout of the Nguni speakers of the Eastern Cape, Natal and neighbouring areas (Lane 1994: 54). In these cultural groups, there was a distinct division between gender and sacred spaces within the homestead. Kuper (1982) states the Bantu culture groups display “...left-female/right-male and back-sacred/front-profane oppositions which govern the layout of the homestead through the way these oppositions are expressed can be visualised in apparently diametrically different ways” (Evers 1984: 236).

However, this is hard to prove archaeologically as the evidence for this has not been found and no in-depth analysis has been done (Lane 1998: 198). This interaction between gender and space is “derived from a theory about the relationship between worldview, social organization and settlement pattern... [and] can be found among patrilineal Eastern Bantu-language speakers who use cattle for bride wealth” (Badenhorst 2009: 149). Huffman (1982; 1986) later applied this model and idea to the archaeological record, underpinning the importance of cattle to particularly Eastern Bantu speaking communities south of the Shashi-Limpopo Confluence.

The Central Cattle Pattern model to understanding archaeological communities has been questioned by several authors including Lane (1994) and Badenhorst (2009). The main critic is in the application of the model to the Early and Middle Iron Age and the lack of “conclusive” evidence outside of archaeological evidence i.e., lack of oral traditions and the supporting historical linguistical affiliation to occupants of these specific archaeological settlements (Lane 1994: 55). Whilst Badenhorst (2009) focuses on the distinct lack of diagnostic features associated with the Central Cattle Pattern in the Early and Middle Iron Age in Southern Africa. M. Hall (1984a) criticizes the model for its lack of defined time frame pointing out that there would have been changes in conceptual space through time (M. Hall 1984a: 76). Secondly, Kuper (1980;1982) did not make use of the ethnographic and archaeological evidence available on the Sotho-Tswana in the Southern Highveld. Finally, that

Kuper (1980) stereotypes the Zulu homestead, only drawing on outdated observations and structuralist analysis of the past whilst there was evidence to show otherwise (M. Hall 1984a: 77-78).

Twentieth-century ethnographies indicate that during the post-*Difaqane* period, the Sotho-Tswana constructed their settlements in clusters referred to as *motse* or *kxôro* (Schapera 1935: 204-205). Schapera (1935: 205) referred to these clusters as ‘wards’ and the settlement as a ‘village’ or ‘town’. Regardless of its size, each ward was socially and administratively independent from other wards within the village. These ethnographic terms have political and administrative implications that are difficult to detect in archaeological ruins. To avoid this issue, a settlement cluster will be referred to as a ‘neighbourhood’ as it can be used to differentiate between the area around the study site and the wider concentration of stone walled structures in this part of Kweneng. In this context, the term ‘neighbourhood’ is defined as being “a residential landscape that integrates households, families, and individuals within a wider social context, typically under the conditions of urbanization and increasing social complexity” (Pacifico & Truex 2019: 12).

A cluster of individual homesteads was made up of a single or several families forming these neighbourhoods (Schapera & Goodwin 1962: 145; Hammond-Tooke 1984). Where several families made up a single homestead, the non-related families were divided by spaces between adjoining courtyard walls (Hoernlé 1962: 91). The courtyards of related family units, such as a father and married sons, were physically connected with a shared central space surrounded by a low earthen wall or wickerwork screen (Molema 1920: 115; Hoernlé 1962: 91; Schapera & Goodwin 1962: 145). Clustering of huts can be seen in several Sotho-Tswana sites in the Bushveld, most notably at Molokwane (Pistorius 1994), Marothodi (Anderson 2009) and Lebenya (Jordaan 2016). The methods used differ between researchers. A combination of ethnographic and archaeological examples will be the method employed in this research project. Positioning within a homestead (regardless of family unit(s) size) conformed to strict social positioning rules, where proximity to the headman’s court relates to the social status of the individual. Social positioning rules extended down to the positioning of a man’s wife or wives on either side of him. At Molokwane, Pistorius (1992, 1996) identified, using ethnographic reports,

that the senior wife's hut was placed to the right, whilst the junior wife's hut was to the left of the man's hut.

The Sotho-Tswana huts were commonly built in a cylindrical shape consisting of vertical poles and wickerwork walls plastered in mud and cow dung. Thatched roofs were supported by a central vertical pole, or the roof poles were only supported by the walls and outer veranda poles where the roof line extended beyond the walls (this is the style most commonly found in South Africa, see Mason's 1986 description of LIA huts found at Olifaanspoort and Klipriversberg). The floors of both the hut and veranda were made of beaten earth and covered with a coating of mud and cow dung (Schapera & Goodwin 1962: 145; Larsson 1985; Frescura 1986). In a typical Molokwane settlement, huts were constructed in a circular to oval or cone-on-cylinder shape, often a row of upright stone slabs was placed around the circumference of the dwelling (Schapera 1935; Maggs 1972: 54). Internally, a low earthen wall or platform divided the front of the dwelling from the rear; this area was generally used for storage (Taylor 1979; Maggs 1993b: 33), with personal belongings like fur cloaks hanging from the walls (Maggs 1993b: 33).

Entrance to the dwelling from the veranda was through a small doorway sealed off by a sliding thick hardwood plank door (Maggs 1993b: 33). Hearths were positioned in the centre of the hut or on the veranda (Maggs 1972: 54). Exterior kitchens were marked by a semicircle of low stonewalling in the front lobe (Huffman 1986: 300). The arrival of Europeans and missionaries in the mid to late 19th century marked a gradual (at first) then rapid change in the way that Sotho-Tswana communities built and interacted with space within and between the homesteads. An example of this change is the method of hut construction changed from circular to square. In addition to this the influence of missionaries during the same period on the way that Sotho-Tswana communities interacted with spiritual and religious spaces within the homestead (Reid et al. 1997).

Each household included numerous clay, wooden and weaved utensils used for the collection, storage, preparation and consumption of food. Clay pots were used for the brewing and consumption of beer and in the cooking of food (Schapera & Goodwin 1962: 145-146; Arthur 2003). Metal objects like axes, adze and spears

were commonly found in Tswana households (Schapera & Goodwin 1962; Maggs 1976a, 1993b). Where metal was in short supply, these objects were made out of stone or bone (see Maggs 1976a: 293 descriptions of Type Z industry). The destruction and re-establishment of a homestead was common practice when a headman or chief died (Schapera & Goodwin 1962: 145). In reality, this might not have always taken place given the vast amount of stone-walling we see today. It is more likely that on the departure from a homestead, building materials like timber would have been removed to be used elsewhere leaving only the stone walls.

Towards the end of the LIA, the rise and expansion of the Zulu state in KwaZulu-Natal coincided with the expanding frontier of the Cape Colony, and prolonged ecological changes pushed the Nguni and other coastal communities into the interior which caused devastation to the Highveld and Lowveld communities during the civil war period known as the *Mfecane/Difaqane* (Mason 1986; Huffman 2002; Perry 2002; Boeyens 2003; S. Hall 2009; Steyn 2011, 2013; Sadr 2019a). Additionally, see Hamilton (1995) for the debates on the *Mfecane/Difaqane* period, its aftermath and our understanding of the period. Throughout the western Highveld, Bankenveld and Bushveld several large Sotho-Tswana ‘mega-site’ settlements have been identified and investigated during the last 50 years (Mason 1962, 1986; Pistorius 1992, 1994, 1996; Boeyens 2000, 2003; Boeyens & Hall 2009). However, only a few mega-sites have been recorded in the northern and central parts of the Highveld (Mason 1986; Sadr 2019a). The reason for the lack of mega-sites in this part of the Highveld is not fully understood. A few possible reasons for why one of these mega-sites, Kweneng, has not been recognised until recently is provided by Sadr (2019b). By the time early European travellers reached the Suikerbosrand area, Kweneng had already been abandoned, and the lack of historical records and oral histories meant that this area was not analysed rigorously during the early stages of the Iron Age research programmes (Sadr 2019b).

Ceramic analysis

Morphological and stylistic analysis of ceramic material focusing on aspects, such as vessel shape, decoration, layout and use-wear, have been a useful tool in

understanding the role of ceramics in the construction of cultural histories for southern African Iron Age communities and elsewhere (Schofield 1948; Mason 1952; Huffman 1970, 1972, 1978, 1980, 1983, 1989a, 1989b, 2007, 2020; van Waarden 1980, 2018; D. Miller 1991; Sinopoli 1991; Neff 1992, 1993; Rice 1996a, 1996b, 2015; Wilson & Rodning 2002; Oudemans 2007; Tebes 2007; Antonites 2020). This approach allowed for the construction of a chronological classification for Iron Age ceramics in southern Africa. In South Africa, Huffman (1980, 1989a, 1989b, 2007) used this approach in combination with the Bantu migration theory of Phillipson (1974, 1977) to create the LIA migration model that is widely used in southern African Iron Age research today. The model tracks the changes in ceramic style across space (*facies*) and time (*phases*) for the entire region (Huffman 2007; Fowler & Greenfield 2009: 345).

An important aspect in understanding the production and use of ceramics in pre-historic communities has been a result of ethnographic and ethnoarchaeological observation of descendant communities (Henrickson & McDonald 1983; David & Kramer 2001; Stark 2003; Nyamushosho 2014; Huffman 2019, 2020). Ceramic ethnoarchaeological work has been carried out predominantly in western and eastern Africa, forming the majority of literature published on this subject on the continent (Stark 2003). Early ethnographic research in southern African “lacked a material-based approach” as it only briefly mentioned material culture (Huffman 2019: 217). Huffman (1972) aimed to establish a method of linking the production and use of modern Shona pottery with archaeological assemblages. Huffman expressed the benefit of using whole vessels over shards as “total assemblages are inherently more culturally meaningful than single traits (e.g. decoration technique) and more statistically significant since they increase the complexity of attribute association” (Huffman 1972: 80). The analysis of whole vessels is not always possible due to the often highly fragmented nature of ceramic assemblages found in most South African sites such as Schroda (Antonites 2020).

During the early to mid 20th century AD, several large scale ethnographic works on pottery production and use were conducted in southern Africa. This includes the work of Lawton (1965) who systematically interviewed potters from more than ten different cultural groups, including the Sotho-Tswana of eastern Botswana and

northwestern South Africa; recording their various vessel shapes, styles and production methods (Lawton 1965: 213-398). In more contemporary times, more ceramic ethnoarchaeology has been conducted in KwaZulu-Natal with contemporary Zulu potters (see Fowler 2006, 2008, 2011a, 2015 for more details) than with any other cultural group. However, the use of specific or incomplete ceramic ethnoarchaeology in southern Africa has been called into question by several authors for marginalising local meanings, worldviews and values, whilst neglecting the role of social meaning, gender identity, group and regional interaction (M. Hall 1983, 1984b; Ndoro 1996; S. Hall 1998; Pikirayi 1999, 2007; Calabrese 2000, 2005; Pikirayi & Lindahl 2013; Nyamushosho 2014; Nyamushosho & Chirikure 2020).

An example of the use of morphological and stylistic analysis is shown in van Waarden's (2018) analysis of EIA pottery from Nyungwe, northern Botswana. Her analysis uses vessel shape, temper, vessel wall size, physical size, and surface finish to distinguish potential functions between coarse kitchenware and finely crafted serving dishes. The samples were separated into vessel types (bowls and pots) based on the size of the opening and the estimated depth of the vessel. Van Waarden (2018) associated function through signs of use wear and the presence of decoration.

Use-wear indicators include burning (carbonization) location and patterns (interior vs exterior), evidence of interior erosion from acidic contents and the presence of any internal or external modifications. Cooking pots had signs of heavy external burning or sooting from being placed over a fire. Internal burning with little external burning indicated that hot stones had been used to heat liquid or to create smoke. Heavily eroded interior surfaces in the form of pitting or complete erosion of the vessel walls point to heavy use and cleaning, or the storage of sour milk or acidic contents like beer (Arthur 2003). The application of decoration indicates the vessel's public or private use. Vessels used in public settings were more highly decorated or decorated in more complex patterns, whilst less decorated or plain vessels were restricted to household use (van Waarden 2018: 257). The significance of this analysis is that it shows the variation in vessel function and design in the

Nyungwe community. The variation in fine-ware decoration indicated contact with communities in the region.

Similarly, Antonites (2020) used a functional analysis of ceramic material from Schroda, a MIA farming settlement located in the middle Limpopo Valley originally excavated by Edwin Hanisch in 1980, to identify vessel functions and related activity areas across the site. Similar to van Waarden (2018), Antonites noted that cooking vessels showed less elaborate decoration than those vessels used for serving (Antonites 2020: 255). Antonites (2020) categorised the Schroda assemblage into seven general vessel types according to the criteria used by Calabrese in his 2007 analysis of the area 5 sherds (Calabrese 2007: 52-55). The fragmented nature of the assemblage meant that only the rim diameter was used to indicate vessel size (Antonites 2020: 254). The surface treatment was determined using Sinopoli's 1991 definitions. Once the initial analysis was completed, Antonites (2020) drew on ethnographic, ethnoarchaeological and archaeological studies to assign possible functions to the ceramic vessels.

The analysis revealed that recurved jars, used for a variety of activities from wet and dry storage to serving beer, were more common across the excavated areas. Whilst very shallow bowls and plates, used for serving or food mixing and preparation, were rare. Beakers and beaker bowls (typical of K2 assemblages) were absent from the sample (Antonites 2020: 256 & 262-266). Vessel decoration was more common on the recurved jars and bowls than any other vessel type, despite the decline in decoration frequency during the occupation of Schroda. Additionally, surface treatment was more frequent during the early occupation period. Interpretation of the results showed that the recurved jars with elaborated decoration were used to serve food and drinks in a high social context, whilst the less decorated recurved jars were used in a mixed household and social context.

The relevance of this study to the one undertaken here is that Antonites (2020) shows that it is possible to identify different activities areas, be it cooking, storage or serving/consumption areas within a settlement using vessel shape, size and surface treatment. In addition, the study shows that vessel types can serve multiple functions in both the household and in social settings, whilst van Waarden (2018)

shows that variation in the assemblage can indicate interaction with out-side communities.

Whilst Antonites (2020) and van Waarden (2018) looked at determining the functional distribution of vessels, it is also important to understand how carbonization and sooting patterns and their positioning on ceramic vessels provide a way of determining how a vessel was used during the cooking of food. A case study of this can be seen in Skibo (1992; 2013), Skibo examines these carbonisation patterns in ceramic vessels from the Kalina of the Philippines. Skibo (1992; 2013) was able to determine the differences in carbon cook deposits of vegetable, meat and rice within the fabric of the vessels. Vessels used to cook these different food groups left carbonization patterns in distinctive positions on the interior surfaces of vessels whilst also leaving unique carbonization and oxidization marks in corresponding positions on the exterior surfaces (Skibo 1992: 148-151).

The exterior carbonization, sooting and oxidisation patterns were used to identify how vessels were hung over a heat source or directly placed in the fire whilst also informing how close a vessel was placed to or above the heat source (Skibo 1992:152-157). Skibo (1992) additionally conducted experiments to determine the effect of different wood types, vessel height above a heat source and the role of moisture on the extent and location of sooting and oxidation patterns. The results of the experiments showed that the positioning of a vessel to a heat source (including its position above or next to) can be determined based on the difference in patterning and the extent of the sooting on the exterior surface, whilst the type of food (vegetable, meat or rice) can be determined based on the carbonization location and extent on the interior surface.

The importance of this case study and that of Arthur (2003) to the understanding of the assemblage of the Schoongezicht neighbourhood is that it provides a way of inferring potential vessel function to vessels that display sooting, carbonization and internal pitting or wear. Whilst it is not the main objective of this research to identify the function of each vessel in each hut. By identifying those vessels with cooking/consuming use-wear indicators a better understanding of the spatial distribution patterns can be established.

Intra-site analysis

In South African Iron Age archaeology, the use of inter/intra-site analysis has been mainly limited to the spatial organisation and the application of settlement organisation models (Evers 1984; Taylor 1984; Huffman 1986, 1988; Dreyer 1990; Greenfield & Van Schalkwyk 2003). The application of these normative models has allowed a greater insight into the relationships between households and their associated features. However, particularistic studies at sites like Broken K Pueblo in the American Southwest and Ndondondwane in KwaZulu-Natal, have explored the idea of localised variations within settlement activity zones. Intra-settlement analysis at Broken K Pueblo (Hill 1970) revealed new interpretations of possible room functions. Hill used a combination of factor analysis on ceramic material using morphological, stylistic and use-ware aspects in conjunction with pollen sampling, additional artefact analysis and ethnographic evidence to assign possible activities. However, Hill's interpretation of room functions at Broken K has drawn criticism from several researchers for his method and general interpretations (Dumond 1977; Plog 1978); in particular, the way he used factor analysis (Lischka 1975), and the lack of ceramic refit before the analysis (Skibo *et al.* 1989). These researchers believe that the problematic approach impacted Hill's (1970) interpretation.

The EIA settlement of Ndondondwane in KZN has seen the application of extensive spatial analysis by several researchers during the late 1990s and early 2000s (Loubser 1993; Van Schalkwyk *et al.* 1997; Fowler *et al.* 2000; Fowler 2002, 2011b; Greenfield & Van Schalkwyk 2003; Greenfield & Miller 2004; Singer 2007; Fowler & Greenfield 2009). Fowler & Greenfield (2009) and Fowler (2011b) used ceramics as the basis for their identification and confirmation of activity zones. Using a combination of the multi-dimensional typological approach and statistical analysis, Fowler & Greenfield (2009) attempted to determine whether a micro-temporal stylistic variation in the Ndondondwane ceramic assemblage could be observed within and between deposits, allowing for a pan-site chronological sequence. They conclude that it is possible to construct micro-temporal stylistic chronological sequences for stratigraphically unconnected deposits in Iron Age settlements but only with certain analytical techniques. Fowler (2011b) attempted

to determine if it was possible to infer activity patterns in depositional areas within Ndondondwane using fragmentation and functional variation of ceramic objects. His quantitative technique allowed for the comparison of vessel fragmentation and functional variability across the previously identified activity spaces. Fowler (2011b) concludes that his technique could be used to distinguish depositional areas in support of other activity evidence. The study also concludes that the method confirmed previous assumptions of activity space and that the results allowed for more dynamic interpretations of the possible activities resulting in the formation of 16 spatially and temporally discrete deposits. Other spatial analyses of EIA sites in Kwazulu-Natal have also been carried out (Whitelaw 1993, 1994a, 1994b; van Schalkwyk 1994; Whitelaw & Moon 1996). The spatial analysis conducted by these researchers focused predominantly on applying the normative models to the sites of KwaGandaganda, Nada, and Wosi whilst emphasising the significance of these settlements in the distribution of agriculturists along South Africa's east coast.

The research into the distribution of ceramic material in the EIA Ndondondwane site shows the potential of ceramic and intra-site analysis in understanding the distribution of activity zones within an Iron Age community. Even though pottery and ceramic materials are the most commonly found artefacts, little literature focuses on their relationship between and within neighbouring sites (also see Fontana 1998). By combining morphological and stylistic ceramic analyses with intra/inter-site analyses, my research attempts to identify spatial patterning within two neighbouring LIA homesteads in Kweneng.

Conclusion

This review covered the spread of Iron Age communities on the Highveld, the development of Iron Age research on Highveld communities and the application of ceramic and intra-site analyses in Iron Age research. In the next chapter, I address my methodologies.

Chapter 3 Methodology

Methods and materials

The materials used in this study came from the artefacts excavated from the homesteads of Sun Shadow (2628CA1/a) and Boschoek (2628CA1/c). The study material was made up of two parts; the first was the documentation relating to the excavations, such as excavation logs and photographs. The second part was the excavated material focusing primarily on the ceramics. This material came from the individual huts in each homestead. In total, 29 huts were excavated or sampled between 1986 and 1994; of these only 26 huts contained ceramic material.

Limitations:

Throughout the project, several limitations were noted. The main limitation was the inconsistency in the quality of the undergraduate student excavations and the information recorded on the excavation logs and maps. This was particularly so for the Boschoek excavations records: several maps were either missing a section of the excavation or the complete record was missing as was the case for Huts 3, 6, 7, 12, and 18. Of the 20 excavations at Boschoek, only 11 had north arrows or other positioning information. Due to the pandemic lockdown in 2020, there was restricted access to the university campus and the original site photographs and excavation maps, therefore, it was not possible to confer in person with Tom Huffman (who led the Boschoek field schools) about the accuracy of the Boschoek huts positioning.

The lack of in-depth documental records means that excavation and sieving methods are not known. It is also not fully known whether any ceramic sorting took place during the excavations, or whether all sherds were kept. An example of this confusion was found in the recording of Boschoek Hut 19, where several pottery-filled bags indicated 20 or more sherds on the exterior bag records. However, on inspection, less than 5 sherds were found in the bag. In addition, there were difficulties in accessing documents and storage boxes due to mislabelling, mis-

cataloguing, and other reasons not known to the author. I used the following methods to accomplish the objective for this project.

Phase 1: Paper archives and GIS mapping.

In the first phase, all the excavation logs and maps relating to the excavated huts in Sun Shadow and Boschoek were scanned to allow for GIS mapping. Excavation images were scanned for further assistance in identifying where possible ceramic vessels were located.

Once all the recording was completed, QGIS (QGIS Development Team 2020) was used to create the spatial distribution maps of the pottery for each hut. The first step was to create a base map onto which the excavated lobes could be geographically positioned. This was done using LiDAR and high-quality aerial imagery of the study site gathered from the SGSWS Project. Once this was done, Kaplan's 1986 map of Sun Shadow and Huffman's 2007 map of Boschoek were geo-referenced onto the LiDAR and aerial imagery.

The next step was to determine the location of the excavations within their respective lobes. Sun Shadow's Hut 5 provides an example of this technique (Figure 3.1). This was the same method used by Hodgson (2019) to geo-reference the individual huts at the Sun Shadow homestead. The location of this excavation was marked with a baseline from between both walls, and additional measurements were given for the excavation distance from the baseline. In Figure 3.1A, the red dots indicate the points chosen for geo-referencing: four points along the back, five on the baseline and 15 on the excavation squares. These dots correspond to the dots in Figure 3.1B; the warping was due to the different measuring types (meters and centimetres) used in the drawing. Once the initial map had been geo-referenced into place, the rest of the excavation squares could be constructed, as seen in Figure 3.1C. After this, the other excavation maps relating to that lobe could be geo-referenced into place (Figure 3.1D).

For Boschoek, no annotated site map identifying hut numbers has survived, so the exact location of numbered huts is not known. The excavation maps with north

arrows and other positioning information were placed into their corresponding lobes and a ‘best-fit’ approach was taken to fit the excavated area into the lobe space. The maps that did not have north arrows, were placed in their corresponding lobes with known doorways facing the central cattle byres. Again, the ‘best-fit’ approach was taken to fit the excavated area into the lobe space, resulting in a few huts not being accurately placed.

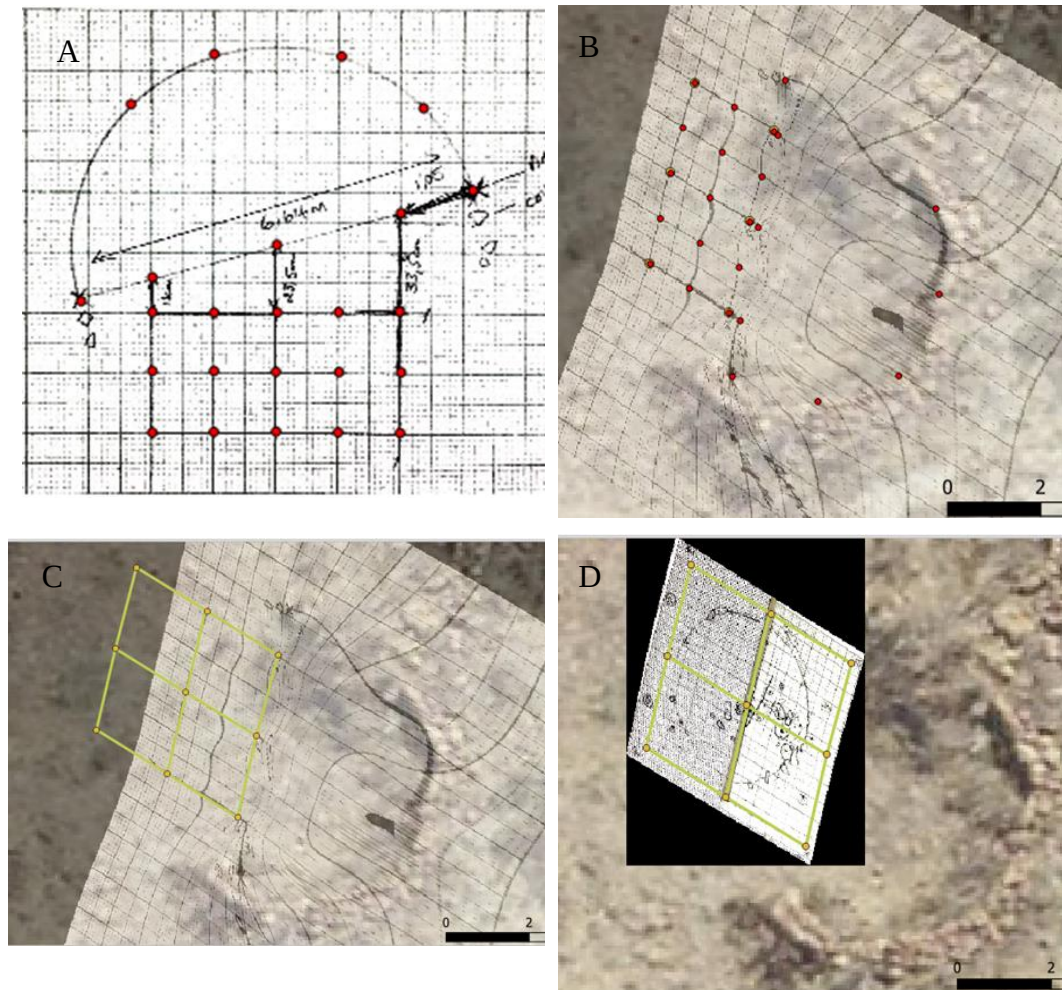


Figure 3.1: GIS processing. A) Field log map with georeferencing points (red dots) B) Field log map georeferenced into QGIS overlaying the aerial image of the site. C) Placement of the excavation grid over the field log map. D) Excavation map georeferenced into place using the grid squares.

Phase 2: Artifact and ceramic analysis.

In Phase 2, all artefacts within the storage boxes were recorded with specific attention given to the ceramic material. Table 3.1 shows the parameters that were

used to record all the objects from each hut. Although the non-ceramic material from the two homesteads is not the focus of this research it is still important to include these values into the overall inter/intra site analysis discussion, as it brings an extra layer of interpretation to understand the similarities and differences not only within the neighbourhood but also within each homestead. The results of the non-ceramic material analysis will be presented in its own section within the results chapter and the anomalies discussed in the same manner as the rest of the anomalies identified within the results chapter. ‘Reference Code’ refers to the unique number given to the ceramic sherds to ensure that their context is not lost during the rest of the analysis.

Table 3.1: Collections recording parameters.

Reference Code	Description of Additional Features	Rim Sherds	Count (or Body Sherds)	Excavation Layer	Excavation Square	Label	Material Type
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Step 2 of this phase was the reconstruction of the vessels. This process was predominantly done on paper through rim profile drawings. Each profile drawing was given a number that can be used to identify the vessel: for example, Boschoek Lobe 1 pot 1 was recorded as BH/1/p1. From personal observations of the Sun Shadow material, sherds relating to an individual pot were mostly placed into a single sample bag and labelled ‘pot A, B, etc’, in the odd case, sherds from multiple pots (seen by the difference in sherd thickness and colour) were placed into one bag. For this, I sorted the sherds into categories using thickness and colour as parameters before continuing with the analysis. Where needed, rim sherds were temporarily refitted using painters’ tape to ensure accurate measurements.

The next step was to take measurements of the ceramic material (Table 3.2). ‘Count’ refers to the number of sherds used to reconstruct the vessel and to make a record of these. Recording parameters were based on those used by Steinwachs (2015: 29-30) and standard ceramic measuring protocols (Rice 2015). Rim profile drawings were done for all vessels using a standard 1cm incremented rim diameter board following the drawing conventions used by Collett (2012). Plan drawings were done on all rim and body sherds that had decoration or surface modifications. Vessels from each hut were then photographed using a Canon EOS 7D camera for later comparisons.

Table 3.2: Recording index of ceramic sherds.

Photograph Number
Drawing Number
Internal pitting (minimal to extensive)
Carbonization (internal, external or both)
Body shape (Pot or Bowl)
Body Thickness
Neck Thickness
Lip Thickness
Rim Modification
Profile (restricted or unrestricted)
Orifice Diameter
Decoration location
Decoration Technique
Decoration (presence or absence)
Count
Vessel element (body, rim or other)
Reference Code

Table 3.3: Classification system used.

Open bowl
Rounded bowl
Small (cup) bowl <8
Medium bowl 9-11
Large bowl 12-15
Undefined
Straight-necked pot 31+ 21-30 <20
Short-necked pot 31+ 21-30 <20
Straight-necked pot 31+ 21-30 <20
Orifice Diameter (cm)

Once the analysis was completed, a classification of types and sizes for the overall neighbourhood was established. This was done using a modified version of the type classification used by Anderson (2009) (Table 3.3 with a classification guide in Figure 3.2 and Figure 3.3). In Figure 3.2, the four categories of pot types were predominantly determined using the upper rim, neck and where possible the shoulder section of the vessels. This was done because of the highly fragmented nature of the sample, 40% of the vessels sampled had enough of the full profile to determine their full shape. Whilst the method used here does not consider the ‘open’ or ‘closed’ nature of each individual vessel, the approach used does allow for a more complete diagnostical sample.

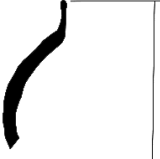
	Smooth-necked pot Defined by having a gently curved transition between the vessel shoulder and rim.
	Short necked pot Defined by having a visible transition section between the vessel shoulder and rim.
	Straight necked pot Defined by a lack of a gently curved transition section between the vessel shoulder and rim edge.
	Undefined Ceramic sherds were too small and undiagnostic to be assigned to any of the other categories.

Figure 3.2: Classification guide showing the cross-section profile and criteria for the four pot categories. After Anderson (2009).

In Figure 3.3, around 60% of the sample had diagnostical features from the rim down; therefore, more encompassing categories could be produced. In addition to the modified classification, the distinction between a pot and a bowl was made using the following criteria: a pot if its orifice diameter was greater than 15 cm and a height equal to or greater than 15 cm; a bowl if its orifice diameter was less than 15

cm, and height less than or equal to 15cm. From there, a breakdown for each hut was done to create analytical data that can be used in the next phase of the research.

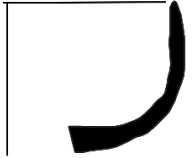
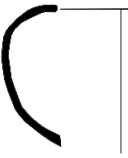
	Large bowl Short vessel with an orifice diameter of between 12-15cm.
	Medium bowl Short vessel with an orifice diameter of between 9-11cm.
	Small (cup) bowl Small vessel with an orifice diameter of 8<cm.
	Rounded bowl Short vessels with an inward curved neck and rim sections.
	Open bowl Bowl-shaped vessels that do not fit into the above criteria. The vessel is of a unique shape that does not occur anywhere else on the site.

Figure 3.3: Classification guide showing the cross-section profile and criteria for the five bowl categories. After Anderson (2009).

Phase 3 and 4: Intra-site and inter-site spatial and statistical analysis.

Phase 3 consisted of two stages, the first stage was to map the positions of the ceramic vessel types across the homestead, this was achieved using the geo-referenced excavation maps from Phase 1. Each vessel type in the classification established in Phase 2 was assigned a unique QGIS symbol allowing for a point distribution pattern analysis (See appendix 1 for Sun Shadow and appendix 2 for Boschoek).

The second stage was to conduct a statistical analysis of the intra-site distribution patterns to determine if the null hypothesis (that there is no significant difference in the pottery assemblages and distribution patterns between and within the homesteads) can be rejected. I started with exploratory data analysis using charts and descriptive statistics. Then the Chi-square test (Equation 3.1) was used to test the relationship of the observed and expected data. These statistical tests were conducted using the PAST statistical software (Hammer & Harper 2001). This phase was repeated for both homesteads. For the inter-site analysis, the individual homesteads will be compared to the theoretical expected values and then the observed values to each other to give the likeliness of similarity for the neighbourhood. To evaluate the null hypotheses, I used the approach given in Drennan 2009: *Statistics for Archaeologists: A Common Sense Approach* (Table 3.4). This approach uses a scale of likeliness to assess the similarity of the observed data to the expected data. In Table 3.4 the rejected hypotheses were given as $p = 0.05$.

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Equation 3.1: Chi-square test.

Where O_i = the observed value, and E_i = the expected value.

Table 3.4: approach used to reject the null hypothesis.

p	Rejecting hypothesis	Likelihood of similarity (Drennan 2009: 159)
$= 0,80$	Failure to reject.	Extremely likely
$= 0,50$		Very likely
$= 0,20$		Fairly likely
$= 0,10$		Not very likely
$= 0,05$	Reject	Fairly unlikely
$= 0,01$		Very unlikely
$= 0,001$		Extremely unlikely

Chapter 4 Results

Introduction:

This chapter is laid out in six sections. Section 1 focuses on the amount of ceramic material recovered from both Sun Shadow and Boschoek. This part will also focus on how the intra-site, inter-site analysis and statistical analysis were conducted and why each type of analysis was selected. Sections 2 and 3 present the results of the intra-site and statistical analysis of Sun Shadow and Boschoek at both a hut-level of analysis and hut cluster level, aiming to prove the null hypothesis that there is no significant difference in the pottery assemblages and distribution patterns between and within the homesteads. After each comparison, I identify any anomalies in the data.

Section 4 presents the results of the inter-site and statistical analysis of the Schoongezicht neighbourhood. Where necessary, I identify anomalies in the data. Section 5 looks briefly at the non-ceramic material recovered from both homesteads. I give a breakdown of material types found as well as a closer look at select artefacts.

Site Maps

Figures 4.1 and 4.2 show the site maps for Sun Shadow and Boschoek, both adapted from Taylor (1984), Kaplan (1986) and Huffman (1986, 2007). The maps have been updated to match features seen on the LiDAR scans of each homestead. This is most visible in the addition of the ‘suspected walls’ between lobes 22 - 23 and 25 - 1 of Sun Shadow, these walls are absent in the original maps due to the erection of a farm fence.

Hut numbering for Sun Shadow was based on the surviving annotated document: areas 4, 7, and 17, however, may not represent huts as the areas are not large enough to host a hut within the space between the walls. At Boschoek, the original numbering system has not survived; thus, a new numbering system was determined using the north arrows and excavation photos to position the huts in their most likely positions. Therefore, there may be one or two huts incorrectly located. The exact

location of Midden 1 was not fully known: the midden in the cattle drive was labelled as Midden 1 due to its size and prominence. Maps for each of the excavated huts can be found in Appendix 1 and 2.

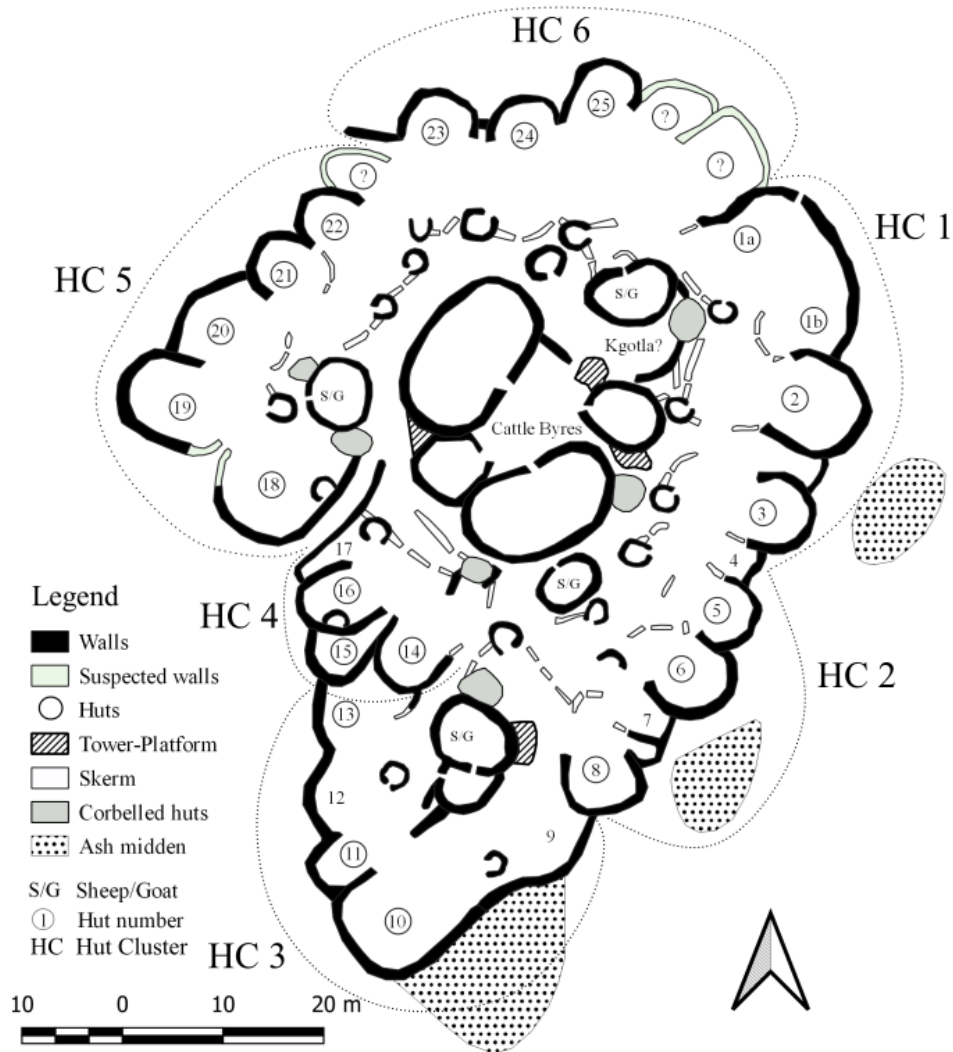


Figure 4.1: Sun Shadow site map with Hut numbering and Hut cluster numbers. Adapted from Taylor (1984) and an annotated version of Kaplan (1986).

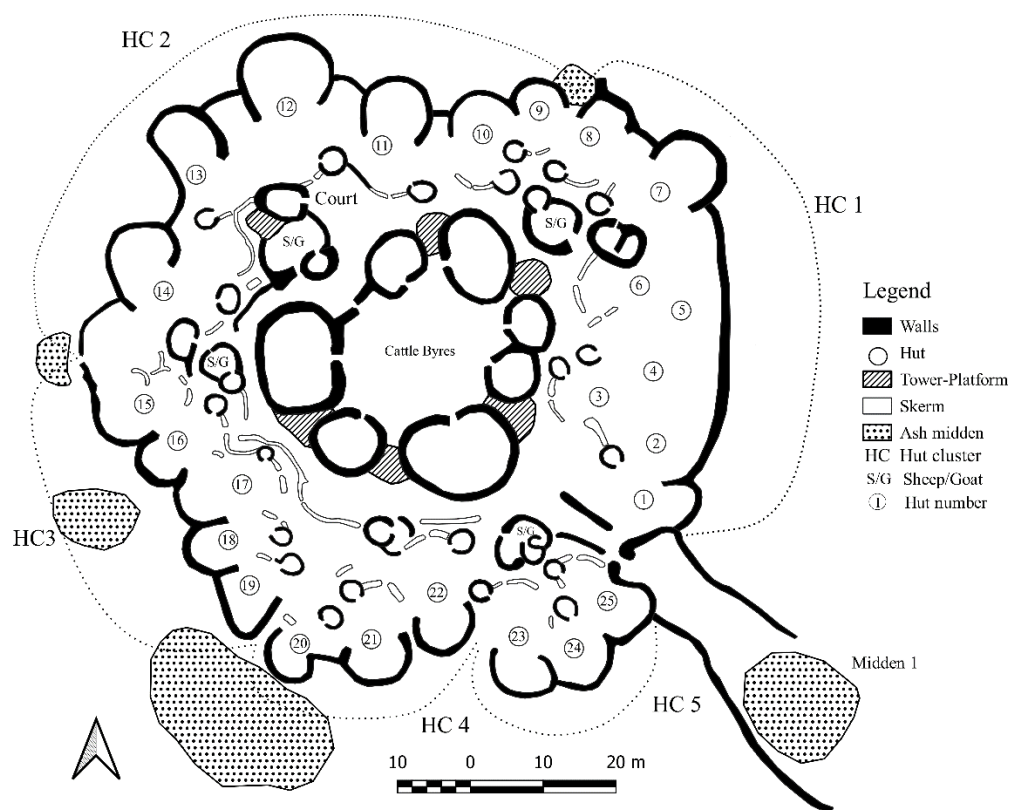


Figure 4.2: Boschoek site map showing Hut numbers and Hut cluster numbers. Adapted from Huffman (1986, 2007).

Hut clusters were determined by using examples found in Pistorius (1994), Anderson (2009); Jordaan (2016) and from ethnographic descriptions given in Molema (1920), Hoernlé (1962), and Schapera & Goodwin (1962). Sun Shadow was divided into six hut clusters, whilst Boschoek was divided into five hut clusters.

Section 1: Ceramic material recovered.

From the two homesteads, a total of 11 028 ceramic sherds were recovered (Table 4.1). Rim sherds made up at least 10% of the collection for each site. Due to the uncertainty of the exact location of the ‘Unknown’ and ‘Midden 1’ sites, they are largely excluded from this project. Vessels were identified using rims and unique body sherds. In all four cases where unique body sherds were identified (excluding the unique sherds found in Boschoek Midden 1), these sherds were decorated, and they lacked corresponding rim sections that allowed for more diagnostic recording.

The minimum number of identified vessels was 201. Sixty-two were found at Sun Shadow (Table 4.2) and 139 at Boschoek (Table 4.3).

Table 4.1: Total number of sherds recovered from the two homesteads.

	Body sherds	Rim sherds	Total
Sun Shadow	3 421	388	3 809
Boschoek	4 350	514	4 864
Boschoek Midden 1	1 801	247	2 048
Unknown	172	135	307
Total	9 744	1 284	11 028

Set out below are the analyses of both the Sun Shadow and Boschoek homesteads. The results are presented on three different scales: a Hut-to-Hut level, a Hut cluster level and finally a Homestead-to-Homestead (neighbourhood) level. The first two scales form an intra-site analysis and the latter, an inter-site analysis. Each scale of analysis was applied to vessel type, vessel subtype and pot diameter size. Once completed, a spatial comparison was possible using the digitised excavation maps. Vessel subtypes were the basis of the spatial comparisons. This is also presented at two different scales, a hut cluster level and finally a neighbourhood level. Finally, I used Chi-Square to statistically analyse the data to test whether the null hypothesis could be rejected.

The first analysis compared the pots and bowls, distinguished by the criteria mentioned in the previous chapter. The second analysis compared vessel subtypes: Smooth-necked, Short-necked, and Straight-necked pots; Large, Medium, Small, Rounded, and Open bowls, following the criteria mentioned in the previous chapter (Table 3.3 with a classification guide in Figure 3.2). The third analysis compared different pot diameter sizes: <20 cm; 21-30 cm; and 31+ cm. The fourth analysis compared the spatial distribution of vessels within and around the huts (Figure 4.3). The distribution maps for Sun Shadow can be found in Appendix 1, and the maps for Boschoek in Appendix 2. For this analysis, Boschoek Huts 3, 6, 12 and 18 were excluded due to the lack of surviving excavation plans. It must be noted that vessel placement outside the hut is not as accurate as inside, mainly because of the original excavators recording system.

Table 4.2: Vessels found at Sun Shadow.

Hut number	Hut cluster number	No. of vessels
1	1	20
2		10
3		5
5	2	6
6		9
8		3
19	5	3
21		6
Total		62

For the pot and bowl analysis, the ratio for each hut was expected to be 77% pots and 23% bowls, based on the total percentage. The table containing the expected values for the pots and bowls can be found in Appendix 5. For the vessel subtype analysis, the additional assumption was made that there would be no vessels in the Rounded and Open bowl categories because of their rarity. Therefore, these values were also omitted. The ratio for the vessel subtypes from each hut was expected to be 22% Smooth-necked pot, 33% Short-necked pot, 23% Straight-necked pot, 11% Large bowl, 9% Medium bowl and 2% Small (cup) bowl. The table containing the expected values for the vessel subtypes is shown in Appendix 5.

For the pot diameter size analysis, the total number of vessels was reduced to 133 (39 in Sun Shadow and 94 in Boschoek). This was due to the bowl types being excluded from the analysis because they were already sorted by orifice diameter size. From this, the ratio for the pot diameter sizes from each hut was expected to be 46% in the <20 cm range, 41% in the 21-30 cm range and 14% in the 31+ cm range. These arbitrary diameter size ranges were selected because there were no clear breaks in the frequency when all the vessels were sorted according to their orifice size in a histogram. The table containing the expected values for the pot sizes is shown in Appendix 5.

The statistical analysis followed the same comparison levels as mentioned above. In this analysis, the expected ratios were based on the rounded total percentage of

both homesteads. Additionally, the assumption was made that there would be no undefined vessels in the assemblages. This value, therefore, was removed from the equations. Only in the spatial positioning analysis were all vessels included.

Table 4.3: Vessels found at Boschoek.

