Social Landscapes of Euphorbia Kop: A K2 Farmer Settlement with a Forager Presence in Southern Africa

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Abstract

Holocene foragers in southern Africa were mobile, stone-tool-using, hunting and gathering communities that lived in rock shelters and in the open in temporary campsites. From the early 1st millennium a.d., farmer groups migrated into southern Africa and introduced domesticated crops, livestock, and metal technology into the region and lived in fixed homesteads. Differences in the material culture and residential habits of these two communities are distinct and largely differentiable. As such, studying their interactions is possible through the analysis of material culture and its context. Here, we present the findings from Euphorbia Kop in the middle Limpopo Valley of central southern Africa that contains several strands of evidence indicating a forager presence within a farmer settlement identified by several distinct cultural markers. Our findings demonstrate a response to contact not well recorded in the region that offers a possible explanation for the decline and eventual disappearance of forager remains in rock-shelter contexts beginning in the early 2nd millennium a.d.

Keywords: middle Limpopo Valley; Later Stone Age; Iron Age; rockshelter; co-habitation foragers and farmers; interaction; settlement patterns

Introduction

In southern Africa's middle Limpopo Valley, indigenous Later Stone Age forager communities, ancestral to modern San groups, witnessed farmer communities transform from subsistence-based agropastoralists to a state-level kingdom with an urban center at Mapungubwe, appearing at A.D. 1220 (see Figure 1 for locations). During these developments, which began at least 300 years before Mapungubwe, foragers interacted with farmers and established complex sets of social relations across the region (Forssman 2020). Partly as a result of these interactions, forager society began to change. Whereas before, foragers relied on primarily a stone-based toolkit, worked bone, and a limited set of personal ornamentation, including shell and bone beads and pendants, among other items (e.g., Lombard et al. 2012), they began incorporating new technologies into their cultural assemblages, such as earthenware ceramics, imported glass beads, and metal implements. All of these were obtained through trade and exchange with neighboring farmer communities. There were more than likely other changes in forager society, including inter-marriage, the sharing of value systems, exchange of food items, and ritual specialization (e.g., Hall and Smith 2000; Schoeman 2009; Van Doornum 2014). The forager sequence, which is known through several studies inside of natural rock shelters, where most of their residential remains are found, declined in density from the turn of the 2nd millennium A.D.

and in some contexts disappeared altogether. It is not clear why this occurred and, if remaining in the valley, where foragers began living.

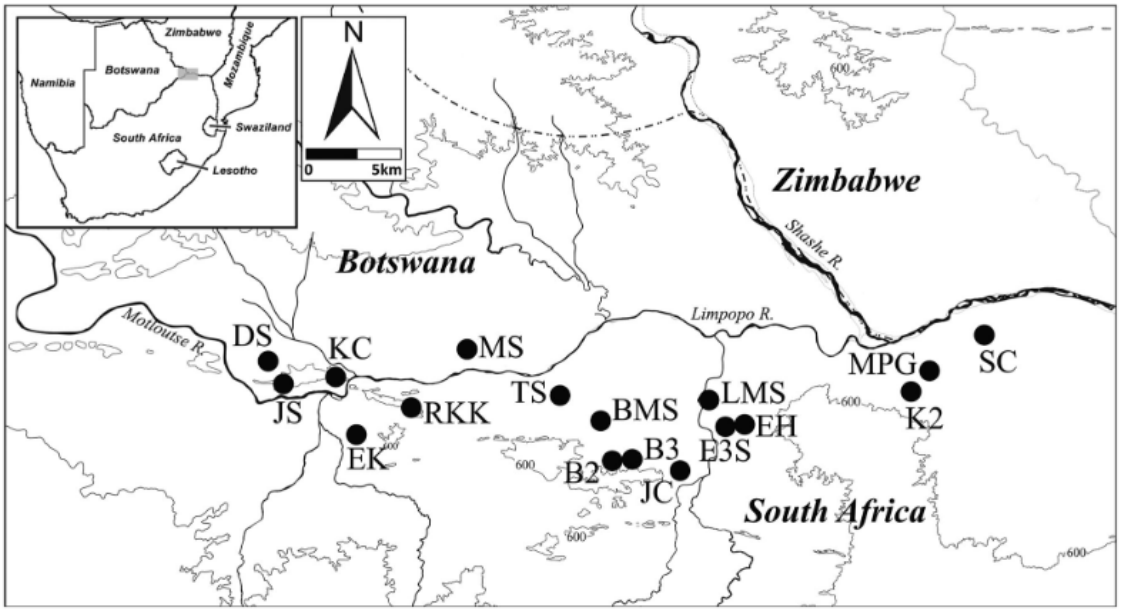

Figure 1. Sites in the middle Limpopo Valley mentioned in the text: B2, Balerno Shelter 2; B3, Balerno Shelter 3; BMS, Balerno Main Shelter; DS, Dzombo Shelter; E3S, E3S Hill; EH, EH Hill; EK, Euphorbia Kop; JS, João Shelter; K2, Bambandyanalo; KC, Kambaku Camp; LMS, Little Muck Shelter; MPG, Mapungubwe; MS, Mafunyane Shelter (Tuli Lodge); RKK, Ratho Kroonkop; SC, Schroda; and, TS, Tshisiku Shelter.