Hut number	Hut cluster number	No. of vessels
1	1	8
2		8
3		3
4		10
5		10
6		1
7		16
8		Not excavated
9	2	Excavated, no vessels
10		5
11		Excavated, no vessels
12		6
13		7
14		4
15	3	20
16		10
17		5
18		7
19		1
20	4	Sampled, not excavated
21		7
22		Not excavated
23	5	Not excavated
24		11
25		Not excavated
Total		139

For spatial positioning statistical analysis, the ratio was based on the rounded total percentage of both homesteads. The assumption was made that there would be no vessels in the exterior kitchen section as only one was excavated. Therefore, this value was omitted from the equation. From this, the expected ratio for each hut was

assumed to be 12% in the Inside front right section, 9% in the Inside front left section, 21% in the Inside rear right section, 24% in the Inside rear left section, 8% in the Outside front right section, 12% in the Outside front left section, 4% in the Outside rear right section, and 10% in the Outside rear left section. The table containing the expected values for the spatial positioning analysis is shown in Appendix 5.

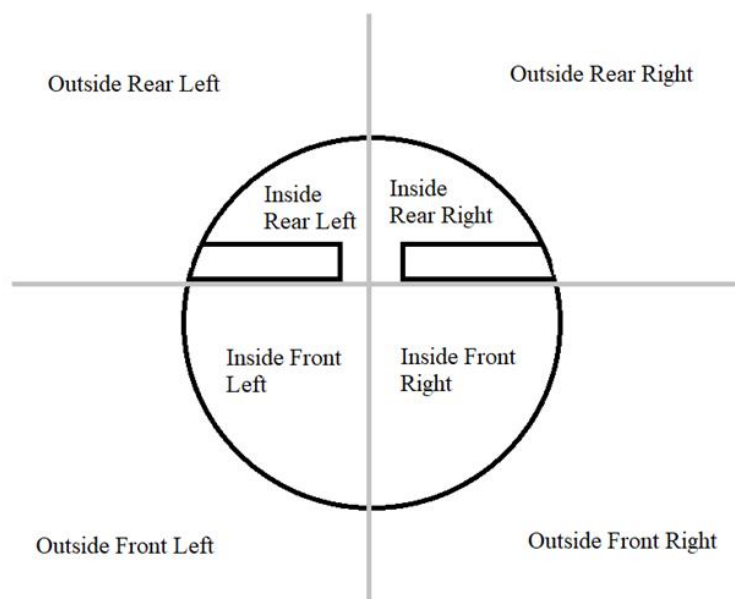


Figure 4.3: Hut layout showing how spatial positioning was determined.

Section 2: Sun Shadow Results.

The ratio of vessel types

The first intra-site comparison is for the ratio of vessel types (Figure 4.4). Sun Shadow had an overall average pot ratio of 65%: Hut 6 (56%) and Hut 21 (50%) have the lowest ratios, whilst Hut 19 (100%) had the highest ratio. Bowls made up an overall average ratio of 24%: Hut 21 (50%) had the highest ratio, whilst Huts 5 and 19 lacked identifiable bowls. The hut cluster level (Figure 4.5) had a more equal ratio of pots to bowls. All the hut clusters had a minimum pot ratio of 60%, whilst

bowls make up between 17% to 33% in each hut cluster. This shows that at Sun Shadow there were no notable differences in the types of vessels, despite the high percentage of undefined vessels for Cluster 2.

The result of the statistical test shows no significant difference in the observed assemblages and the expected results. At the hut cluster level (Appendix 5 Table A5.2), the probability range was between $p = 0.339$ (Cluster 5) and $p = 0.913$ (Cluster 2). However, at the hut level (Appendix 5 Table A5.1), there was a wider range of variation, with some huts (such as Hut 21 $p = 0.123$) having a ratio quite different to the expected values, while others had a rather closer ratio to the expected values (such as Hut 6 $p = 0.719$).

An implication of the null hypothesis is that all the huts and hut clusters should have the same number of pots and bowls. However, several anomalies can be seen in this respect. Huts 5 and 19 had no identifiable bowls and Hut 19 additionally had the lowest number of vessels. The second anomaly was that Huts 2 and 21 had a higher ratio of identified bowls than the expected ratio. A third anomaly was the number of vessels identified in Hut cluster 1 compared to the other 2 clusters. This cluster had almost double the number of vessels as Hut cluster 2, despite the same number of huts excavated in each cluster. Hut cluster 5 had the lowest number of vessels identified within the homestead. These anomalies are discussed in the next chapter.

The ratio of vessel sub-types

The second intra-site comparison is for vessel sub-types (Figure 4.7), vessel profile drawings can be found in Appendix 3. Short-necked pots made up the largest proportion of pots found at Sun Shadow (27% of the total assemblage). Straight-necked pots were next with 21%. Finally, Straight-necked pots made up 15% of the total assemblage. Large bowls were the most common bowl sub-type with 10%, while Medium and Small bowls were the next most common at 5% each. Rounded and Open shaped bowls were the least common at 2% each. These types of bowls were only found at Sun Shadow in Huts 2 and 3.

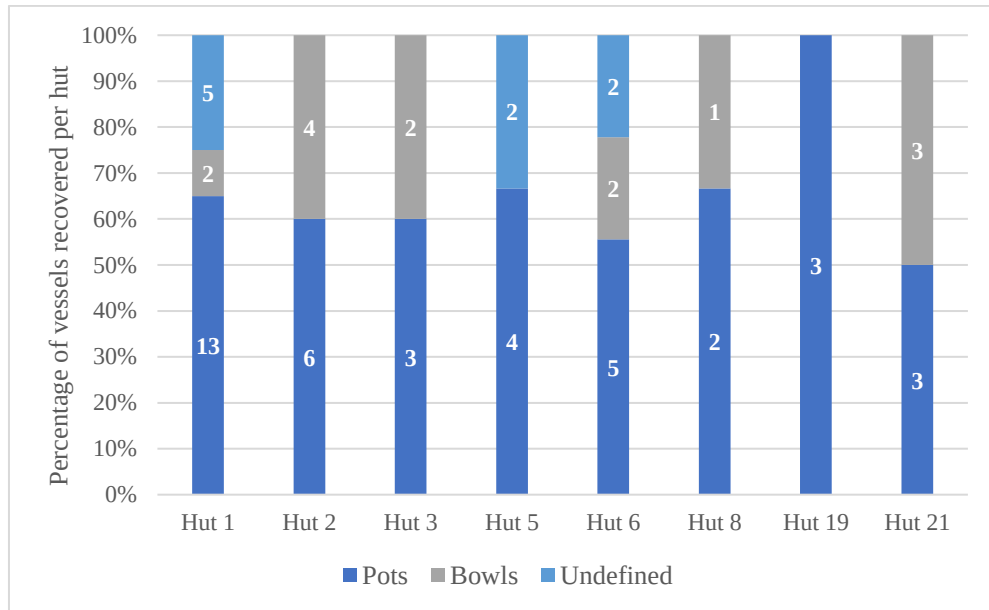


Figure 4.4: Vessel type comparison for Sun Shadow. Data labels represent the number of vessels recovered.

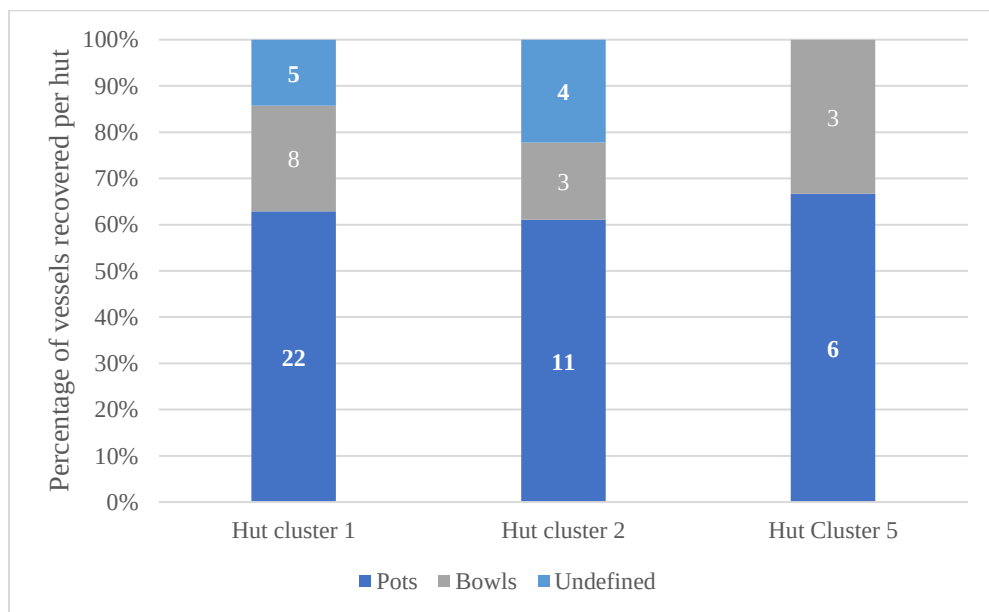


Figure 4.5: Vessel type comparison for Hut clusters at Sun Shadow. Data labels represent the number of vessels recovered.

At the hut cluster level (Figure 4.8), Hut cluster 1 had the highest percentage of each type of pot with Short-necked pots being the most common vessel with Large bowls being the most common subtype. This cluster made up 56% of the total Sun Shadow assemblage. Hut cluster 2 had the next highest percentage of each pot type

with Short-necked and Straight-necked pots being the most common. In total, this cluster made up 29% of the Sun Shadow assemblage. Hut cluster 5 made up 15% of the total assemblage. Overall, there is no notable difference in the vessel sub-types.

The result of the statistical test shows that at the hut cluster level (Appendix 5 Table A5.4), there was no significant difference in vessel subtypes and the expected results, with a probability range of between $p = 0.182$ (Hut cluster 5) and $p = 0.656$ (Hut cluster 2). However, at the hut level of analysis (Appendix 5 Table A5.3), there was a wider range in variation: Huts 3 ($p = 0.024$) and 21 ($p = 0.029$) show a significant difference between their sub-types and the expected results.

Decoration and internal pitting

Fifteen vessels had exterior decoration (Table 4.4 and Figure 4.6). Notching was the most common technique found at Sun Shadow which was mostly applied to Short-necked vessels. Huts 1 and 2 had the most decorated vessels and made up 60% of all the decorated vessels at Sun Shadow. The most elaborate decoration motif was found in Hut 6, an Undefined vessel with horizontal incisions and a row of comb stamping. Forty percent of the decoration was found on Short-necked and Undefined vessels. No decoration was found on the Large and Small bowl sub-types. Stylistically, ten vessels belonged to the *Buispoort* facies, three vessels to *Makgwareng* facies, and two vessels to *Uitkomst* facies. In Figure 4.6 the black colouring seen in images C and D does not appear to be sooting or burnishing as it only occurs on selective sections of the vessels, for this reason, it was not reordered as ochre burnishing or exterior carbonisation.

Nine vessels had interior wear or pitting (Table 4.5), with at least one etched vessel in each hut, except for Hut 5. Etched vessels came from the Short-necked and Straight-necked sub-types only. There were only two vessels (from Huts 2 and 21) that had both decoration and interior pitting or wear. Both were of the Short-necked sub-type, and both had notching techniques.

The null hypothesis implies that all the huts and hut clusters should have the same types of pots and bowls. However, several anomalies can be seen in this respect. The first anomaly was the two additional types of bowls found in Huts 2 and 3. These bowl types were only found in these two huts. A second anomaly was that Hut 3 only had one pot sub-type. A third anomaly was the large number of decorated vessels found in Huts 1 and 2 (this was a unique anomaly that does not occur in Boschoek). Finally, there was a lack of etched vessels from Hut 5 and decorated vessels from Hut 8.

Table 4.4: Decoration techniques found at Sun Shadow.

Sh = Short-necked pot; Sm = Straight-necked pot; St = Straight-necked pot;

Un = Undefined; MB = Medium Bowl.

Context	Incisions	Notching	Notching on appliqué coil	Comb stamping	Ochre Burnishing	Total
<i>Hut cluster 1</i>						
Hut 1	-	Un; MB	-	Un (2)	Un	5
Hut 2	-	Sh (2)	Sh; Sm	-	-	4
Hut 3	-	Sh	-	-	-	1
<i>Hut cluster 2</i>						
Hut 5	-	St; Un	-	-	-	2
Hut 6	Un	-	-	-	-	1
<i>Hut Cluster 5</i>						
Hut 19	-	Sh	-	-	-	1
Hut 21	-	Sh	-	-	-	1
Total	1	9	2	2	1	15

() = number of vessels of that sub-type.

The ratio of pot sizes

The third intra-site comparison is pot diameter size (Figure 4.9 and Table 4.6). The most common diameter size ranges were the <20 cm and 21-30 cm (35% each); the 31+ cm range made up only 10% of the vessel assemblage. Pots in the 31+ cm range came from the Smooth-neck and Short-neck sub-types. Hut 2 had the two largest diameter pots in Sun Shadow with a Short-necked pot at 37 cm and a Straight-necked pot at 46 cm.

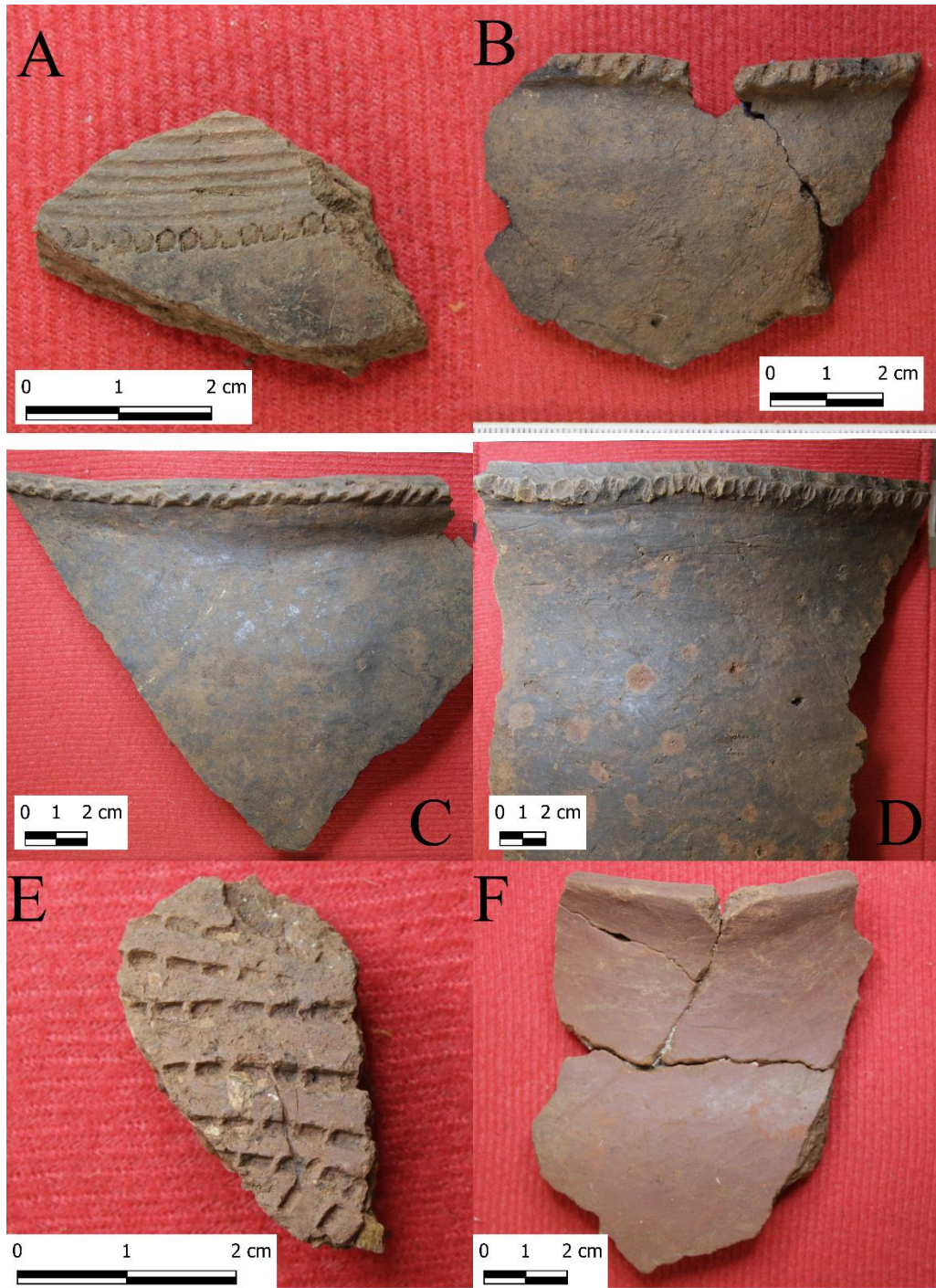


Figure 4.6: Examples of the decoration found at Sun Shadow. A) Incisions; B Notching; CD) Notching on an appliqué coil; E) Comb stamping; F) Ochre burnishing.

Table 4.5: Etched and worn vessels found at Sun Shadow.

	Smooth-necked pot	Short-necked pot	Straight-necked pot	Undefined	Large bowl	Medium bowl	Total
Hut cluster 1							
Hut 1	-	-	1	-	-	-	1
Hut 2	-	2*	-	-	-	-	2
Hut 3	-	1	-	-	-	-	1
Hut cluster 2							
Hut 6	-	1	1	-	-	-	2
Hut 8	-	-	1	-	-	-	1
Hut Cluster 5							
Hut 19	-	1	-	-	-	-	1
Hut 21	-	1*	-	-	-	-	1
Total	0	6	3	0	0	0	9

* = decorated vessels

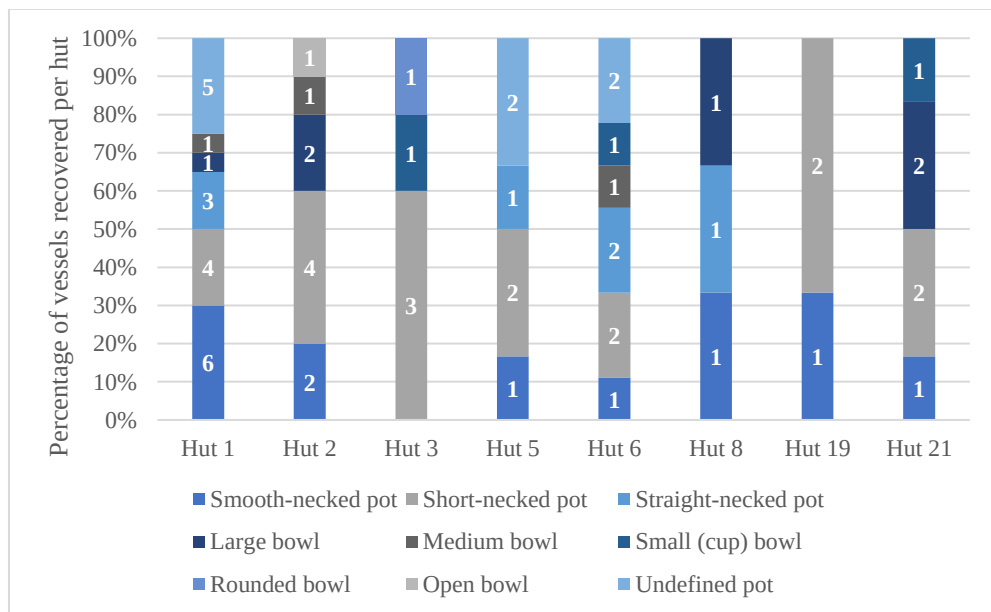


Figure 4.7: Vessel subtypes comparison for Sun Shadow. Data labels represent the number of vessels recovered.

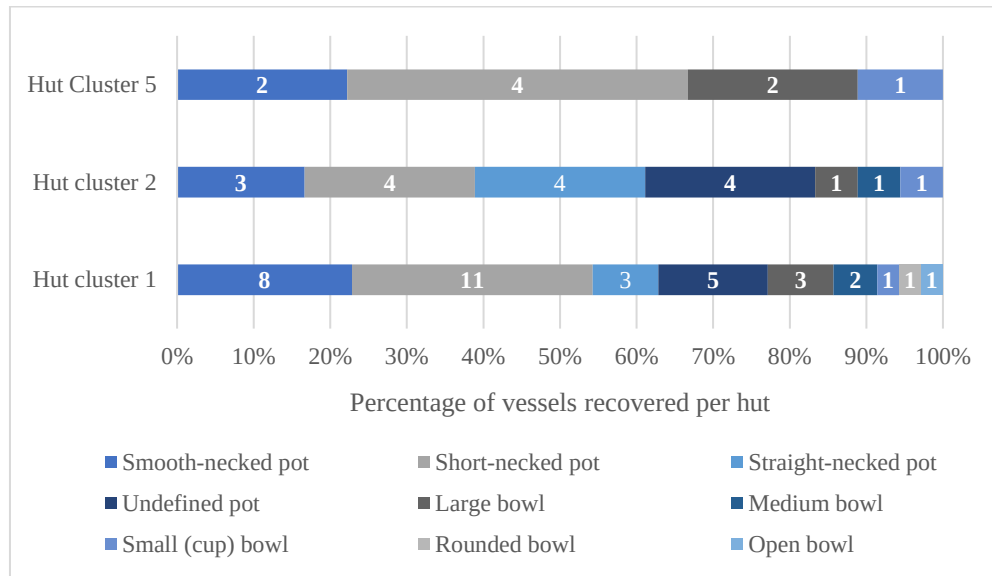


Figure 4.8: Vessel subtypes comparison for Hut clusters at Sun Shadow. Data labels represent the number of vessels recovered.

At the Hut cluster level (Figure 4.10 and Table 4.7), Hut cluster 1 had more vessels in the <20 cm diameter size range, with the most being the Short-necked sub-type. In the 21-30 cm diameter size range, most were the Straight-necked sub-type; in the 31+ cm range, most came from the Straight-necked sub-type. Hut cluster 2 had more vessels in the 21-30 cm diameter size range, mostly the Straight-necked sub-type. In the <20 cm diameter size range, most occurred in the Short-necked sub-type. In the 31+ cm range, most vessels came from the Straight-necked sub-type. Hut cluster 5 had an equal number of vessels in the 21-30 cm diameter size range. In the <20 cm diameter size range, most occurred in the Straight-necked sub-type. There were no vessels in the 31+ cm range.

The result of the statistical test shows that there was no significant difference between sizes and the expected values. At the Hut cluster level (Appendix 5 Table A5.6), there was a probability ratio between $p = 0.393$ (Cluster 5) and $p = 0.870$ (Cluster 1). However, at the hut level (Appendix 5 Table A5.5), there was a wider range of variation, with Hut 1 ($p = 0.799$) having the nearest ratio of pot sizes as the expected values, whilst Hut 21 ($p = 0.105$) showed the greatest difference to the expected ratio.

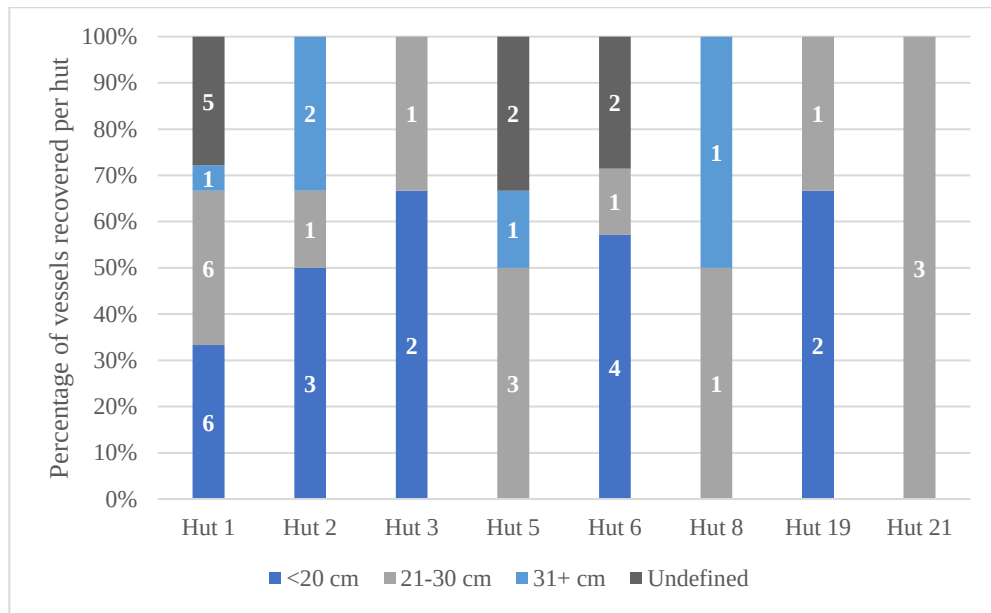


Figure 4.9: Pot size comparison for Sun Shadow. Data labels represent the number of vessels recovered.

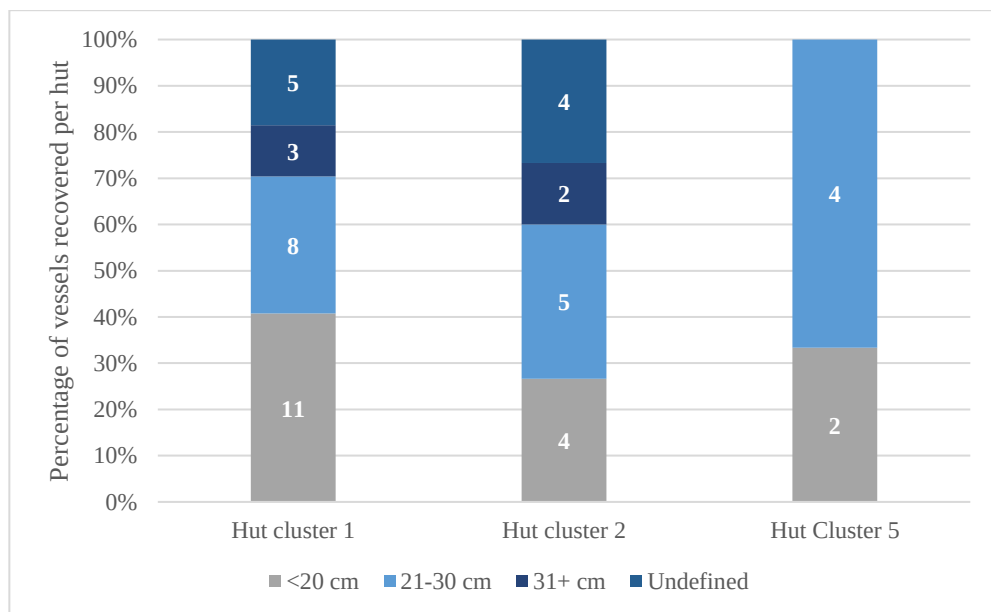


Figure 4.10: Pot size comparison for Hut clusters at Sun Shadow. Data labels represent the number of vessels recovered.

Table 4.6: Pot-sizes by vessel subtype for Sun Shadow at a Hut level

	Smooth-necked pot			Short-necked pot			Straight-necked pot			Undefined	Total
Orifice Diameter (cm)	<20	21-30	31+	<20	21-30	31+	<20	21-30	31+		
Hut 1	2	3	1	2	2	-	2	1	-	5	18
Hut 2	-	1	1	3	-	1	-	-	-	-	6
Hut 3	-	-	-	2	1	-	-	-	-	-	3
Hut 5	-	-	1	-	2	-	-	1	-	2	6
Hut 6	1	-	-	2	-	-	1	1	-	2	7
Hut 8	-	-	1	-	-	-	-	1	-	-	2
Hut 19	-	1	-	-	-	-	2	-	-	-	3
Hut 21	-	1	-	-	2	-	-	-	-	-	3
Total	3	6	4	9	7	1	5	4	-	9	48

Table 4.7: Pot-sizes by vessel subtype for Sun Shadow at a Hut cluster level

	Smooth-necked pot			Short-necked pot			Straight-necked pot			Undefined	Total
Orifice Diameter (cm)	<20	21-30	31+	<20	21-30	31+	<20	21-30	31+		
Hut Cluster 1	2	4	2	7	3	1	2	1	-	5	27
Hut Cluster 2	1	-	2	2	2	-	1	3	-	4	15
Hut Cluster 5	-	2	-	-	2	-	2	-	-	-	6
Total	3	6	4	9	7	1	5	4	-	9	48

An implication of the null hypothesis is that all the huts and hut clusters should have the same diameter pots. However, several anomalies can be seen in this respect. The first anomaly was that Hut 21 only has one diameter size range. The second anomaly was the lack of large diameter Straight-necked pots in Sun Shadow. The third anomaly was the lack of large diameter pots in Hut cluster 5.

The spatial position of vessels

In Hut cluster 1 (Figure 4.11), 14 vessels were found within the hut wall and 21 vessels outside. Inside the hut, only one vessel was found in the front left. Behind the internal wall, five vessels were from the rear right and eight were from the rear left. Six bowls were found in the rear section of the hut with four to the left and two to the right. The Open shaped bowl was found on the left, whilst the Rounded bowl was found on the right. From the 21 vessels found outside the hut, 19 were found in the front half of the courtyard: 15 vessels were found on the front left and four on the front right, whilst two vessels were found at the back.

In Hut cluster 2 (Figure 4.12), 17 vessels were found inside the hut and one in the front left courtyard. Inside the hut, four vessels were in the front right, five vessels were in the front left. Only two bowls were found in the front left section of the hut. Behind the internal wall, five vessels were from the rear right and three were from the rear left. In Hut cluster 5 (Figure 4.13), eight vessels were found inside the hut and one vessel outside in the front left courtyard. Inside, all vessels were recovered from the rear area: six from the rear right and two from the rear left.

The results of the Chi-Squared test were inconclusive for the spatial positioning analysis due to the small sample size. The Chi-Square results for Sun Shadow pot size analysis are shown in Appendix 5 Tables A5.7 and A5.8.

The null hypothesis implies that all the huts and hut clusters should have the same positioning of vessels. However, two anomalies can be seen in this respect. The first anomaly was that all of Hut 1's vessels were found outside the hut and mainly in

the front of the hut. The second anomaly was that all of Huts 2 and 21 were found only in the rear section of the hut.

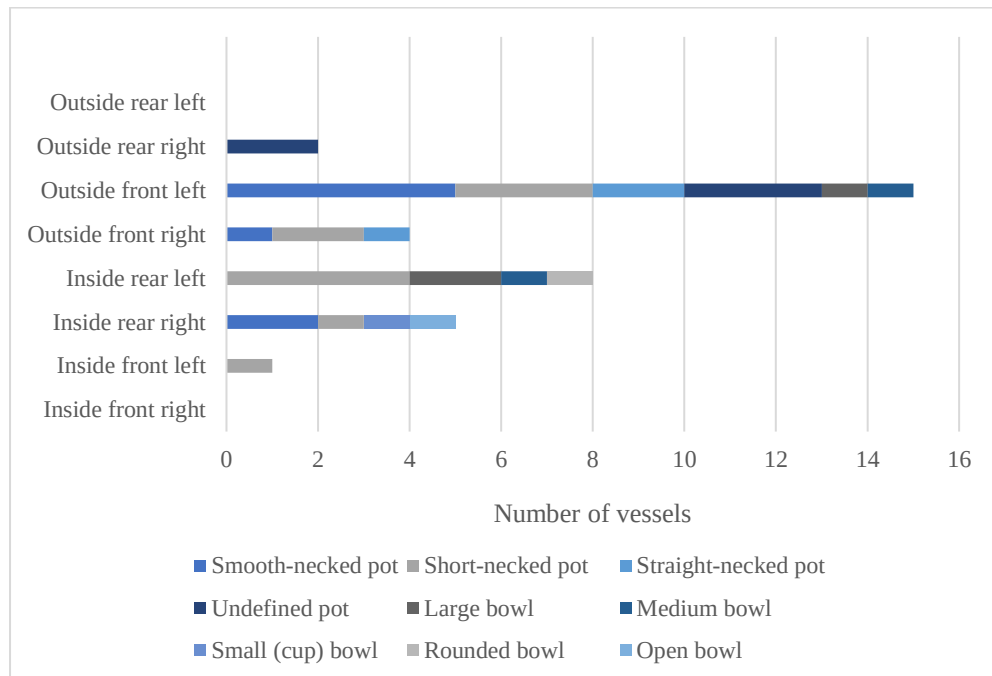


Figure 4.11: Spatial positioning of vessels in Hut cluster 1 at Sun Shadow.

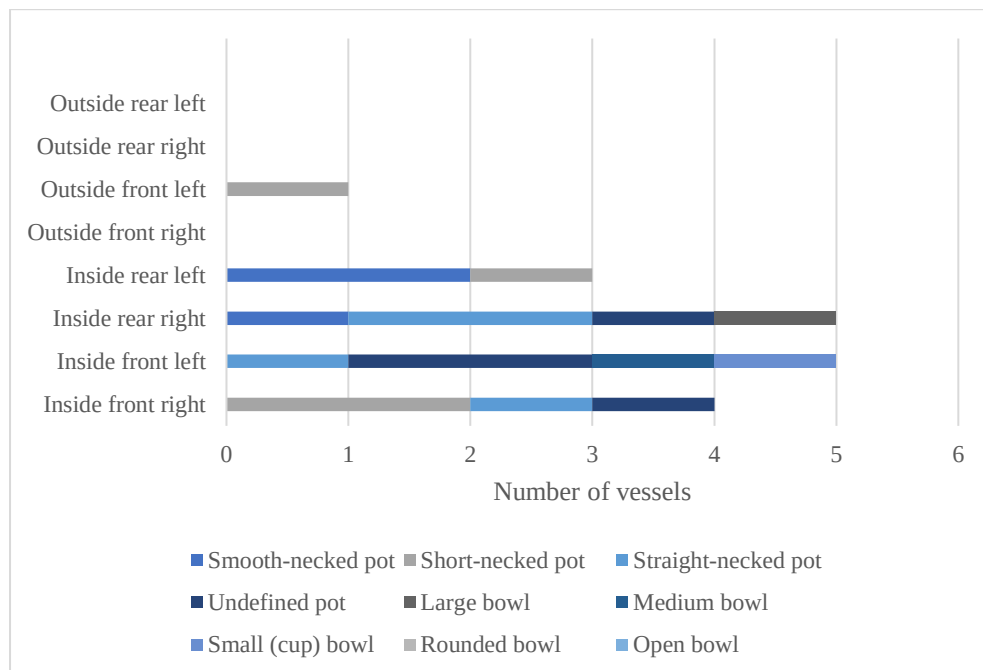


Figure 4.12: Spatial positioning of vessels in Hut cluster 2 at Sun Shadow.

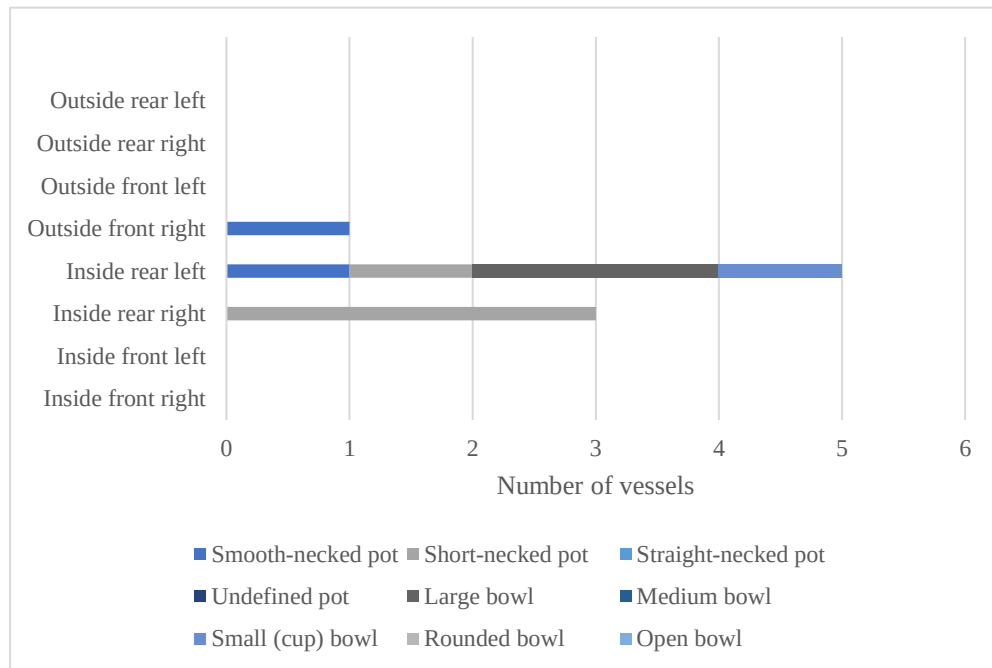


Figure 4.13: Spatial positioning of vessels in Hut cluster 5 at Sun Shadow.

Section 3: Boschoek Results.

The ratio of vessel types

The first intra-site comparison is for vessel types (Figure 4.14). Boschoek had an overall average pot ratio of 69%, a higher ratio than that of Sun Shadow. Bowls only averaged 16%, considerably lower than Sun Shadow. At the Hut cluster level (Figure 4.15), all had a minimum pot ratio of 40%, whilst bowls ranged between 0% to 23%, Hut cluster 4 being the only one to lack bowls.

This initial comparison indicates that at Boschoek there is a notable difference in the types of vessels compared to Sun Shadow. The statistical analysis at the hut (Appendix 5 Table A5.9) and hut cluster levels (Appendix 5 Table A5.10), however, indicate that there was no significant difference in the assemblage. At the Hut cluster level, the probability ratio was between $p = 0.219$ (Cluster 4) to $p = 0.866$ (Cluster 5). There was more diversity in the probability ratio between the observed and expected assemblage at the hut level. Hut 17 ($p = 0.057$) had the largest ratio gap, whilst Hut 24 ($p = 0.866$) had the smallest.

An implication of the null hypothesis is that all the huts and hut clusters should have the same number of pots and bowls. However, several anomalies can be seen in this respect. The first anomaly was that unlike Sun Shadow several huts had no identifiable bowls. The second anomaly was the low number of vessels found in several huts but especially Huts 6 and 19. The third anomaly was the large number of identified vessels in Hut clusters 1 and 3.

The ratio of vessel sub-types

The second intra-site comparison is for vessel sub-types (Figure 4.16), vessel profile drawings can be found in Appendix 4. Short-necked pots had the largest proportion at 29%; Straight-necked pots were second with 20%; and finally, Straight-necked pots made up 25% of the total assemblage. Bowls occurred in 11 of the huts, while Large and Medium-sized bowls were the most common sub-type with 9%, but only one small bowl was present throughout the Boschoek assemblage. At the Hut cluster level (Figure 4.17), Hut cluster 1 had an even ratio of each type of pot compared to the other Hut clusters with Short-necked pots being the most common. This Hut cluster made up 40% of the total Boschoek assemblage. Hut cluster 3 had the next highest percentage with Straight-necked pots being the most common vessel; this Hut cluster made up 31% of the total Boschoek assemblage. The other clusters were the following: Hut cluster 2 made up 16%; Hut cluster 5 was 8%; Hut cluster 4 was 5%. Overall, there was no notable difference observed in the vessel sub-types, despite the lack of identifiable bowls.

The result of the statistical test shows that at the hut cluster level (Appendix 5 Table A5.12) there was no significant difference in vessel subtypes and the expected results. There was a probability range of $p = 0.078$ (Cluster 4) to $p = 0.831$ (Cluster 1). However, at the hut level (Appendix 5 Table A5.11), there was a wider range in variation. Huts 4 ($p = 0.097$) and 21 ($p = 0.078$) showed the greatest divergence from the expected values. Whilst this does not necessarily indicate a significant difference between their sub-types and the expected results, it shows that there are outliers within a homestead.

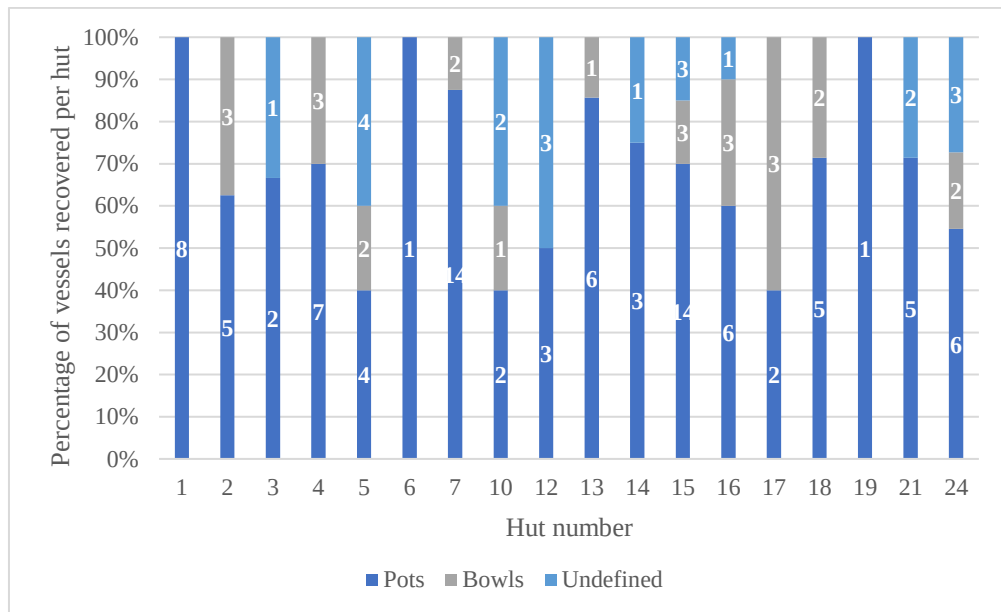


Figure 4.14: Vessel type comparison for Boschoek. Data labels represent the number of vessels recovered.

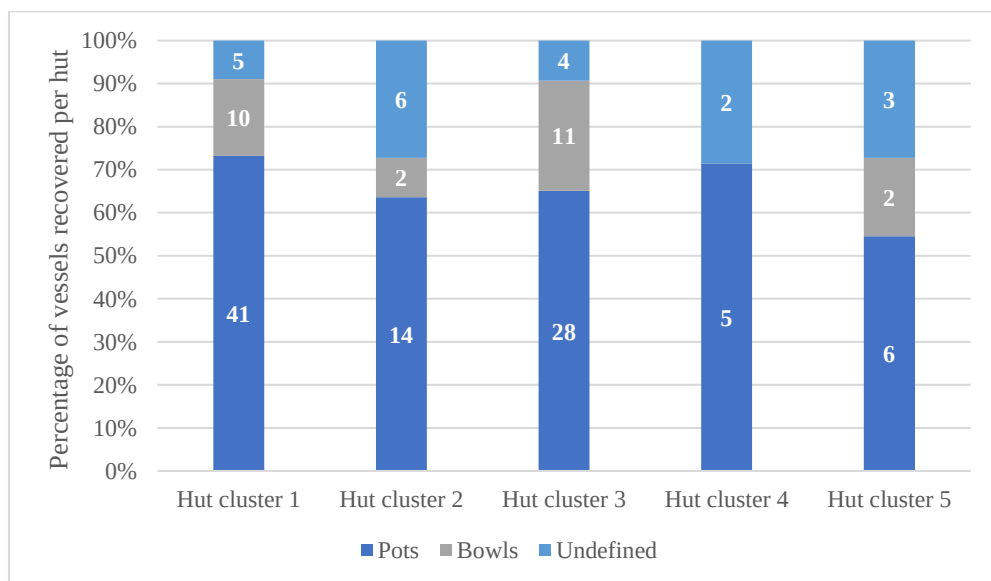


Figure 4.15: Vessel type comparison for Hut clusters at Boschoek. Data labels represent the number of vessels recovered.

Decoration and internal pitting

Thirty-six vessels had exterior decoration (Table 4.8 and Figure 4.18), 20 of these were found in Midden 1. Notching was the most common technique found in the huts whilst, comb stamping was the most common technique found in Midden 1. The most elaborate decoration motif was found in Hut 10; a Short-necked vessel

with comb stamping and ochre burnishing. Forty-four percent of decoration was found on Straight-necked vessels. No decoration was found on the Small bowl sub-types. Stylistically, eight vessels belong to the *Buispoort* facies, six vessels to *Makgwareng* facies, and two vessels to *Uitkomst* facies.

Twenty vessels had interior pitting or wear (Table 4.9), at least one etched vessel was found at 10 huts within the Boschoek homestead. Hut 7 had the most etched vessels. Etched vessels came from all sub-types except the Small bowl sub-type. There were only two vessels (from Huts 19 and 21) that had both decoration and interior pitting or wear. One was of the Short-necked sub-type and the other was of the Straight-necked sub-type and both had notching techniques.

Table 4.8: Decoration techniques found at Boschoek.

*Sh = Short-necked pot; Sm = Straight-necked pot; St = Straight-necked pot;
Un = Undefined; LB = Large Bowl; MB = Medium Bowl.*

Context	Incisions	Notching	Notching on an appliqué coil	Comb stamping	Ochre burnishing	Comb stamping and ochre burnishing	Total
Midden 1	Un (2)	Un (2); Sh; Sm; St (2)		Un (7)	Un (2)	Un (2)	20
<i>Hut cluster 1</i>							
Hut 2	St	-		-	-	-	1
Hut 4	-	St		-	-	-	1
Hut 5	Un	MB		-	-	-	2
Hut 7	St	Sm		-	-	-	2
<i>Hut cluster 2</i>							
Hut 10	-	-		Un	-	Sh	2
Hut 13	-	-	Sh	-	-	-	1
<i>Hut cluster 3</i>							
Hut 15	-	-		LB	-	-	1
Hut 19	-	Sh		-	-	-	1
<i>Hut cluster 4</i>							
Hut 21	-	St	St	-	-	-	2
<i>Hut cluster 5</i>							
Hut 24	-	Un; St (2)		-	-	-	3
Total	5	14	2	9	2	3	36

() = number of vessels of that sub-type.



Figure 4.16: Examples of the decoration found at Boschoek. A) Incisions; B) Notching; C-D) Notching on an appliqué coil; E) Comb stamping; F) Comb stamping and light and dark ochre burnishing.

Table 4.9: Etched and worn vessels found at Boschoek.

	Smooth-necked pot	Short-necked pot	Straight-necked pot	Undefined	Large bowl	Medium bowl	
Hut cluster 1							
Hut 1	-	1	1	-	-	-	2
Hut 4	-	1	-	-	-	1	2
Hut 5	1	-	1	1	-	-	3
Hut 7	2	2	-	-	1	-	5
Hut cluster 2							
Hut 12	-	1	-	1	-	-	2
Hut cluster 3							
Hut 15	1	-	-	-	-	-	1
Hut 16	-	1	-	-	-	-	1
Hut 18	2	-	-	-	-	-	2
Hut 19	-	1*	-	-	-	-	1
Hut cluster 4							
Hut 21	-	-	1*	-	-	-	1
Total	6	7	3	2	1	1	20

* = decorated vessels

An implication of the null hypothesis is that all the huts and hut clusters should have the same types of pots and bowls. However, several anomalies can be seen in this respect. The first anomaly was that Huts 2, 5 and 7 had the most variety of vessel sub-types and they are all located in Hut cluster 1, whereas the huts with the lowest variety of vessel sub-types are spread throughout the hut clusters. The second anomaly was the high number of etched or worn vessels in Hut 7, similar to the observation made for Sun Shadow Huts 2 and 6. The third anomaly was the low concentration of decorated vessels at Boschoek compared to Sun Shadow. Twenty-four percent of the identified vessels at Sun Shadow had decoration, whilst only 11% of the identified vessels at Boschoek had decoration. This does not include the decorated vessels found in Boschoek's midden.

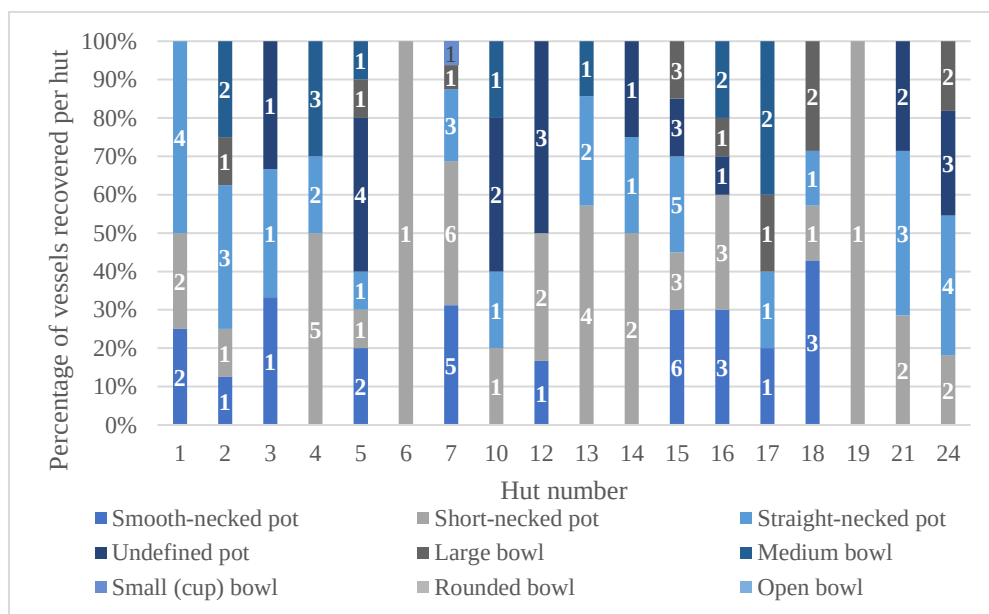


Figure 4.17: Vessel subtypes comparison for Boschoek.

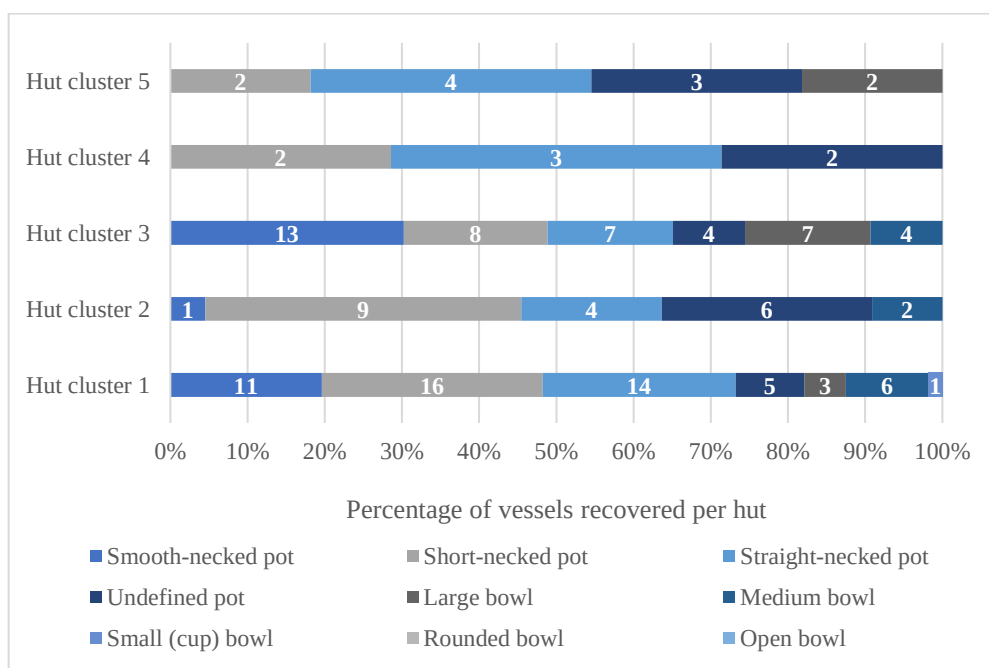


Figure 4.18: Vessel subtypes comparison for Hut clusters at Boschoek.

The ratio of pot sizes

The third intra-site comparison is pot diameter size (Figure 4.19, Table 4.10). The most common diameter range was <20 cm at 39%, next was the 21-30 cm range at 32%, and finally 31+ cm at 11%. Vessels in the 31+ cm diameter range came from

all the subtypes. Huts 4 and 21 had the two largest diameter pots with a Short-necked pot at 51 cm and a Straight-necked pot at 51 cm.

At the Hut cluster level (Figure 4.20, Table 4.11), Hut cluster 1 had more vessels in the 21-30 cm diameter size range with most being in the Short-necked sub-type. In the <20 cm diameter size range, most being in the Straight-necked sub-type. In the 31+ cm range, most vessels being in the Straight-necked sub-type. Hut cluster 2 had more vessels in the <20 cm diameter size range with most occurring in the Short-necked sub-type. In the 21-30 cm diameter size range, most occurred in the Short-necked sub-type. There were no vessels in the 31+ cm range. Hut cluster 3 had more vessels at <20 cm with most occurring in the Short-necked sub-type. In the 21-30 cm diameter size range, most occurred in the Straight-necked sub-type. At 31+ cm, most vessels came from the Short-necked sub-type. In Hut cluster 4 all vessels came from the Short-necked sub-type regardless of orifice diameter size. Hut cluster 5 had an equal number of vessels in the 21-30 cm diameter size range in the Short-necked and the Straight-necked. In the <20 cm range, most occurred in the Straight-necked sub-type, but there were no vessels in the 31+ cm range. In all, there was no notable difference between the diameter sizes of the vessels and the expected values.

The result of the statistical test shows there was no significant difference in pot diameter sizes. At the hut cluster level (Appendix 5 Table A5.14), there was a probability ratio between $p = 0.148$ (Hut cluster 1) and $p = 0.846$ (Hut cluster 3). Overall, at the hut level (Appendix 5 Table A5.13), there was a wider range of variation, with Hut 15 ($p = 0.921$) having the closest ratio, whilst Hut 7 ($p = 0.134$) showed the greatest difference from the expected ratio. However, only Hut 1 ($p = 0.004$) showed a significant difference. The reason for this difference was that Hut 1 had more vessels in the 31+ cm category than any other hut in the homestead.

The null hypothesis implies that all the huts and hut clusters should have the same diameter sized pots. However, two anomalies can be seen in this respect. The first anomaly was the large number of 31+ cm diameter sized pots in Hut 1. The second anomaly was the lack of 31+ cm diameter sized pots in Hut clusters 2 and 5.

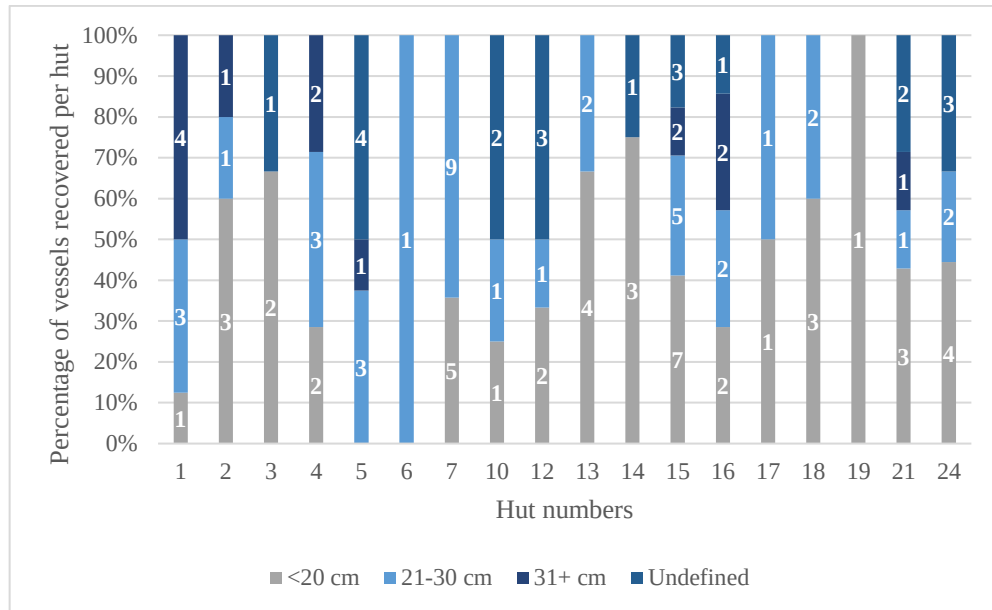


Figure 4.19: Pot size comparison for Boschoek. Data labels represent the number of vessels recovered.

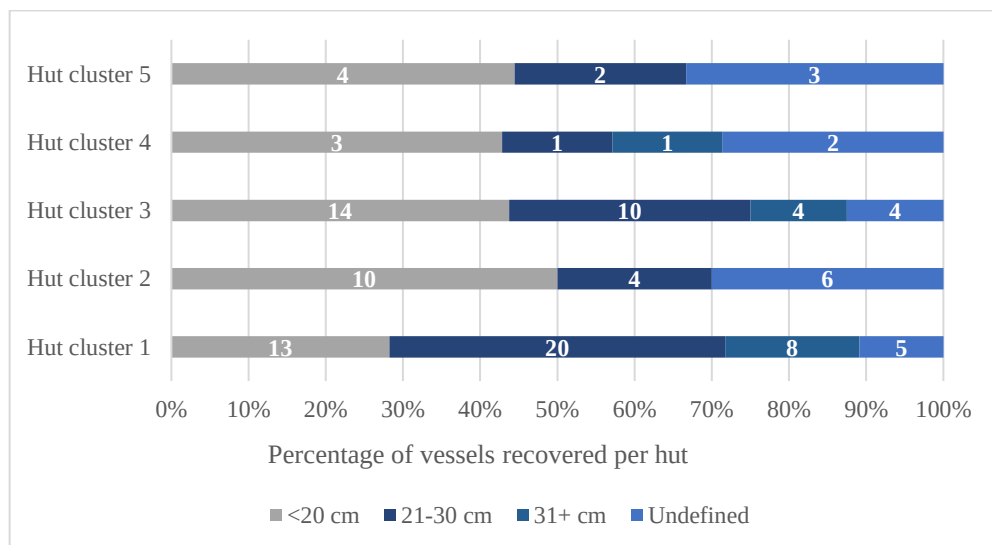


Figure 4.20: Pot size comparison for Hut clusters at Boschoek. Data labels represent the number of vessels recovered.

Table 4.10: Pot-sizes by vessel subtype for Boschoek at a Hut level

Context	Smooth-necked pot			Short-necked pot			Straight-necked pot			Undefined	Total
Orifice Diameter (cm)	<20	21-30	31+	<20	21-30	31+	<20	21-30	31+		
Hut 1	-	1	1	-	1	1	1	1	2	-	8
Hut 2	1	-	-	1	-	-	1	1	1	-	5
Hut 3	1	-	-	-	-	-	1	-	-	1	3
Hut 4	-	-	-	1	2	2	1	1	-	-	7
Hut 5	-	1	1	-	1	-	-	1	-	4	8
Hut 6	-	-	-	-	1		-	-	-	-	1
Hut 7	1	4	-	1	5	-	3	-	-	-	14
Hut 10	-	-	-	-	1	-	1	-	-	2	4
Hut 12	1	-	-	1	1	-	-	-	-	3	6
Hut 13	-	-	-	3	1	-	1	1	-	-	6
Hut 14	-	-	-	2	-	-	1	-	-	1	4
Hut 15	2	3	1	2	-	1	3	2	-	3	17
Hut 16	1	2	-	1	-	2	-	-	-	1	7
Hut 17	1	-	-	-	1	-	-	-	-	-	2
Hut 18	1	2	-	1	-	-	1	-	-	-	5
Hut 19	-	-	-	1	-	-	-	-	-	-	1
Hut 21	-	-	-	3	1	1	-	-	-	2	7
Hut 24	-	-	-	1	1	-	3	1	-	3	9
Total	9	13	3	18	16	7	17	8	3	20	114

Table 4.11: Pot-sizes by vessel subtype for Boschoek at a Hut cluster level

Context	Smooth-necked pot			Short-necked pot			Straight-necked pot			Undefined	Total
Orifice Diameter (cm)	<20	21-30	31+	<20	21-30	31+	<20	21-30	31+		
Hut cluster 1	3	6	2	3	10	3	7	4	3	5	46
Hut cluster 2	1	-	-	6	3	-	3	1	-	6	20
Hut cluster 3	5	7	1	5	1	3	4	2	-	4	32
Hut cluster 4	-	-	-	3	1	1	-	-	-	2	7
Hut cluster 5	-	-	-	1	1	-	3	1	-	3	9
Total	9	13	3	18	16	7	17	8	3	20	114

The spatial position of vessels

In the spatial positionings for Hut cluster 1 (Figure 4.21), 33 vessels were found within the hut and 20 vessels outside. Inside the hut, eight vessels were in the front right and four in the front left. Behind the internal wall, 10 vessels were in the rear right and 11 in the rear left. Of the 20 vessels found outside the hut, 12 were in the front half of the courtyard, whilst eight vessels were at the back. In Hut cluster 2 (Figure 4.22), all 13 vessels were found inside the hut. In the front section, three came from the front right and one from the front left. Behind the internal wall, four vessels were in the rear right and five vessels were in the rear left. Of the three vessels found outside the hut, one was in the front half of the courtyard, whilst two vessels were at the back.

In Hut cluster 3 (Figure 4.23), 25 vessels were found within the hut and 11 vessels outside. Inside the hut, six vessels were in the front right, and three in the front left. Behind the internal wall, nine vessels came from the rear right and seven from the rear left. Of the 11 vessels found outside the hut, one was in the front half of the courtyard, whilst 10 were at the back. In the spatial positionings for Hut cluster 4 (Figure 4.24), all seven vessels were found inside the hut walls. In the front section, two were from the left and one from the front left. Behind the internal wall, one vessel was from the rear right and three were from the rear left. In Hut cluster 5 (Figure 4.25), two vessels were found within the hut wall and nine vessels outside. Inside the hut, both vessels were found in the rear section. All nine exterior vessels were found at the back.

The results of the Chi-Squared test were inconclusive for the spatial positioning analysis due to the small sample size. The Chi-Square results for Boschoek pot size analysis can be seen in Appendix 5 Tables A5.15 and A5.16.

The null hypothesis implies that all the huts and hut clusters should have the same positioning of vessels. However, two anomalies can be seen in this respect. The first anomaly was the ratio of vessels found outside the hut compared to Sun Shadow, in particular Huts 1, 15 and 24. In both Huts 15 and 24 vessels were found in the back courtyard, whilst Hut 1 vessels were only found in the front courtyard. The

second anomaly was that vessels in several huts, predominantly from Hut clusters 3 and 4, were only found inside the hut.

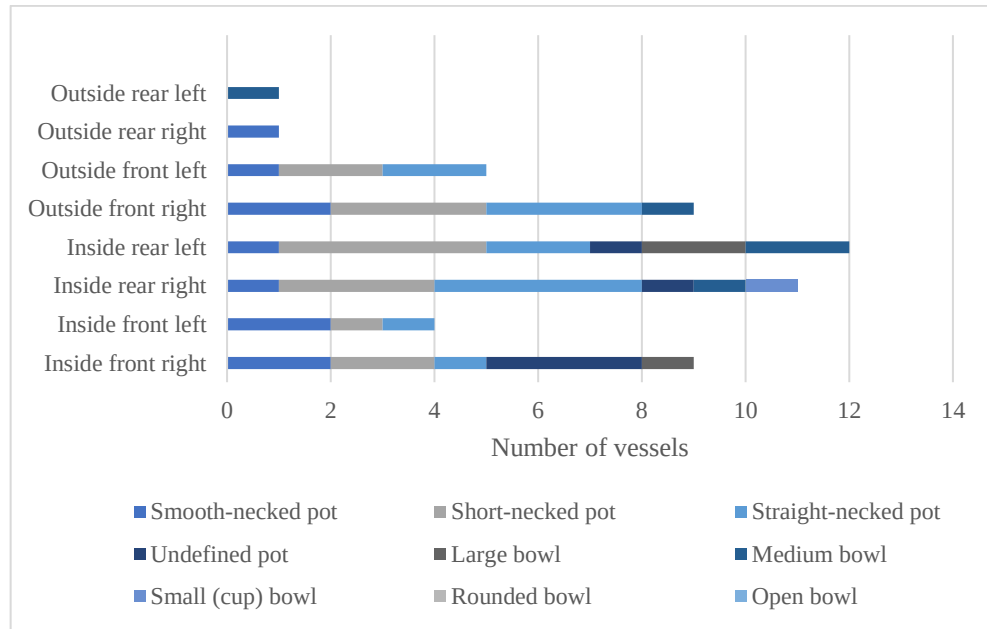


Figure 4.21: Spatial positioning of vessels in Hut cluster 1 at Boschoek.

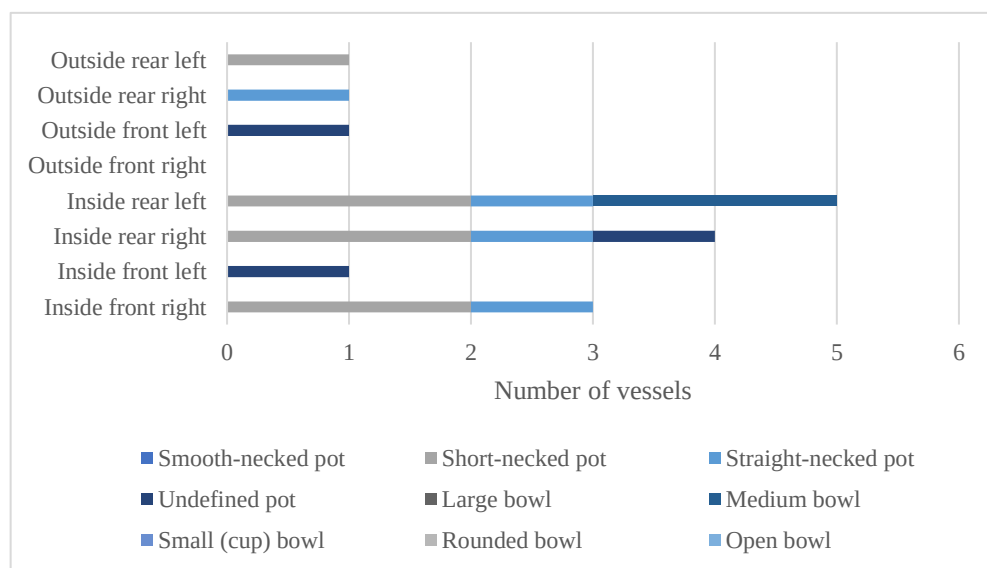


Figure 4.22: Spatial positioning of vessels in Hut cluster 2 at Boschoek.

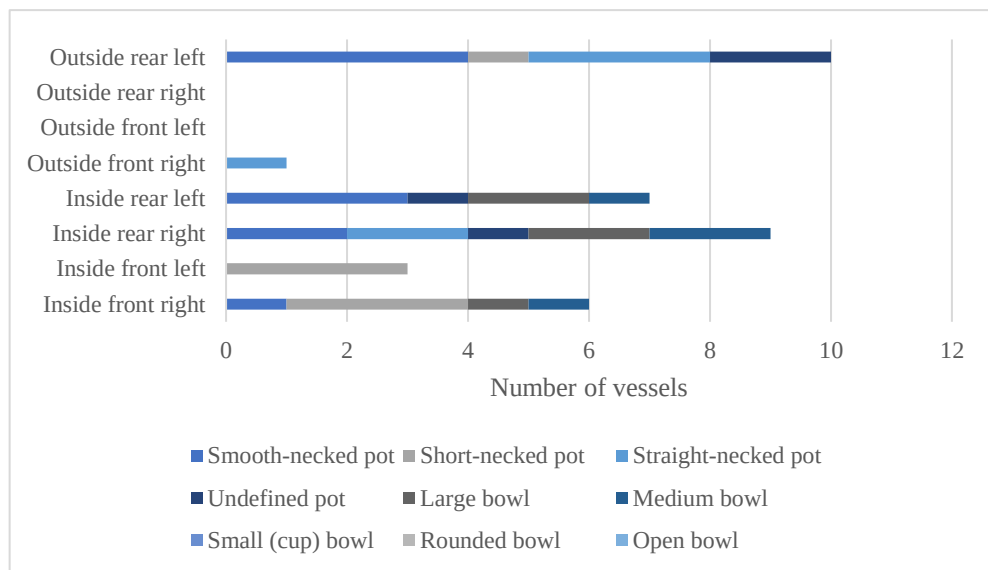


Figure 4.23: Spatial positioning of vessels in Hut cluster 3 at Boschoek.

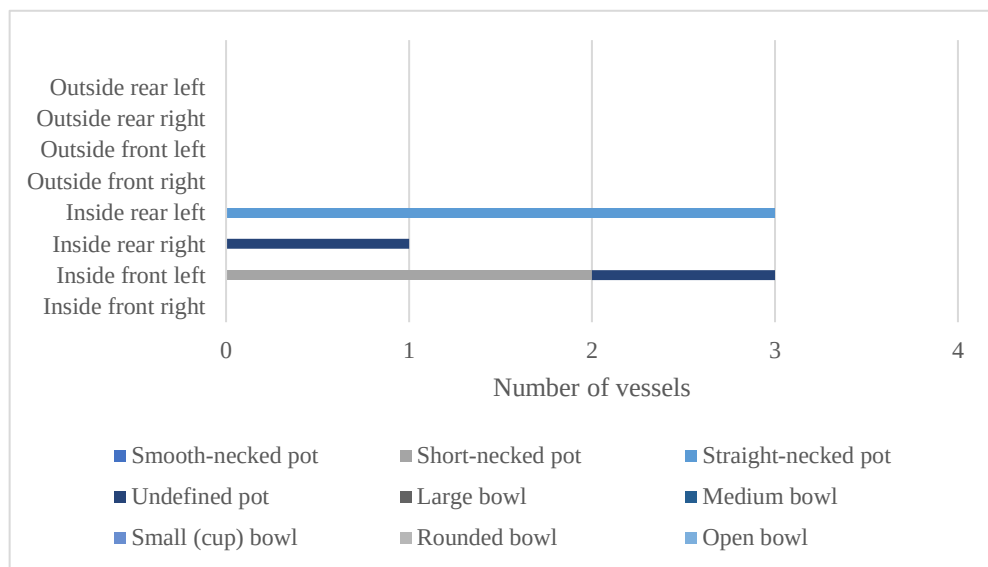


Figure 4.24: Spatial positioning of vessels in Hut cluster 4 at Boschoek.

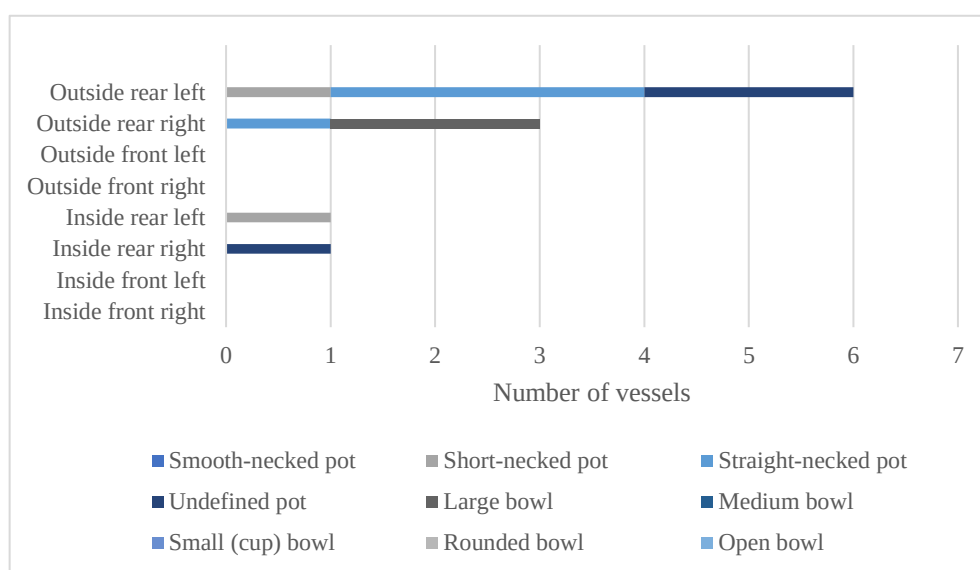


Figure 4.25: Spatial positioning of vessels in Hut cluster 5 at Boschoek.

Section 4: Inter-site analysis results.

The ratio of vessel types

At an inter-site analysis (Figure 4.26), both homesteads were similar with only a 5% difference in the ratio of pots and bowls. The statistical test for the inter-site analysis (Appendix 5 Table A5.17), shows that there is no significant difference between the observed number of pots and bowls to the theoretically expected values. Sun Shadow had an overall p -value of 0.557 and Boschoek had an overall p -value of 0.601. When comparing the two homesteads against each other, the neighbourhood had a p -value of 0,434. At this level the null hypothesis was valid, both homesteads had the same ratio of pots and bowls. This was not surprising as I expected the two neighbouring homesteads to have a relatively equal ratio of pots and bowls.

The ratio of vessel sub-types

At an inter-site analysis (Figure 4.27), both Sun Shadow and Boschoek had a higher ratio of Short-necked vessels. Sun Shadow had more Smooth-necked vessels than

Straight-necked, whilst Boschoek had the opposite. Sun Shadow had a higher percentage of Large bowls and an equal ratio of Medium and Small bowls, whilst Boschoek had an equal ratio of Large and Medium bowls. Also, the Rounded-shaped and Open-shaped bowls were only found at Sun Shadow.

The statistical test for the inter-site analysis (Appendix 5 Table A5.18) shows that there is no significant difference between the observed vessel sub-types to the theoretically expected values. Sun Shadow had an overall p -value of 0.692 and Boschoek had an overall p -value of 0.828. When comparing the two homesteads against each other, the neighbourhood had a p -value of 0,241. At this level the null hypothesis was valid; both homesteads had the same types of pots. What this showed was that despite there being more diversification within the overall vessel assemblage, these two neighbouring homesteads made use of the same types of pots and bowls, even though Sun Shadow had two extra types of vessels that could be a type only used in select homesteads within the wider neighbourhood, or a result of selective curation of excavated sherds.

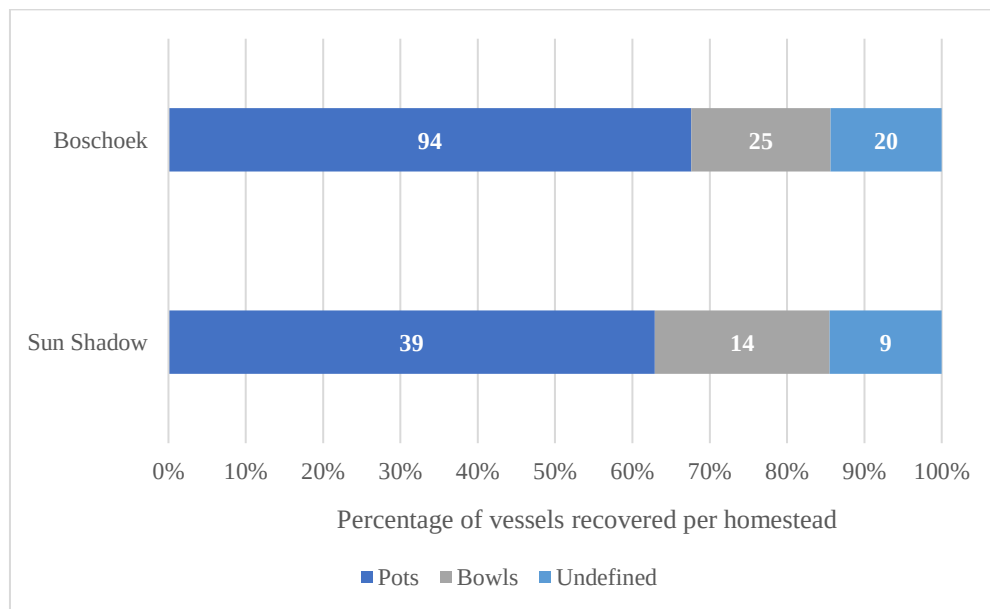


Figure 4.26: Vessel type comparison for the two homesteads. Data labels represent the number of vessels recovered.

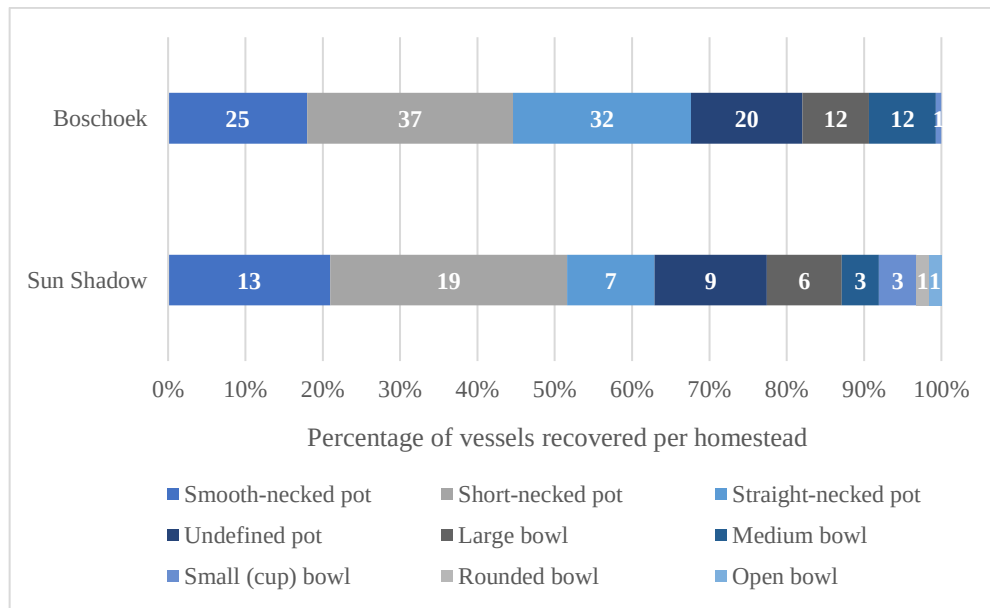


Figure 4.27: Vessel subtypes comparison for the two homesteads. Data labels represent the number of vessels recovered.

The ratio of pot sizes

The comparison between the homesteads (Figure 4.28) shows that the homesteads are similar. Thirty-five percent of Sun Shadows pots fell into the <20 cm diameter size range, whilst 31% of the Boschoek pots fell into the same diameter size range. Thirty-eight percent of the Boschoek pots were in the 21-30 cm diameter size range compared to the 35% of Sun Shadow's pots. In the 31+ cm diameter size range, the two homesteads were the most similar with 10% of Sun Shadow and 9% of Boschoek being in this range.

The statistical test for the inter-site analysis (Appendix 5 Table A5.19) shows that there is no significant difference between the observed pot diameter sizes to the theoretically expected values. Sun Shadow had an overall p -value of 0,947 and Boschoek had an overall p -value of 0,939. When comparing the two homesteads against each other, the neighbourhood had a p -value of 0,903. At this level the null hypothesis was valid; both homesteads had the same ratio of pot diameter sizes.

The spatial position of vessels

At the homestead level (Figure 4.29), 63% of all vessels were found inside the hut at Sun Shadow, whereas 68% were found inside the hut at Boschoek. Fifty-five percent of all vessels from both homesteads were recovered from the left side (inside and outside) of each hut. Fifty-nine percent of all vessels from both homesteads were recovered from the back (inside and outside) sections of each hut. This means that there was no identifiable left/right and front/back distribution pattern for both homesteads.

The statistical test for the inter-site analysis (Appendix 5 Table A5.20) shows that overall, there was a significant difference between the observed and the theoretically expected distribution. Boschoek had an overall p -value of 0.276, while Sun Shadow had an overall p -value of 0.012. When comparing the two homesteads against each other, the neighbourhood had a p -value of $< 0, 01$. At this level the null hypothesis was rejected, the homesteads did not have the same distribution pattern.

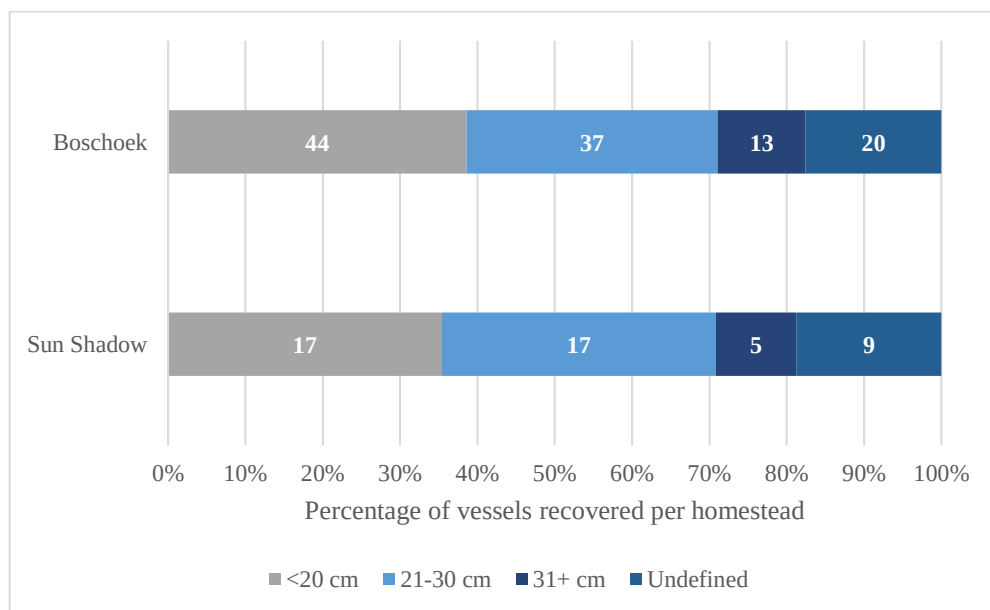


Figure 4.28: Pot size comparison for the two homesteads. Data labels represent the number of vessels recovered.

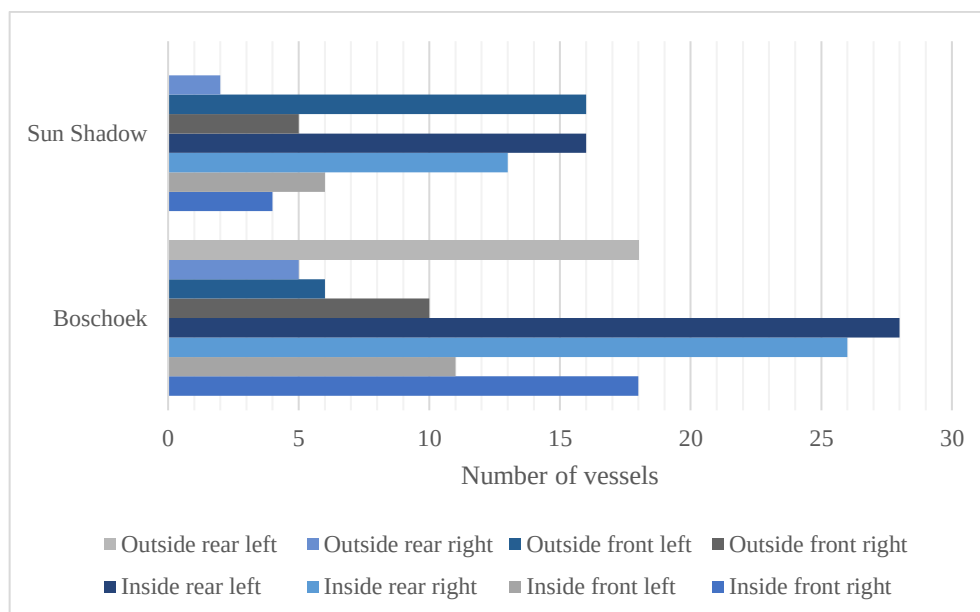


Figure 4.29: Spatial positioning of vessels for the two homesteads.

The null hypothesis implies that all the huts and hut clusters should have the same positioning of vessels. However, an anomaly can be seen in this respect which was that whilst positioning of vessels inside the huts of both homesteads was relatively similar, the positioning of vessels outside the hut differed significantly.

Section 5: Non-ceramic material results.

Sun Shadow

Additional finds from Sun Shadow are shown in Table 4.12. In total 1 711 artefacts were recovered from this homestead. Hut 6 contained the most artefacts including 366 copper and clay beads and 47 Ostrich Eggshell Beads; this was the only hut in the neighbourhood to have both types of beads. The lack of beads in other huts might be attributed to excavation methods. In this table, the ‘Other’ category includes artefacts such as wall reeds, wall daga and mica samples. The stone objects recovered from Sun Shadow are shown in Table 4.13. Two important artefacts recovered from Sun Shadow were a clay pipe bowl for smoking, found in Hut 8 (Figure 4.30) and a stone amulet recovered from Hut 1 (Figure 4.31). These were the only examples of each type found in the neighbourhood.

Table 4.14 shows the types of metal objects recovered from Sun Shadow. Hut 6 had the most metal objects; these were found in a hoard situated in front of the internal wall (Figure 4.32). The most intricate objects in the hoard were two copper earrings and a clump of copper wire with a few clay beads stuck to it. The most common metal objects recovered were spearheads and spearpoints. Hut 8 contained an unknown metal object with two holes punched through the middle (Figure 4.33).

Table 4.12: Non-ceramic artefacts recovered from Sun Shadow. Adapted from Hodgson 2019.

	Beads	Bone	Charcoal	Clay pipe	Grindstone	Metal	Eggshell Beads	Ostrich	Other	Stone	Wood	Total
Hut 1	2	15	373	-	2	1	-	-	54	119	-	566
Hut 2	-	48	1	-	4	1	1	-	-	1	-	56
Hut 3	-	1	-	-	1	2	-	-	-	-	-	4
Hut 5	-	7	3	-	6	-	-	-	1	3	7	27
Hut 6	366	196	149	-	5	18	47	7	1	-	-	789
Hut 8	-	3	27	1	-	1	-	-	-	4	164	200
Hut 19	-	29	-	-	4	-	-	-	9	9	-	51
Hut 21	-	5	-	-	5	1	-	-	2	5	-	18
Total	368	304	553	1	27	24	48	73	142	171	-	1711



Figure 4.30: Clay pipe found in Hut 8. Images courtesy of Hodgson (2019) Section drawing after Wits Archaeology Department (1994).

Table 4.13: Stone objects recovered from Sun Shadow.

	Adze	Amulet	Artefact/ Stone tools / Stone Flakes	Burnishing stone	Hammer Stone	Ochre Lamp	Quartz points	Quartz	Stone	Stone tool debris	Unknown	Total
Hut 1	1	1	51	2	7	1	5	12	15	10	14	119
Hut 2	-	-	-	-	-	-	-	-	-	-	1	1
Hut 5	-	-	3	-	-	-	-	-	-	-	-	3
Hut 6	-	-	-	-	-	-	-	-	1	-	-	1
Hut 8	-	-	3	1	-	-	-	-	-	-	-	4
Hut 19	-	-	5	4	-	-	-	-	-	-	-	9
Hut 21	-	-	2	-	-	-	-	-	3	-	-	5
Total	1	1	64	7	7	1	5	12	19	10	15	142

Table 4.14: Metal objects recovered from Sun Shadow.

	Iron Ingots/tangs	Iron sliver	Metal	Spear head/point	Adze	Razer	Earrings	Copper wire	Other	Total
Hut 1	-	1	-	-	-	-	-	-	-	1
Hut 2	-	-	-	1	-	-	-	-	-	1
Hut 3	-	-	-	2	-	-	-	-	-	2
Hut 6	7	-	2	3	1	2	2	1	-	18
Hut 8	-	-	-	-	-	-	-	-	1	1
Hut 21	-	-	-	1	-	-	-	-	-	1
Total	7	1	2	7	1	2	2	1	1	24

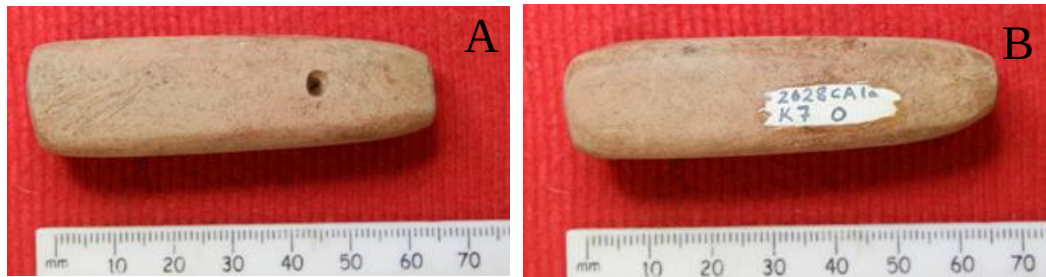


Figure 4.31: Stone amulet found in Hut 1. A: Top view, B: bottom view.



Figure 4.32: Metal hoard objects recovered from Hut 6.



Figure 4.33: Unknown metal object recovered from Hut 8.

Boschoek

Additional finds from Boschoek are shown in Table 4.15. More than 2 786 artefacts were recovered from this homestead. The ‘Organic’ category included botanical samples. The ‘Other’ category included artefacts, such as wall reeds, wall daga and mica samples. I did not count all the charcoal remains because of time constraints. A breakdown of the ‘Stone’ objects recovered from Boschoek are shown in Table 4.16.

Midden 1 contained several clay objects that were not found elsewhere in the neighbourhood. These objects can be seen in Figure 4.34: Object A was a double cone-shaped object, similar objects were found at Lebenya by Jordaan (2016: 167), at Olifantspoort 61/71 and Suikerbosrand 103/73 by Mason (1986: 476 & 622).

Object B was a broken pedestal base: similar objects were found at Lebenya by Jordaan (2016: 167) and at Klipriversberg and Suikerbosrand 103/73 by Mason (1986: 570 & 622). Object C was a clay figurine of an unknown animal. The figurine was missing its head and one of its back legs. Similar clay animal figurines were found at Klipriversberg 31/78 and Suikerbosrand 103/73 by Mason (1986: 574 & 622).

Table 4.15: Non-ceramic artefacts recovered from Boschoek.

	Bone	Charcoal	Grindstone	Metal	Miscellaneous	Ostrich Eggshell	Organic	Other	Stone	Unknown	Wood	Total
Hut 1	22	-	8	4	-	-	-	-	-	-	-	34
Hut 2	20	-	-	-	-	-	-	-	7	-	-	27
Hut 3	27	-	-	-	-	40	-	1	2	-	-	70
Hut 4	27	-	1	4	-	-	-	-	6	-	-	38
Hut 5	5	-	5	2	-	-	-	-	3	-	-	15
Hut 6	-	-	-	-	-	-	-	-	-	-	-	-
Hut 7	55	-	-	10	-	8	-	1	-	-	-	74
Hut 9	1	-	-	-	-	-	-	-	-	-	-	1
Hut 10	1	-	-	-	-	-	-	-	8	-	-	9
Hut 11	-	2	-	-	-	-	-	-	-	5	-	7
Hut 12	-	2	-	-	-	-	-	-	-	-	-	2
Hut 13	38	-	-	1	-	-	-	5	-	-	14	58
Hut 14	24	-	1	-	-	-	-	-	-	-	-	25
Hut 15	63	-	-	4	-	-	-	178	1	-	-	246
Hut 16	48	1	2	1	-	18	1	-	4	-	-	75
Hut 17	-	-	5	1	-	-	-	3	-	-	-	9
Hut 18	52	-	2	1	-	260	-	2	6	-	-	323
Hut 19	4	-	-	-	-	-	-	-	-	-	-	4
Hut 20	-	-	-	-	-	-	-	3	-	-	-	3
Hut 21	41	-	4	-	2	-	-	2	5	-	-	54
Hut 24	109	-	-	1	-	-	2	5	17	-	3	137
Midden 1	-	-	-	4	-	1	-	212	1342	-	-	1559
No info	10	-	-	-	-	-	-	-	6	-	-	16
Total	610	5	28	37	2	327	3	590	1408	5	17	3032

Table 4.17 shows the types of metal objects recovered from Boschoek. Hut 7 contained the most metal objects, including the only copper earring. Hut 7 also contained the most spearheads: all were found in an unmapped area right of the hut. It is not known if they were found in a hoard or individually.