One possibility is a shift in settlement patterns. With a growing farmer population in the valley and, therefore, an increase in homesteads associated with agricultural fields and livestock, foragers may have taken up residency in these spaces for any number of reasons (for examples, see Maggs 1980; Walker 1994; Wadley 1996; Hall 2000; Bradfield, Holt, and Sadr 2009; Klatzow 2010; Denbow 2017). To determine whether this occurred in the middle Limpopo Valley, we investigated a settlement called Euphorbia Kop. The site is located 2 km south of the Limpopo-Motloutse confluence area in northern South Africa and abuts a koppie (sandstone tor) with its southern perimeter adjoining what is suspected to be a kraal (byre) (Figures 2, 3). According to Huffman (2001), if the site follows other farmer settlement layouts, we can expect a common settlement spatial pattern—known as the Central Cattle Pattern—characterized by a central cattle kraal surrounded by a residential zone of huts, gardens, and food storage bins, and an open space after the kraal followed by a residential zone. At Euphorbia Kop, in what would be this residential area, there are at least two suspected grain bin foundations (rooted, upright rocks in a roughly circular pattern) and ceramic sherds, various beads, and Later Stone Age tools. The site also has multiple platforms on the koppie that appear to be residential areas most likely dating to the early 2nd millennium A.D. based on diagnostic ceramics identified on the surface (Seiler 2016). Hierarchical residential areas using height to distinguish social groups are not uncommon for this period (Calabrese 2007). As such, the site appears to represent a multi-tiered community with various status levels. Of further interest is a small rock shelter with Later Stone Age remains on the outskirts of the lower-most occupied zone and the low-density stone tool scatter within the site. The occurrence of artifacts usually associated with foragers on the surface of a farmer site does not immediately indicate their association, as

Figure 2. A view south over Euphorbia Kop. The kraal is visible as a grey deposit in the center of the image (A), and the shelter is to the right (B).

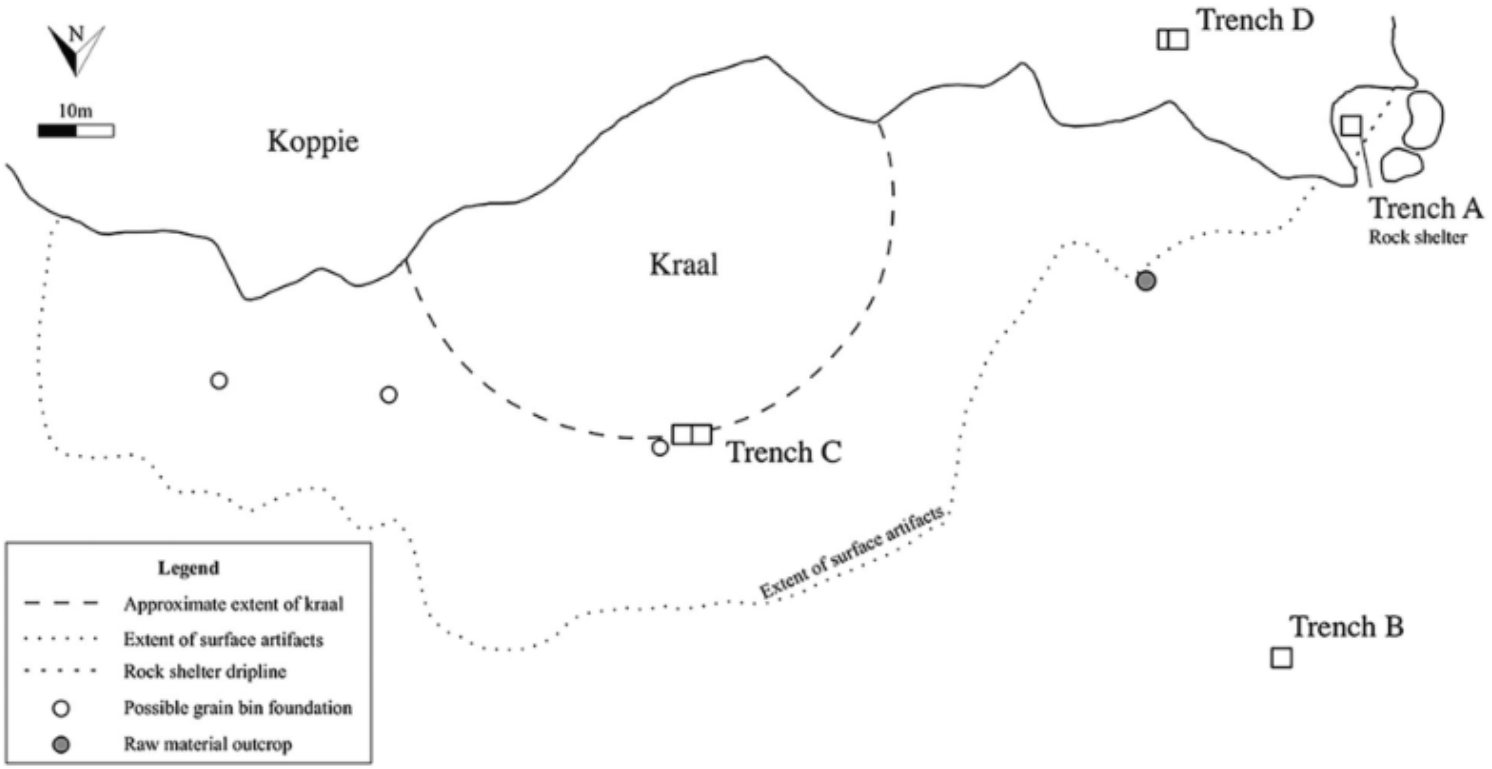

Figure 3. A plan view of Euphorbia Kop's lower-most occupied area, its features, and the location of the excavation trenches.

they could represent a palimpsest, but, if the right conditions are met, may show that foragers co-occupied, or visited, the settlement.

To assess the possible co-habitation of Euphorbia Kop by foragers and farmers, excavations were conducted to understand the site's stratigraphy, obtain absolute dates, and examine the range of cultural material along with, importantly, their association. Our focus was in areas where Later Stone Age material was found on the surface and expected in primary contexts and areas in which we predicted large ceramic samples may be located based on the known structure of farmer homesteads and previous findings at similar sites. The main goal of this study was to examine the possibility that foragers occupied the homestead in order to better understand the gradual decline of forager material culture in rock shelters during a time of significant socio-political development. In this contribution, we present our findings and situate them within a broader contextual framework.