Figure 4.34: Clay objects recovered from Midden 1. Object A: A double cone-shaped object; Object B: A broken pedestal base; Object C: A clay figurine of an unknown animal.

Table 4.16: Stone objects recovered from Boschoek.

	Crystals	LSA Flake	Quartz crystal	Stone	Stone flakes	Stone tools	Unknown	Total
Hut 2	-	-	-	7	-	-	-	7
Hut 3	-	-	-	2	-	-	-	2
Hut 4	-	-	-	3	-	-	3	6
Hut 5	-	-	-	3	-	-	-	3
Hut 10	-	-	-	8	-	-	-	8
Hut 15	-	-	-	1	-	-	-	1
Hut 16	-	1	2	1	-	-	-	4
Hut 18	-	1	-	-	3	2	-	6
Hut 21	-	-	-	5	-	-	-	5
Hut 24	-	-	-	-	-	-	17	17
Midden 1	95	-	-	969	278	-	-	1342
No info	-	-	-	-	-	-	6	6
Total	95	2	2	999	281	2	26	1407

Table 4.17: Metal objects recovered from Boschoek.

	Axe/ Adze	Copper earring	Flakes	Hoe	Iron tangs/ pins/rods	Metal object	Modern pressed metal	Spear heads	Total
Hut 1	-	-	-	-	2	-	-	2	4
Hut 4	-	-	3	1	-	-	-	-	4
Hut 5	-	-	-	-	-	-	-	2	2
Hut 7	-	1	-	-	1	-	-	8	10
Hut 13	1	-	-	-	-	-	-	-	1
Hut 15	-	-	-	-	-	-	-	4	4
Hut 16	1	-	-	-	-	-	-	-	1
Hut 17	-	-	-	-	-	-	-	1	1
Hut 18	-	-	-	-	-	1	-	-	1
Hut 24	-	-	-	-	1	-	-	-	1
Midden 1	-	-	-	-	2	-	1	1	4
Total	2	1	3	1	6	1	1	18	33

Conclusion

This research focused primarily on the analysis of ceramic material recovered from the Sun Shadow and Boschoek homesteads. The analytical method used intra and inter-site levels of analysis to determine similarities and differences between these two neighbouring homesteads. At each level of analysis, I combined vessel type, vessel subtype and pot diameter with a spatial comparison of vessels to test the null hypothesis that there was no significant difference in the pottery assemblages and distribution patterns between and within the homesteads. By testing the observed results against an expected pattern Chi-square, I found several anomalies in both homesteads. These anomalies provide an opportunity to explore the possible household setup for a Late Iron Age Sotho-Tswana settlement in this area of the Highveld. The anomalies in these data also provide an opportunity to investigate how these two-neighbouring homesteads (despite no statistically significant morphological difference between them) are individual in their own right, and how this individuality is not often seen in archaeological records. These anomalies are outlined and discussed in the next chapter.

Chapter 5 Discussion

In this chapter, the null hypothesis will be evaluated before turning to the anomalies. I discuss these anomalies with reference to other Sotho-Tswana sites located in the Highveld, Bankenveld and Bushveld regions of South Africa. Additionally, any limitations identified during the project are discussed.

General observations.

The artefacts recovered from both Sun Shadow and Boschoek are not only well preserved but also relatively complete with ceramics, beadwork and metalwork. The completeness of the assemblage is not surprising given that greater Kweneng is believed to have been abandoned suddenly based on observations made by Mason (1986: 615) about the sites Suikerbosrand 101-103/73. Because of the large quantities of artefacts recovered from the study site, it would be reasonable to assume that the same destruction event in the southern section caused the sudden abandonment of the central section, in particular the Schoongezicht neighbourhood. The results of the analysis of the ceramics within the Schoongezicht neighbourhood were presented in the previous chapter.

Null hypothesis

From the results presented in the previous chapter and using the likelihood of similarity table given in Table 3.4, it is now possible to address the null hypothesis that there is no significant difference in the pottery assemblages and distribution patterns between and within the homesteads. These are addressed according to the different analyses: Vessel type, Vessel subtypes, Pot diameters and Spatial distribution.

The null hypothesis was determined using the same assumptions made in most population estimation studies, that all structures in a settlement are dwelling structures with a uniform number of occupants (typically between 2-5 persons) making up a single-family unit (see Zorn 1994 and Birch-Chapman *et al.* 2017 for

examples of this). If this estimate averaging were to be followed it would be assumed that all dwelling structures within both homesteads would have about the same number and kinds of vessels. However, by using a population estimate as the basis of the null hypothesis, the implications are the ignoring of the difference in the social standing of different houses within each homestead that is predicted by the Central Cattle Patten and those observed in ethnographic literature. By assuming that each household had the same number and kind of vessels regardless of social standing, it was possible to determine an assumed likelihood of similarity for those huts not excavated in Sun Shadow. This then meant that the estimate averaging could then be carried onto the different analytical scales of hut clusters and finally overall neighbourhood.

Hut-level of analysis

For the Vessel type analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the huts had a likelihood of similarity from fairly unlikely (only one hut had a p -value lower than 0.10) to extreme likelihood that the observed values were similar to the expected theoretical values. For the Vessel subtype analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the huts had a likelihood of similarity from not very likely to extreme likelihood that the observed values were similar to the expected theoretical values. For the Pot diameter analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the huts had a likelihood of similarity from extremely unlikely (one hut had a p -value of less than 0.01) to extreme likelihood that the observed values were similar to the expected theoretical values. For the Spatial distribution analysis, the inconclusive result of the Chi-Square means that the null hypothesis cannot be tested statistically. However, based purely on visual observation of the data from the individual hut there appears to be a difference in the distribution of vessels, this can be attributed to the individuality of each hut.

Hut cluster level of analysis

For the Vessel type analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the Hut clusters had a likelihood of similarity from fairly likely to extreme likelihood that the observed values were similar to the expected theoretical

values. For the Vessel subtype analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the Hut clusters had a likelihood of similarity from not very likely to extreme likelihood that the observed values were similar to the expected theoretical values. For the Pot diameter analysis, I fail to reject the null hypothesis at both Sun Shadow and Boschoek as the Hut clusters had a likelihood of similarity from not very likely to extreme likelihood that the observed values were similar to the expected theoretical values. For the Spatial distribution analysis, the inconclusive result of the Chi-Square means that the null hypothesis cannot be tested. However, based purely on visual observation of the graphs there appears to be a difference in the distribution of vessels. This difference needs further analysis.

Neighbourhood level of analysis

At the overall Neighbourhood level of analysis, I fail to reject the null hypothesis for the morphological levels of analysis. At these levels of analysis, the neighbourhood had a likelihood of similarity from fairly likely to extreme likelihood that the two homesteads were similar to each other. However, at the Spatial distribution level of analysis, I reject the null hypothesis. There is significant evidence to conclude that the two homesteads had a different spatial distribution of vessels within and between the homesteads.

Whilst the statistical test conducted on the assemblage indicates that for the most part there were no significant differences between the assemblages at any of the morphological levels of analysis, it is necessary to highlight that these assemblages are not uniform in appearance. This was most apparent with regards to vessel subtypes and pot diameters. Individual huts and hut clusters in both homesteads rarely had the same combinations of vessel makeup, with some huts preferring a certain vessel type and size over another. Several anomalies were identified. These are discussed in the rest of the chapter. Where possible examples are drawn from other Sotho-Tswana sites located on the Highveld, Bankenveld and Bushveld regions of South Africa.

Anomalies and interpretations.

The first anomaly was the lack of bowls in several huts in both Sun Shadow and Boschoek: this anomaly occurred in 34.6% of all huts across both homesteads. It is possible that excavations did not expose enough of the surrounding lobe areas to reveal vessels placed in either the front courtyard or the back courtyard. Nor were excavations conducted in enough exterior kitchens to determine if vessels were in these features. I believe this to be the case because many vessels, including bowls, were found towards the exterior lobe walls and in the exterior kitchen, for example, Sun Shadow Hut 1, Boschoek Huts 4, 15, and 24.

The second anomaly was the low number of vessels in several huts including Boschoek Huts 9 and 11 which completely lacked vessels. In this project, the average number of vessels was six (172 vessels divided by the 28 excavated huts), vessel counts below this considered 'low' and those above as 'high'. Eleven huts thus had a low vessel count. As mentioned, the limited excavations may account for this pattern. Another possible explanation is that vessels from these huts could have been used in communal areas like the *kgotla* (court) or other consumption places not excavated.

The third anomaly was the additional bowl subtypes found in Sun Shadow. These bowls are unique in the Schoongezicht neighbourhood. No similar vessels were found at the southern Kweneng excavations Suikerbosrand 101-103/73 (Mason 1986: 609-629 & 770-771). However, these types are rare in Sotho-Tswana sites elsewhere. Similarly shaped bowls have been found at Olifaanspoort 20/71, Makgwareng (OO 1), Platberg site 30-32/71, Klipriversburg 18/69, and Tihela (OND 3) (Maggs 1976a: 101 fig. 30 & 201 fig. 58; Mason 1986: 747, 763 & 769). It is possible that the unexcavated huts at Sun Shadow and Boschoek may contain similar bowl subtypes, but this appears unlikely.

The fourth anomaly was the high number of vessels in a few hut clusters in both homesteads. In this project, a high number was 25, calculated as the number of vessels (201) divided by the total number of excavated hut clusters (8). Three hut clusters had a higher value. In all three, one single hut had over 15 vessels. It is possible that these three hut clusters were a focal point for activity. No other Sotho-

Tswana excavation report focused on similar analyses; thus, no comparison can be made.

Across the Schoongezicht neighbourhood, eight huts (three in Sun Shadow and five in BH) had less than three vessel subtypes. In all cases except for one (BH Hut 12), all these low variety huts had less than five vessels and were spread across the hut clusters in both homesteads. This anomaly is interesting even though in both homesteads there was no significant difference in vessel subtype analysis. These seven huts show that individual huts differed from the norm. As I have mentioned before, the limited excavations cannot rule out sampling errors. It is possible that these huts were occupied by young people (such as unmarried girls and boys) who had not yet established their own households. This idea, however, does not explain Boschoek Hut 12, the principal dwelling of the homestead. This interpretation has not been discussed in great detail in archaeological literature, where they have been discussed it has been in reference to Early Iron Age sites in KwaZulu-Natal (See Fowler 2002: 348-351).

At the Early Iron Age site of Ndongondwane, Fowler (2002: 350-351) noted a similar lack of ceramics from the principal dwelling which had 20-30 times less ceramic material than houses half its size, concluding that the principal dwelling might have moved to a different part of the settlement after a burning event. According to Schapera & Goodwin (1962), in Nungi culture, a married woman generally brings her own household items “such as pots, baskets, hoes, and sleeping mats and the gifts of her parents” this could also be true in other southern African societies. Because most household items were made of organic materials like wood and straw, they have not been preserved. Thus, it is difficult to assess this interpretation without further ethnographic and archaeological research.

The fifth anomaly was the amount of decoration in each homestead. Even though the same types of decoration were found in both homesteads, there was only one vessel difference between the two. This means that Sun Shadow had a higher percentage of decorated vessels (24%) than Boschoek (11,5%), even though more huts were excavated at Boschoek. In the midden’s ceramic material, only 20 sherds (1% of ceramics in the midden) contained any decoration. All were of the same

three facies found within the huts: 14 sherds were *Uikomst*, four *Buispoort* and one was *Makgwareng*. With no midden excavated at Sun Shadow, it is difficult to determine if the same pattern occurs there as well. The difference in decorated material between the huts and the midden at Boschoek implies that decorated vessels were treated more carefully than plain wares. This does however not take into account the sampling issues identified in the methodologies chapter for Boschoek, without a complete sample this interpretation cannot be fully implied. Furthermore, based on what I have observed in the sample from the huts with the identified issue, is that the excavators attempted to keep the rim section with and without decoration.

The lack of difference between the types of decoration found in both homesteads is not surprising given that these two neighbouring homesteads probably belonged to the same community. The incorporation of different ceramic traditions is to be expected in LIA homesteads as these styles would have been brought into the community through marriage or assimilation of other groups (Huffman 2007: 104). The mixture of styles in the two homesteads points to an interesting dilemma where assimilation of one or both of the homesteads took place. Where this assimilation (adopting the practices of others and abandoning your own) was done through passive or force cannot and probably will never be known. Alternatively, the Schoongezicht neighbourhood presents a possible coexistence of communities where ceramic styles from multiple communities were emulated and copied. A potential way of determining whether the alternative could have happened would be to determine the source of vessels identified to the different facies through XRF or petrographic analysis (see Thebe 2017 for a study involving XRF analysis and the sourcing of clay).

Of the three ceramic facies found at the homesteads, the *Buispoort* facies is attributed to the Western Sotho-Tswana groups of the Hurutshe, Kwena Ngwaketse, Ngwato, Tawana and Kgatla (Ngcongco 1979; Huffman 2002, 2007, 2020). The *Buispoort* facies, part of the Moloko Branch of the Urewe Tradition and is typically identified on vessels that have rim notching, broadly incised chevrons and bands of red and white ochre burnishing (Huffman 2007: 203-205). This facies occurs to the west of the study site with examples being found at Olifaanspoort, Buffelshoek and

Kaditshwene (Taylor 1979; Mason 1986). Whilst, the *Makgwareng* and *Uitkomst* facies are attributed to the Fokeng Cluster made by Fokeng, Po and Tlokwa (Ngcongco 1979; Huffman 2002, 2007, 2020). Both Cluster groups are believed to have been in the Suikerbosrand area before or during the 18th and early 19th century (Breutz 1956: Map; Maggs 1976a; Rasmussen 1978: 42-44; Mason 1986; Huffman 2007, 2020; Sadr 2019a, 2019c, 2020a). The *Makgwareng* facies is part of the Blackburn Branch of the Urewe Tradition and is typically identified on vessels that have finely stamped triangles, rim notching and appliqué (Huffman 2007: 179-181). This facies occurs to the south-east of the study site with examples being found at OND 2, Robertsdrift, and Winburg (Derricourt & Evers 1973; Maggs 1976a; Dreyer 1992). This facies has not been recorded as far north as the study area before. The *Uitkomst* facies is also part of the Blackburn Branch of the Urewe Tradition and is typically identified on vessels that have comb stamping, and appliqué (Huffman 2007: 171-173). This facies occurs to the north and west of the study site with examples being found at Buffelshoek and Klipriversberg (Taylor 1979; Mason 1986). Both *Makgwareng* and *Uitkomst* derive from *Ntsuanatsatsi* in the Free State (Huffman 2007).

The above four anomalies relate to vessel numbers and variety. Overall, however, there were not as many vessel types as I originally expected. The only surprising thing was the additional bowl types at Sun Shadow. In both homesteads, there was a greater production of, and possible reliance, on Short-necked vessels. Similarly, at Suikerbosrand 101-103/73, the occupants made greater use of Short-necked shaped vessels (Mason 1986: 770). However, the recorded pottery shapes presented by Mason are not sufficiently complete as 25% of the sample is listed as 'other'. When compared to other studies that use the same vessel type classification Jordaan (2016) and Anderson (2009), Sun Shadow and Boschoek had a different ratio of vessel types. At Lebenya, Jordaan (2016: 155) stated that 60% of the vessels were of the Straight-necked sub-type with only 4% of the Short-necked sub-type. At Marothodi, 79% of all diagnostic sherds were of the Straight-necked sub-type with less than 1% being of the Short-necked sub-type (Anderson 2009). At the Schoongezicht sites, only 19% were of the Straight-necked sub-type, with 28% being of the Short-necked sub-type.

The large difference in types and the frequencies of those types observed at Lebenya, Marothodi and the Schoongezicht neighbourhood may relate to the individual preferences of each sites' researcher. Even if an inconsistency had occurred in the assigning of vessels to types due to the limited completeness of the vessels sampled, this would not account for the lack of an inflated preference of one prominent vessel sub-type (i.e the Straight-necked sub-type) at the Schoongezicht neighbourhood as with the other two sites in the Bankenveld. The difference in vessel preference observed at the Schoongezicht sites may reflect regional preferences in vessel type. More research is needed on other Highveld sites to determine if this is the case.

When discussing the decoration anomaly mentioned above, it is important to note that the oral histories and decoration are not interchangeable and should rather be used as an indicator of who might have occupied a certain region. Irrespective of the oral histories, multiple stonewalling types have been recorded in Kweneng; these range from early Type N style, to later Molokwane-style walling (Taylor 1984; Huffman 1986; Mason 1986: 186; Sadr & Rodier 2012; Hunt & Sadr 2014; Sadr 2019a, 2019c, 2021; Sadr & Mshuqwana 2020). Without a comprehensive historical record for Kweneng, it is difficult to determine when and who built the earliest structures in the Kweneng landscape. The Fokeng cluster are known to have made the Group III, Type N and Klipriviersberg-type stonewalling (Huffman 2007: 33& 38). Several examples of these have been recorded in the central Kweneng sector (Sadr 2019c), with two being found approximately northeast of Boschoek. The Western Sotho-Tswana clusters like the Hurutshe and Kwena are known to have made the Group II, Type Z and Molokwane type stonewalling (Huffman 2007: 38-41) These are the most commonly found walling type in Kweneng (Sadr 2019a).

Each of these Sotho-Tswana clusters have been attributed to a ceramic tradition, which is mentioned elsewhere in the discussion. From oral traditions, it is known that the Fokeng Cluster moved North across the Vaal sometime before or during the AD 1700s (Maggs 1976a, 1976b; Hall *et al.* 2008: 63). Whether they settled in the Suikerbosrand area at this time remains undetermined as no Group III, Type N and Klipriviersberg type stonewalling site within Kweneng has been extensively studied yet. The builders of the Schoongezicht neighbourhood were the *Busipoort*

people (the Western Sotho-Tswana clusters like the Hurutshe and Kweneng) who interacted with and married neighbouring communities, most likely originating from the Fokeng Cluster made by Fokeng, Po and Tlokwa. The discovery of all three facies adds to the understanding of who occupied the Kweneng landscape but this should not be taken as a substitute for the oral histories of the Suikerbosrand region which are contradictory in some cases (see Sadr 2020a). What is known is that the Schoongezicht neighbourhood and Suikerbosrand 101-103/73 were abandoned suddenly with the huts being burnt down before the arrival of early trekkers around AD1840 (Mason 1986: 616).

Thirty-four percent of the vessels recovered from the Schoongezicht neighbourhood were located outside of the hut walls either in the surrounding courtyards or in the exterior kitchen. The high percentage of vessels found within the hut walls may indicate that communal activities such as farming, cooking and crop grinding were not in action at the time of abandonment. A possible explanation for this hybrid vessel placement is that when this section of Kweneng was attacked, it was possibly in the morning before all the occupants had started their daily task or during the early evening when the hut occupants were cleaning up. Another hypothesis is that the homestead was attacked during the winter months when farming activities were dormant. These hypotheses are not easily testable as there is no real way of telling when or how the Kweneng landscape was attacked. By conducting similar spatial distribution analyses on the southern and northern sectors of Kweneng, it might be possible to determine if the whole landscape was destroyed in the same episode or if some areas were spared destruction and were abandoned peacefully.

In total, 50 vessels from both homesteads had use-wear indicators of internal pitting, interior or exterior carbonization or a combination of the three. The Schoongezicht sites had a total of 29 internally etched or worn vessels. The level of pitting ranged from minor to extensive and most etched vessels were found in the Short-necked vessels sub-type. The majority of the etched or worn vessels were found inside the rear section of the hut in both Sun Shadow and Boschoek. Where etched vessels were found outside, these vessels were only recorded in front sections. Overall, Sun Shadow had eight carbonized vessels whilst Boschoek had one. Of the 23 carbonized vessels, two had interior carbonization, 17 had exterior

carbonization, and five vessels had both forms of carbonization. Carbonization ranged from slight blackening of the surface (either internally or externally) to heavy encrusting exterior sooting. Whether or not the carbonization is an indicator of use or the result of the hut burning process is not fully known. However, the experimental burning of a traditional Nungi beehive and rectangular huts by Friede & Steel (1980: 179) showed that vessels subjected to heat over 1 000°C developed stress fractures and clay colour changed. Small vessels (no indication of the exact size) were vitrified. Evidentially, the fire did not cause pitting or sooting (carbonization) on any vessels. The complete destruction of small vessels in this experiment burning could account for the lack of Small (cup) bowls found at Boschoek.

Although no residue analysis was conducted on the sample, it is possible to infer the potential use of these vessels based on experimental and ethnographic work conducted during the late 20th century (Skibo 2015: 189). Carbonization on the exterior surface has been attributed to the process of cooking, placing the vessel onto or next to a fire with heat less than 400°C (Skibo 2015: 190-191; van Waarden 2018: 246). Carbonization on the interior surface has been attributed again to the process of cooking; however, the internal carbonization is caused by charring food in temperatures over 300°C (Skibo 2015: 190-191) or to the smoking or heating of food with the use of heated stones placed into the vessels filled with water (van Waarden 2018: 246). The appearance of both forms of carbonization implies that both cooking techniques were used to prepare food in the households.

It must be noted that this research was only concerned about the presence or absence, and whether carbonization was observed on the interior or exterior surfaces of a vessel. Whilst it is acknowledged that the different patterns produced by carbonisation are important to the understanding of vessel function; it was not the aim of this research to determine such functions, only to identify the ceramic assemblage and to explain the distribution patterns. More work will need to be done with these carbonized vessels to determine the location and extent of the carbonization, sooting and oxidization patterns in addition to residue analysis to infer the individual use of the vessels and their interaction with heat sources.

Spatially, 17 carbonized vessels were found within the hut walls: none were found in or next to hearth features, although such features may not have been recorded. Four carbonized vessels were found in the front courtyards with three of these being on the veranda features of their respective huts. Likewise, interior pitting or wear implies a potential function of the vessel. Interior pitting has been attributed to the processes of heavy use (including the prolonged storage of liquids and other acidic goods), cleaning and to the fermentation process typically used in the production of sorghum beer (Arthur 2003: 524; Skibo 2015: 193-194; van Waarden 2018: 246). Spatially, 18 etched vessels were found within the hut walls, predominantly in the rear storage sections. Outside the hut, all seven etched vessels were recorded in the front courtyards. The distribution of these etched and carbonized vessels in both the storage and cooking areas implies that, at the time of abandonment, the occupants had either not started their daily tasks or were in the process of cleaning up.

In contemporary Botswanan ethnographic observations, vessels are observed to be moved around according to different times of the day. For example, water and beer pots are used around the yard and shaded areas during the day and only taken in when it gets dark (Phenyo Thebe [University of Botswana], pers. comm. 2021). During the cooking process, only the vessels needed are taken out of the storage area. Once cooking is completed, these vessels along with those used in the serving and consumption of food, water and beer are packed away, leaving only the cooking vessels outside overnight. These cooking vessels are normally secured inside a *lwapa* (Phenyo Thebe, pers. comm. 2021).

Several of these carbonized or etched vessels were decorated with *Buispoort* and *Makgwareng* types. Two of the four decorated and interior etched vessels had an orifice diameter of 35+ cm. It is possible that these large vessels were used as storage for a liquid such as water, milk or beer, as the latter two could cause interior pitting (van Waarden 2018: 246). The simplistic design of these vessels makes it unlikely that they were used in a highly social setting like the more elaborate designs found elsewhere in the homesteads. The carbonized and decorated vessels were thus probably used for cooking in the more public exterior kitchens or veranda areas as opposed to the undecorated carbonized vessels.

Academically, our understanding of the spatial distribution of vessels within Sotho-Tswana sites is predominantly based on ethnographic reports from either early missionaries such as Barrow (1806), Campbell (1815), and Burchell (1822); or more recent ethnographic reports of contemporary Botswanan homesteads e.g. Larsson (1985) and Frescura (1986). Likewise, spatial positionings of vessels have been established through extensive archaeological excavations at sites like Olifantspoort, Klipriversberg, OMB 1, Mophathe and Buffelshoek (Maggs 1976a; Taylor 1979; Mason 1986). Very rarely have the excavators spoken directly to the spatial distribution of every vessel, as many focus on occupation/ownership or ceramic composition, nor, have excavators focused on how the distribution of vessels would change between hut and homesteads. I acknowledge that the distribution patterns mentioned in my project are limited as not all the data is available, nor was it my aim to establish an ideal pattern. However, what this project does show is how individual huts within a given homestead differ from one another. Models such as the one used for this research do not take individuality nor 'real world' variables into account. As such the method merely makes the results appear similar or dissimilar. Whereas, in the actual observed data, this similarity is not present, as each hut is unique in the makeup of vessel types and sizes, and use-wear indicators, as well as location within the hut and corresponding lobe area. Additionally, with few studies focused on this type of analysis, there was no example or established base to build on. Therefore, the distribution patterns shown in Appendix 1 and 2 can be used as a building point for future distribution studies in Sotho-Tswana sites.

The sixth observation was the different construction methods used in Boschoek Hut 9. Although not uncommon in Sotho-Tswana huts on the Highveld, the use of flagstones in the construction of hut flooring was not recorded elsewhere in the Schoongezicht neighbourhood. Hut 9 appears to be the only hut where the flooring was removed (Figure 5.1); thus, the frequency of this flooring type is unknown. However, Mason (1986: 615) found two paved floors below a thick layer of yellow gravelly sand at Suikerbosrand 103/73, suggesting that flagstone underflooring was common in the area.



Figure 5.1: Flagstone flooring found in Boschoek Hut 9. (Photo taken by Thomas N. Huffman 1993)

The last anomaly in the non-ceramic analysis was the high number of metal artefacts and beadwork recovered from Sun Shadow Hut 6. This hut was the only one to have three different types of beadwork in addition to the large quantity of metalwork. Because of their proximity, it is possible that the objects found together in this metal hoard were placed into a bag or storage container made from organic material. These objects were likely stored in a bag hanging from or stashed in the roof, like most other personal belongings in typical Molokwane settlements (Maggs 1993b: 33). This metal hoard is of particular importance as it contained the only recorded copper earrings, copper beads and copper wire found in Kweneng as a whole. Boschoek Hut 7 is the only other hut to yield another copper earring. Similar copper earrings have been found at Askoppies (Pelser 2003: 49 & Fig. 42.), 001 Makgwareng (Maggs 1976a: 122 & Fig. 36) and Marothodi (Hall et al. 2006: 26). Although arguably not as important as the long ostrich eggshell necklace found in Suikerbosrand 103/73 Hut 7 (Mason 1986: 611 & 613 Figures 264-265), the wire, copper beads and earrings showed that the occupants traded for more than just metal for tools and weaponry but also for ornamental objects. These objects along, with

the metal work, implies that Kweneng was involved in a trade area extending across the Vaal River and possibly into the Bushveld region to the north of Kweneng.

Limitations of the study

As mentioned in Chapter 3, this project has several limitations and issues relating to the access and the use and understanding of both the documental and material collections. In addition, during the analysis and write up, a few more limitations came to light. One limitation in the results was the slow realization of evidence for vessel pitting and sooting. This evidence was not recognized until after at least a third to half of the Boschoek material had been analysed. Afterwards, this information was added to the analysis, but it is possible that some examples were not recorded.

During the write-up two additional limitations became apparent: firstly, the impact of small sample size as well as too many categories affecting the statistical results, especially the spatial distribution analysis. Secondly, was the comparison of a nearly complete excavation (Boschoek) with a partially excavated site (Sun Shadow). As a result, I focused the null hypothesis on similarities of the sample groups, as this was a better representation of the unexcavated huts at Sun Shadow.

The last limitation worth mentioning was the limited availability of information regarding large scale excavations at sites such as Klipriversburg, Suikerbosrand 101-103, and Olifaanspoort. Although they have been mentioned extensively in articles and literature about the Late Iron Age, not all detailed excavation data are available for comparison or reference beyond Mason's 1986 book. This might not have impacted my research, but with the recent passing of Revil Mason, information regarding these and other sites is slowly retreating into the footnotes of research publications. It is, therefore, worth revisiting other excavated Sotho-Tswana mega-sites to get a better understanding of these important sites in the wider field of both public and academic knowledge.

Conclusion

This chapter set out to discuss the validity of the null hypothesis in relation to the hut, hut cluster and neighbourhood levels of analysis. Additionally, the anomalies identified in the project were discussed with reference to other Sotho-Tswana sites of the Highveld, Bankenveld and Bushveld regions of South Africa. Finally, the limitations identified in the study were briefly discussed. In the concluding chapter, I summarize the project and then consider recommendations and future research avenues.

Chapter 6 Conclusion

General conclusion

This research aimed to identify and explain the variations in the ceramic vessel assemblages and distribution patterns between two neighbouring Late Iron Age homesteads in Kweneng, in order to form a better understanding of the ceramic diversity in the two homesteads. This was accomplished by testing the null hypothesis that there is no significant difference in the pottery assemblages and distribution patterns between and within the homesteads. Following Anderson (2009), Drennan (2009) and Steinwachs (2015), I analysed the ceramic material from both homesteads, and statistically tested for their similarity at all analytical scales. In addition, the excavation logs were digitised and georeferenced to create spatial distribution maps for each excavated hut.

From these data, vessels were analysed according to the type, shape, orifice diameter and positioning within both homesteads. The results of the statistical analysis showed that overall, there was a very likely to an extreme likelihood of similarity between the observed and expected results. I thus failed to reject the null hypothesis that there was no significant difference in the pottery assemblages at any scales of analysis. However, I reject the null hypothesis at the neighbourhood level of analysis for spatial distribution. Whilst at the hut and hut cluster levels the sample size was too small for meaningful testing, observation of the data showed that there was a significant difference in the distribution of vessels. From the research finding, I identified several anomalies and compared them to other Sotho-Tswana homesteads around South Africa. From these anomalies, several key findings can be summarised: vessel assemblages were not different in terms of their types, shapes, sizes and decoration facies for both homesteads. The discovery of over 50 metal objects implies that Kweneng was located within a metal trade area. The many artefacts (especially metal objects and ceramic vessels) recovered from within the hut walls point towards the abandonment of these homesteads (and possibly Kweneng central) in the winter months. Finally, the application of a null

hypothesis to the distribution of vessels was not fully appropriate as it did not consider real-world variables like daily use and consumption patterns.

Recommendations and future research

From this research, The following recommendations are made. First, there needs to be a better understanding of the relationship between overall vessel size and vessel orifice diameter. This is something that has been addressed in studies in other Bantu communities but not fully in the study of Sotho-Tswana vessel assemblages. Secondly, that any study attempting to understand the similarities and differences between vessel assemblages needs to incorporate a more refined use-wear analysis. This will aid in a better understanding of how the two assemblages compare. Finally, there needs to be the application of a more appropriate hypothesis to test the spatial distribution of vessels than the one used here. Hypotheses that look at the use of space rather than vessel positioning can help clarify the use of space, giving a glimpse into where much activity using pots and bowls was taking place prior to abandonment.

In the future, several additional research projects can be established out of the methods and results mentioned in this research project. Firstly, working with the same two homesteads, a project focused purely on the metal and other non-ceramic material can provide more information on the dietary practices, consumption patterns, and the use of stone and metal objects in working or ornamental practices.

Secondly, within the wider Kweneng mega-site, a re-analysis of Suikerbosrand 101-103/73 incorporating methods used here will add to the understanding of a different community in Kweneng. Excavations of hut floors in the northern Kweneng sector can provide valuable information on how the occupants of this sector differed from those in the central and southern sectors. Additionally, the application of similar research methods used here could provide an opportunity for a cross mega-site project looking at similarities and differences in material type and vessel usage in all three sectors of Kweneng.

Finally, the study of other student excavation sites or under-analysed material within the wider Southern Gauteng Stone-Walled Structures project could shed some light on occupants of the more than 5000 stone-walled structures in the area (Sadr 2019c). The study of these sites will also help to clarify the migration and occupational sequences of the Highveld and their relation to other Sotho-Tswana mega-sites in the Bushveld region of South Africa.

Chapter 7 References

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Appendix 1: Sun Shadow excavation and distribution maps

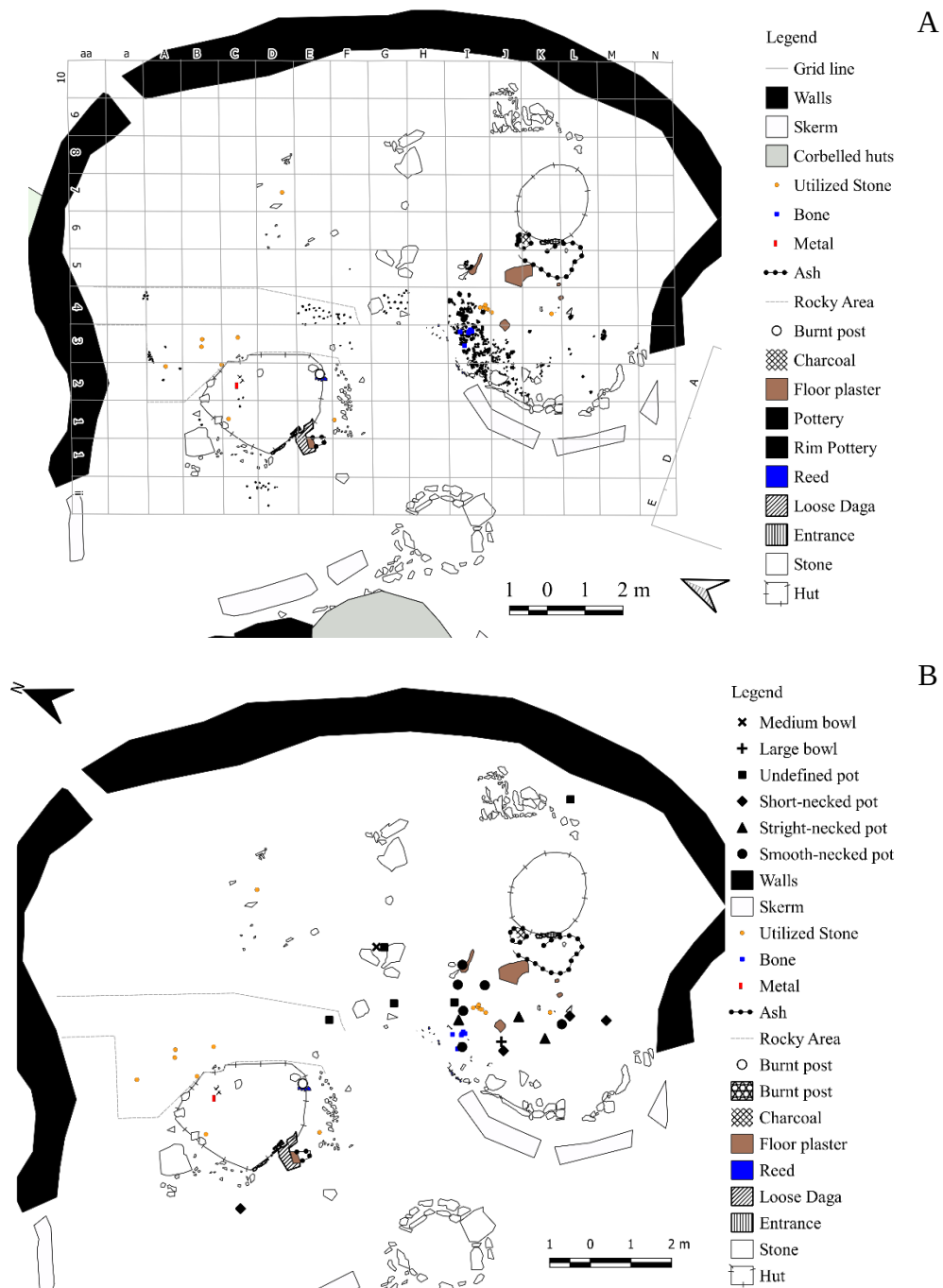


Figure 1: A) Sun Shadow Lobe 1 after Kaplan (1986), Sales (1986) and de Wet (1987). A) Showing the excavation area and all artefacts recovered. B) Showing the distribution of vessel types and the associated objects.

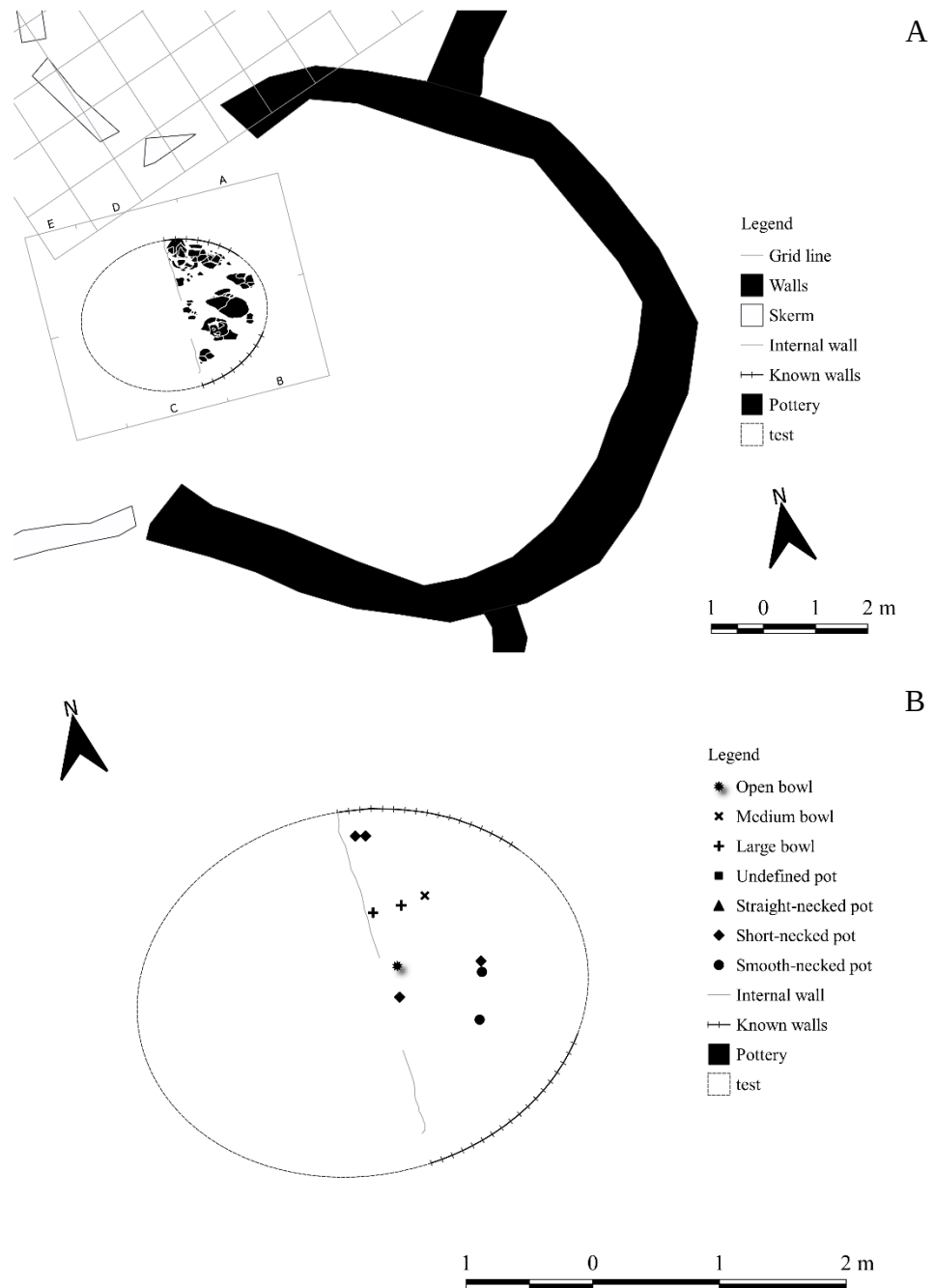


Figure 2: Sun Shadow Hut 2 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

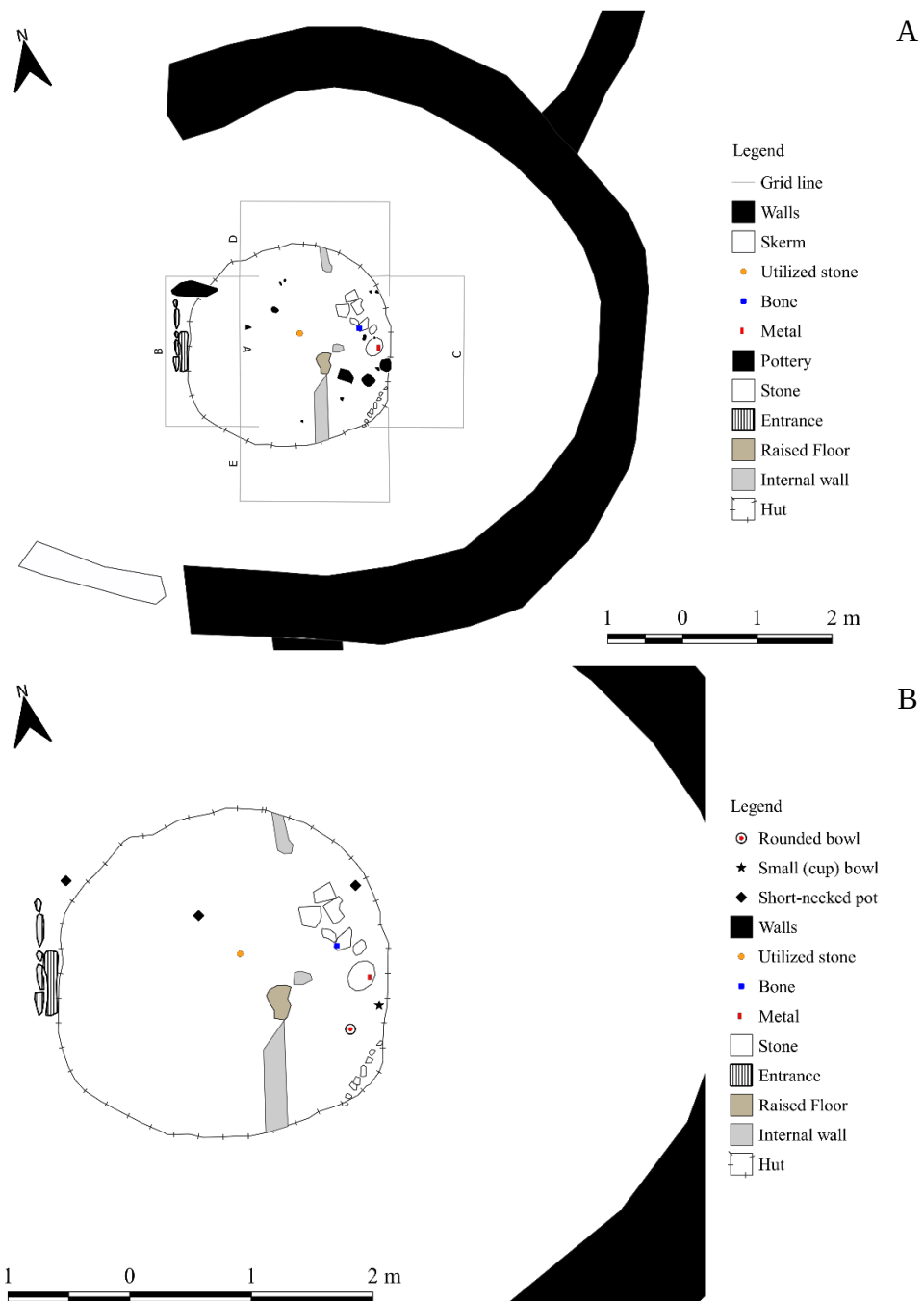


Figure 3: Sun Shadow Hut 3 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

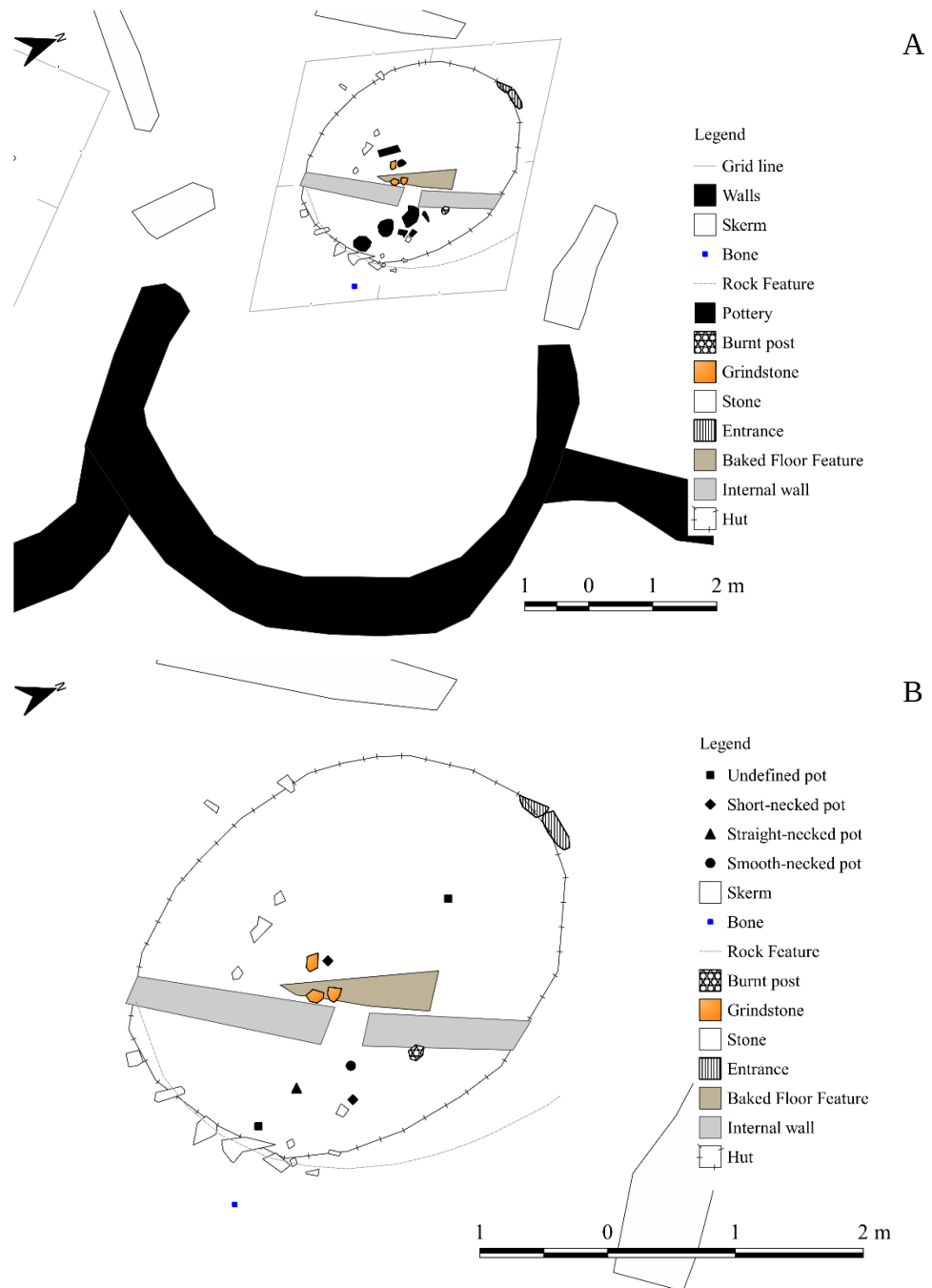


Figure 4: Sun Shadow Hut 5 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

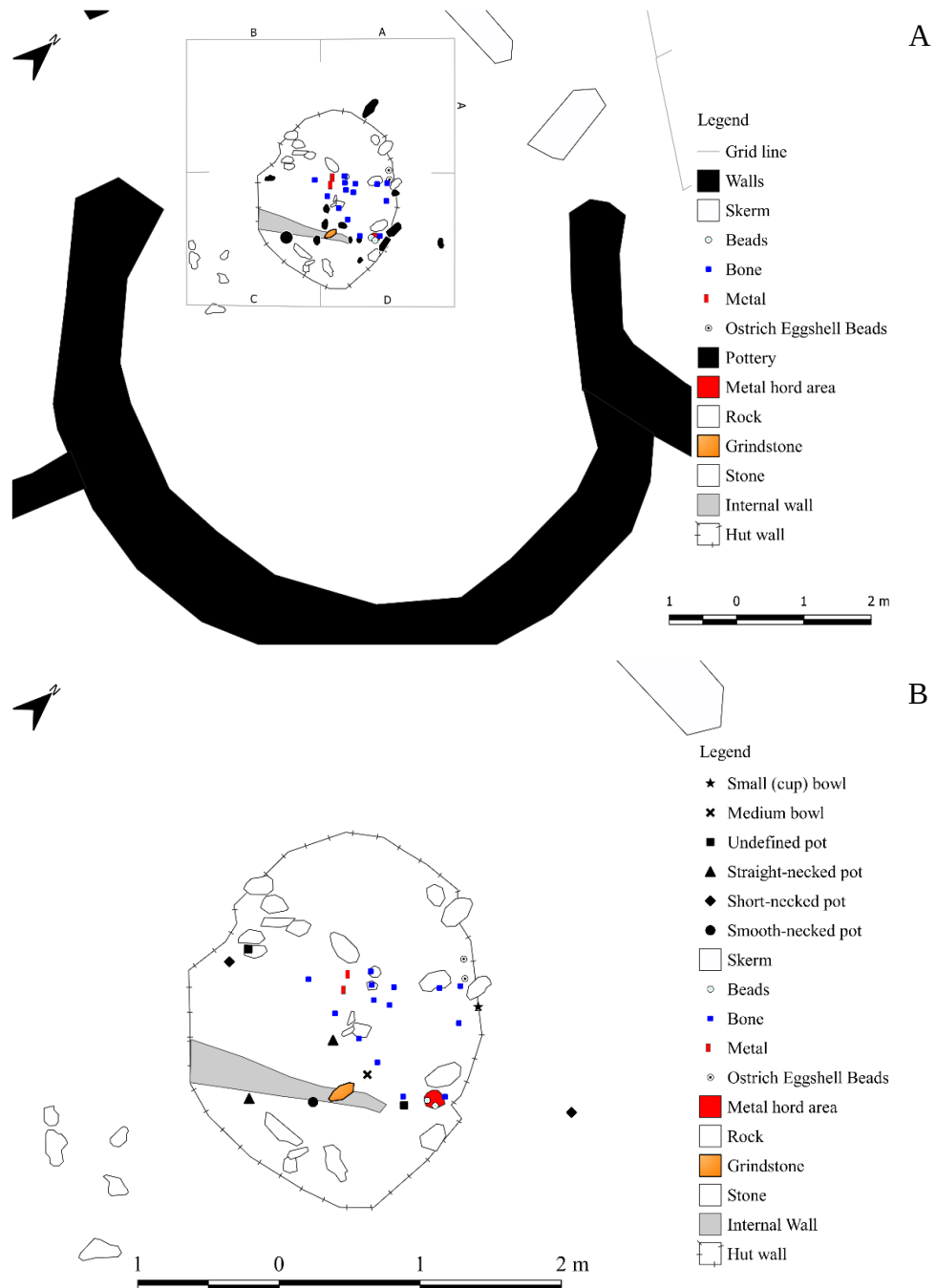


Figure 4: Sun Shadow Hut 6 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

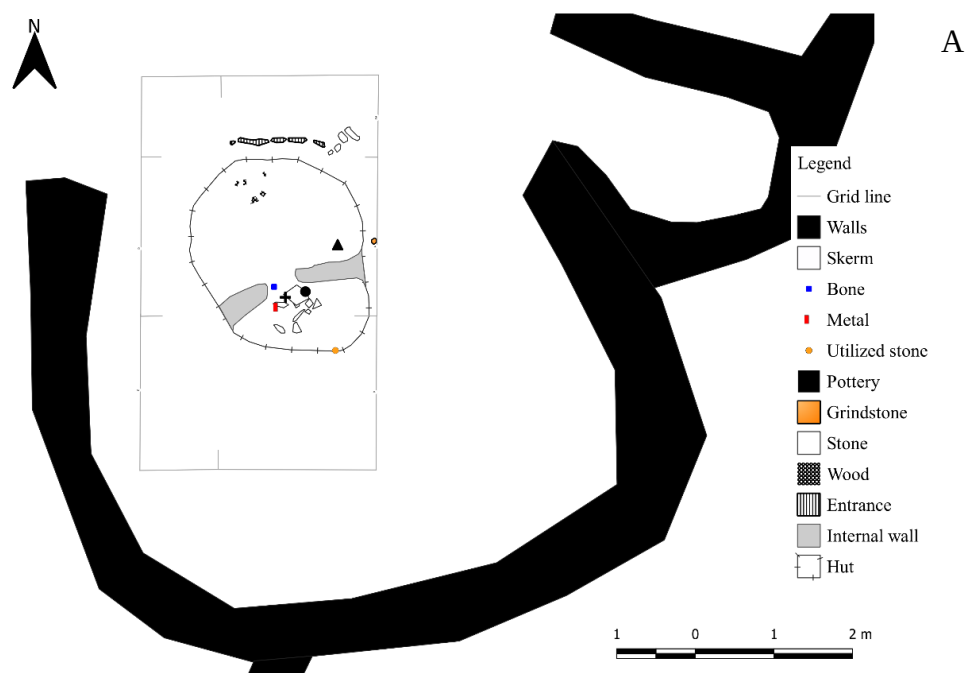


Figure 5: Sun Shadow Hut 8 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

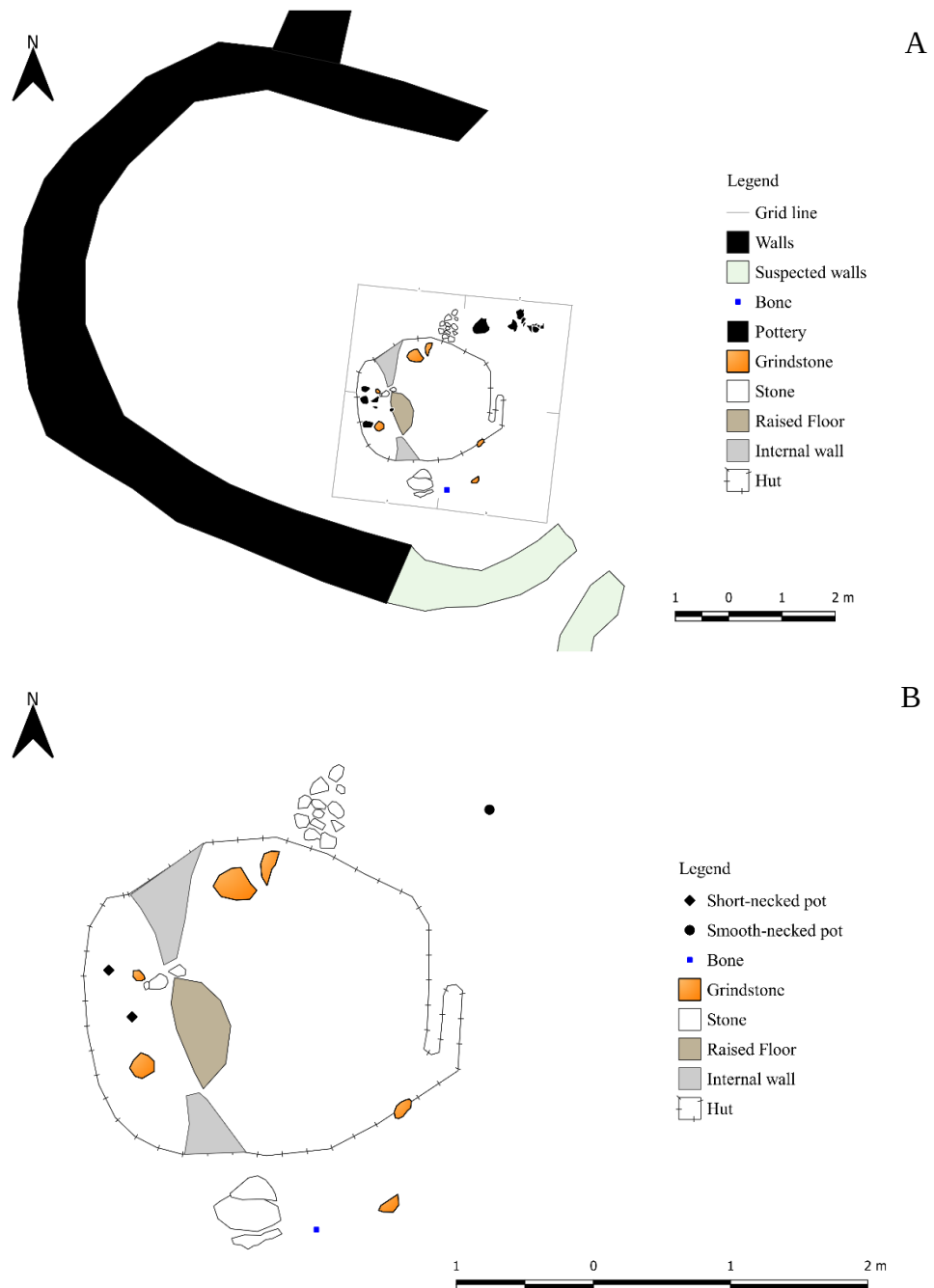


Figure 6: Sun Shadow Hut 19 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

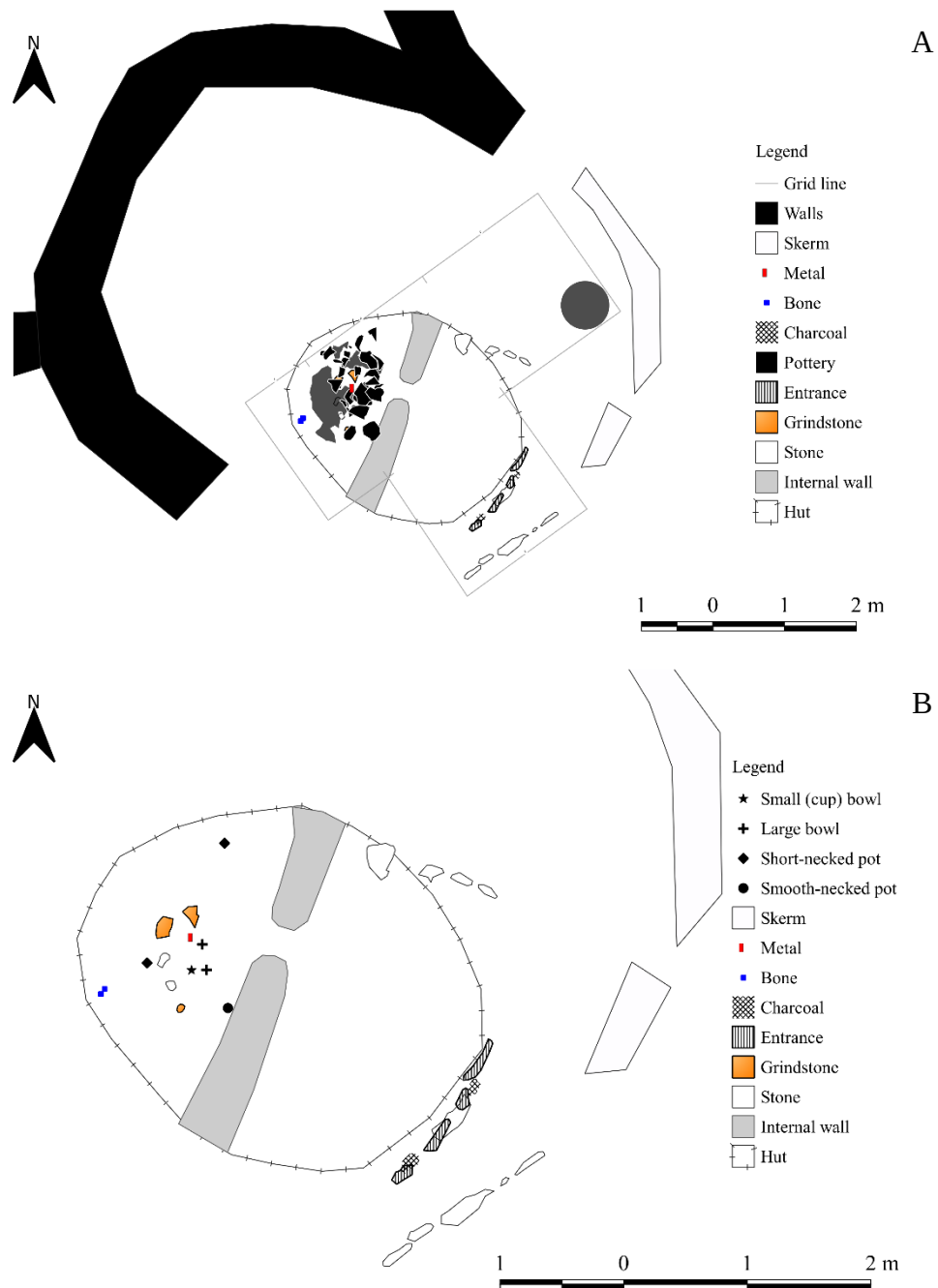


Figure 7: Sun Shadow Hut 21 after Wits Archaeology Department 1994. A) Showing the excavation area. B) Showing the distribution of vessel types.

Appendix 2: Boschoek excavation and distribution maps

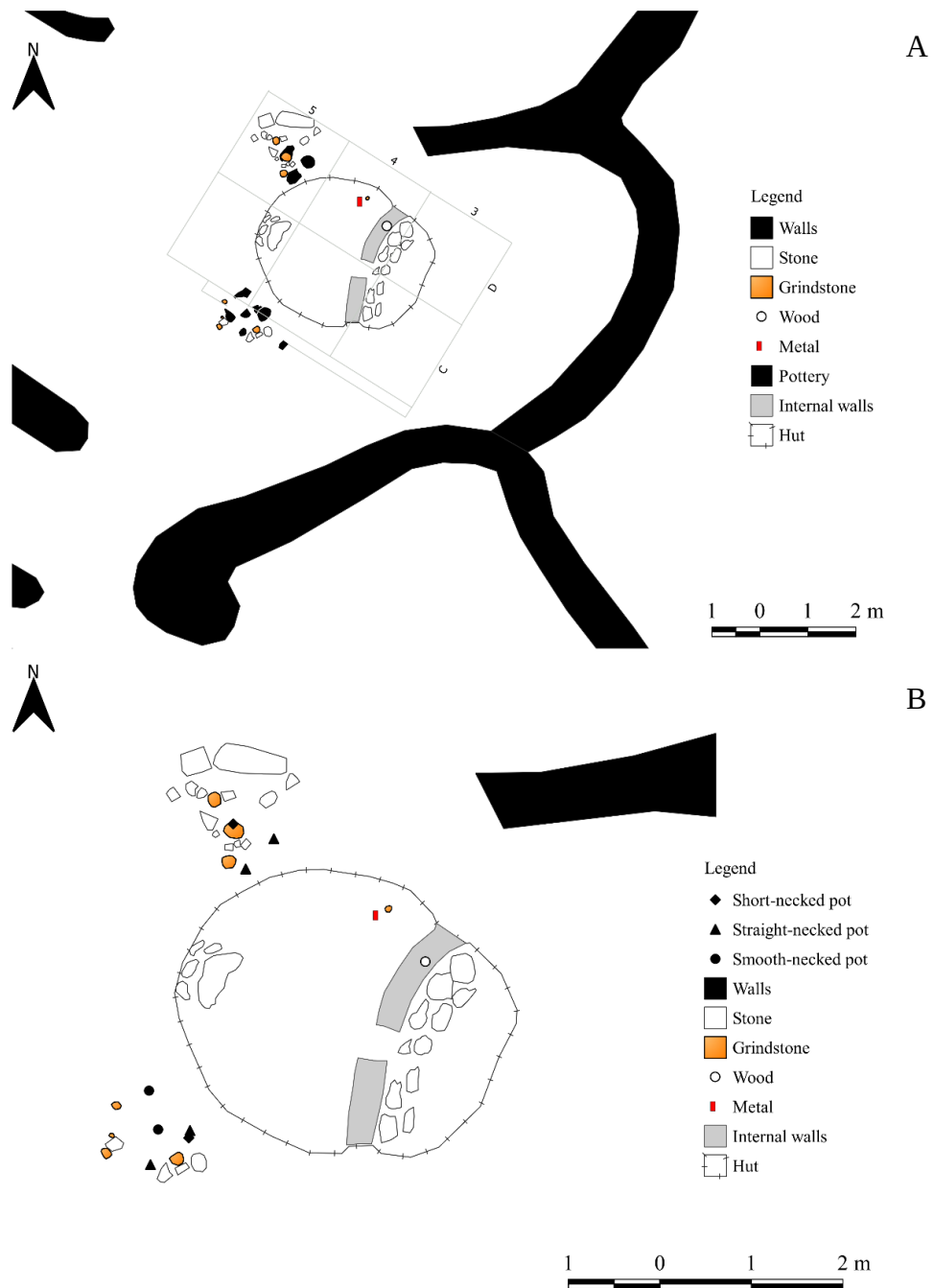


Figure 8: Boschoek Hut 1 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.



Figure 9: Boschoek Hut 2 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

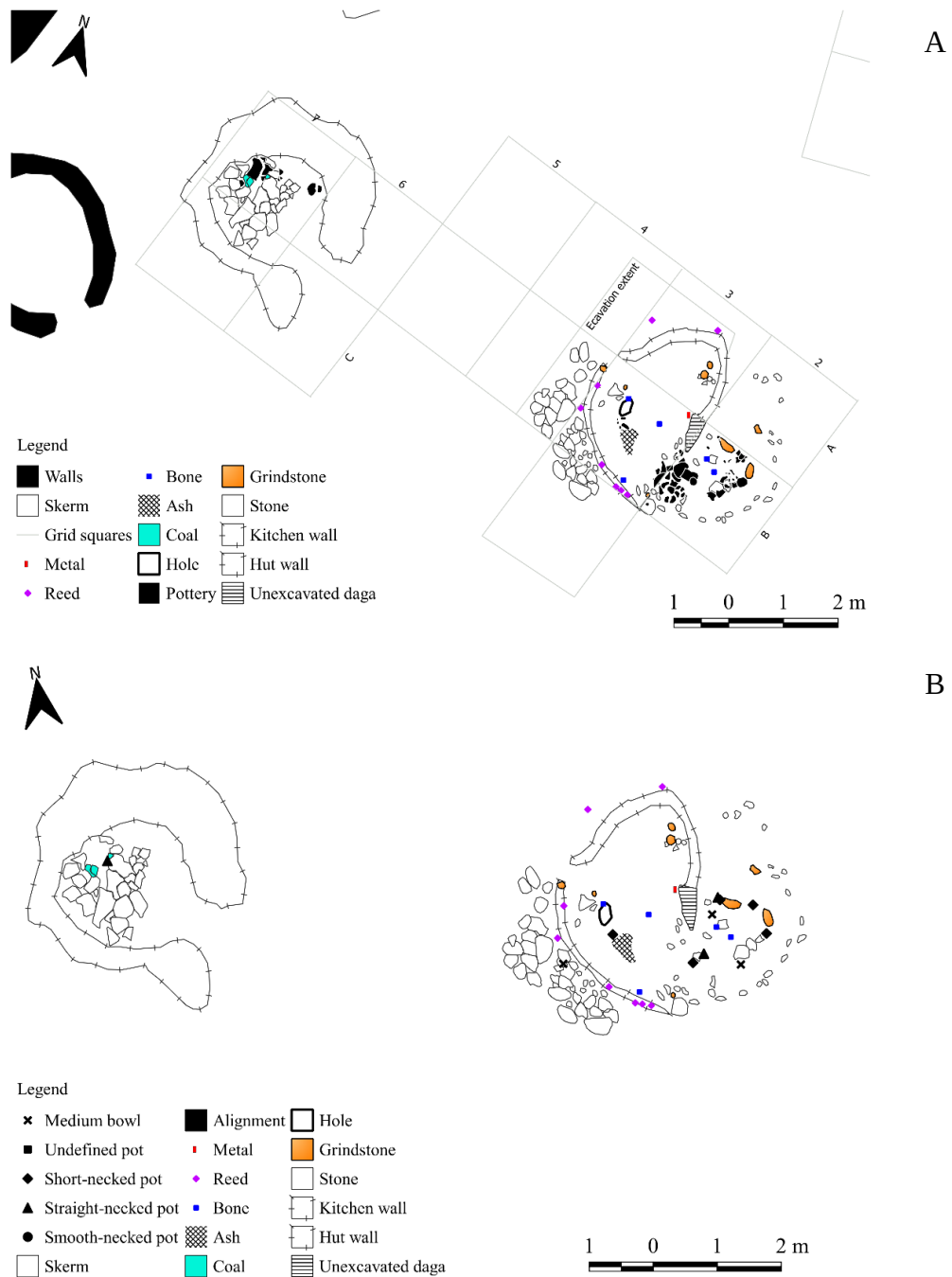


Figure 10: Boschoek Hut 4 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

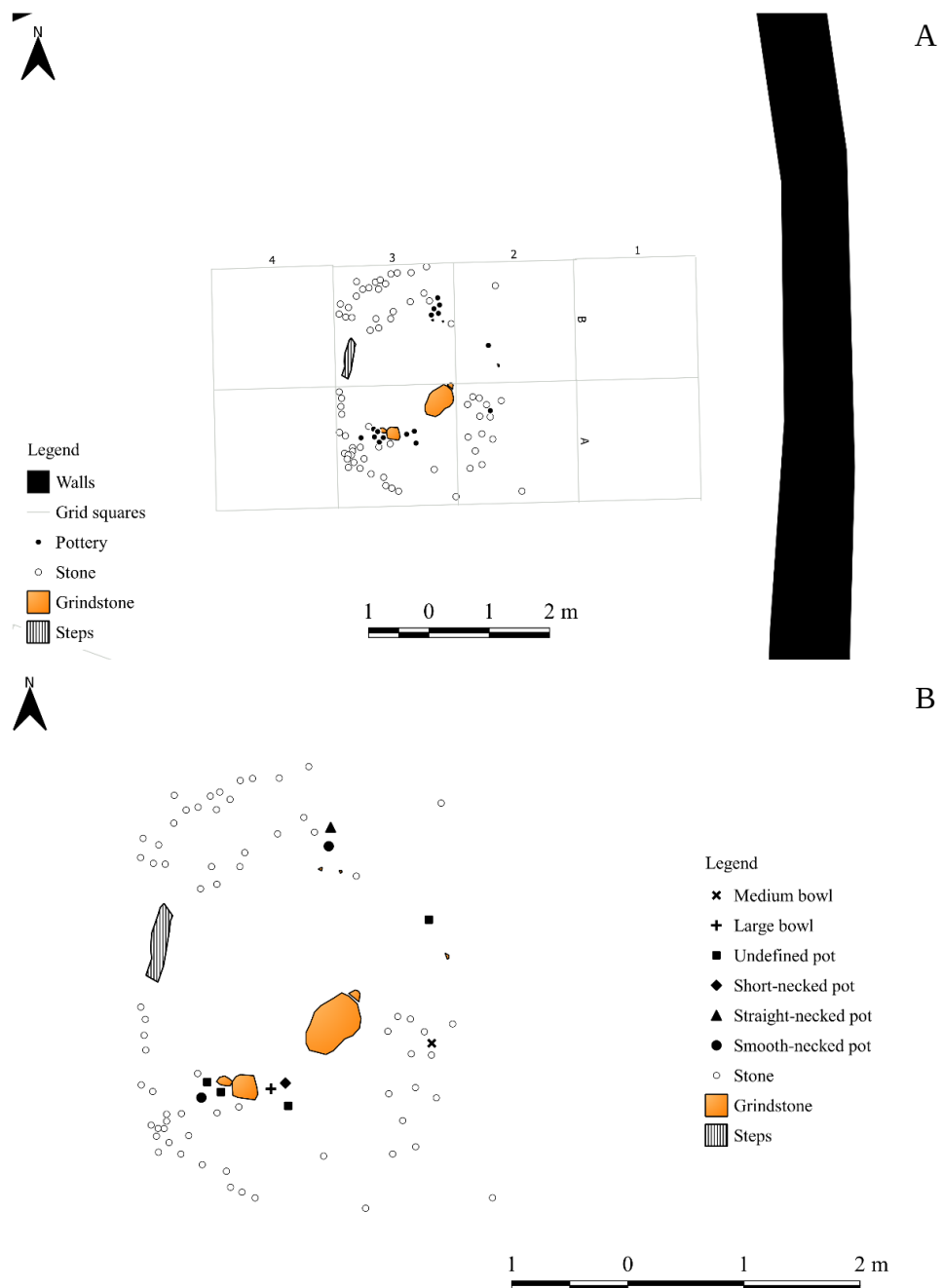


Figure 11: Boschoek Hut 5 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

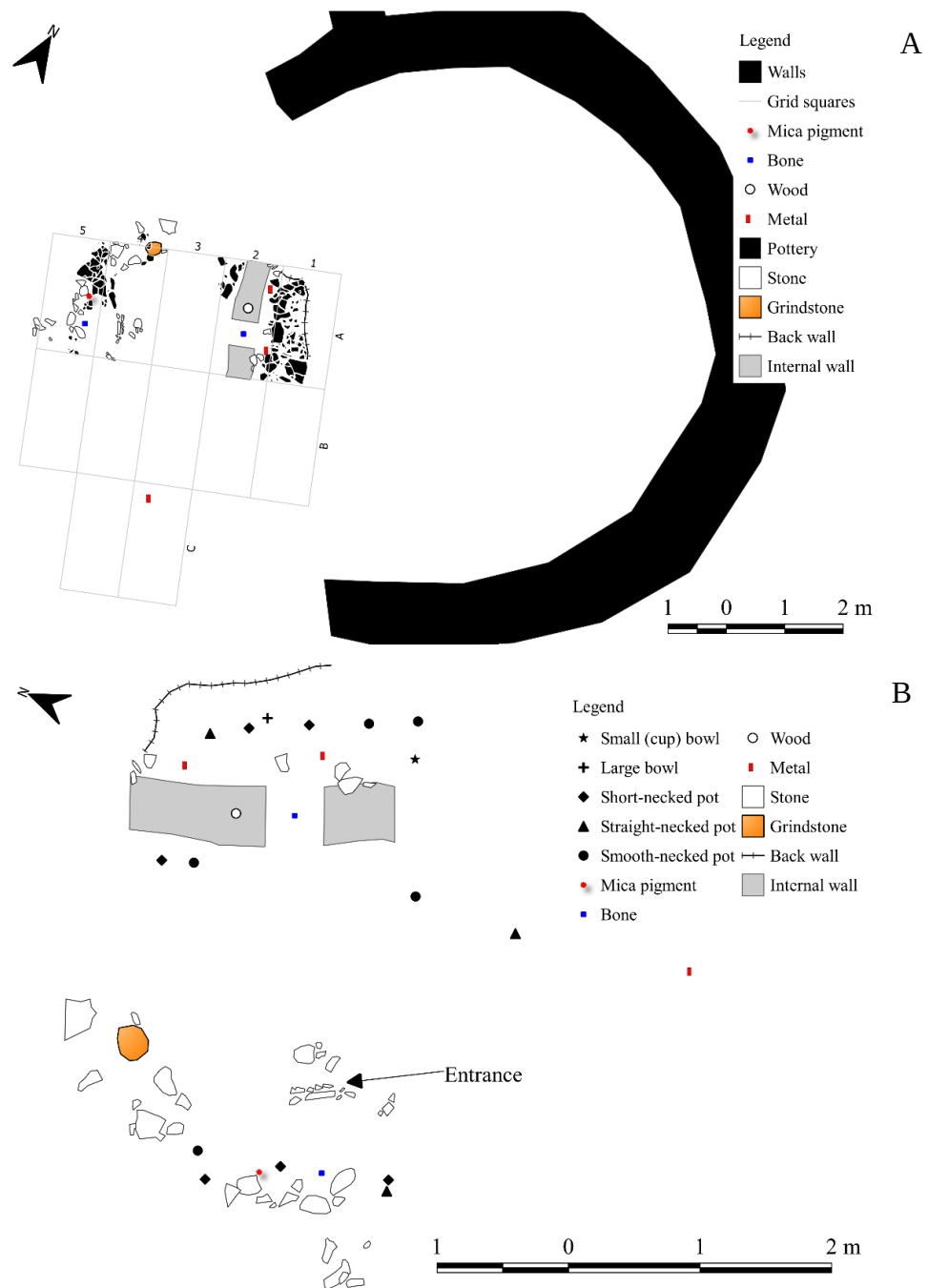


Figure 12: Boschoek Hut 7 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

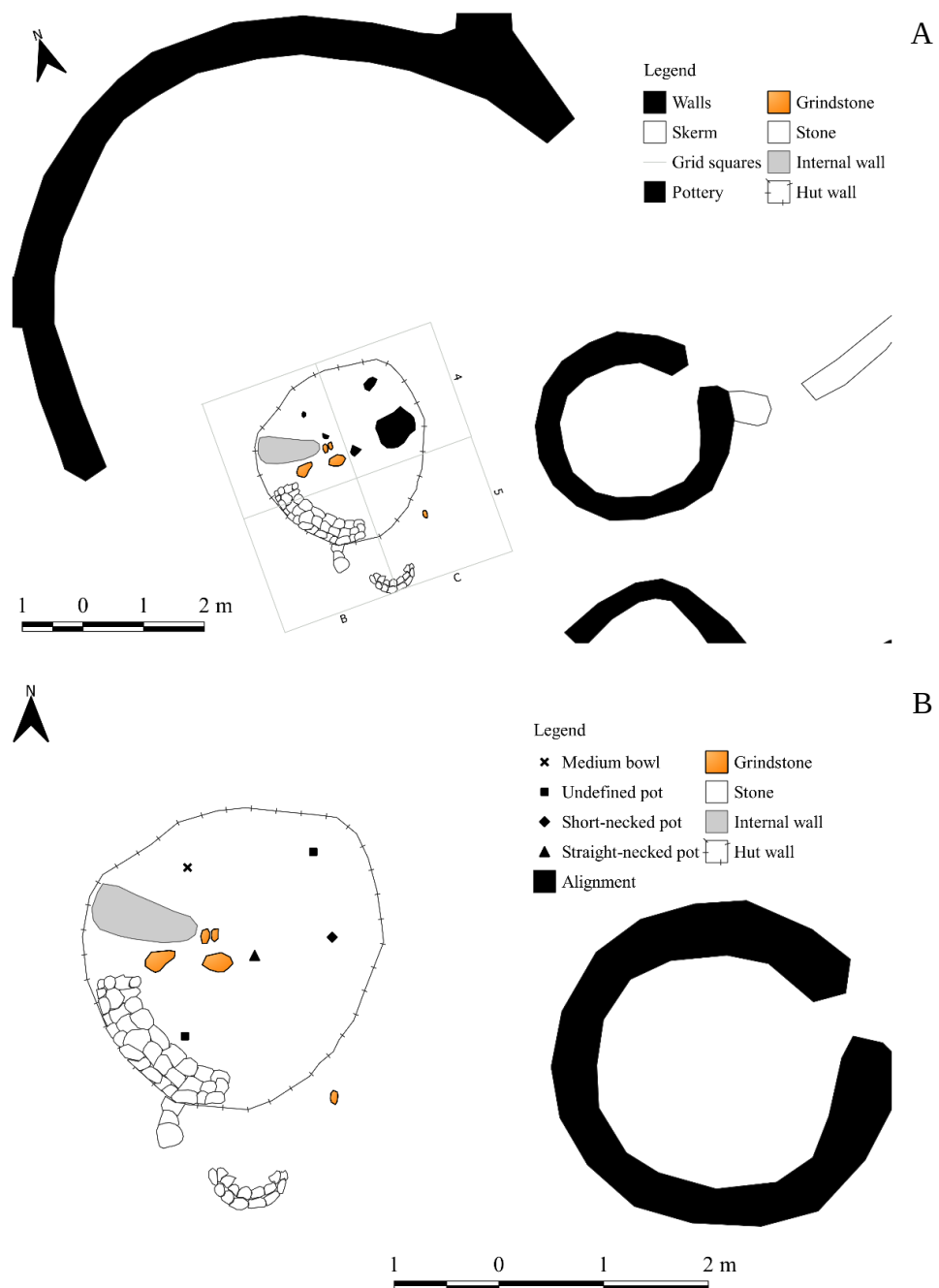


Figure 13: Boschoek Hut 10 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

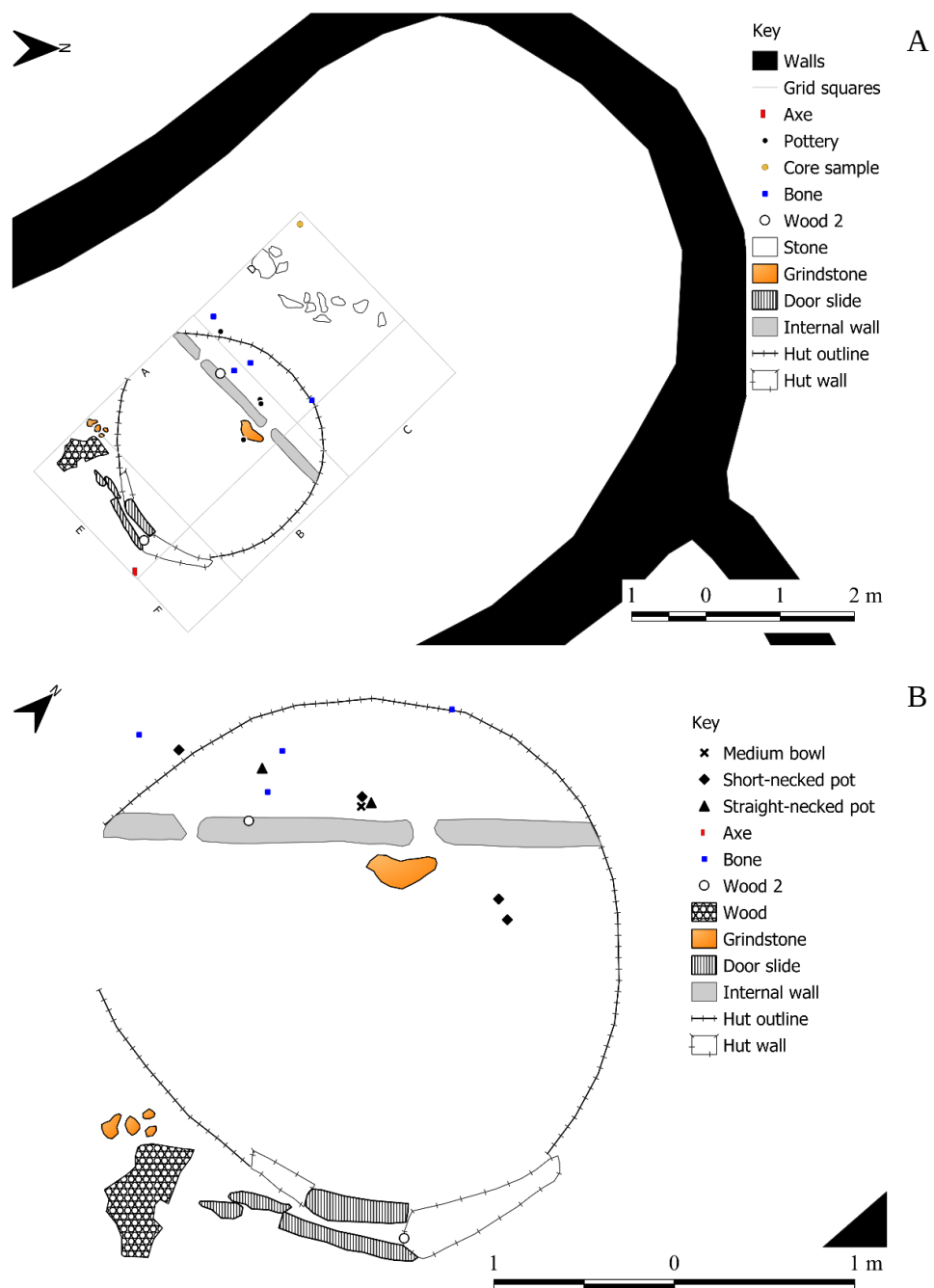


Figure 14: Boschoek Hut 13 after Wits Archaeology Department 1993. A) Showing the excavation area. B) Showing the distribution of vessel types.

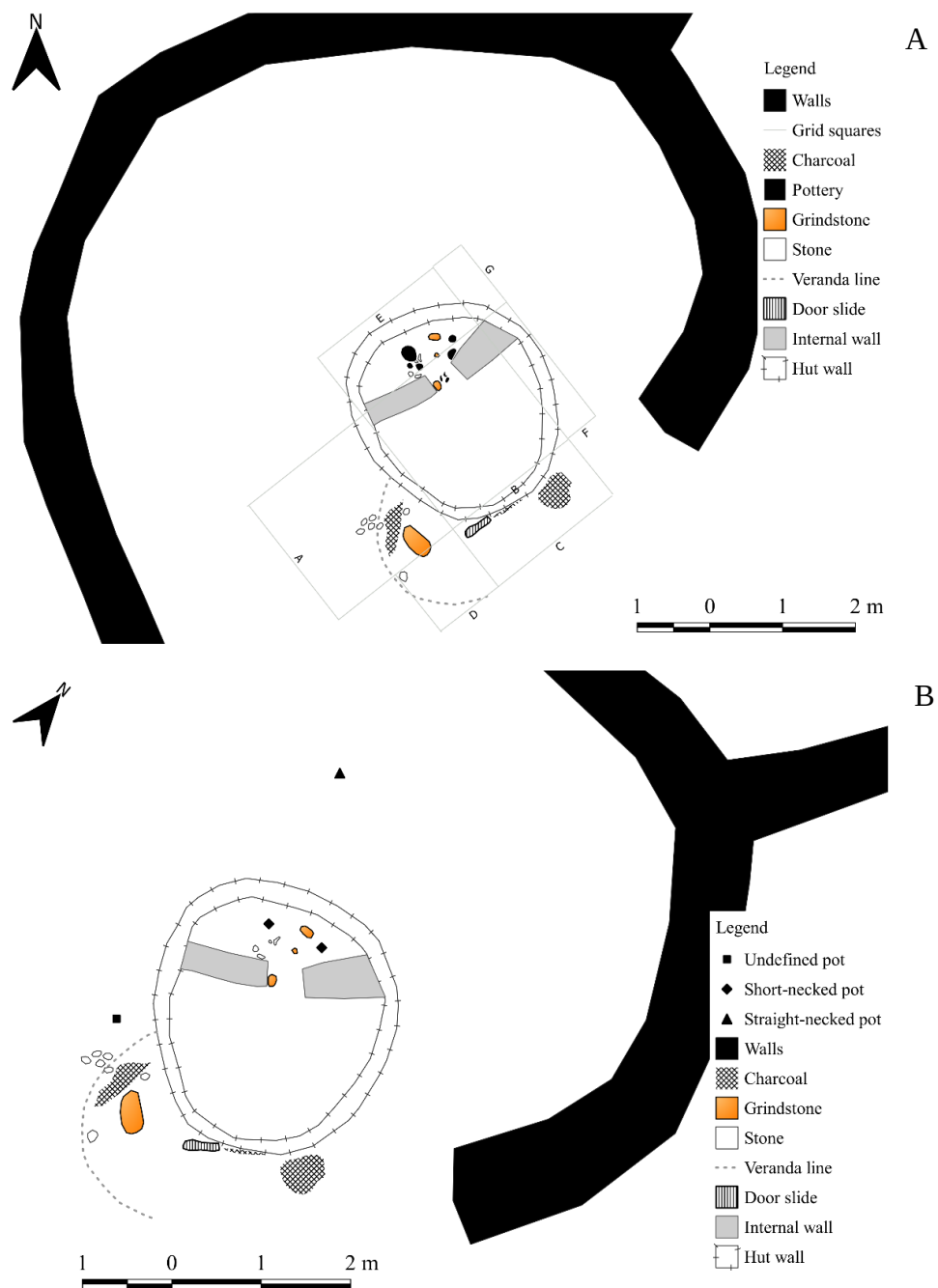


Figure 15: Boschoek Hut 14 after Wits Archaeology Department 1993. A) Showing the excavation area. B) Showing the distribution of vessel types.

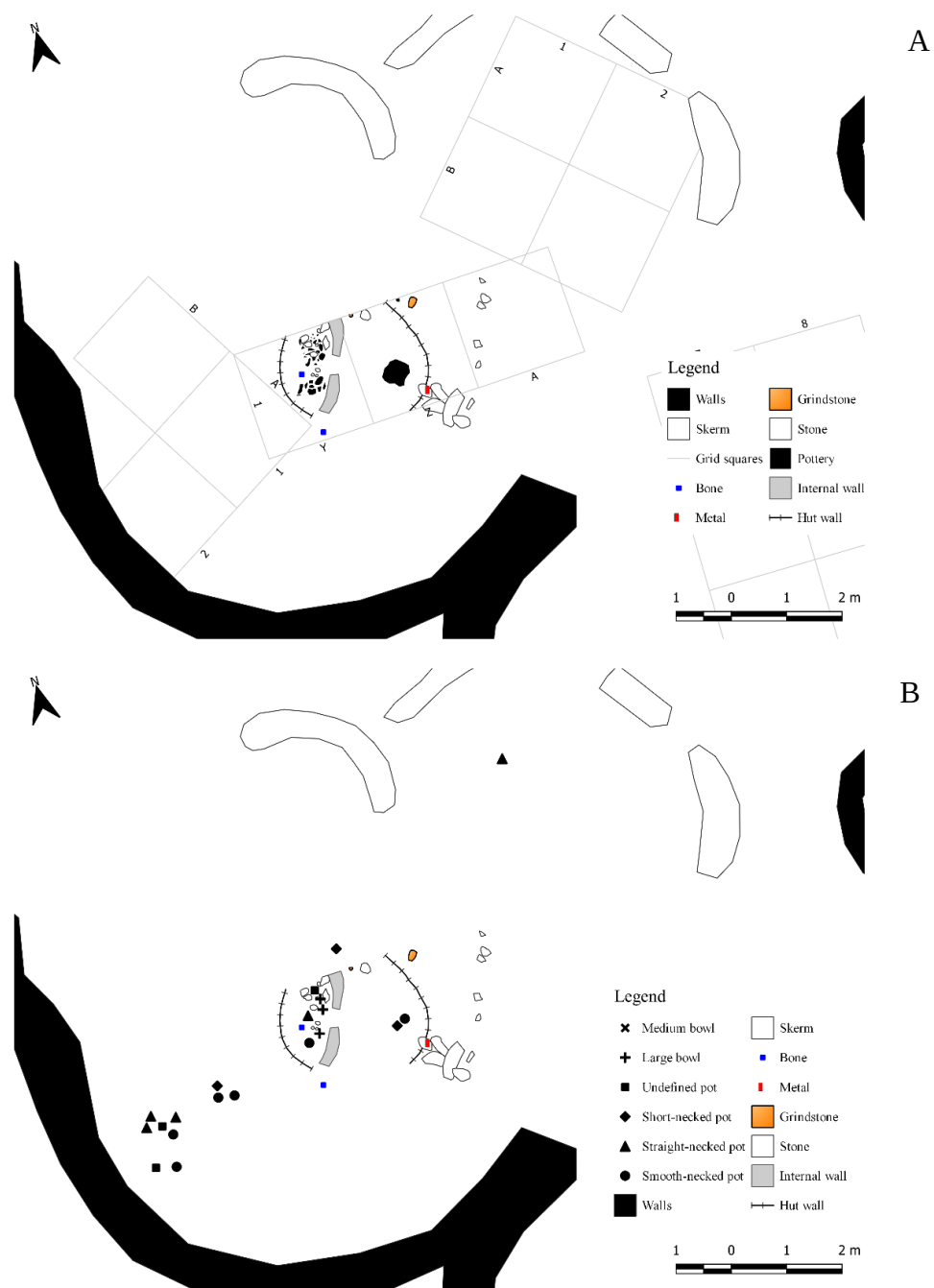


Figure 16: Boschoek Hut 15 after Wits Archaeology Department 1993. A) Showing the excavation area. B) Showing the distribution of vessel types.