The Middle Limpopo Valley's Archaeological Sequence

The middle Limpopo Valley is well-known because of the local appearance of state-level society in the early 2nd millennium A.D. at Mapungubwe. Studies at the capital and its nearby predecessor, Bambandyanalo or K2, as well as earlier settlements such as Schroda and Pont Drift (Hanisch 1980), have shown a series of developmental stages in the build-up to the Mapungubwe kingdom (Chirikure et al. 2014; Huffman 2015). The focus on these sites, and more broadly the local Iron Age or farmer sequence, has dominated research in the valley, with other aspects of the archaeological record seeing less attention, such as the Later Stone Age, forager-related prehistory. However, and despite some early studies (e.g., Cooke and Simons 1969; Walker 1994), since 2000, interest in local forager archaeology has increasingly grown, and a far more detailed sequence of their history is now known (see Forssman 2020 for a detailed overview).

Based on this research, it appears that the Later Stone Age sequence fits into four phases after the mid-Holocene period (Table 1); an early Holocene assemblage is known from Balerno Main Shelter but has not been studied (Van Doornum 2008). The earliest phase relevant here begins at about 1220 B.C., before which only Balerno Main as well as Tshisiku Shelter were occupied. From the final millennia B.C., in addition to the two sites previously mentioned, more shelters exhibit evidence of occupation and residency, such as Little Muck, Dzombo, and Balerno 2 and 3. Most of these sites were used as residential camps at which a range of stone tools were produced, as well as some bone tool types, and ostrich eggshell beads, and a variety of flora and fauna was subsisted upon (van Van Doornum 2005; Forssman 2020). Balerno Main appears to be different and possibly represents an aggregation camp (Van Doornum 2008). Among the Kalahari San, groups aggregated at single sites during limited periods of the year when they feasted, performed rituals, inter-married, shared gifts, and socialized (cf. Wadley 1987). As a result of these activities, there was a large and diverse build-up of cultural material and food waste (Yellen 1977), which can be observed archaeologically. Van Doornum (2008) argued that these conditions, and others such as the presence of sufficient space, are present at Balerno Main, indicating that the site was an aggregation camp for local forager groups. Other sites, she stated, were likely dispersal camps, as they lack a variety of materials which also occur in lower densities than at Balerno Main (Van Doornum 2008). These sites show that various occupation

Table 1. The chronologies from local Later Stone Age excavations. * = relative dates (adapted from Forssman 2017).

	Date	Balerno Main	Tshisiku	Little Muck	Balerno 2	Balerno 3	Dzombo	João	Mafunyane
A.D.	1800	Seventeenth	Venda farmers					European	
	1600	century farmers	Hiatus				Khami	period use?	
	1400	Hiatus					(Surface; Spits 1–3)		
	1300	K2/MPG	K2/MPG	K2/MPG	K2/MPG	K2/MPG	MPG (Spit 4)*	MPG?*	K2/MPG
	1200	(BRA)*	(Surface; Spits 1–2)*	(PGA2)*	(Surface)*	(Surface)*	K2 (Spits 5–10)	K2 (PBS)*	(Surface; Spits 1–2)
	1000	Zhizo	Zhizo	Zhizo	Zhizo	Zhizo	Zhizo	Zhizo?*	Zhizo
	900	(BRA 45–50)		(PGA3)*	(Surface)*	(OB 0–5)*	(Spits 11–13)*		(Spits 3–6)
	800	Early contact	Early contact	Early	Early contact	Early contact	Early contact		Early contact?
	600	(BRA 50–60; LB;	(Spit 3)	contact	(GB 0–10)*	(AG2–GB2)	(Spits 14–18)		(Spit 7)
	350	DBG 55–65)		(ARB)*	Early contact/				
	200				Late precontact				
	100				(GB 10–15)*				
	0	Late precontact	Late	Precontact	Late precontact	Late	Late precontact		
B.C.	200	(DBG 65–75)	precontact (Spit 4)	(ARB2)*	(OB 0–35)*	precontact (DR5–AG3)	(Spit 19)		
	400						Late precontact /		
	600	Hiatus					early precontact		
			Early precontact				(Spits 20–27)		
	6000	Early precontact	(Spits 5–14)						
	8000	(DAF)							
	10 000						Bedrock not		
	11 000						reached		

cycles existed on the landscape and those recorded ethnographically may be observed in local rock shelters.

The second phase follows soon after the B.C./A.D. transition. During this period, change in forager society accelerated, and new technologies began appearing in their assemblages. In both instances, this was because of farmer communities settling in the extended region and later in the middle Limpopo Valley. It is not clear when farmers first occupied the valley, but early and mid-1st millennium A.D. ceramics (Bambata and Happy Rest) have been identified at several local rain-control sites, including Mapungubwe, and rock shelters such as Tuli Lodge (Mafunyane Shelter) and Little Muck (Hall and Smith 2000). Their occurrence in forager contexts demonstrates the more-or-less immediate impact contact with farmers had on forager society and in particular the trade relations that likely emerged. This is not unlike changes that occurred in parts of Botswana, such as in the Tsodilo Hills area, Ngoma, and the Makgadikgadi Pans, that saw early close relations between foragers and farmers which included trade (Denbow 1990; Denbow et al. 2008; Klehm 2017). At a far more noticeable level, at Little Muck and Dzombo, craft and hunting activities increased respectively along with evidence of trade, which appears to reflect changing markets and the appearance of new opportunities available to both foragers and nearby farmers. Other sites, such as Balerno 2 and 3, show an increase in forager-associated material culture, possibly indicating an increasing population or an emphasis on the use of shelter spaces over those in the open. Balerno Main continued to be used as an aggregation camp based on general continuity in the forager sequence during the second phase when compared to the first. However, across the region, the succeeding period was to begin more marked change in forager lifeways and landscape patterns.

The third phase begins at around A.D. 900, when Zhizo ceramic-associated homesteads appear (see Hall and Smith 2000; Huffman 2000). At this stage, if not from earlier, fields were cultivated, livestock was reared, and extensive and long-distance trade took place. This had tangible impacts on local foragers. During the Zhizo period, high densities of stone and bone tools and jewelry, including evidence for their production, were recorded at Little Muck (Hall and Smith 2000). Changes in the sequence are thought to have been linked to forager-farmer relations. More specifically, an increasing number of scrapers possess use traces, which formed during the production of hide, bone, and wooden crafts that were traded for various farmer-associated items (Forssman, Seiler, and Witelson 2018). Similarly, at Dzombo, in layers contemporaneous with Little Muck's Zhizo period occupation, there was an increase in stone arrowhead components linked to an intensification of hunting activities (Forssman 2015). In contrast, changes at Balerno Main are almost non-existent, indicating general continuity in the way the shelter was used (see Figure 1 for site locations and Table 1 for chronologies) (Van Doornum 2008). At other sites, such as Balerno 2 and 3 and Tshisiku, forager artifact densities declined (Van Doornum 2005). Why at some sites forager remains proliferated and not others appears to be motivated by their interactions with farmer groups.

The final phase, and period applicable to our study, begins at A.D. 1000 when farmers producing K2 ceramics settled the region. Socio-political developments following their arrival ultimately led to the establishment of Mapungubwe by at least A.D. 1220, generally acknowledged as southern Africa's first state-level society (Huffman 2015; see also Chirikure

et al. 2014). Foragers were present during these developments and participated in activities related to state formation, even benefitting by acquiring trade wealth (Forssman 2017). At Dzombo, for example, the emphasis on hunting continued, but other craft activities became important, as well. This was likely a result of foragers reorganizing their roles in the local market economy and expanding their offerings to remain active in trade networks (Forssman 2020). At Little Muck, Hall and Smith (2000), meanwhile, recorded a change in the site's function and interpreted a decline in artifact numbers as indicating the appropriation of the site by K2 farmers. At Balerno Main, general consistency in artifact density and diversity suggests little change to the site's role in local society (Van Doornum 2008). By the end of this period, A.D. 1300, when the Mapungubwe kingdom declined, there is a general decrease in the density of forager remains recorded at all excavated sites in eastern Botswana (Forssman 2014) and northern South Africa (Van Doornum 2005).

What might this decline represent? Also recorded during the fourth phase is the appearance of forager material culture in open-air farmer homesteads. João Shelter and Kambaku Camp, both near the Limpopo-Motloutse confluence but in Botswana, contain obvious farmer- and forager-associated material culture, with a particularly large stone artefact assemblage at João (N = 3166; Forssman 2016a, 150). João dates to the beginning of the 2nd millennium A.D., but Kambaku post-dates Mapungubwe (A.D. 1450–1680; Forssman 2016a). Importantly, each site is associated with a rock shelter from which most of the forager material was recovered. That foragers occupied the sites contemporaneously with farmers appears clear. Less clear is a forager presence in farmer rain-control contexts. Schoeman (2006a, 2009) excavated four rain hills and specifically rock tanks therein (EH Hill, JC Hill, M3S, and Ratho Kroonkop). These deep hollows were intentionally filled with deposit. Therefore, their contexts are secure, and the accumulation of deposit and strata relate to a series of events. Among the cultural material recovered from these contexts was knapped stone. Of the assemblages, Schoeman (2006a, 157) noted a "lack of formal tools" and a "'scrappy' nature of the worked chalcedony" but nonetheless argued that they indicated forager participants in the associated rain-control rituals (see also Schoeman 2006b, 120). During the fourth phase, there appears to have been a shift in forager settlement patterns that resulted in lower signals of presence and activities in rock shelters, where traditionally foragers lived, and the emergence of foragers in farmer homesteads. Euphorbia Kop appears part of this early 2nd millennium A.D. residential shift.

Materials and Methods

Selecting excavation trenches at Euphorbia Kop was based on cultural zones and the presence of cultural material accumulations on the surface (see Figures 2, 3). Trench A was established inside the shelter located in the western portion of the site. Although the size of the shelter is limited, with a floor area of approximately 4 m2, a large surface assemblage of Later Stone Age stone tools was recorded here, and it was thought that this portion of the site may have been used by foragers. Trench B was placed away from the site where a large artifact surface assemblage of stone tools, beads, and ceramics was found. Trench C was alongside the suspected kraal area, identified from the grey surface deposit containing fine and degrading vegetation matter, in the vicinity of a surface assemblage of beads (garden rollers, K2 glass beads, and ostrich eggshell beads). Two 1 × 1 m squares were excavated here. Lastly, Trench D was set up in the proximity of the shelter on an occupied platform in the koppie where a hut floor was identified. The original 1 × 1 m square was extended by 1 ×

0.5 m on finding a large ceramic collection along the northern wall. Doing so exposed a human burial below the ceramics, which were all below the hut floor (Seiler 2016).

Spits of 5 cm were maintained in all squares, except where artifact densities reduced to low frequencies and 10 cm spits were followed (Trench C from Spit 7). Internal spit divisions were created following stratigraphic layers, which were prioritized and recorded using the Museum of London's Archaeological Site Manual. Following this method, spits assisted in recording depth, and when a new stratum was identified, it would be entirely exposed and not excavated. Once revealed, excavations proceeded into the new stratum following the same spit depths. As such, a single spit might be composed of multiple strata, as they appear at variable depths below datum. For example, Spit 4 in Trench C contains three separate strata, GA1, GA2, and GA3, which were excavated separately but are located within the same vertical unit (15–20 cm below datum). However, we relied on the strata when performing the analysis, as they were clearly distinguished, and we did not conflate different stratums in favor of spits.