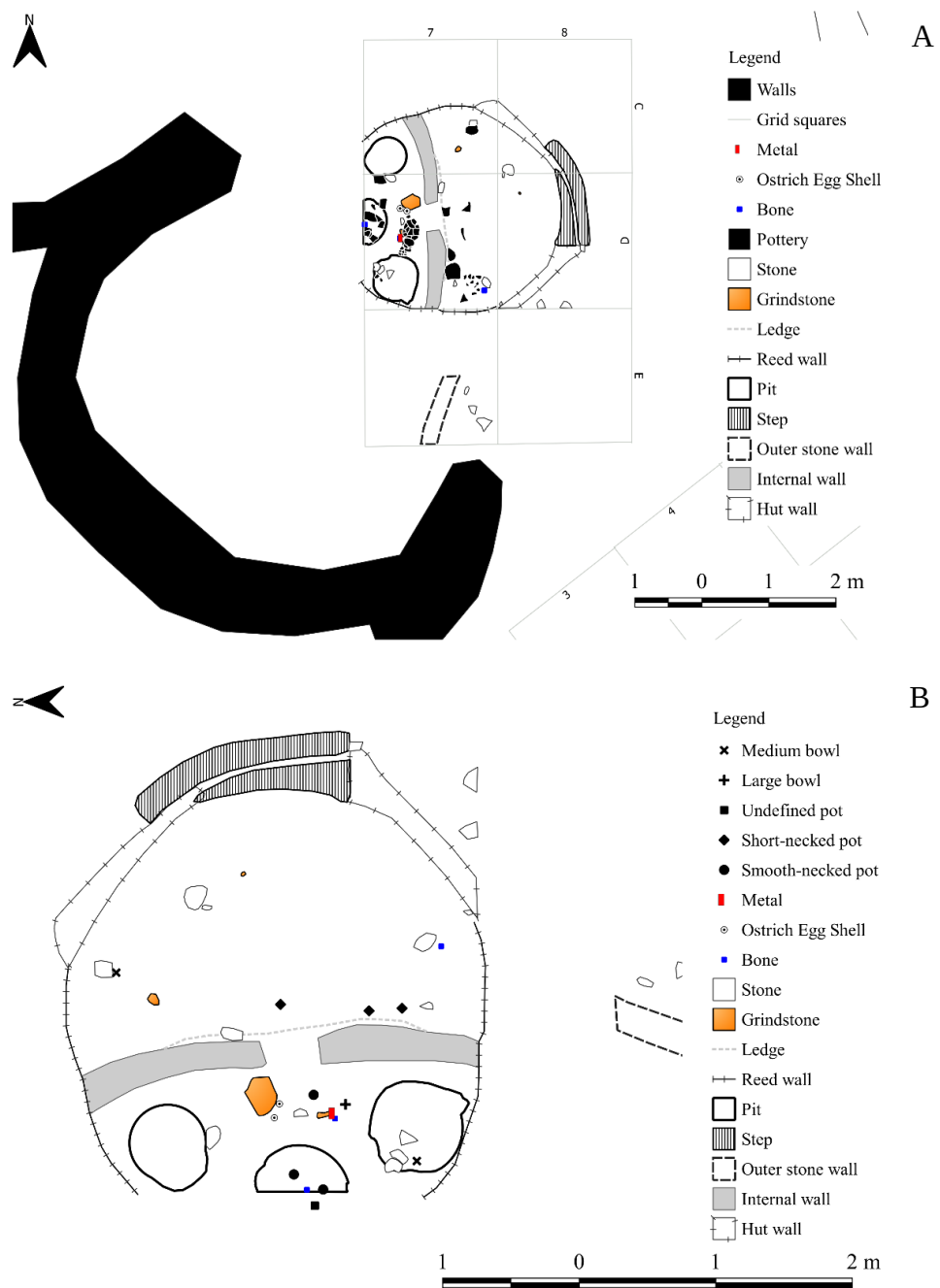


Figure 17: Boschoek Hut 16 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

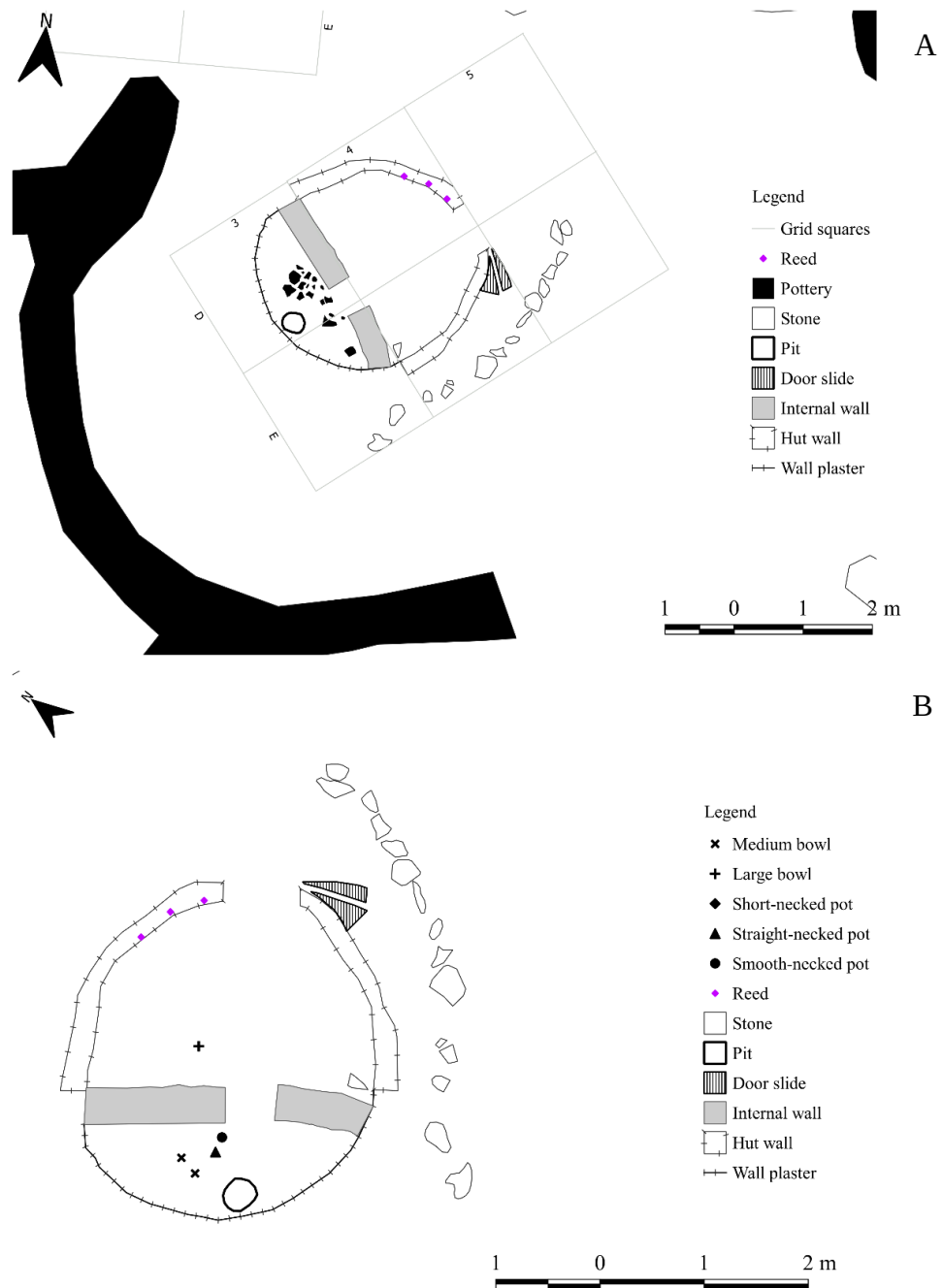


Figure 18: Boschoek Hut 17 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.

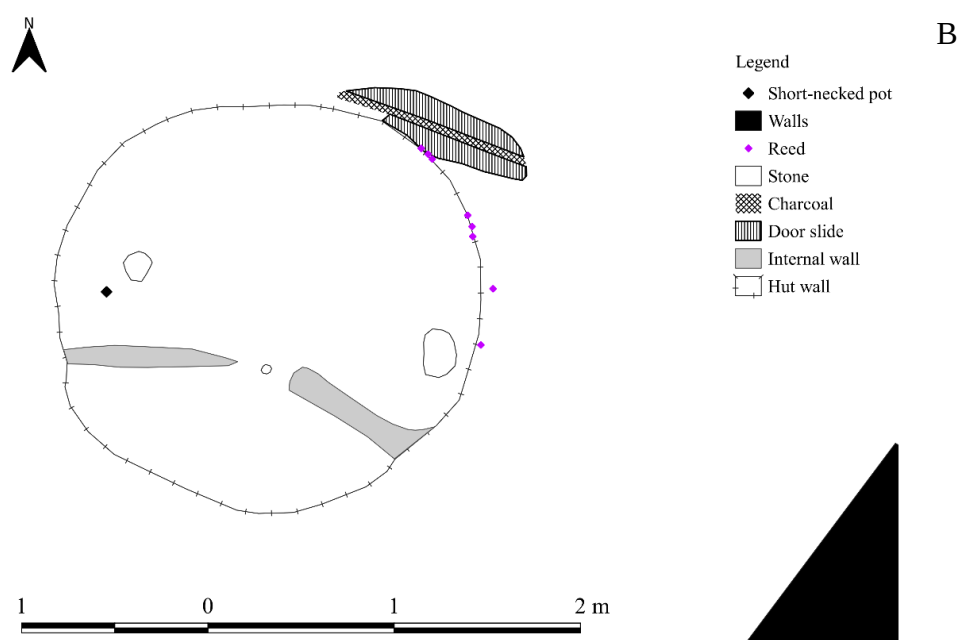
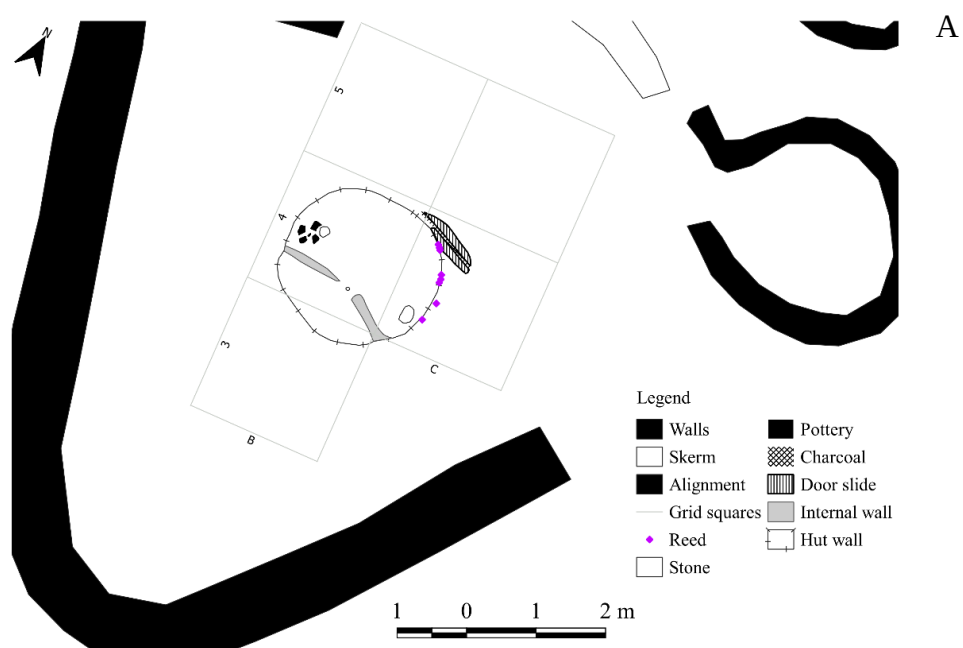
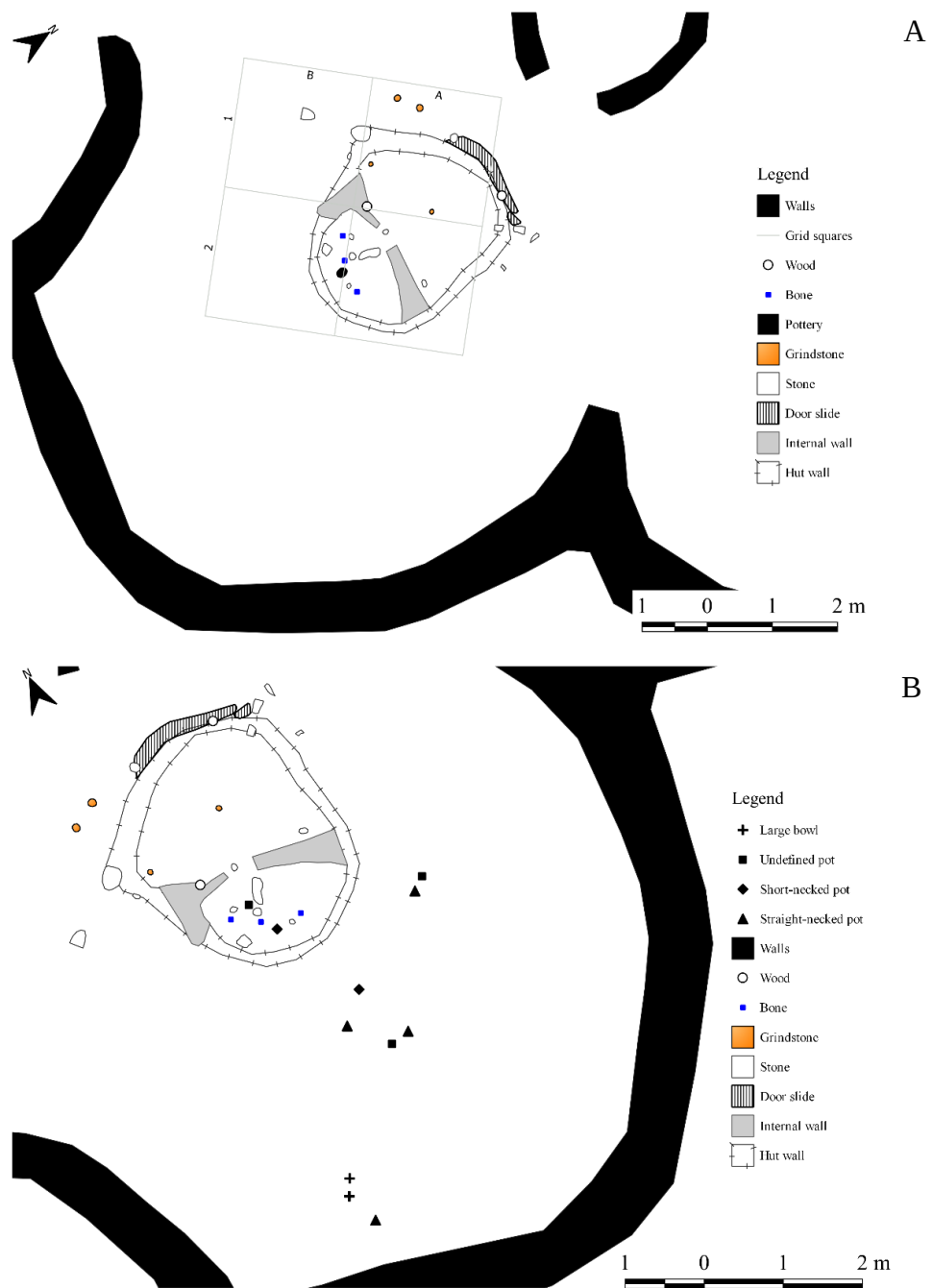


Figure 19: Boschoek Hut 19 after Wits Archaeology Department 1992. A) Showing the excavation area. B) Showing the distribution of vessel types.





Appendix 3: Sun Shadow pottery profile drawings

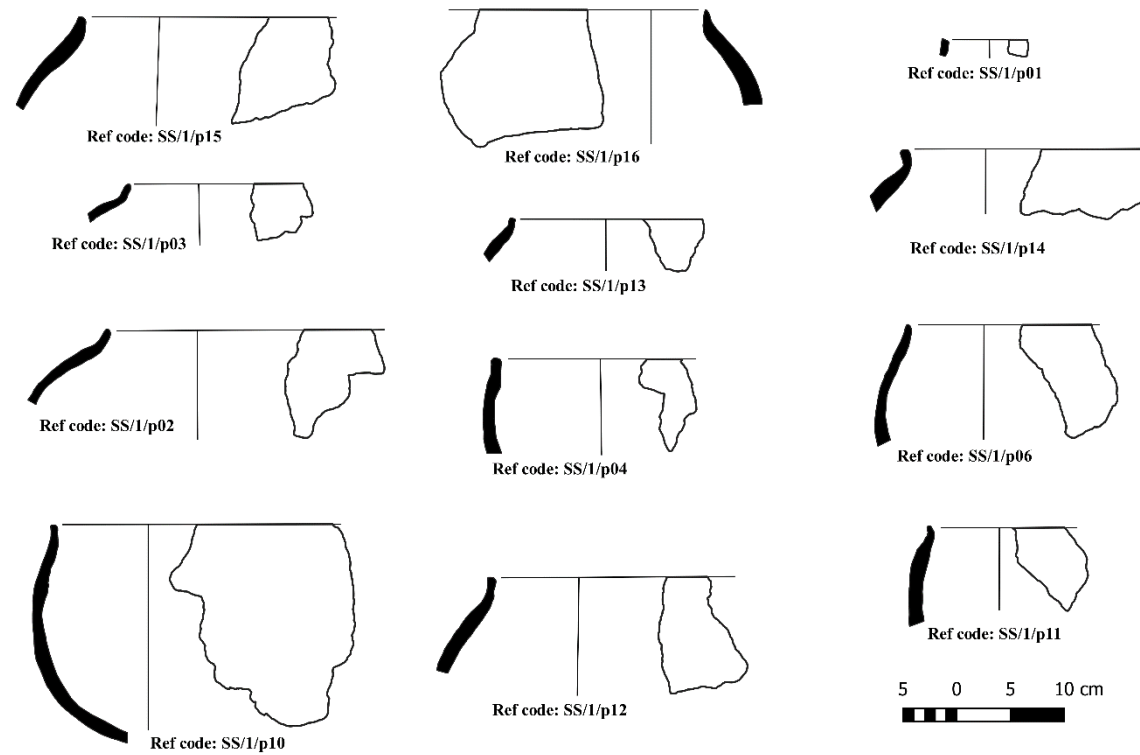


Figure 21: Sun Shadow Hut 1 pottery profile drawings.

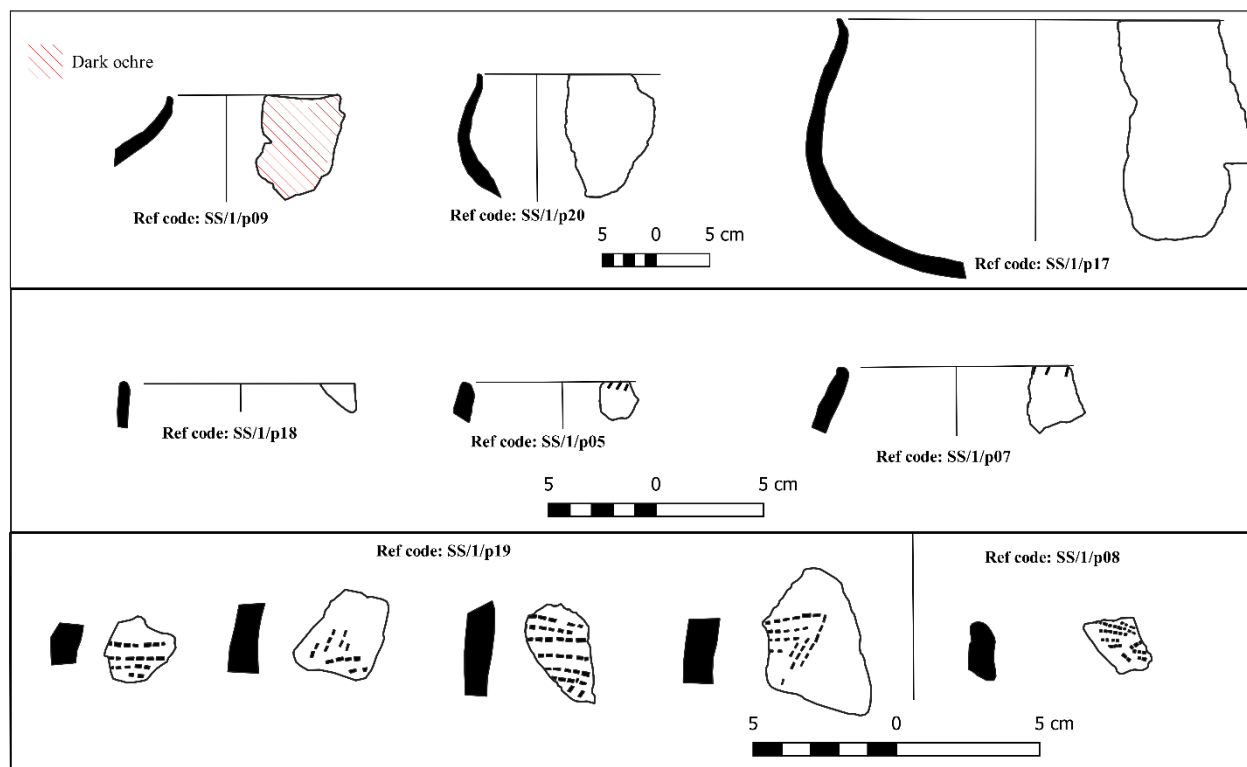


Figure 21 cont.: Sun Shadow Hut 1 pottery profile drawings.

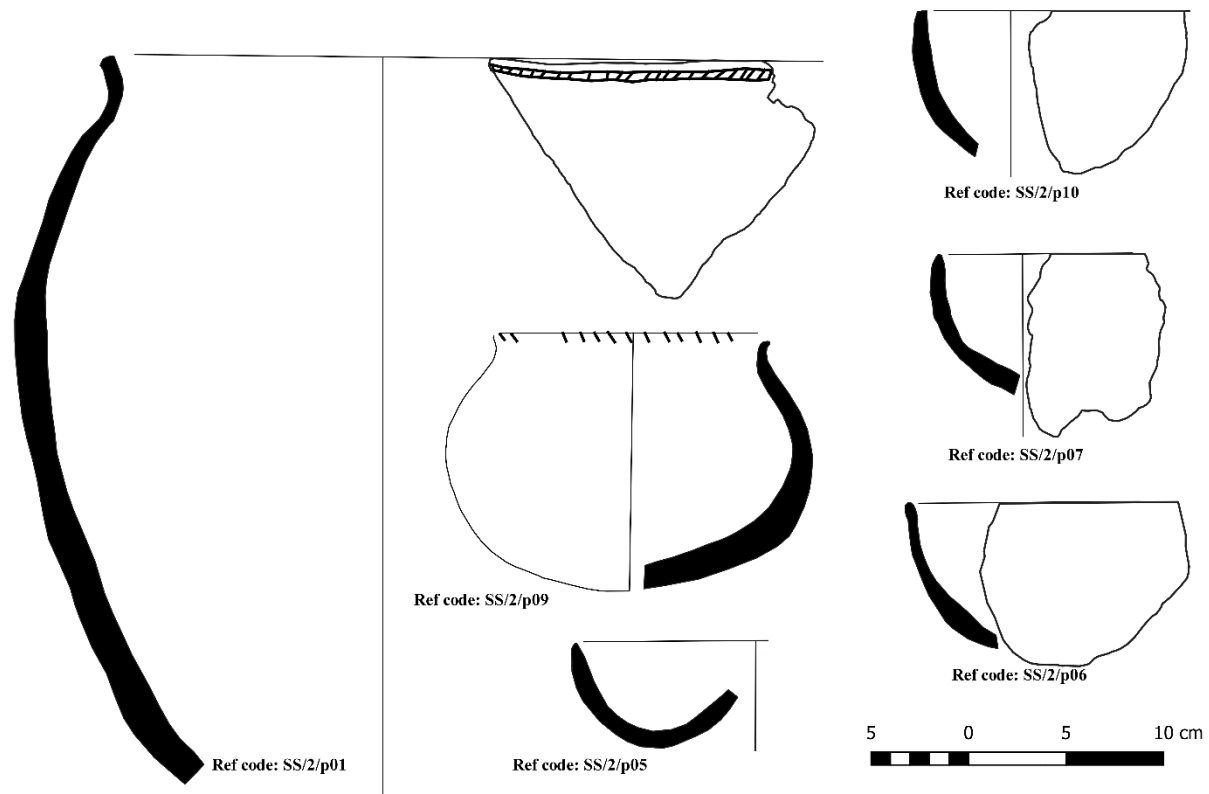


Figure 22: Sun Shadow Hut 2 pottery profile drawings.

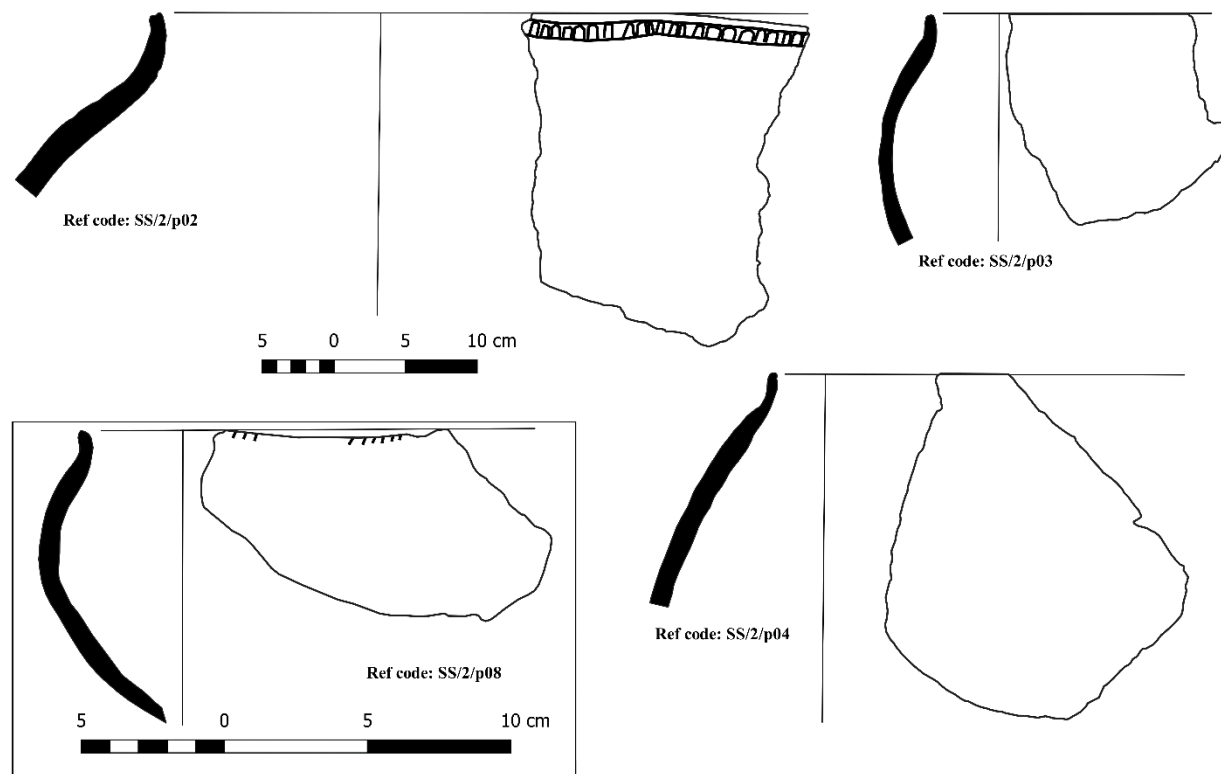


Figure 22 cont.: Sun Shadow Hut 2 pottery profile drawings.

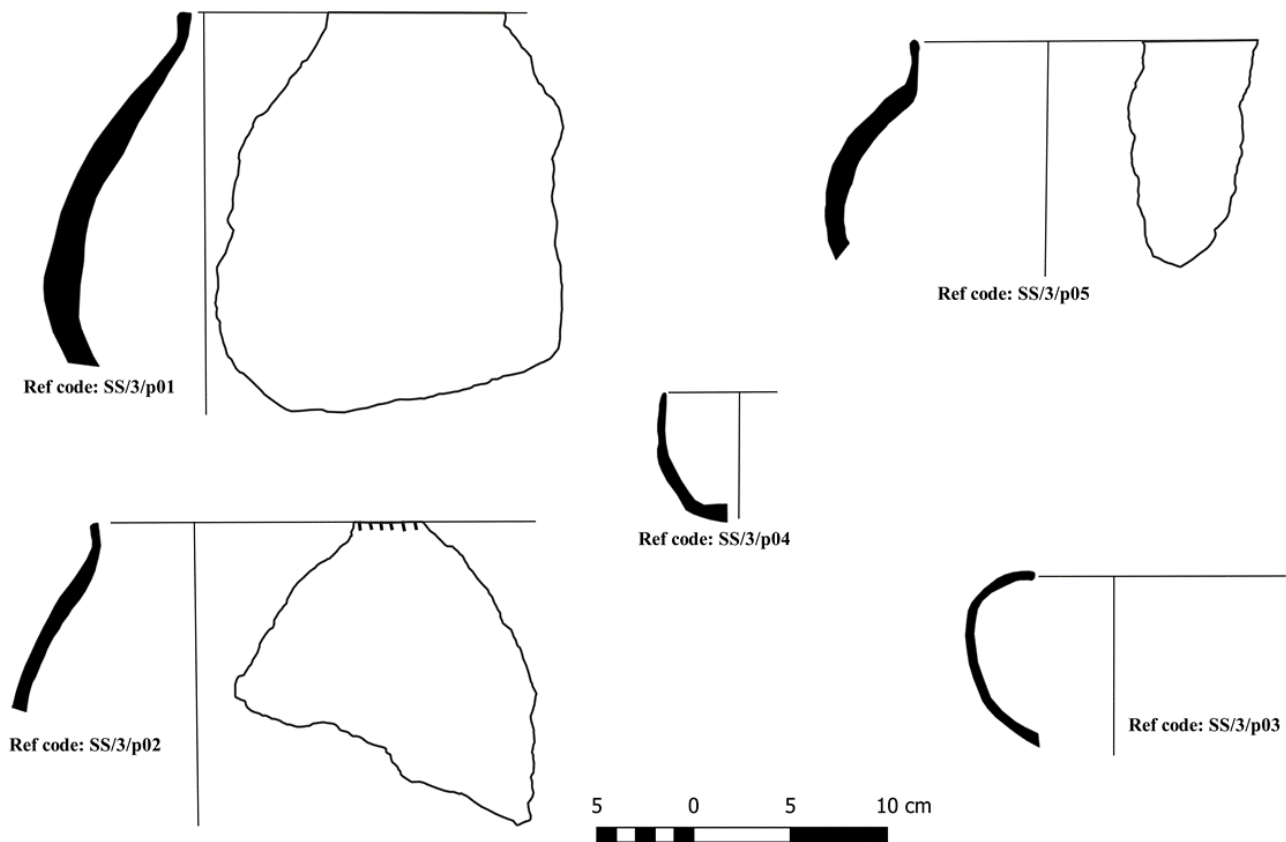


Figure 23: Sun Shadow Hut 3 pottery profile drawings.

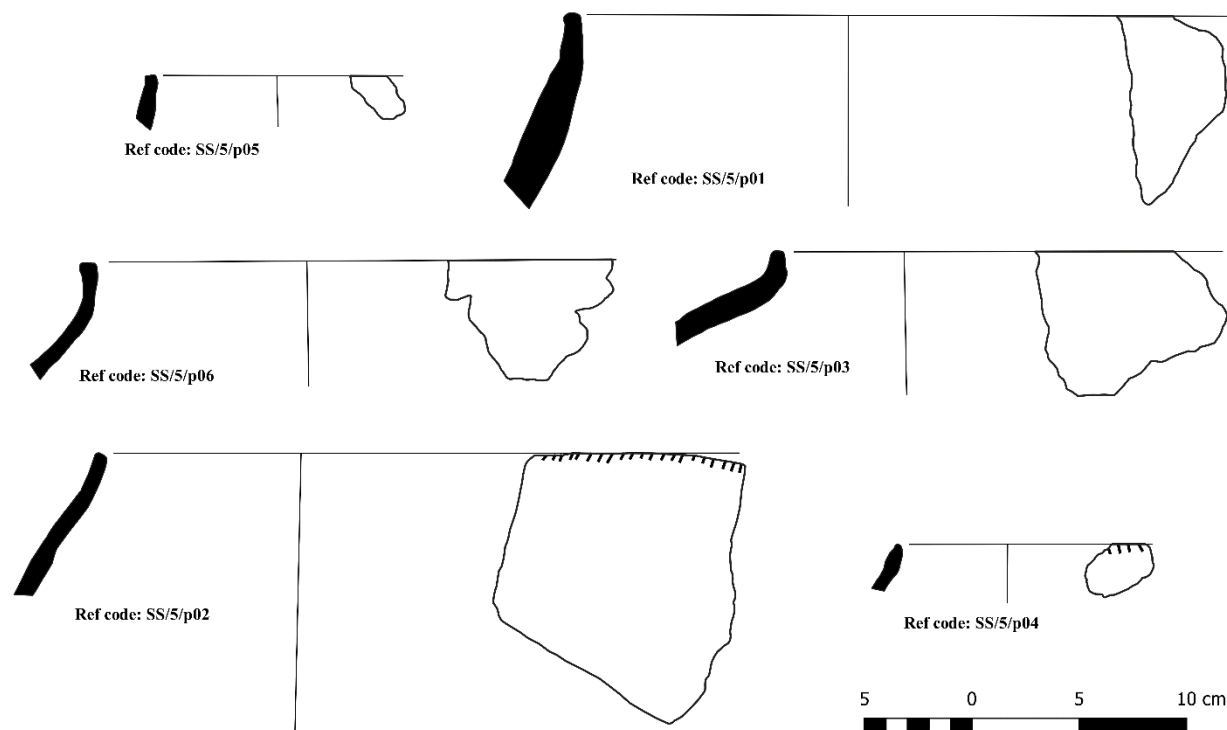


Figure 24: Sun Shadow Hut 5 pottery profile drawings.

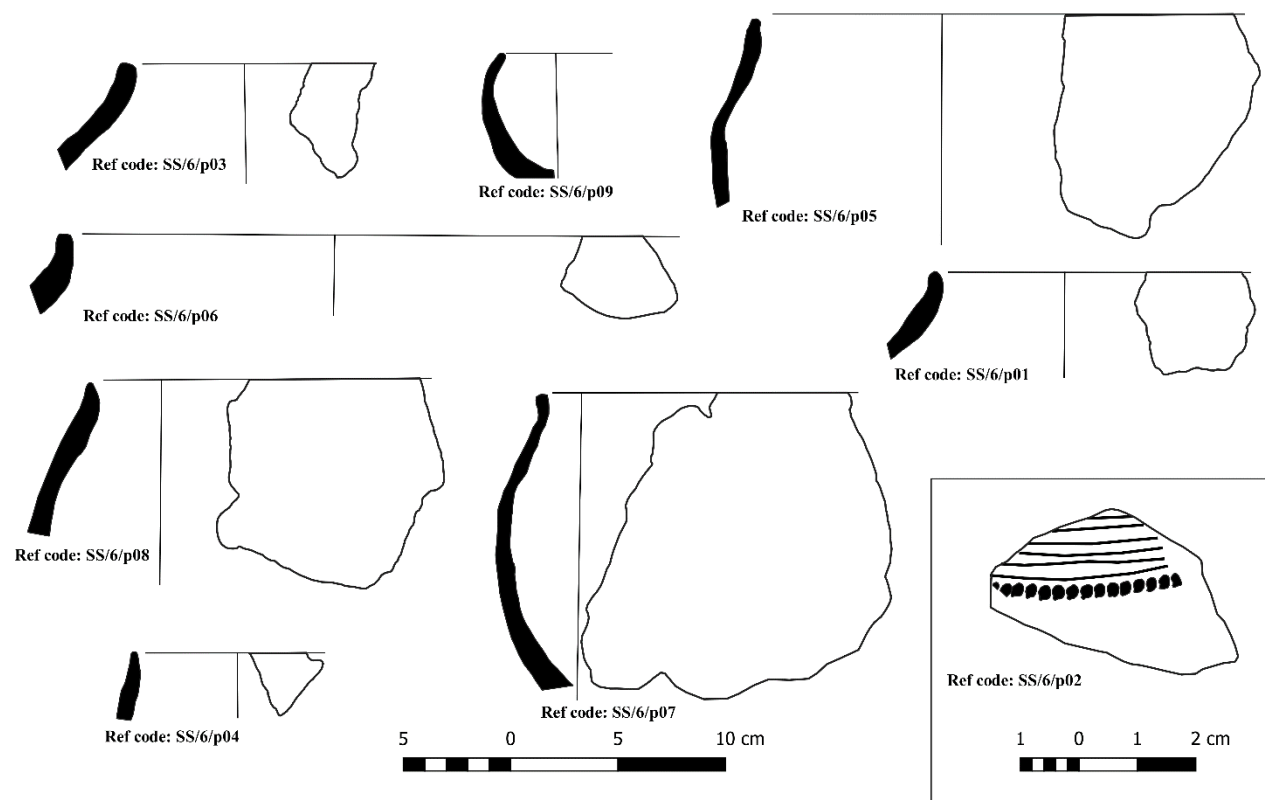


Figure 25: Sun Shadow Hut 6 pottery profile drawings.

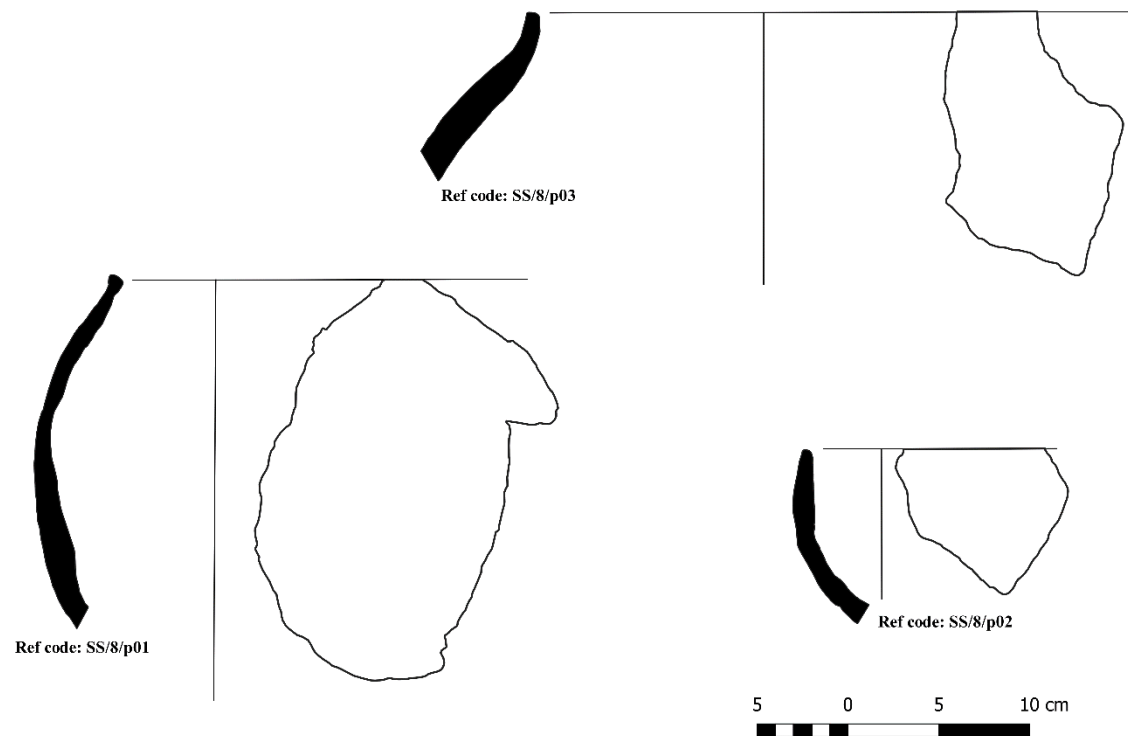


Figure 26: Sun Shadow Hut 8 pottery profile drawings.

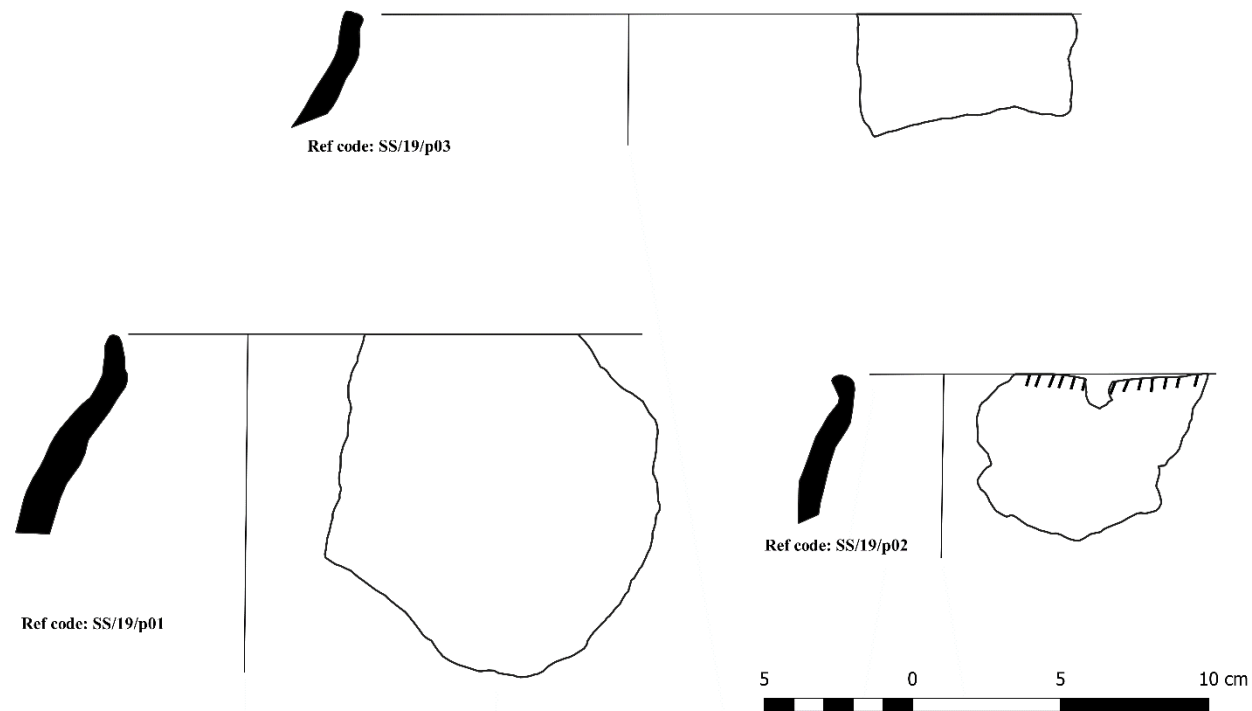


Figure 26: Sun Shadow Hut 19 pottery profile drawings.