Artifact analysis was undertaken at the University of Pretoria. The typologies provided by Deacon (1984) and Walker (1994) were followed when analyzing the stone tool assemblage, as was done by van Van Doornum (2005) and Forssman (2014). Three primary tool types were used to categorize the tools: debitage, cores (which are debitage), and formal tools. Debitage and cores possess no evidence of secondary flaking, such as retouch or backing, which are defining features of formal tools. Of the debitage category, flakes, small flaking debris (SFD; < 10 mm in maximum length), and chunks (irregularly fractured artifacts with no clear ventral or dorsal surfaces) were recorded. Cores include several categories: casual (less than three flake removals), blade/bladelet (blade/bladelet removals), irregular (referring to core organization), and single, double, or multi-platform cores (referring to the number of platforms from which flakes were struck). Of the formal tool types, only scrapers were identified. Scrapers have one or more retouched edges forming an angle usually from 35–75°. They can be further categorized based on the location of the retouch relative to the bulb of percussion: an end scraper is retouched along the distal edge, and a side scraper has lateral retouch. Combinations also exist: for example, side-end, side-side, end-end, or circular. Additionally, scrapers are further classed by size (small = < 20 mm, medium = 20–30 mm, and large = > 30 mm). A refitting analysis was also conducted on the stone tools, but none were found.

The ceramics from the site received a basic typological analysis. It was noted whether sherds were plain, contained a rim, or possessed diagnostic features, in which case they were placed into a facies using Huffman (2007) where possible. The ceramics from Trench D's extension were treated differently because of their quality and context (see Msibi 2017). Several typologies were used for their analysis. Huffman's (1980, 2007) standardized multi-dimensional approach was the primary typology, which included looking at several categories and their combinations to infer facies. Also used in this study was Calabrese's (2007) typology, which included the Type-Variety method that categorized vessels on their defining features and geographic location, and Meyer's (1980, 2000). The major advantage of combining these approaches is that it does not make assumptions about cultural affinities when analyzing the vessel, which is only done after all the variables are recorded and their combinations noted. The analysis identified the profile type of the vessel and which portion

of the vessel was present on the sherds. The diameter and the percentage of the rim on the sherd was recorded. Where applicable, the motif was recorded, as well as the placement and quality of the motif. The treatment of the vessel was noted on both the interior and exterior. Features (e.g., a handle or a spout) were noted, as well. Ceramics from Trenches A and C exceeding 2 cm in maximum length were furthermore subjected to a fabric composition analysis to establish whether the vessels were made by potters using the same source or possibly even made by the same potters, as well as a refitting analysis.

The bead assemblage was separated into shell and glass beads. The former were identified to type (ostrich eggshell or land snail) and measured (external and perforation diameter). The purpose of taking both measurements was to compare the bead sizes with forager beads in other contexts, as well as beads produced by modern Kalahari San groups (see Jacobson 1987; Mazel 1989; Tapela 2001). A small glass bead sample was retrieved and analyzed using categories presented in Wood (2005).

These data, along with the spatial distribution of the finds, it is argued here, provides sufficient evidence to understand the occurrence of Later Stone Age remains in the settlement.

Stratigraphy and Chronology

Few stratigraphic units were recorded. In Trench B, a single unit was noted, and in Trench D, a hut floor with an artifact-bearing unit below was identified. In the latter, the finds from above and below the hut floor were separated. As mentioned, Trench D contained human remains, and the excavation team opted to cease digging in the area as continued work here would require community engagement and specialist interventions. Trench A was excavated to bedrock at approximately 25 cm. Although shallow, the deposit appeared intact, possibly as a result of the protection offered by the overhang. Three distinct stratigraphic units were identified here. A fine-grained layer less than 5 cm thick (FG1) overlaid a consolidated gravel layer rich with inclusions (CG1) and with a maximum thickness of around 20 cm. A thin, sterile, disintegrated bedrock layer (± 5 cm thick; DB1) was identified directly above bedrock (Figure 4).

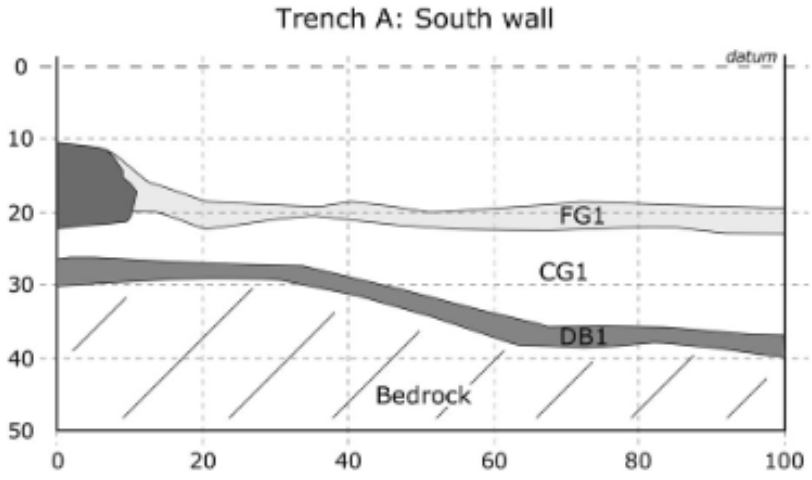

Figure 4. Trench A has a fairly uniform and flat stratigraphic sequence (measurements in cm; rocks marked in dark grey).

In Trench C, the upper-most unit was a grey, ashy layer (GA1) with an inconsistent basal interface and gravel inclusions (GA2). Below this, a clay-like layer appeared (HC1) and varied in thickness across the profile but averaged around 30 cm. Truncating the interface between the ash and clay-like layer was a reddish-grey stratum (RG1), less than 20 cm thick, with root inclusions. The lower clay-like layer was directly above a disintegrated bedrock (DB1) unit, which was on top of bedrock reached approximately 78 cm below the surface (Figure 5).

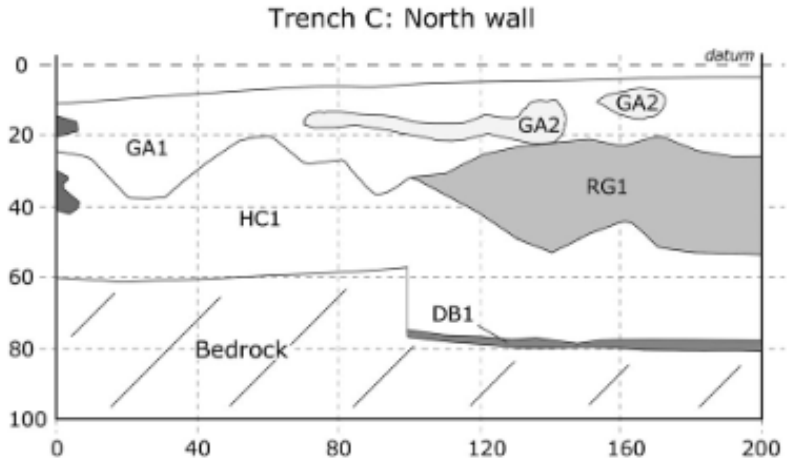

Figure 5. Trench C's northern wall demonstrates the general variability in the square's strata (measurements in cm; rocks marked in dark grey).

It was from Trench C that two charcoal samples of an unknown species were submitted to Direct AMS for radiocarbon dating. The results were calibrated using OxCal 4.4 and ShCal20, the Southern Hemisphere calibration curve, with a two-sigma error (Table 2). Sample 017472's provenance was stratum GA2, spit 4 and calibrated to CAL A.D. 1078–1151 (65.4%) and 1028–1072 (30.1%) (996 ± 19 B.P.). The second sample, 017473, was from stratum HC1, spit 7, below what appeared to be the primary farmer occupation, and was found in association with a single stone tool. It calibrated to CAL A.D. 987–1049 (81.7%) and 1085–1139 (13.7%) (1063 ± 27 B.P.). Therefore, at least the main occupation period for the site is within the K2 period, between ca. A.D. 1000 and 1200.

Table 2. Radiocarbon results from Euphorbia Kop.

Code	Spit	Date	Calibrated Date
017472	4	996 ± 19 B.P.	CAL A.D. 1078–1151 (65.4%)
			CAL A.D. 1028–1072 (30.1%)
017473	7	1063 ± 27 B.P.	CAL A.D. 987–1049 (81.7%)
			CAL A.D. 1085–1139 (13.7%)

Artifact Assemblages

Stone tools

A relatively small stone assemblage was recovered (N = 534). Most are nodules (N = 346), and it is not possible to say whether they were collected for working, because they occur naturally around the site. For this reason, they have been excluded from any further discussion, leaving 188 stone artifacts with evidence of intentional knapping. Of these, the vast majority were made from quartz (N = 108, 57.45%), followed by chalcedony (N = 45,

Table 3. The distribution of stone tool raw materials and types between stratigraphic units in Trenches A, B, C, and D, with numeric values followed by percentages per column (italic text). SFD refers to small flaking debris.

	Trench A						Trench C				Trench D				
Stone Tool Raw Materials and Categories	FG1		CG1		Trench B		GA1		HC1		Upper		Lower		Totals
Quartz	15	*60.00*	48	*71.64*	13	*65.00*	21	*44.68*	5	*29.41*	4	*57.14*	2	*40.00*	108
Quartzite	0	*0.00*	0	*0.00*	1	*5.00*	2	*4.26*	1	*5.88*	1	*14.29*	0	*0.00*	5
Chalcedony	9	*36.00*	18	*26.87*	4	*20.00*	10	*21.28*	1	*5.88*	1	*14.29*	2	*40.00*	45
Dolerite	1	*4.00*	1	*1.49*	2	*10.00*	14	*29.79*	10	*58.82*	1	*14.29*	1	*20.00*	30
SFD	2	*8.00*	12	*17.91*	13	*65.00*	8	*17.02*	1	*5.88*	0	*0.00*	0	*0.00*	36
Chunk	7	*28.00*	20	*29.85*	6	*30.00*	18	*38.30*	7	*41.18*	7	*100*	2	*40.00*	67
Flake	9	*36.00*	26	*38.81*	0	*0.00*	19	*40.43*	9	*52.94*	0	*0.00*	1	*20.00*	64
Broken flake	6	*24.00*	4	*5.97*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	2	*40.00*	12
Bladelet core	0	*0.00*	0	*0.00*	0	*0.00*	1	*2.13*	0	*0.00*	0	*0.00*	0	*0.00*	1
Casual core	1	*4.00*	1	*1.49*	1	*5.00*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	3
Irregular core	0	*0.00*	0	*0.00*	0	*0.00*	1	*2.13*	0	*0.00*	0	*0.00*	0	*0.00*	1
End scraper	0	*0.00*	2	*2.99*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	2
Side scraper	0	*0.00*	2	*2.99*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	0	*0.00*	2
Totals	25		67		20		47		17		7		5		188
Trench totals	92				20		64				12				

23.94%), dolerite (N = 30, 15.96%), and quartzite (N = 5, 2.66%) (Table 3). Most of the artifacts were retrieved from Trench A (N =92, 48.94%), inside the shelter. Fewer artifacts were found in Trench C (N = 64, 34.04%) and even fewer in Trenches B (N = 20, 10.64%) and D (N = 12, 6.38%). The raw material types that were worked into stone tools are somewhat consistent between the trenches, but there are differences. Whereas in Trenches A, B, and D, quartz represents half or more of the assemblage, in Trench C, dolerite is within 5% of quartz. Based on soil volume removed per trench, Trench A has the highest density of finds (2.75/10 L bucket), whereas all of the others are less than 0.5/10 L bucket. This might indicate that stone tool users and producers were focusing their activities in the shelter. While this is probably expected, with such a small assemblage, their distribution may not be representative of the entire site.