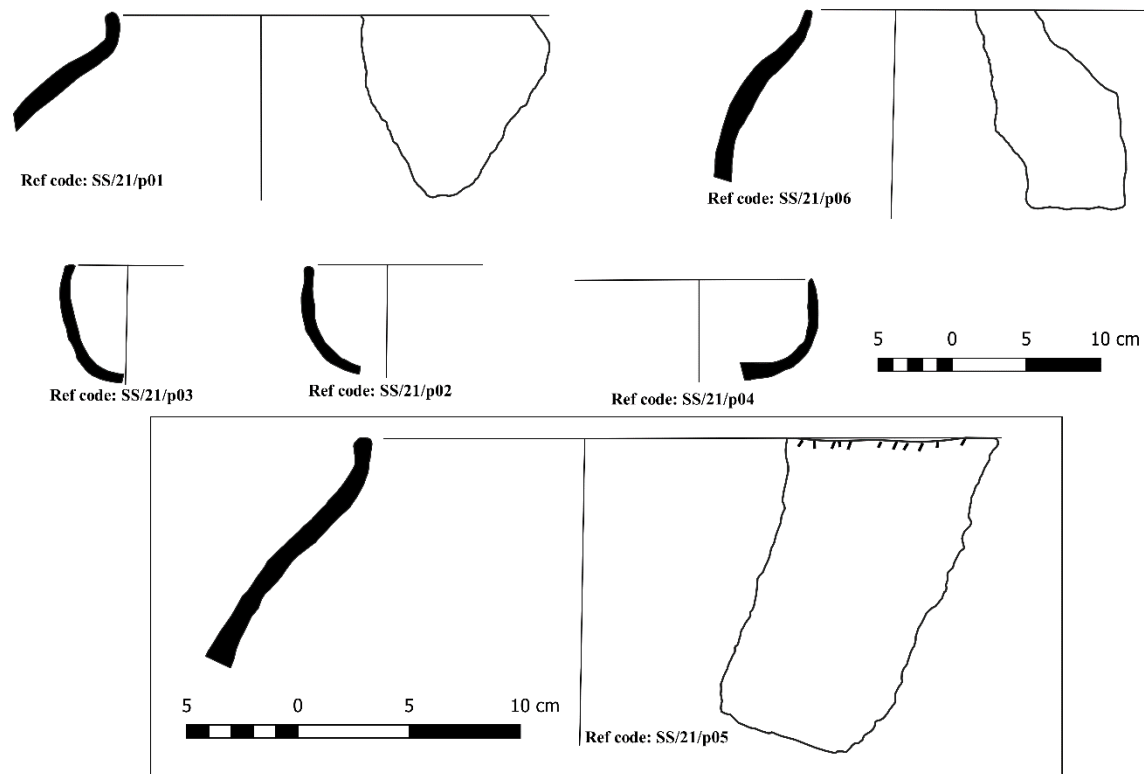


Figure 27: Sun Shadow Hut 21 pottery profile drawings.

Appendix 4: Boschoek and Unknown pottery profile drawings

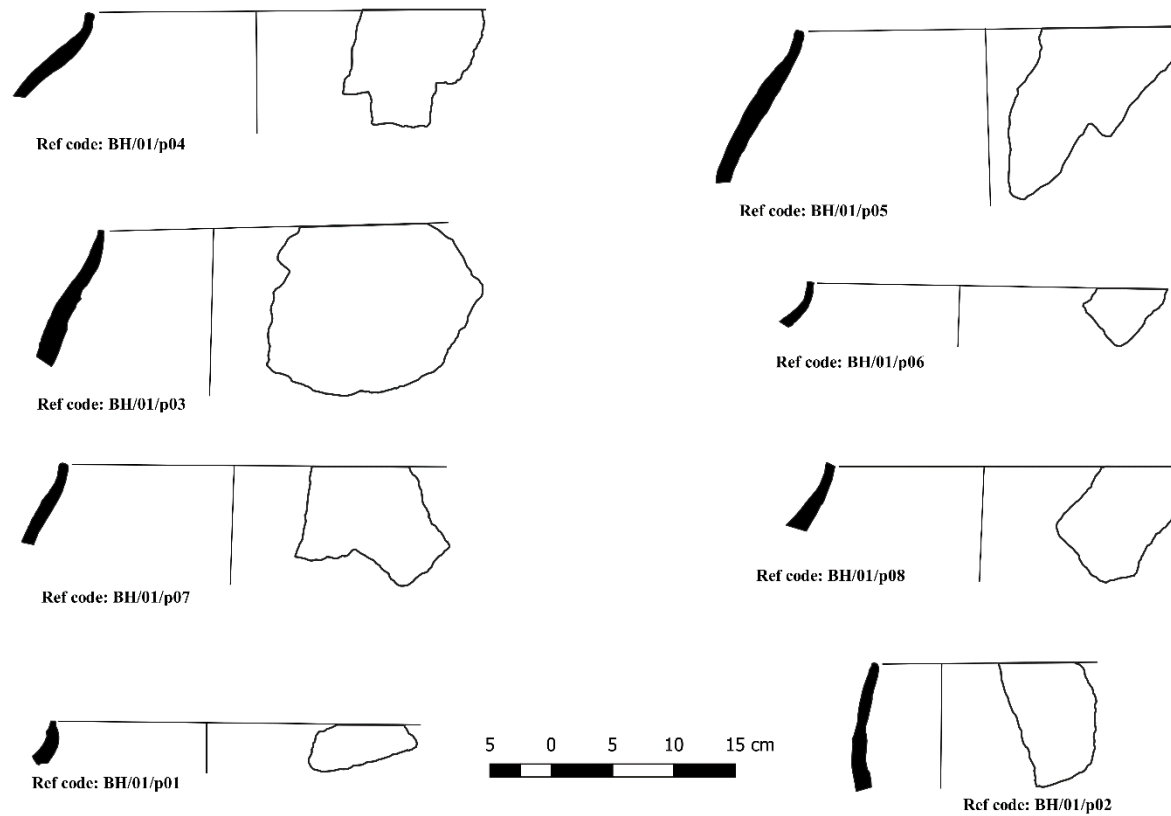


Figure 28: Boschoek Hut 1 pottery profile drawings.

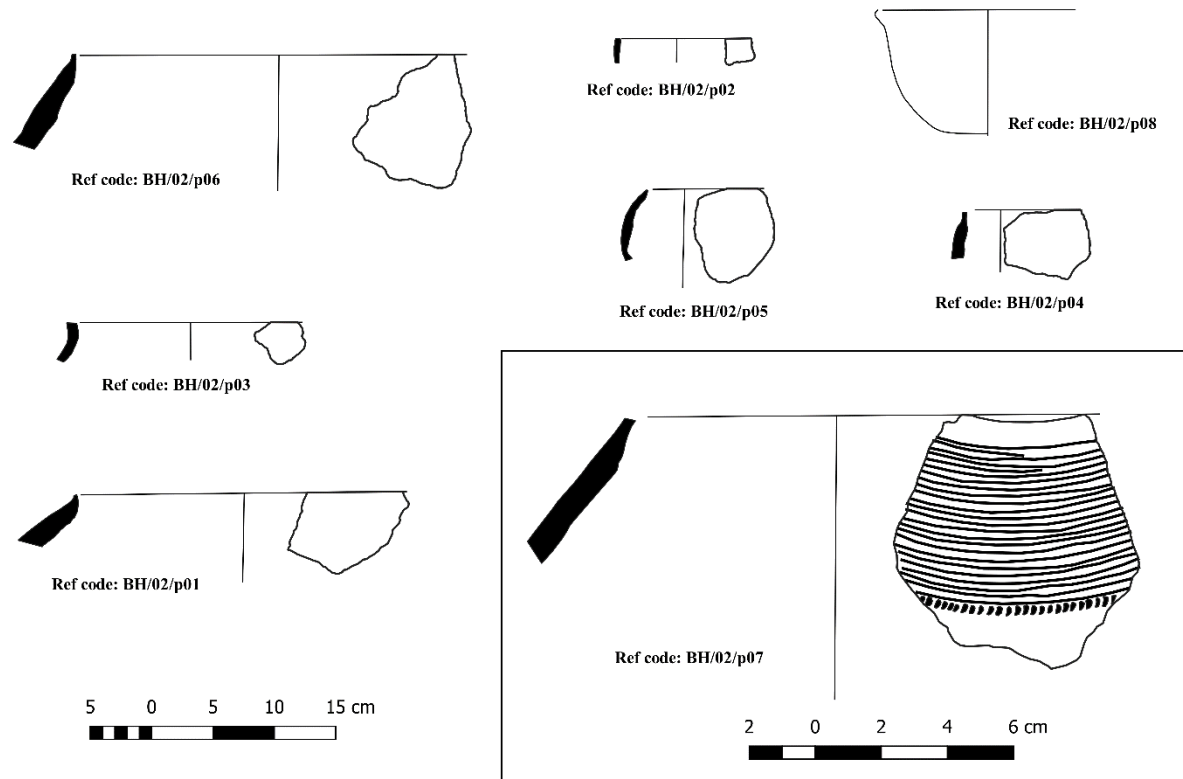


Figure 29: Boschoek Hut 2 pottery profile drawings.

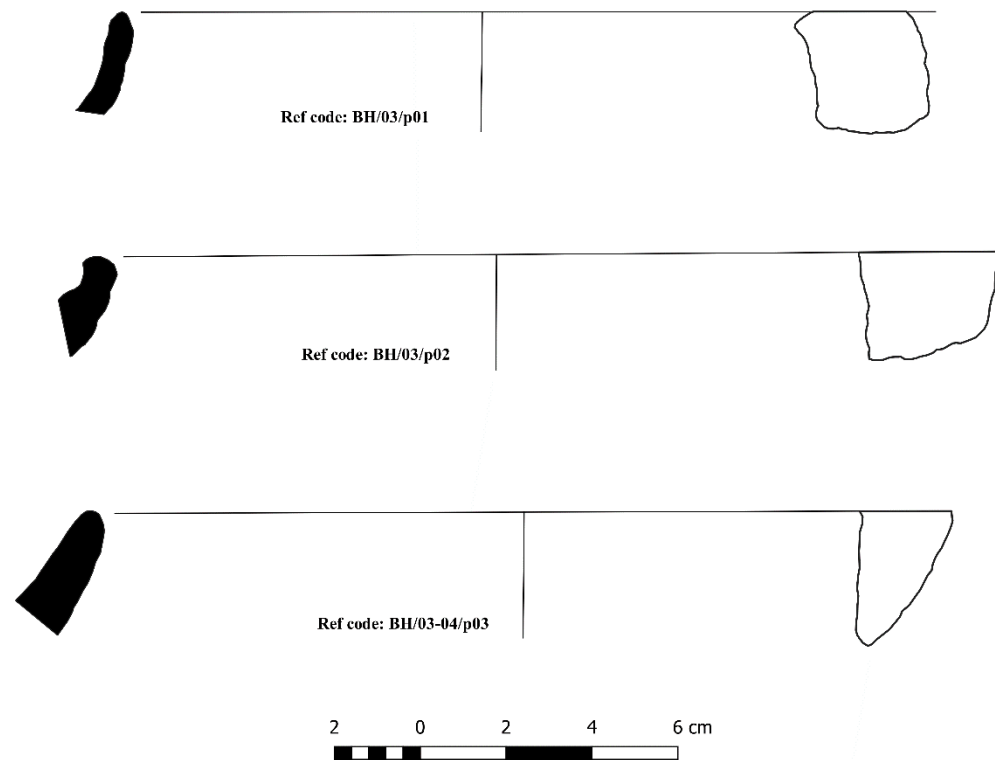


Figure 30: Boschoek Hut 3 pottery profile drawings.

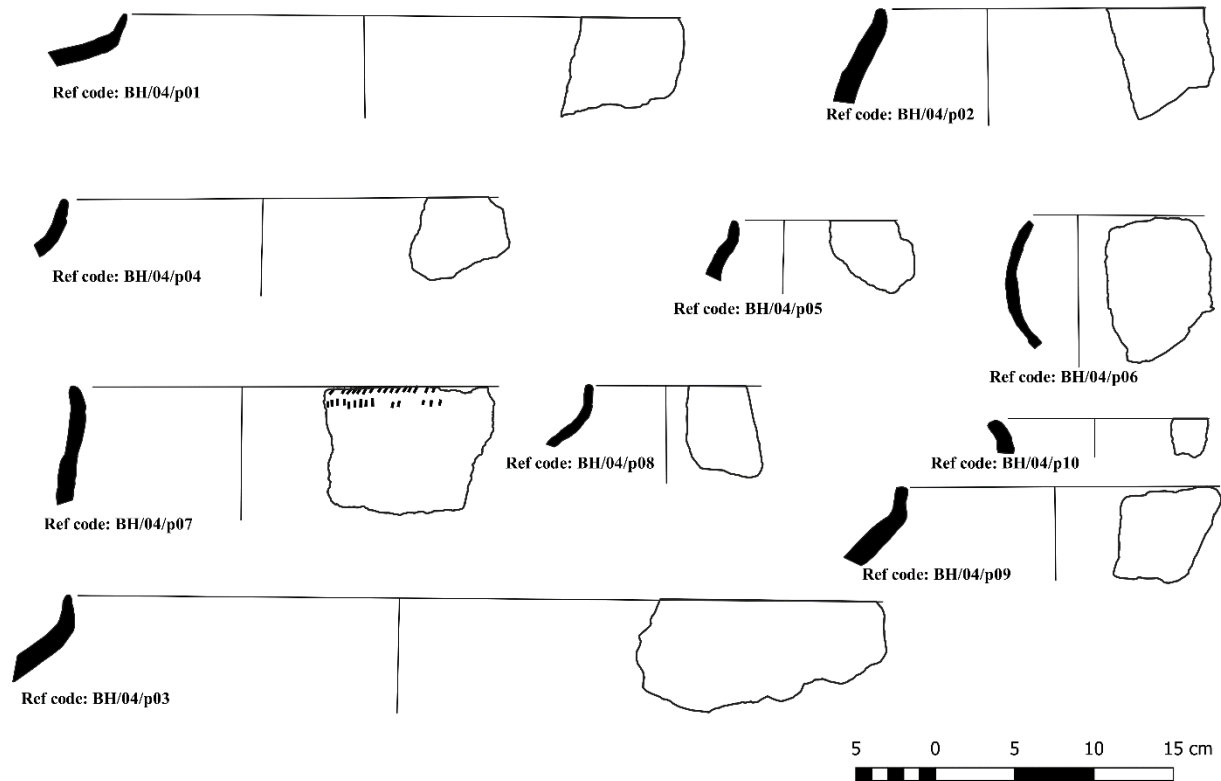


Figure 31: Boschoek Hut 4 pottery profile drawings.

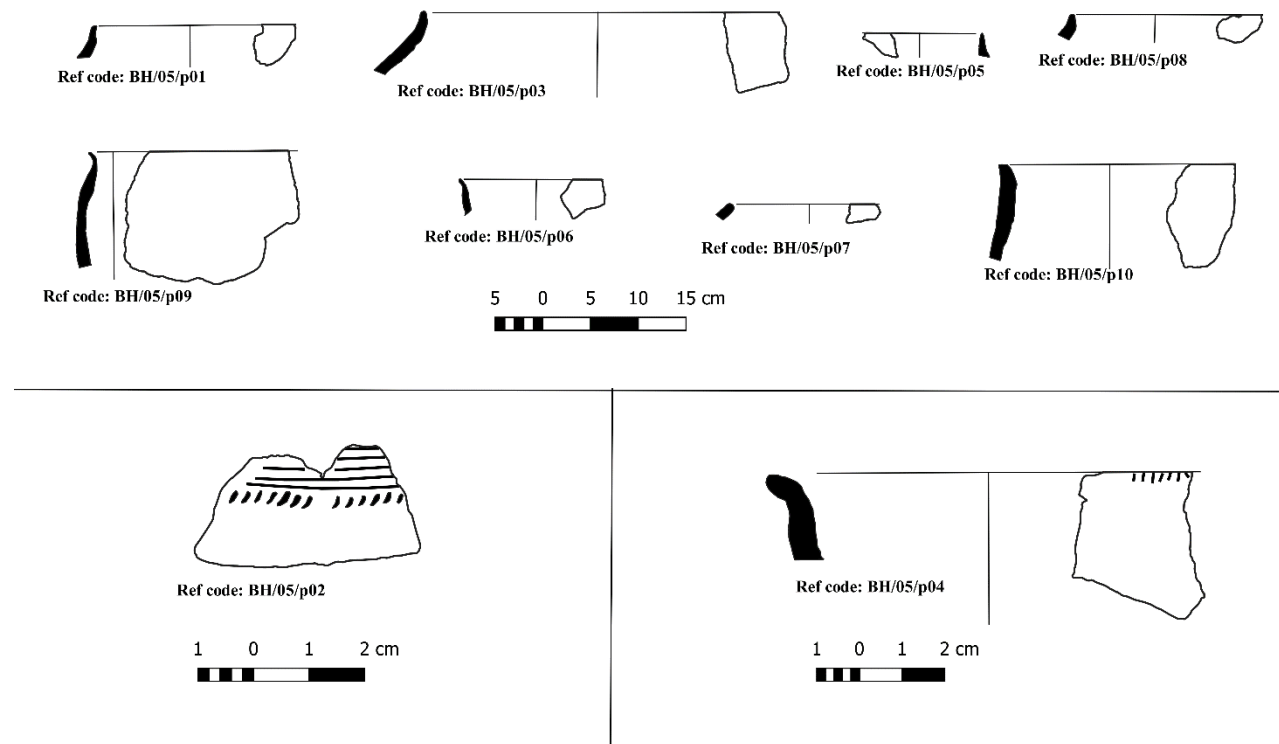


Figure 32: Boschoek Hut 5 pottery profile drawings.



Figure 33: Boschoek Hut 6 pottery profile drawings.

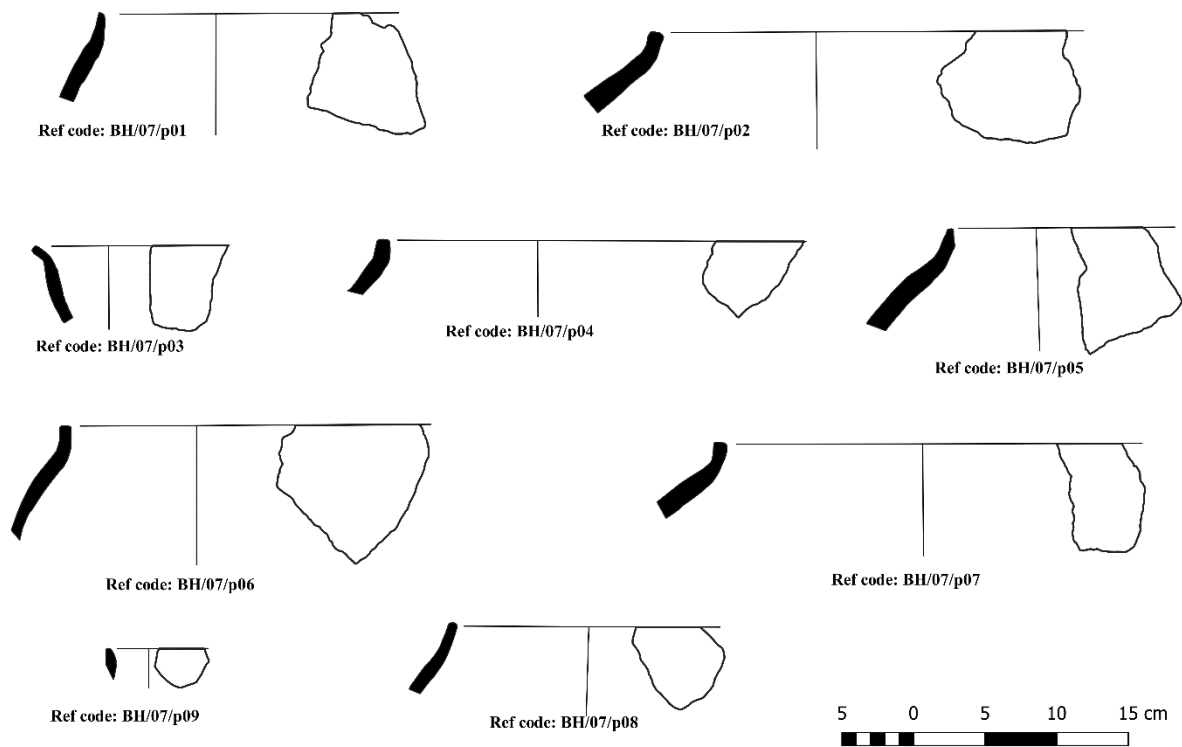


Figure 34: Boschoek Hut 7 pottery profile drawings.

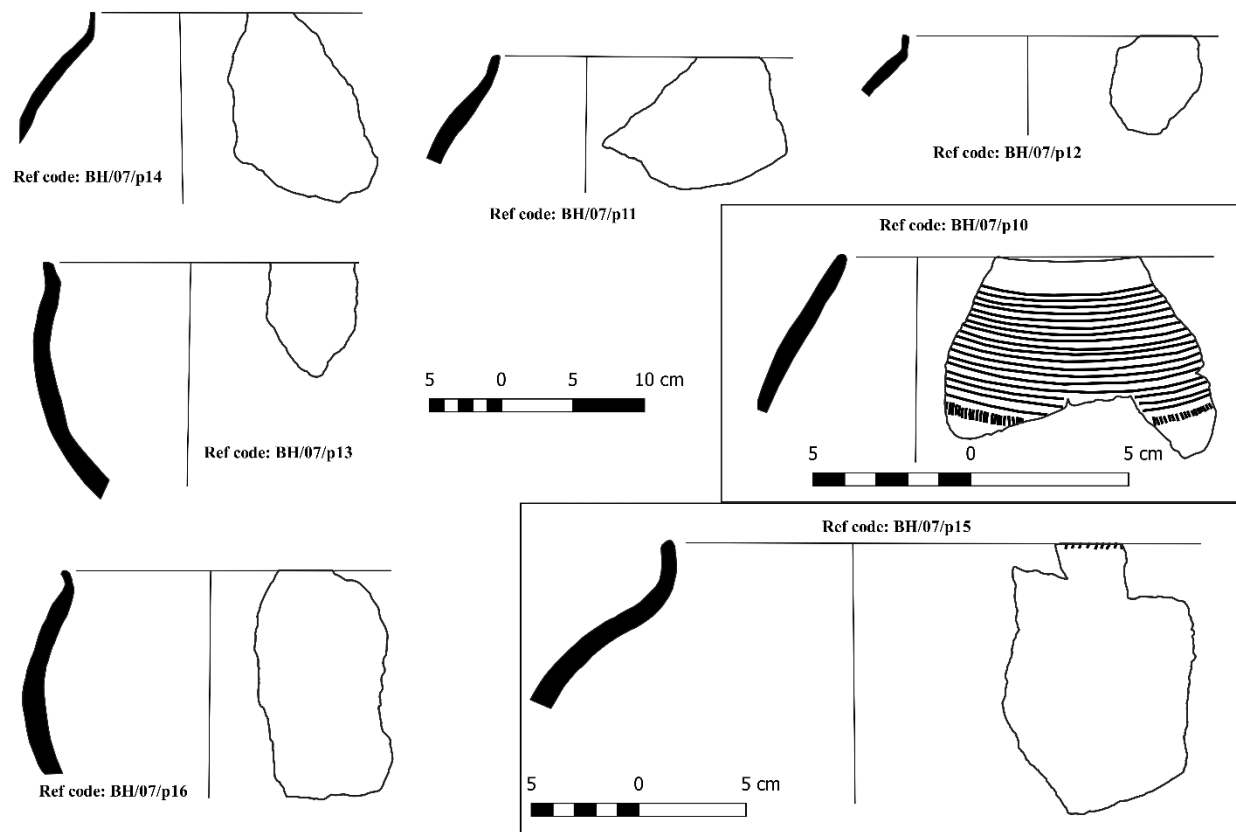


Figure 34 cont.: Boschoek Hut 7 pottery profile drawings.

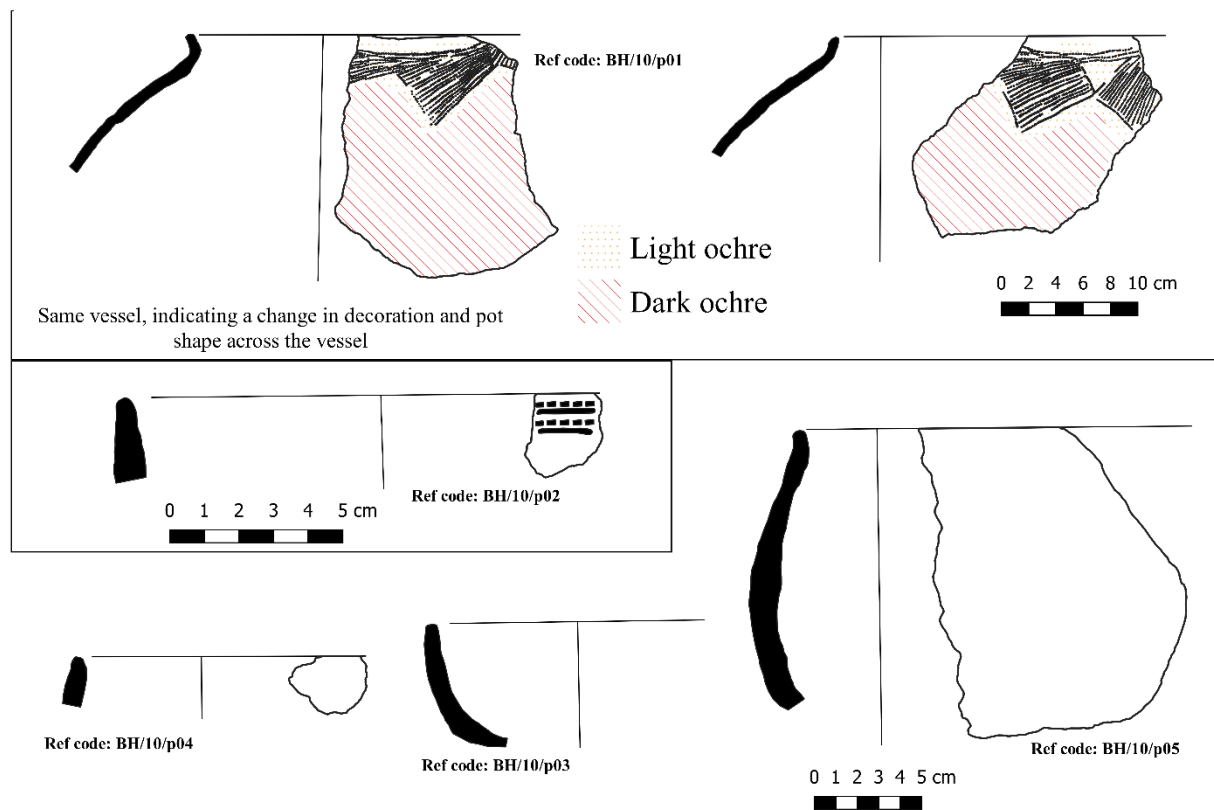


Figure 35: Boschoek Hut 10 pottery profile drawings.

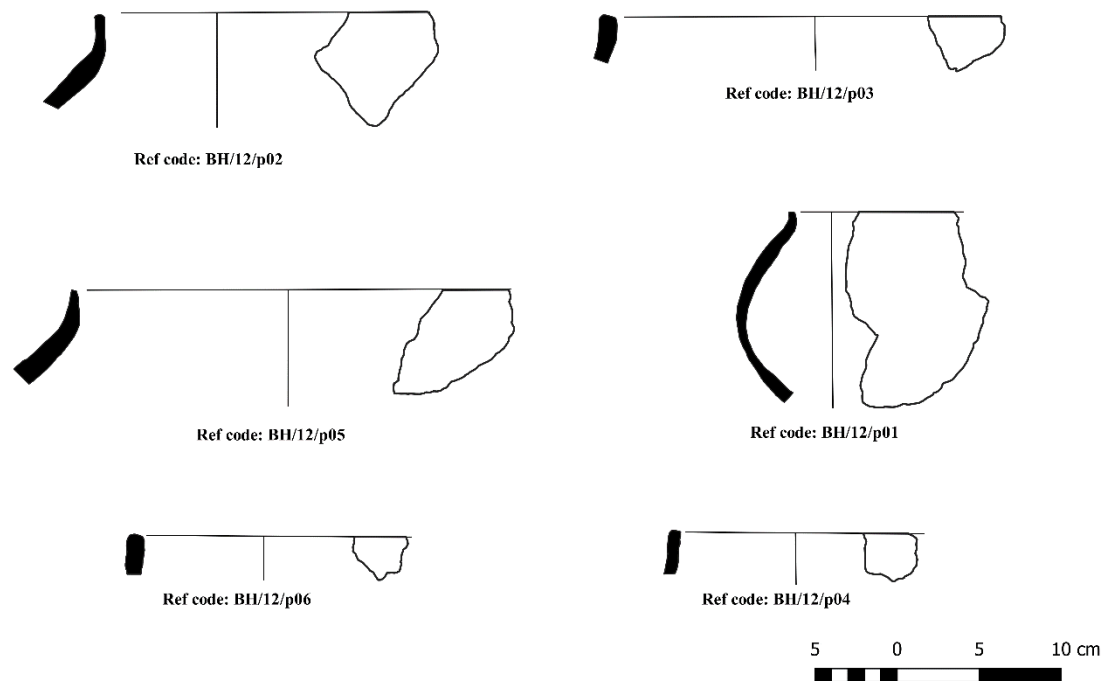


Figure 36: Boschoek Hut 12 pottery profile drawings.

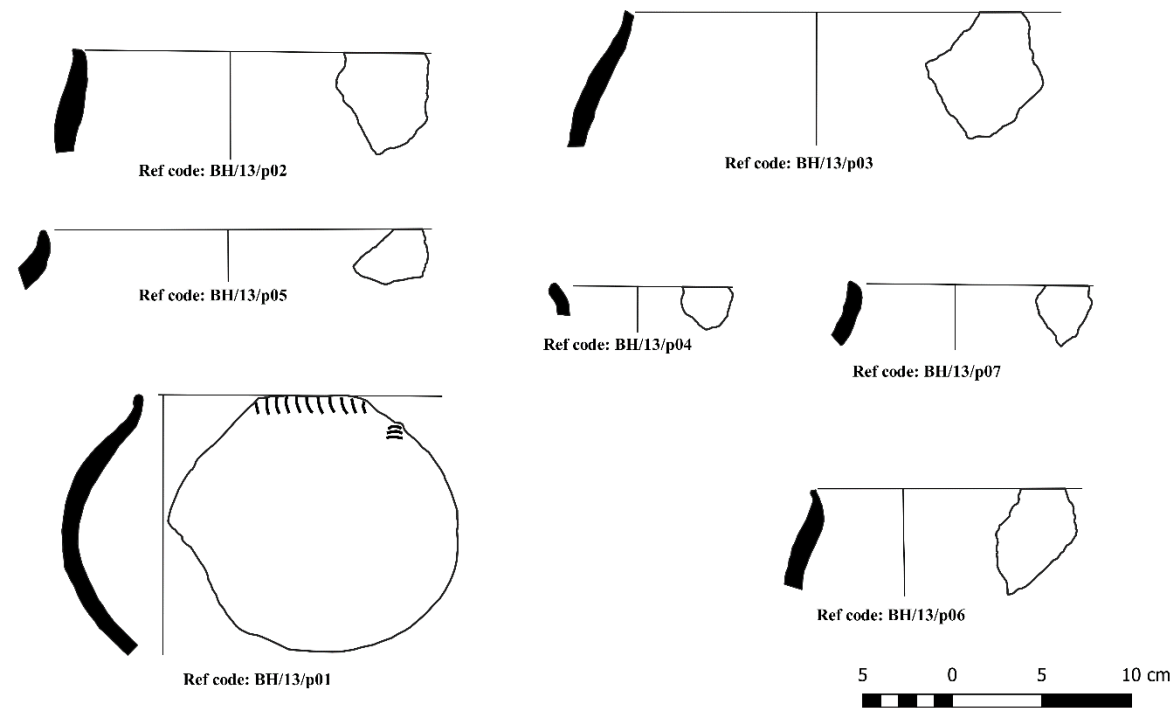
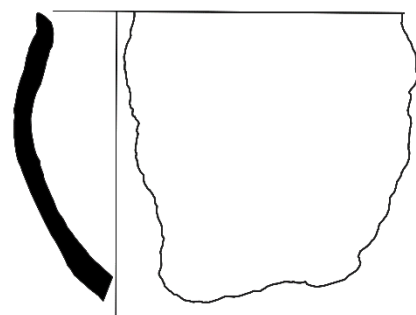
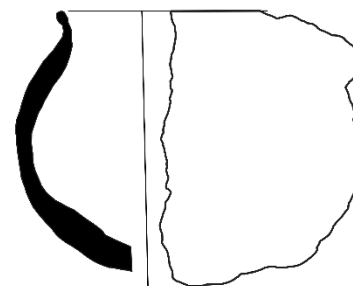


Figure 37: Boschoek Hut 13 pottery profile drawings.



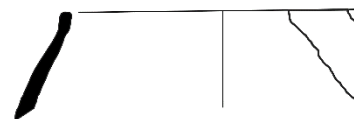
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Ref code: BH/14/p04

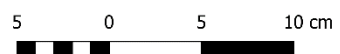


Figure 38: Boschoek Hut 14 pottery profile drawings.

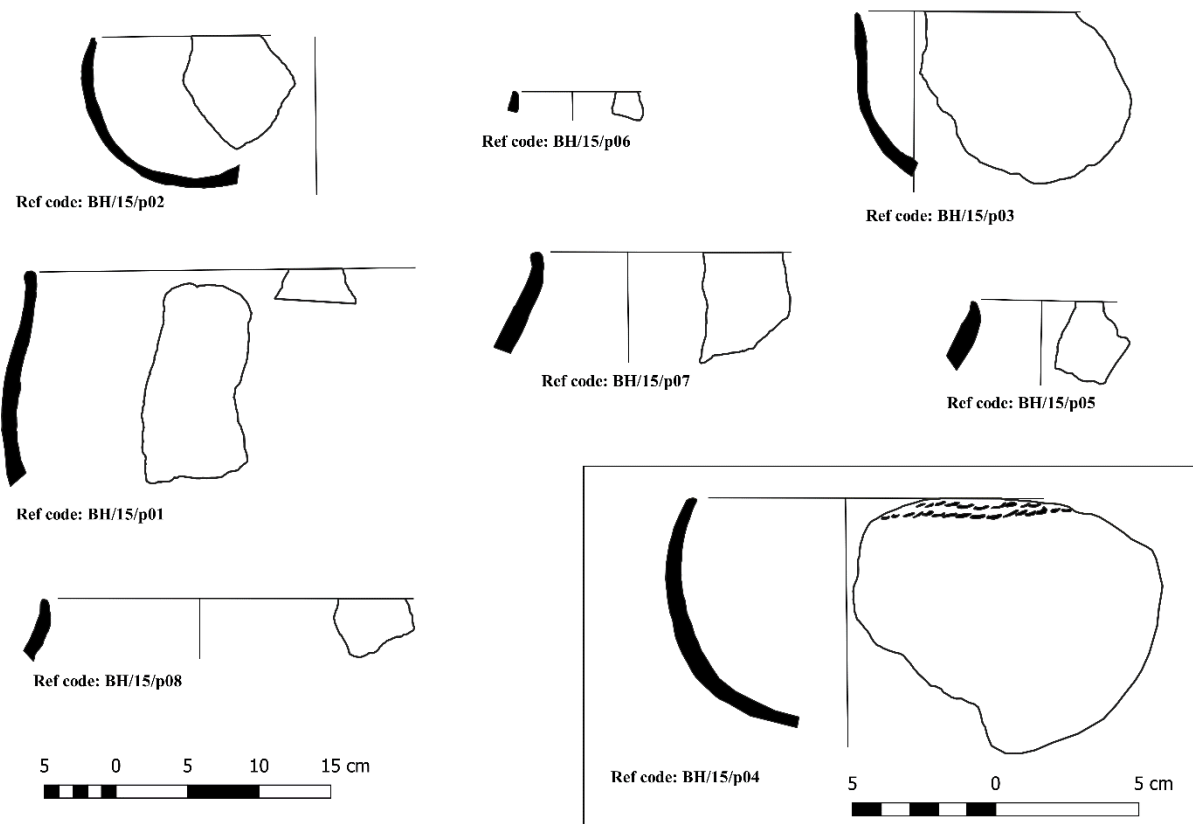


Figure 39: Boschoek Hut 15 pottery profile drawings.

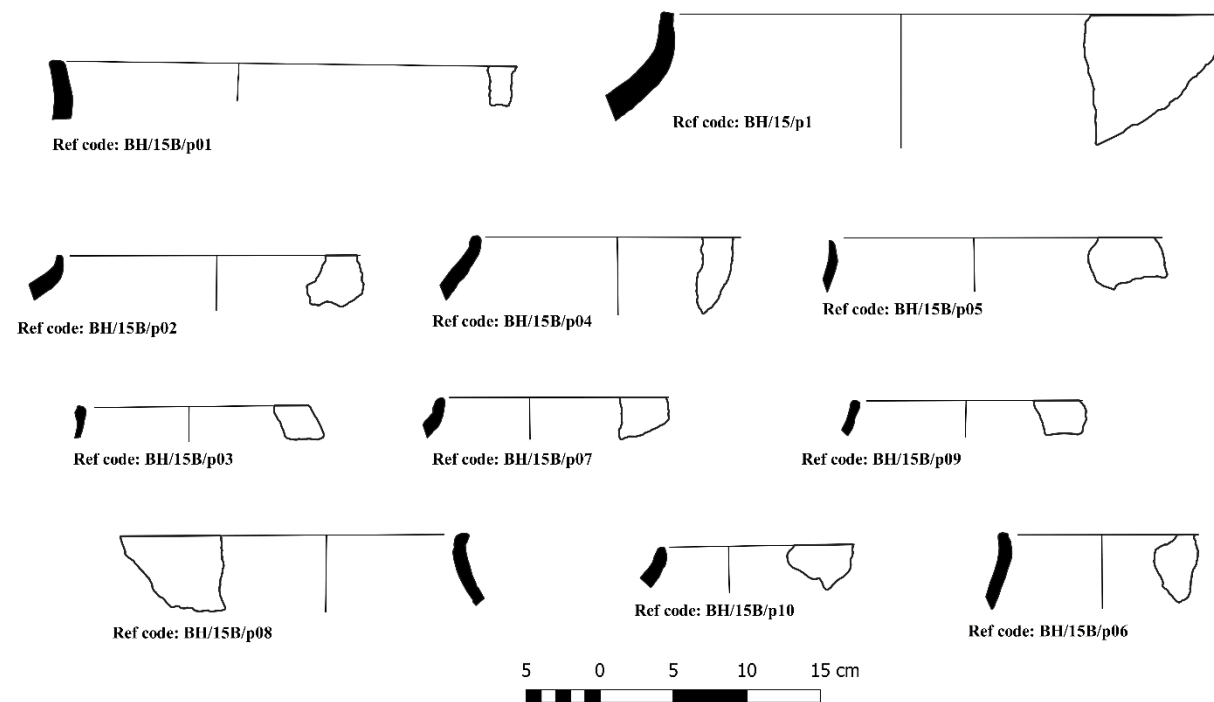


Figure 39 cont.: Boschoek Hut 15 Back courtyard pottery profile drawings.

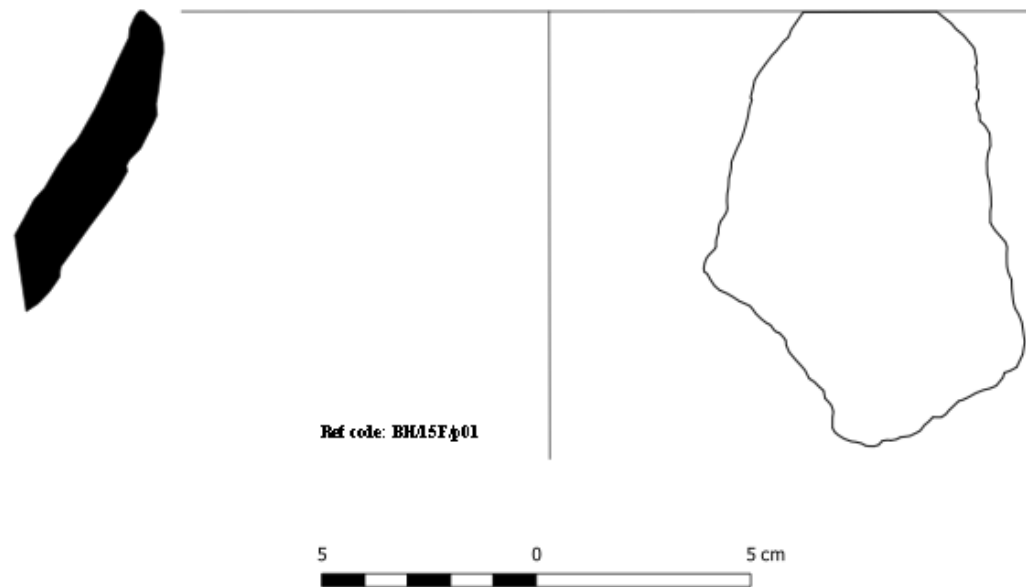


Figure 39 cont.: Boschoek Hut 15 Front courtyard pottery profile drawings.

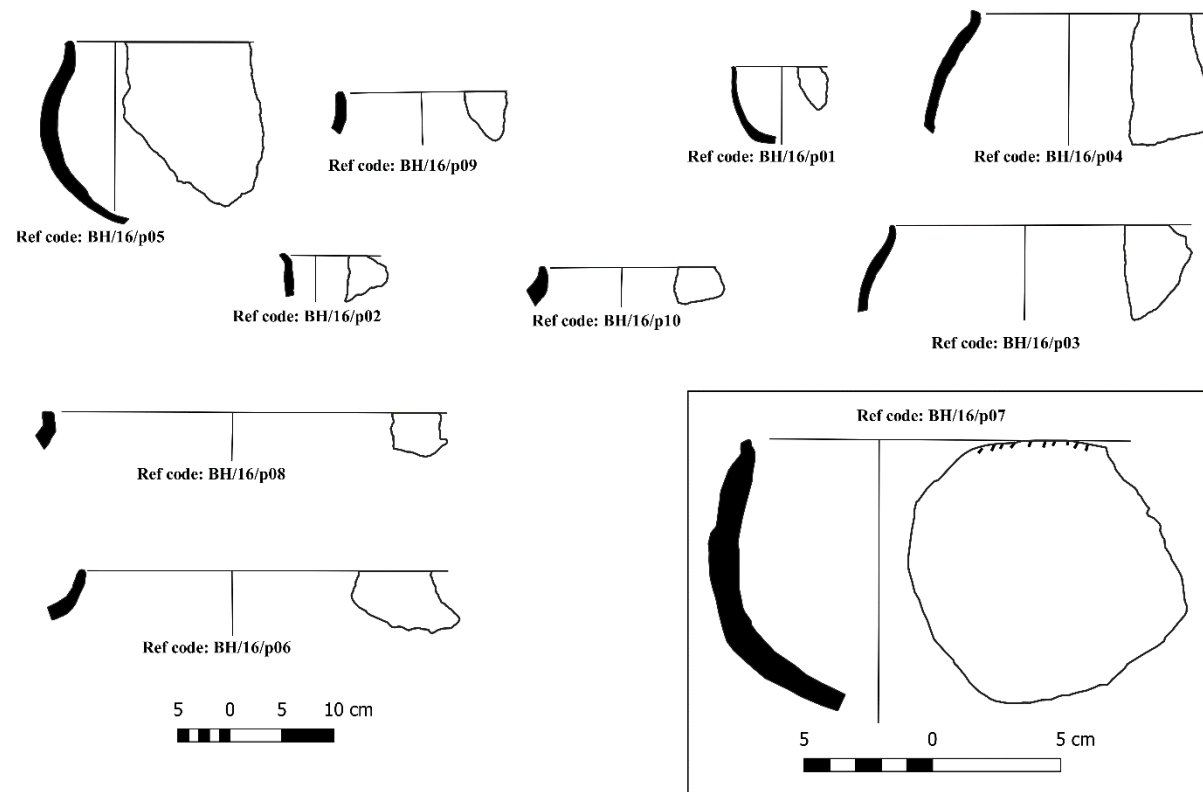
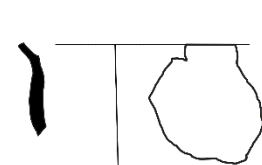
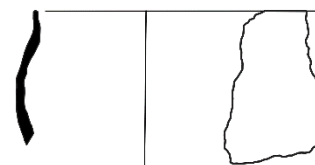


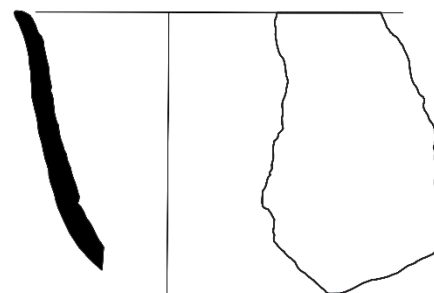
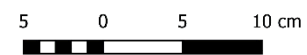
Figure 40: Boschoek Hut 16 pottery profile drawings.



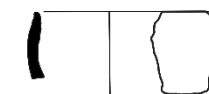
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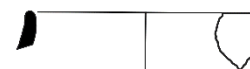
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Ref code: BH/17/p03



Ref code: BH/17/p04



Ref code: BH/17/p05

Figure 41: Boschoek Hut 17 pottery profile drawings.