The assemblage included various stages of the reduction process. Flakes, complete and broken, are the most numerous debitage type with 76 specimens (40.43%). They are most frequent in FG1 in Trench A (60%), followed by HC1 in Trench C (52.94%) and CG1 in Trench A again (44.78%). Two cores were found in Trenches A (both casual) and C (bladelet and irregular), as well as a fifth core in Trench B (casual) on the surface. Although a bladelet core was identified, no bladelets were recovered, possibly suggesting the assemblage analyzed here is not fully representative of the site's overall stone tool assemblage. In Trench B, SFD represents 65% (N = 13) of the trench's assemblage, but this includes nine specimens from the surface, which far exceeds where they are next highest in frequency: CG1 in Trench A (N = 12, 17.91%), followed by GA1 in Trench C (N = 8, 17.02%). These results appear to suggest that in Trenches A and C, stone tool manufacturing took place, and even though Trench B contains indicators of tool production, most are from the surface and so cannot be reliably used to indicate spatial associations because of their uncertain context. Based on the higher density of finds in Trench A, it was here that most of this manufacturing took place, although this appears to be limited when compared to nearby Later Stone Age sites (e.g., Van Doornum 2014; Forssman 2015).

Four formal stone tools (2.53% when SFD is excluded) were identified (Figure 6). All were retrieved from CG1 in Trench A and include two end and side scrapers each, one of each type produced from chalcedony and quartz. The quartz side scraper is the only one of the four that exceeds 20 mm in maximum length (size class = medium). The numeric dominance of small scrapers is characteristic of scrapers from sites including Balerno Main (Guillemard and Porraz 2019) and Little Muck (Forssman, Seiler, and itelson 2018). However, the formal tools are numerically limited, even though their representation in the assemblage is not notably low (e.g., Van Doornum 2014; Forssman 2016a), especially considering that quartz dominates the assemblage.

Ceramics

Ceramics were found in all trenches and totaled 1992 sherds (Table 4). Trench C contained the most sherds (N = 1050, 52.71%), followed by Trenches D Extension (N = 845, 42.42%), D (N = 42, 2.11%), A (N = 29, 1.46%), and B (N = 26, 1.31%). Recovering a large portion of ceramics from Trenches C and D (including the extension) is not unusual. Trench C is located on the edge of the kraal and is in a zone where ceramic remains are often located. The ceramic density here was 6.77/10 L bucket. In Trench D and its extension, this was higher (10.11/10 L bucket), probably owing to the presence of the burial (Figure 7). Most of the

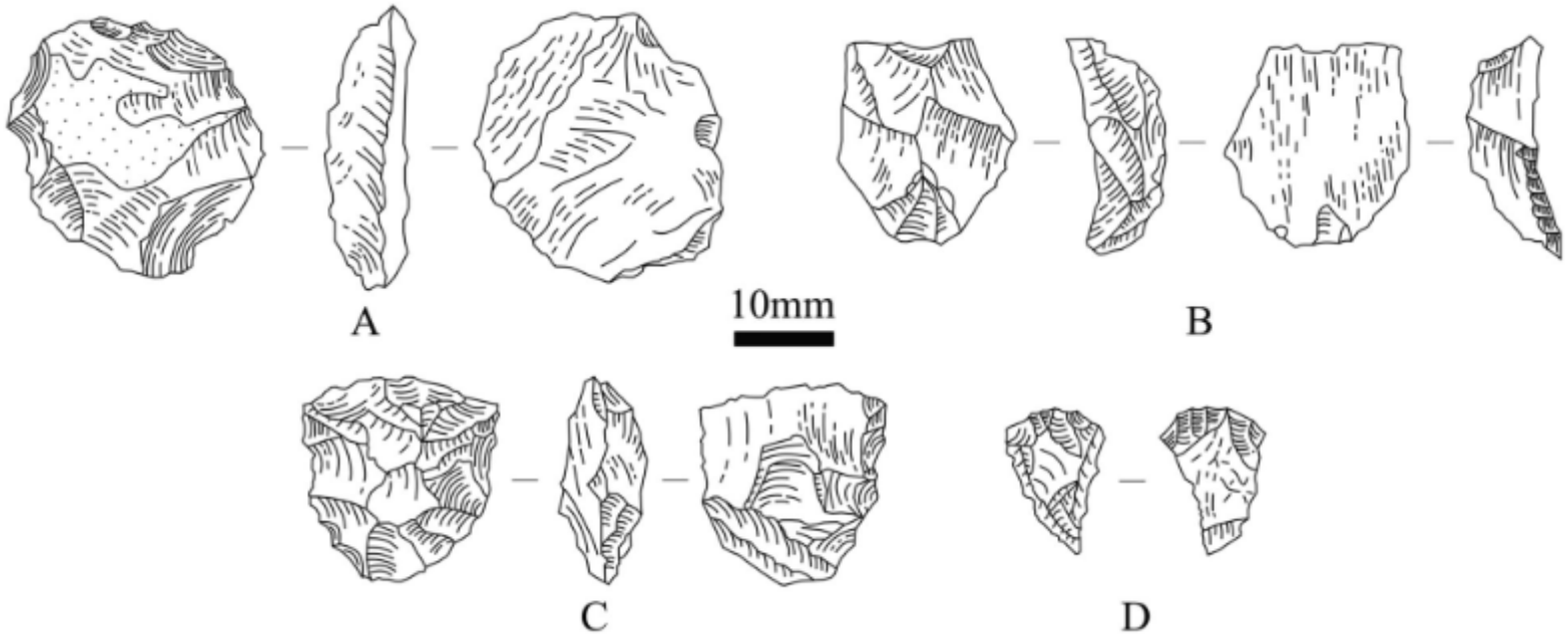

Figure 6. A, C) Side and B, D) end scrapers from Trenches A (A and C–D) and C (B).

Table 4. The distribution of ceramic finds in Trenches A, B, C, and D.