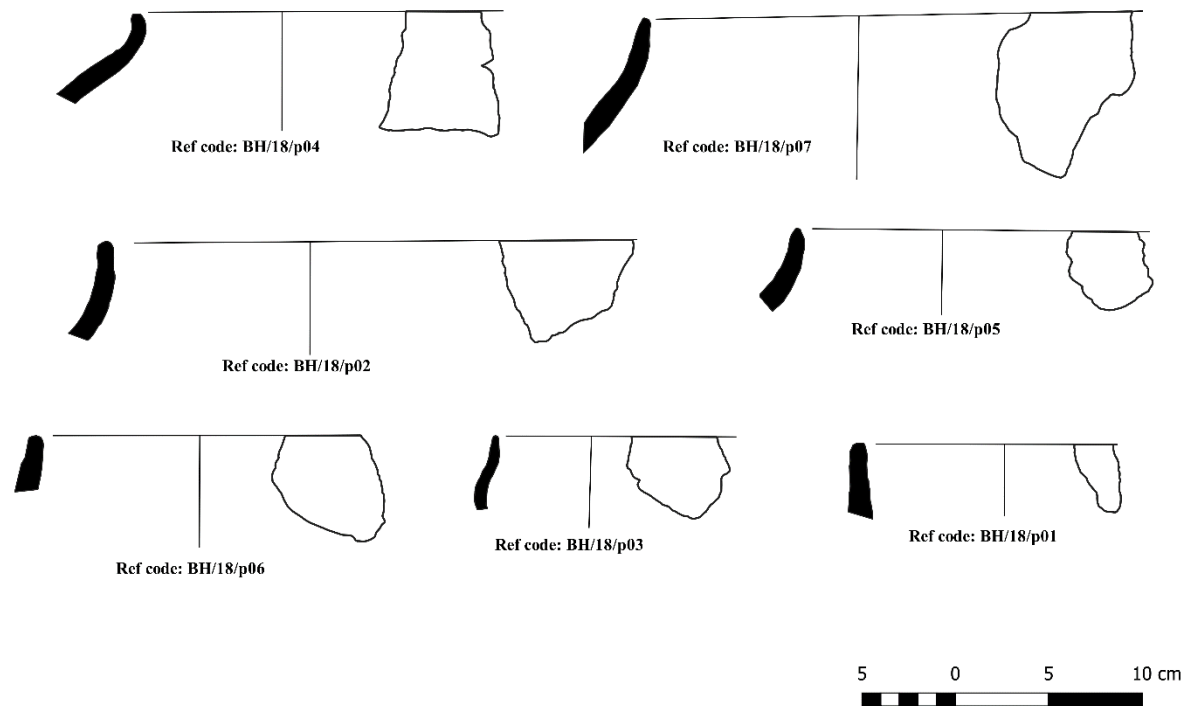


Figure 42: Boschoek Hut 18 pottery profile drawings.

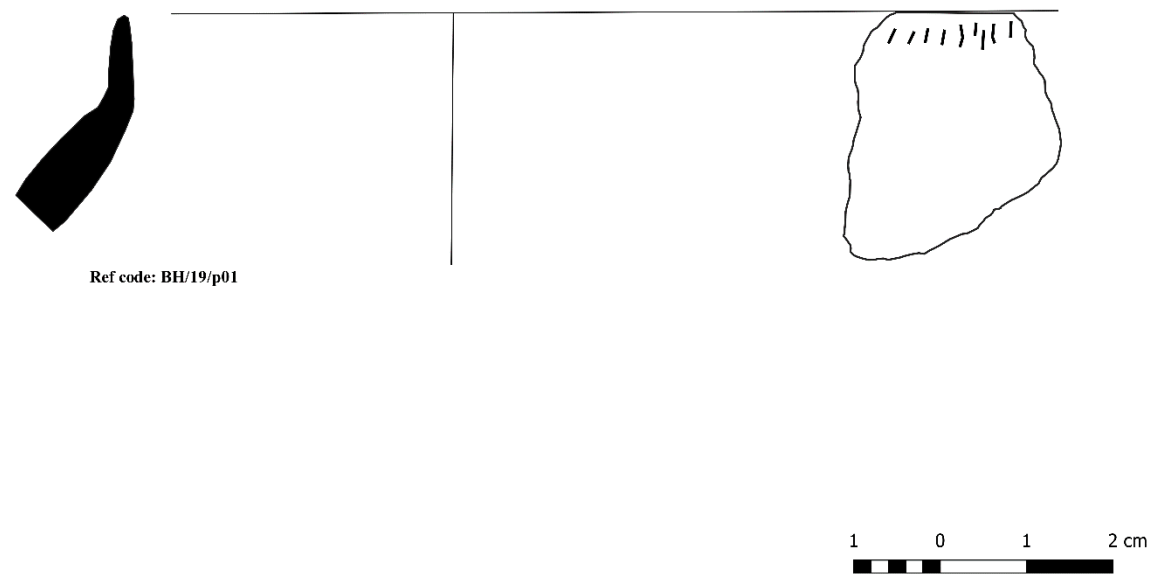


Figure 43: Boschoek Hut 19 pottery profile drawings.

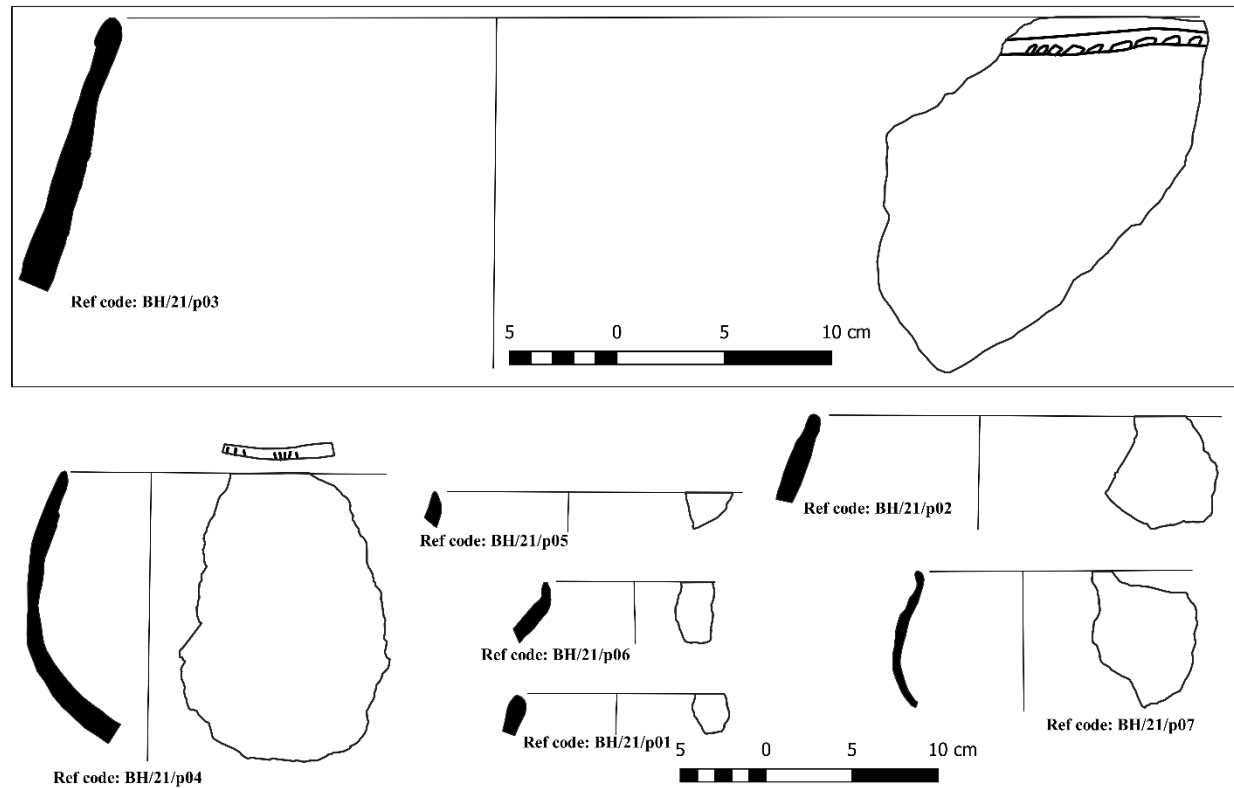


Figure 44: Boschoek Hut 21 pottery profile drawings.

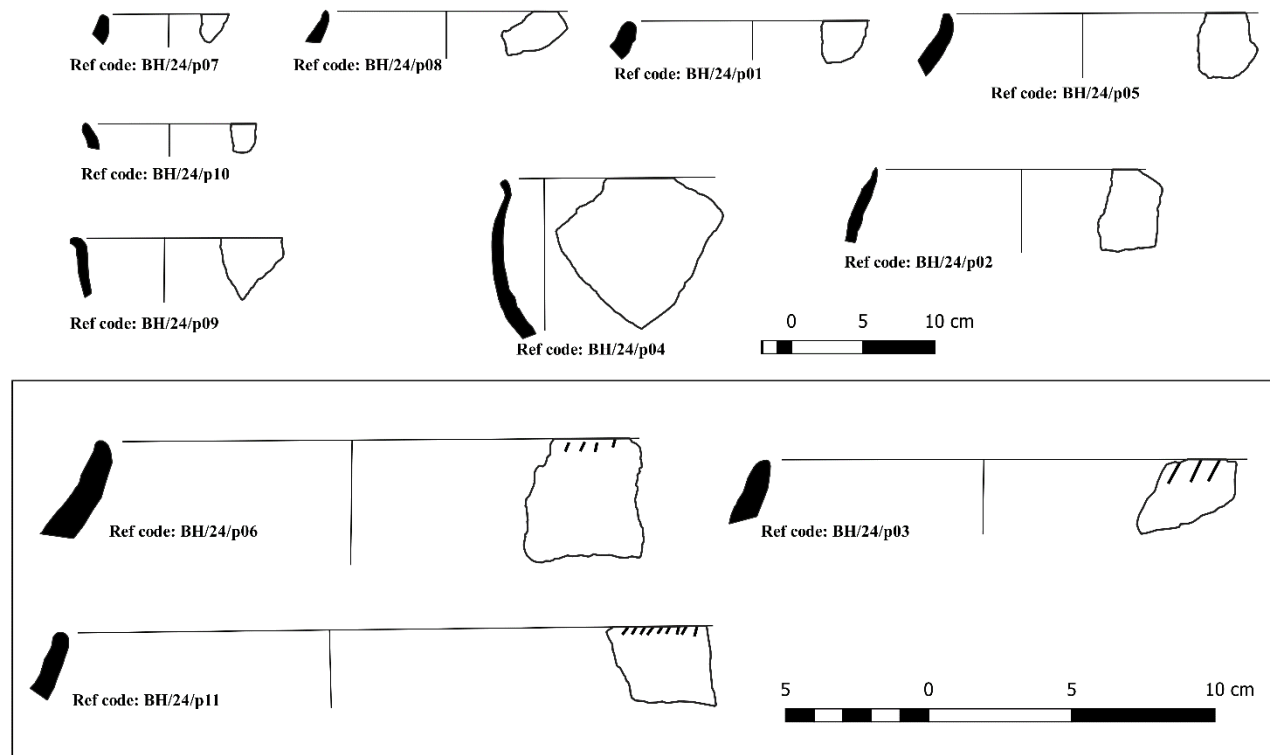


Figure 45: Boschoek Hut 24 pottery profile drawings.

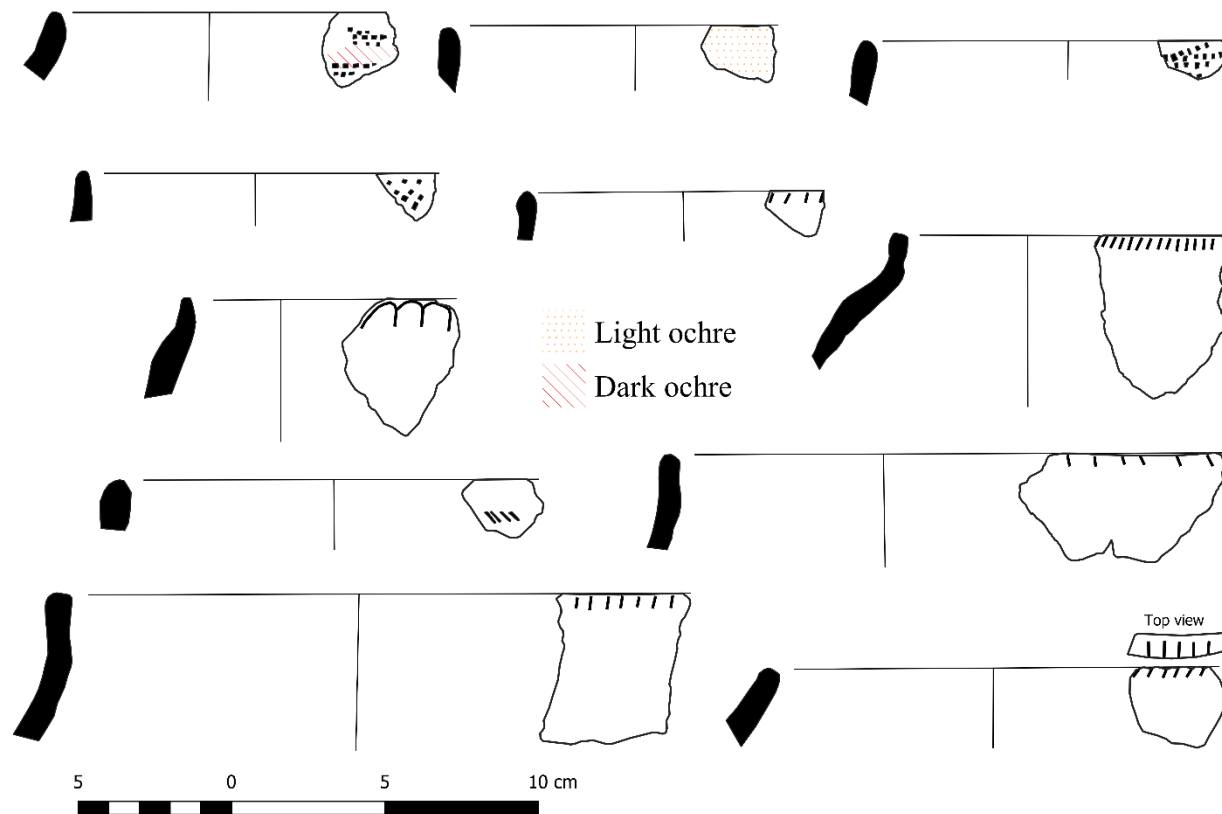


Figure 46: Boschoek Midden 1 pottery profile drawings.

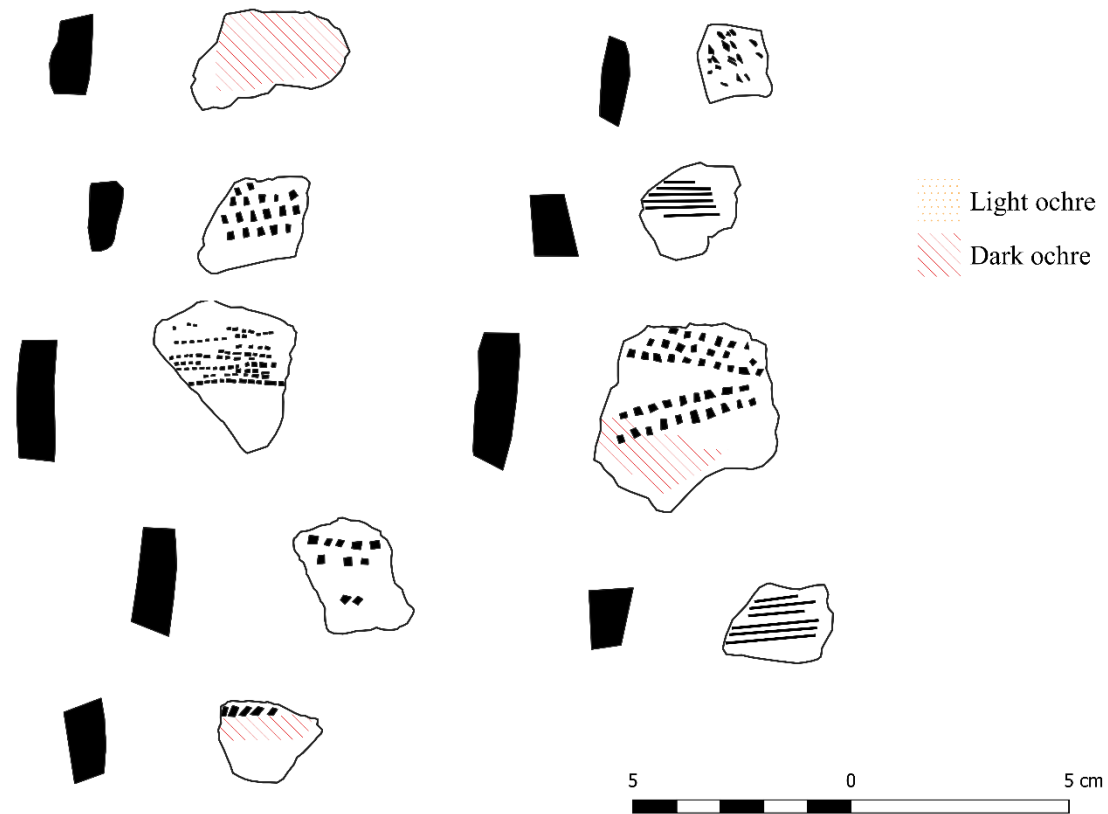


Figure 46 cont.: Boschoek Midden 1 pottery profile drawings.

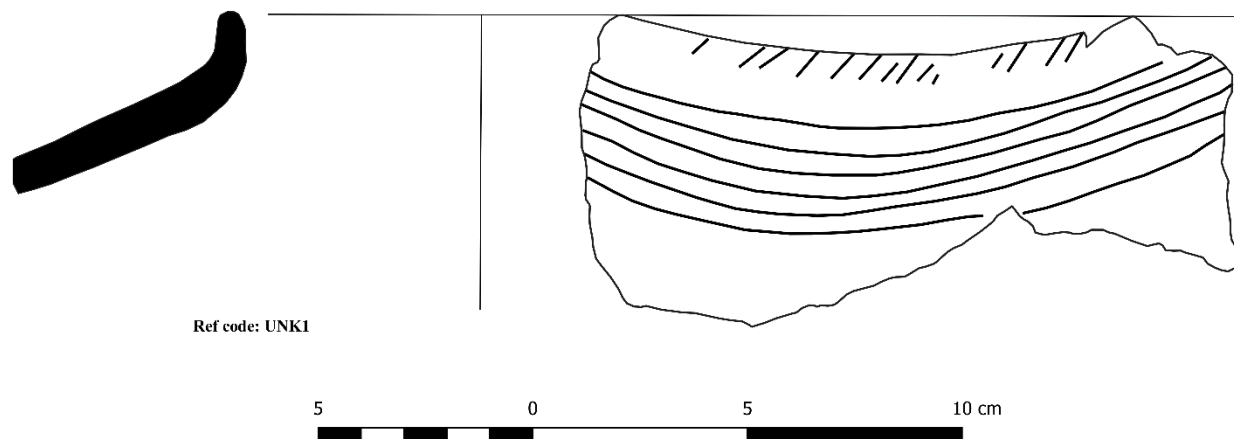


Figure 47: Unknown pottery profile drawings.

Appendix 5: Statistical analysis data.

Table A5.1: Sun Shadow pots and bowls at the Hut level.

		Pots	Bowls	Total		
Hut 1	Observed	13	2	15	χ^2	0,812
	Expected	11,6	3,5		DF	1
					p	0,368
Hut 2	observed	6	4	10	χ^2	0,693
	expected	7,7	2,3		DF	1
					p	0,405
Hut 3	observed	3	2	5	χ^2	0,225
	expected	3,9	1,2		DF	1
					p	0,635
Hut 5	observed	4	0	4	χ^2	1,161
	expected	3,1	0,9		DF	1
					p	0,281
Hut 6	observed	5	2	7	χ^2	0,130
	expected	5,4	1,6		DF	1
					p	0,719
Hut 8	observed	2	1	3	χ^2	0,168
	expected	2,3	0,7		DF	1
					p	0,682
Hut 19	observed	3	0	3	χ^2	0,913
	expected	2,3	0,7		DF	1
					p	0,339
Hut 21	observed	3	3	6	χ^2	2,385
	expected	4,6	1,4		DF	1
					p	0,123
Total	observed	39	14	53	χ^2	0,345
	expected	40,8	12,2		DF	1
					p	0,557

Table A5.2: Sun Shadow pots and bowls at the Hut cluster level.

		Pots	Bowls	Total		
Hut cluster 1	observed	22	8	35	χ^2	0,228
	expected	23,1	6,9		DF	1
					p	0,633
Hut cluster 2	observed	11	3	18	χ^2	0,016
	expected	10,8	3,2		DF	1
					p	0,899
Hut cluster 5	observed	6	3	9	χ^2	0,503
	expected	6,9	2,1		DF	1
					p	0,478

Table A5.3: Sun Shadow vessel subtypes at the Hut level.

		Smooth-necked pot	Short-necked pot	Straight-necked pot	Large bowl	Medium bowl	Small (cup) bowl	Total		
Hut 1	observed	6	4	3	1	1	0	15	χ^2	3,183
	expected	3,3	5,0	3,5	1,7	1,4	0,3		DF	5
									p	0,672
Hut 2	observed	2	4	0	2	1	0	9	χ^2	3,683
	expected	2,0	3,0	2,1	1,0	0,8	0,2		DF	5
									p	0,596
Hut 3	observed	0	3	0	0	0	1	4	χ^2	12,923
	expected	0,9	1,3	0,9	0,4	0,4	0,1		DF	5
									p	0,024
Hut 5	observed	1	2	1	0	0	0	4	χ^2	1,399
	expected	0,9	1,3	0,9	0,4	0,5	0,1		DF	5
									p	0,924
Hut 6	observed	1	2	2	0	1	1	7	χ^2	9,473
	expected	1,5	2,3	1,6	0,8	0,6	0,1		DF	5
									p	0,092
Hut 8	observed	1	0	1	1	0	0	3	χ^2	3,291
	expected	0,7	1,0	0,7	0,3	0,3	0,1		DF	5
									p	0,655
Hut 19	observed	1	2	0	0	0	0	3	χ^2	2,529
	expected	0,7	1,0	0,7	0,3	0,3	0,1		DF	5
									p	0,772
Hut 21	observed	1	2	0	2	0	1	6	χ^2	12,484
	expected	1,3	2,0	1,4	0,7	0,5	0,1		DF	5
									p	0,029
Total	observed	13	19	7	6	3	3	51	χ^2	7,051
	expected	11,2	16,8	11,7	5,6	4,6	1,0		DF	5
									p	0,217

Table A5.4: Sun Shadow vessel subtypes at the Hut cluster level.

		Smooth-necked pot	Short-necked pot	Straight-necked pot	Large bowl	Medium bowl	Small (cup) bowl	Total		
Hut cluster 1	observed	8	11	3	3	2	1	28	χ^2	19,789
	expected	6,2	9,2	6,4	3,1	2,5	0,6		DF	5
									p	0,285
Hut cluster 2	observed	3	4	4	1	1	1	14	χ^2	14,162
	expected	3,1	4,6	3,2	1,5	1,3	0,3		DF	5
									p	0,656
Hut cluster 5	observed	2	4	0	2	0	1	9	χ^2	15,012
	expected	2,0	3,0	2,1	1,0	0,8	0,2		DF	5
									p	0,182

Table A5.5: Sun Shadow pot diameter size at the Hut level.

		<20 cm	21-30 cm	31+ cm	Total		
Hut 1	observed	6	6	1	13	χ^2	0,448
	expected	6,0	5,3	1,8		DF	2
						p	0,799
Hut 2	observed	3	1	2	6	χ^2	2,714
	expected	2,8	2,5	0,8		DF	2
						p	0,257
Hut 3	observed	2	1	0	3	χ^2	0,690
	expected	1,4	1,2	0,4		DF	2
						p	0,708
Hut 5	observed	0	3	1	4	χ^2	3,525
	expected	1,8	1,6	0,5		DF	2
						p	0,172
Hut 6	observed	4	1	0	5	χ^2	2,533
	expected	2,3	2,1	0,7		DF	2
						p	0,282
Hut 8	observed	0	1	1	2	χ^2	2,583
	expected	0,9	0,8	0,3		DF	2
						p	0,275
Hut 19	observed	2	1	0	3	χ^2	0,690
	expected	1,4	1,2	0,4		DF	2
						p	0,708
Hut 21	observed	0	3	0	3	χ^2	4,500
	expected	1,4	1,2	0,4		DF	2
						p	0,105
Total	observed	17	17	5	39	χ^2	0,110
	expected	17,9	16,0	5,1		DF	2
						p	0,947

Table A5.6: Sun Shadow pot diameter size at the Hut cluster level.

		<20 cm	21-30 cm	31+ cm	Total		
Hut cluster 1	observed	11	8	3	22	χ^2	0,195
	expected	10,1	9,0	2,9		DF	2
						p	0,907
Hut cluster 2	observed	4	5	2	11	χ^2	0,550
	expected	5,1	4,5	1,4		DF	2
						p	0,760
Hut cluster 5	observed	2	4	0	6	χ^2	1,929
	expected	2,8	2,5	0,8		DF	2
						p	0,381

Table A5.7: Sun Shadow spatial positioning at the Hut level

		Inside front right	Inside front left	Inside rear right	Inside rear left	Outside front right	Outside front left	Outside rear right	Outside rear left	Total		
Hut 1	observed	0	0	0	0	4	14	2	0	20	χ^2	76,667
	expected	2,4	1,8	4,2	4,8	1,6	2,4	0,8	2,0		DF	7
											p	2,020E-13
Hut 2	observed	0	0	3	7	0	0	0	0	10	χ^2	14,702
	expected	1,2	0,9	2,1	2,4	0,8	1,2	0,4	1,0		DF	7
											p	0,040
Hut 3	observed	0	1	2	1	0	1	0	0	5	χ^2	3,236
	expected	0,6	0,5	1,1	1,2	0,4	0,6	0,2	0,5		DF	7
											p	0,862
Hut 5	observed	1	1	2	2	0	0	0	0	6	χ^2	3,263
	expected	0,7	0,5	1,3	1,4	0,5	0,7	0,2	0,6		DF	7
											p	0,860
Hut 6	observed	3	3	2	0	0	1	0	0	9	χ^2	13,546
	expected	1,1	0,8	1,9	2,2	0,7	1,1	0,4	0,9		DF	7
											p	0,060
Hut 8	observed	0	1	1	1	0	0	0	0	3	χ^2	3,429
	expected	0,4	0,3	0,6	0,7	0,2	0,4	0,1	0,3		DF	7
											p	0,843
Hut 19	observed	0	0	2	0	1	0	0	0	3	χ^2	8,667
	expected	0,4	0,3	0,6	0,7	0,2	0,4	0,1	0,3		DF	7
											p	0,277
Hut 21	observed	0	0	1	5	0	0	0	0	6	χ^2	12,526
	expected	0,7	0,5	1,3	1,4	0,5	0,7	0,2	0,6		DF	7
											p	0,085
Total	observed	4	6	13	16	5	16	2	0	62	χ^2	18,989
	expected	7,4	5,6	13,0	14,9	5,0	7,4	2,5	6,2		DF	7
											p	8,221E-03

Table A5.8: Sun Shadow spatial positioning at the Hut cluster level

		Inside front right	Inside front left	Inside rear right	Inside rear left	Outside front right	Outside front left	Outside rear right	Outside rear left	Total		
Hut cluster 1	observed	0	0	1	6	7	4	16	1	35	χ^2	38,553
	expected	3,2	2,8	6,3	8,1	3,2	2,5	5,6	3,5		DF	7
											P	2,378E-06
Hut cluster 2	observed	0	4	5	6	2	0	1	0	18	χ^2	14,024
	expected	1,6	1,4	3,2	4,1	1,6	1,3	2,9	1,8		DF	7
											P	0,051
Hut cluster 5	observed	0	0	0	6	2	0	1	0	9	χ^2	8,629
	expected	0,8	0,7	1,6	2,1	0,8	0,6	1,4	0,9		DF	7
											P	0,280

Boschoek

Table A5.9: Boschoek pot and bowls at the Hut level.

		Pots	Bowls	Total		
Hut 1	observed	8	0	8	χ^2	2,323
	expected	6,2	1,8		DF	1
					p	0,128
Hut 2	observed	5	3	8	χ^2	1,032
	expected	6,2	1,8		DF	1
					p	0,310
Hut 3	observed	2	0	2	χ^2	0,667
	expected	1,5	0,5		DF	1
					p	0,414
Hut 4	observed	7	3	10	χ^2	0,277
	expected	7,7	2,3		DF	1
					p	0,599
Hut 5	observed	4	2	6	χ^2	0,335
	expected	4,6	1,4		DF	1
					p	0,562
Hut 6	observed	1	0	1	χ^2	0,250
	expected	0,8	0,2		DF	1
					p	0,617
Hut 7	observed	14	2	16	χ^2	1,016
	expected	12,3	3,7		DF	1
					p	0,313
Hut 10	observed	2	1	3	χ^2	0,168
	expected	2,3	0,7		DF	1
					p	0,682
Hut 12	observed	3	0	3	χ^2	0,913
	expected	2,3	0,7		DF	1
					p	0,339
Hut 13	observed	6	1	7	χ^2	0,292
	expected	5,4	1,6		DF	1
					p	0,589
Hut 14	observed	3	0	3	χ^2	0,913
	expected	2,3	0,7		DF	1
					p	0,339
Hut 15	observed	14	3	17	χ^2	0,270
	expected	13,1	3,9		DF	1
					p	0,604
Hut 16	observed	6	3	9	χ^2	0,503
	expected	6,9	2,1		DF	1
					p	0,478
Hut 17	observed	2	3	5	χ^2	3,626
	expected	3,9	1,2		DF	1
					p	0,057
Hut 18	observed	5	2	7	χ^2	0,130
	expected	5,4	1,6		DF	1
					p	0,719
Hut 19	observed	1	0	1	χ^2	0,250
	expected	0,8	0,2		DF	1
					p	0,617

Hut 21	observed	5	0	5	χ^2	1,510
	expected	3,9	1,2		DF	1
					p	0,219
Hut 24	observed	6	2	8	χ^2	0,029
	expected	6,2	1,8		DF	1
					p	0,866
Total	observed	94	25	119	χ^2	0,273
	expected	91.6	27.4		DF	1
					p	0,601

Table A5.10: Boschoek pot and bowls at the Hut cluster level.

		Pots	Bowls	Total		
Hut cluster 1	observed	41	10	51	χ^2	0,321
	expected	39,3	11,7		DF	1
					p	0,571
Hut cluster 2	observed	14	2	16	χ^2	1,016
	expected	12,3	3,7		DF	1
					p	0,313
Hut cluster 3	observed	28	11	39	χ^2	0,578
	expected	30,0	9,0		DF	1
					p	0,447
Hut cluster 4	observed	5	0	5	χ^2	1,510
	expected	3,9	1,2		DF	1
					p	0,219
Hut cluster 5	observed	6	2	8	χ^2	0,029
	expected	6,2	1,8		DF	1
					p	0,866

Table A5.11: Boschoek vessel subtype at the Hut level.

		Smooth-necked pot	Short-necked pot	Straight-necked pot	Large bowl	Medium bowl	Small (cup) bowl	Total		
Hut 1	observed	2	2	4	0	0	0	8	χ^2	4,650
	expected	1,8	2,6	1,8	0,9	0,7	0,2		DF	5
									p	0,601
Hut 2	observed	1	1	3	1	2	0	8	χ^2	4,766
	expected	1,8	2,6	1,8	0,9	0,7	0,2		DF	5
									p	0,445
Hut 3	observed	1	0	1	0	0	0	2	χ^2	2,500
	expected	0,4	0,7	0,5	0,2	0,2	0,0		DF	5
									p	0,777
Hut 4	observed	0	5	2	0	3	0	10	χ^2	9,315
	expected	2,2	3,3	2,3	1,1	0,9	0,2		DF	5
									p	0,097
Hut 5	observed	2	1	1	1	1	0	6	χ^2	1,720
	expected	1,3	2,0	1,4	0,7	0,5	0,1		DF	5
									p	0,886
Hut 6	observed	0	1	0	0	0	0	1	χ^2	2,233
	expected	0,2	0,3	0,2	0,1	0,1	0,0		DF	5
									p	0,816
Hut 7	observed	5	6	3	1	0	1	16	χ^2	4,257
	expected	3,5	5,3	3,7	1,8	1,4	0,3		DF	5
									p	0,513
Hut 10	observed	0	1	1	0	1	0	3	χ^2	2,862
	expected	0,7	1,0	0,7	0,3	0,3	0,1		DF	5
									p	0,721
Hut 12	observed	1	2	0	0	0	0	3	χ^2	2,529
	expected	0,7	1,0	0,7	0,3	0,3	0,1		DF	5
									p	0,772

Hut 13	observed	0	4	2	0	1	0	7	χ^2	4,023
	expected	1,5	2,3	1,6	0,8	0,6	0,1		DF	5
									p	0,546
Hut 14	observed	0	2	1	0	0	0	3	χ^2	2,529
	expected	0,7	1,0	0,7	0,3	0,3	0,1		DF	5
									p	0,772
Hut 15	observed	6	3	5	3	0	0	17	χ^2	5,384
	expected	3,7	5,6	3,9	1,9	1,5	0,3		DF	5
									p	0,371
Hut 16	observed	3	3	0	1	2	0	9	χ^2	4,600
	expected	2,0	3,0	2,1	1,0	0,8	0,2		DF	5
									p	0,467
Hut 17	observed	1	1	0	1	2	0	5	χ^2	6,364
	expected	1,1	1,7	1,2	0,6	0,5	0,1		DF	5
									p	0,272
Hut 18	observed	3	1	1	2	0	0	7	χ^2	4,960
	expected	1,5	2,3	1,6	0,8	0,6	0,1		DF	5
									p	0,421
Hut 19	observed	0	1	0	0	0	0	1	χ^2	2,233
	expected	0,2	0,3	0,2	0,1	0,1	0,0		DF	5
									p	0,816
Hut 21	observed	0	5	0	0	0	0	5	χ^2	9,906
	expected	1,1	1,7	1,2	0,6	0,5	0,1		DF	5
									p	0,078
Hut 24	observed	0	2	4	2	0	0	8	χ^2	6,872
	expected	1,8	2,6	1,8	0,9	0,7	0,2		DF	5
									p	0,230
Total	observed	25	41	28	12	12	1	119	χ^2	1,209
	expected	26,2	39,3	27,4	13,1	10,7	2,4		DF	5
									p	0,944

Table A5.12: Boschoek vessel subtype at the Hut cluster level.

		Smooth-necked pot	Short-necked pot	Straight-necked pot	Large bowl	Medium bowl	Small (cup) bowl	Total		
Hut cluster 1	observed	11	16	14	3	6	1	51	χ^2	2,127
	expected	11,2	16,8	11,7	5,6	4,6	1,0		DF	5
									p	0,831
Hut cluster 2	observed	1	9	4	0	2	0	16	χ^2	6,750
	expected	3,5	5,3	3,7	1,8	1,4	0,3		DF	5
									p	0,240
Hut cluster 3	observed	13	9	6	7	4	0	39	χ^2	6,997
	expected	8,6	12,9	9,0	4,3	3,5	0,8		DF	5
									p	0,221
Hut cluster 4	observed	0	5	0	0	0	0	5	χ^2	9,906
	expected	1,1	1,7	1,2	0,6	0,5	0,1		DF	5
									p	0,078
Hut cluster 5	observed	0	2	4	2	0	0	8	χ^2	6,872
	expected	1,8	2,6	1,8	0,9	0,7	0,2		DF	5
									p	0,230

Table A5.13: Boschoek pot size at the Hut level.

		<20 cm	21-30 cm	31+ cm	Total		
Hut 1	observed	1	3	4	8	χ^2	10,998
	expected	3,7	3,3	1,0		DF	2
						p	0,004
Hut 2	observed	3	1	1	5	χ^2	0,918
	expected	2,3	2,1	0,7		DF	2
						p	0,632
Hut 3	observed	2	0	0	2	χ^2	2,444
	expected	0,9	0,8	0,3		DF	2
						p	0,295
Hut 4	observed	2	3	2	7	χ^2	1,798
	expected	3,2	2,9	0,9		DF	2
						p	0,407
Hut 5	observed	0	3	1	4	χ^2	3,525
	expected	1,8	1,6	0,5		DF	2
						p	0,172
Hut 6	observed	0	1	0	1	χ^2	1,500
	expected	0,5	0,4	0,1		DF	2
						p	0,472
Hut 7	observed	5	9	0	14	χ^2	4,017
	expected	6,4	5,7	1,8		DF	2
						p	0,134
Hut 10	observed	1	1	0	2	χ^2	3,611
	expected	0,9	0,8	0,3		DF	2
						p	0,835
Hut 12	observed	2	1	0	3	χ^2	0,690
	expected	1,4	1,2	0,4		DF	2
						p	0,708
Hut 13	observed	4	2	0	6	χ^2	1,414
	expected	2,8	2,5	0,8		DF	2
						p	0,493
Hut 14	observed	3	0	0	3	χ^2	3,429
	expected	1,4	1,2	0,4		DF	2
						p	0,180
Hut 15	observed	7	5	2	14	χ^2	0,164
	expected	6,4	5,7	1,8		DF	2
						p	0,921
Hut 16	observed	2	2	2	6	χ^2	2,129
	expected	2,8	2,5	0,8		DF	2
						p	0,345
Hut 17	observed	1	1	0	2	χ^2	0,361
	expected	0,9	0,8	0,3		DF	2
						p	0,835
Hut 18	observed	3	2	0	5	χ^2	0,918
	expected	2,3	2,1	0,7		DF	2
						p	0,632
Hut 19	observed	1	0	0	1	χ^2	1,000
	expected	0,5	0,4	0,1		DF	2
						p	0,607
Hut 21	observed	3	1	1	5	χ^2	0,918
	expected	2,3	2,1	0,7		DF	2
						p	0,632

Hut 24	observed	4	2	0	6	χ^2	1,414
	expected	2,8	2,5	0,8		DF	2
						p	0,493
Total	observed	44	37	13	94	χ^2	0,126
	expected	43.2	38.5	12.2		DF	2
						p	0,939

Table A5.14: Boschoek pot size at the Hut cluster level.

		<20 cm	21-30 cm	31+ cm	Total		
Hut cluster 1	observed	13	20	8	41	χ^2	3,827
	expected	18,9	16,8	5,3		DF	2
						p	0,148
Hut cluster 2	observed	10	4	0	14	χ^2	4,332
	expected	6,4	5,7	1,8		DF	2
						p	0,115
Hut cluster 3	observed	14	10	4	28	χ^2	0,334
	expected	12,9	11,5	3,6		DF	2
						p	0,846
Hut cluster 4	observed	3	1	1	5	χ^2	0,918
	expected	2,3	2,1	0,7		DF	2
						p	0,632
Hut cluster 5	observed	4	2	0	6	χ^2	1,414
	expected	2,8	2,5	0,8		DF	2
						p	0,493

Table A5.15: Boschoek spatial positioning at the Hut level.

		Inside front right	Inside front left	Inside rear right	Inside rear left	Outside front right	Outside front left	Outside rear right	Outside rear left	Total		
Hut 1	observed	0	0	0	0	5	3	0	0	8	χ^2	42,667
	expected	1,0	0,7	1,7	1,9	0,6	1,0	0,3	0,8		DF	7
											p	3,868E-07
Hut 2	observed	0	0	3	3	0	0	1	1	8	χ^2	6,614
	expected	1,0	0,7	1,7	1,9	0,6	1,0	0,3	0,8		DF	7
											p	0,470
Hut 4	observed	1	0	4	4	1	0	0	0	10	χ^2	6,369
	expected	1,2	0,9	2,1	2,4	0,8	1,2	0,4	1,0		DF	7
											p	0,497
Hut 5	observed	6	2	1	1	0	0	0	0	10	χ^2	25,337
	expected	1,2	0,9	2,1	2,4	0,8	1,2	0,4	1,0		DF	7
											p	6,611E-04
Hut 7	observed	2	2	3	4	3	2	0	0	16	χ^2	4,748
	expected	1,9	1,4	3,4	3,8	1,3	1,9	0,6	1,6		DF	7
											p	0,691
Hut 10	observed	1	1	2	1	0	0	0	0	5	χ^2	3,236
	expected	0,6	0,5	1,1	1,2	0,4	0,6	0,2	0,5		DF	7
											p	0,862
Hut 13	observed	2	0	1	3	0	0	0	1	7	χ^2	5,389
	expected	0,8	0,6	1,5	1,7	0,6	0,8	0,3	0,7		DF	7
											p	0,613

Hut 14	observed	0	0	1	1	0	1	1	0	4	χ^2	5,350
	expected	0,5	0,4	0,8	1,0	0,3	0,5	0,2	0,4		DF	7
											p	0,617
Hut 15	observed	2	1	4	2	1	0	0	10	20	χ^2	37,490
	expected	2,4	1,8	4,2	4,8	1,6	2,4	0,8	2,0		DF	7
											p	3,787E-06
Hut 16	observed	2	2	1	5	0	0	0	0	10	χ^2	8,671
	expected	1,2	0,9	2,1	2,4	0,8	1,2	0,4	1,0		DF	7
											p	0,277
Hut 17	observed	1	0	4	0	0	0	0	0	5	χ^2	11,312
	expected	0,6	0,5	1,1	1,2	0,4	0,6	0,2	0,5		DF	7
											p	0,126
Hut 19	observed	1	0	0	0	0	0	0	0	1	χ^2	8,900
	expected	0,1	0,1	0,2	0,2	0,1	0,1	0,0	0,1		DF	7
											p	0,260
Hut 21	observed	0	3	1	3	0	0	0	0	7	χ^2	13,961
	expected	0,8	0,6	1,5	1,7	0,6	0,8	0,3	0,7		DF	7
											p	0,052
Hut 24	observed	0	0	1	1	0	0	3	6	11	χ^2	44,947
	expected	1,3	1,0	2,3	2,6	0,9	1,3	0,4	1,1		DF	7
											p	1,401E-07
Total	observed	18	11	26	28	10	6	5	18	122	χ^2	8,685
	expected	14,6	11,0	25,6	29,3	9,8	14,6	4,9	12,2		DF	7
											p	0,276

Table A5.16: Boschoek spatial positioning at the Hut cluster level.

		Inside front right	Inside front left	Inside rear right	Inside rear left	Outside front right	Outside front left	Outside rear right	Outside rear left	Total		
Hut cluster 1	observed	9	4	11	12	9	5	1	1	52	χ^2	11,076
	expected	6,2	4,7	10,9	12,5	4,2	6,2	2,1	5,2		DF	7
											p	0,135
Hut cluster 2	observed	3	1	4	5	0	1	1	1	16	χ^2	3,454
	expected	1,9	1,4	3,4	3,8	1,3	1,9	0,6	1,6		DF	7
											p	0,840
Hut cluster 3	observed	6	3	9	7	1	0	0	10	36	χ^2	19,563
	expected	4,3	3,2	7,6	8,6	2,9	4,3	1,4	3,6		DF	7
											p	0,007
Hut cluster 4	observed	0	3	1	3	0	0	0	0	7	χ^2	13,961
	expected	0,8	0,6	1,5	1,7	0,6	0,8	0,3	0,7		DF	7
											p	0,052
Hut cluster 5	observed	0	0	1	1	0	0	3	6	11	χ^2	44,947
	expected	1,3	1,0	2,3	2,6	0,9	1,3	0,4	1,1		DF	7
											p	1,401E-07

Inter-site analysis

Table A5.17: Sun Shadow and Boschoek pots and bowls.

		Pots	Bowls	Total		
Sun Shadow	observed	39	14	53	χ^2	0,345
	expected	40,8	12,2		DF	1
					p	0,557
Boschoek	observed	94	25	119	χ^2	0,273
	expected	91,6	27,4		DF	1
					p	0,601
Inter-site	SS	39	14	172	χ^2	0,611
	BH	94	25		DF	1
					p	0,434

Table A5.18: Sun Shadow and Boschoek vessel subtype.

		Smooth-necked pot	Short-necked pot	Straight-necked pot	Large bowl	Medium bowl	Small (cup) bowl	Total		
Sun Shadow	observed	13	19	7	6	3	3	51	χ^2	3,051
	expected	11,2	16,8	11,7	5,6	4,6	1,0		DF	0,69215
									p	0,692
Boschoek	observed	25	41	28	12	12	1	119	χ^2	2,151
	expected	26,2	39,3	27,4	13,1	10,7	2,4		DF	5
									p	0,828
Inter-site	SS	13	19	7	6	3	3	170	χ^2	6.734
	BH	25	41	28	12	12	1		DF	5
									p	0,241

Table A5.19: Sun Shadow and Boschoek pot size.

		<20 cm	21-30 cm	31+ cm	Total		
Sun Shadow	observed	17	17	5	39	χ^2	0,110
	expected	17,9	16,0	5,1		DF	2
						p	0,947
Boschoek	observed	44	37	13	94	χ^2	0,126
	expected	43,2	38,5	12,2		DF	2
						p	0,939
Inter-site	SS	17	17	5	133	χ^2	0,204
	BH	44	37	13		DF	2
						p	0,903

Table A5.20: Sun Shadow and Boschoek spatial positioning.

		Inside front right	Inside front left	Inside rear right	Inside rear left	Outside front right	Outside front left	Outside rear right	Outside rear left	Total		
Sun Shadow	observed	4	6	13	16	5	16	2	0	62	χ^2	17,967
	expected	7,4	5,6	13,0	14,9	5,0	7,4	2,5	6,2		DF	7
											p	0,012
Boschoek	observed	18	11	26	28	10	6	5	18	122	χ^2	8,685
	expected	14,6	11,0	25,6	29,3	9,8	14,6	4,9	12,2		DF	7
											p	0,276
Inter-site	SS	4	6	13	16	5	16	2	0	184	χ^2	26.764
	BH	18	11	26	28	10	6	5	18		DF	7
											p	3,675E-04