Ceramic	Trench A			Trench C		Trench D		Trench D	
Type	FG1	CG1	Trench B	GA1	HC1	Upper	Lower	Ext.	Totals
Plain	10	18	26	796	210	32	5	731	1828
Decoration	0	0	0	11	3	0	1	46	61
Rim	1	0	0	25	5	3	1	59	94
Decorated rim	0	0	0	0	0	0	0	7	7
Other	0	0	0	0	0	0	0	2	2
Totals	11	18	26	832	218	35	7	845	1992
Trench totals	29		26	1050		42		845	

ceramic sherds and vessels from this area were associated with this feature and could be refitted (see Msibi 2017; see also Figure 7). Ceramic vessels were commonly used as grave goods and were often specifically chosen for this purpose (Huffman and Murimbika 2003; Armstrong, Whitelaw, and Reusch 2008; Hattingh and Hall 2009; Van Waarden and Mosothwane 2013). However, as it does not pertain here, an interpretation of these pots in their context are not considered further, though they have been the focus of further study and were shown to be K2 and dating from ca. A.D. 1000–1220 (Msibi 2017). For a comparison, ceramic densities in Trenches A (0.87/10 L bucket) and B (0.48/10 L bucket) were far lower. In the former, 10 sherds were recovered from GA1 (25 stone tools) and 18 from HC1 (67 stone tools, which includes the four scrapers). The co-occurrence of ceramics and stone tools in the same stratigraphic units indicates their potential association.

Figure 7. The collection of ceramics from Trench D in the extended portion where a human burial was also identified.

Out of the main trenches, 15 of the sherds were decorated, but none could be confidently placed into a single facies. From the Trench D extension, eight vessels could be considered diagnostic and were placed into facies (Figure 8). Vessel A could be positively identified as a bellied jar and includes a downward triangle with cross-hatching. Vessels B and E are an incurvate bowl and necked jar but without motifs. Vessel C is an almost-intact beaker with an incised motif on the bottom near the base of the beaker and two perforated lugs (one lug is no longer present). The quality of burnishing on both the interior and exterior means it was likely not just made for functionality. Vessel D contains the entire profile, with 30% of the rim intact, and is a bellied jar with thick horizontal incisions on the shoulder. Vessel F is

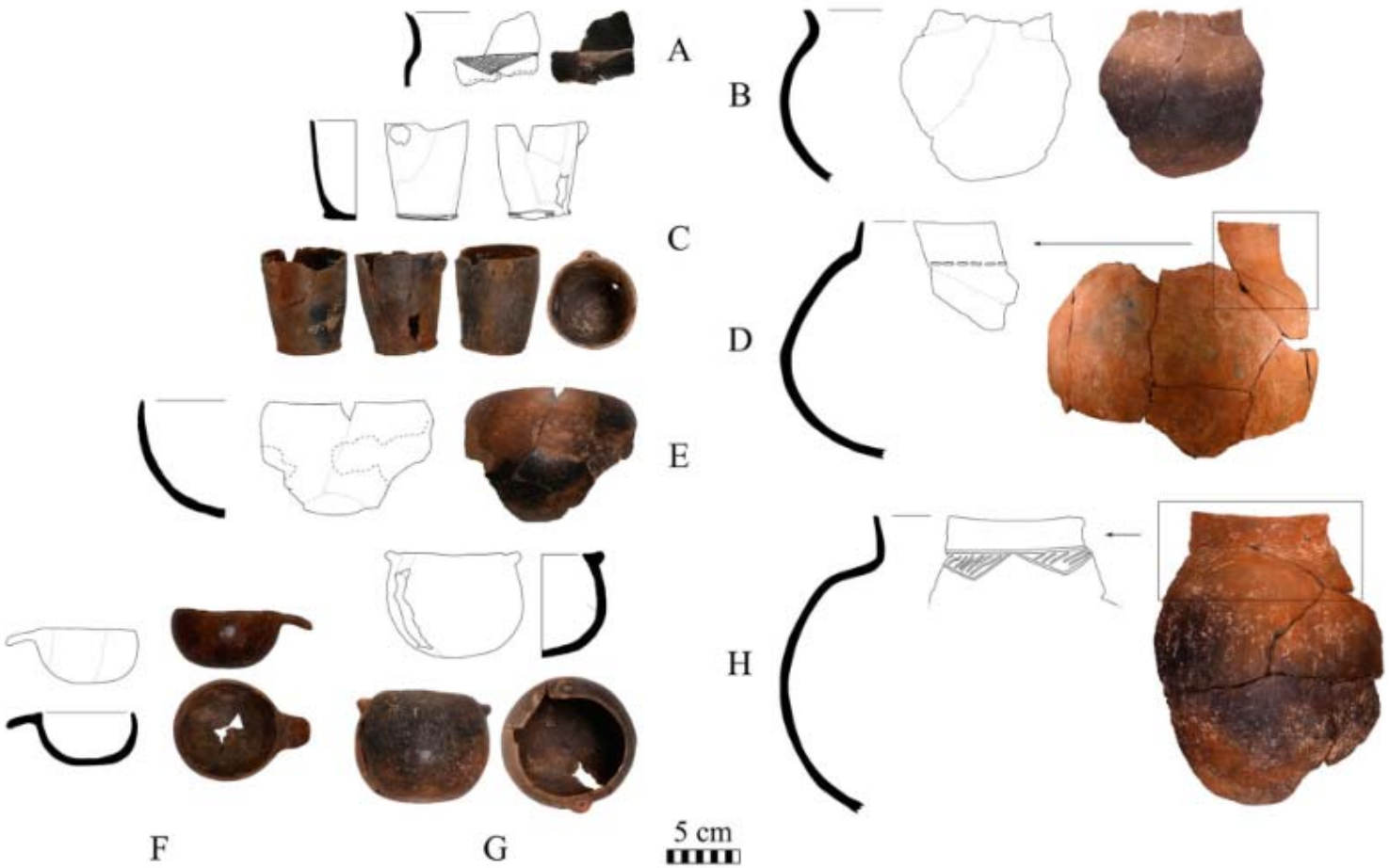

Figure 8. Ceramics from Euphorbia Kop that are consistent with K2 and TK2 wares (see text descriptions; grey lines indicate refitted sections, and dashed lines show spalling).

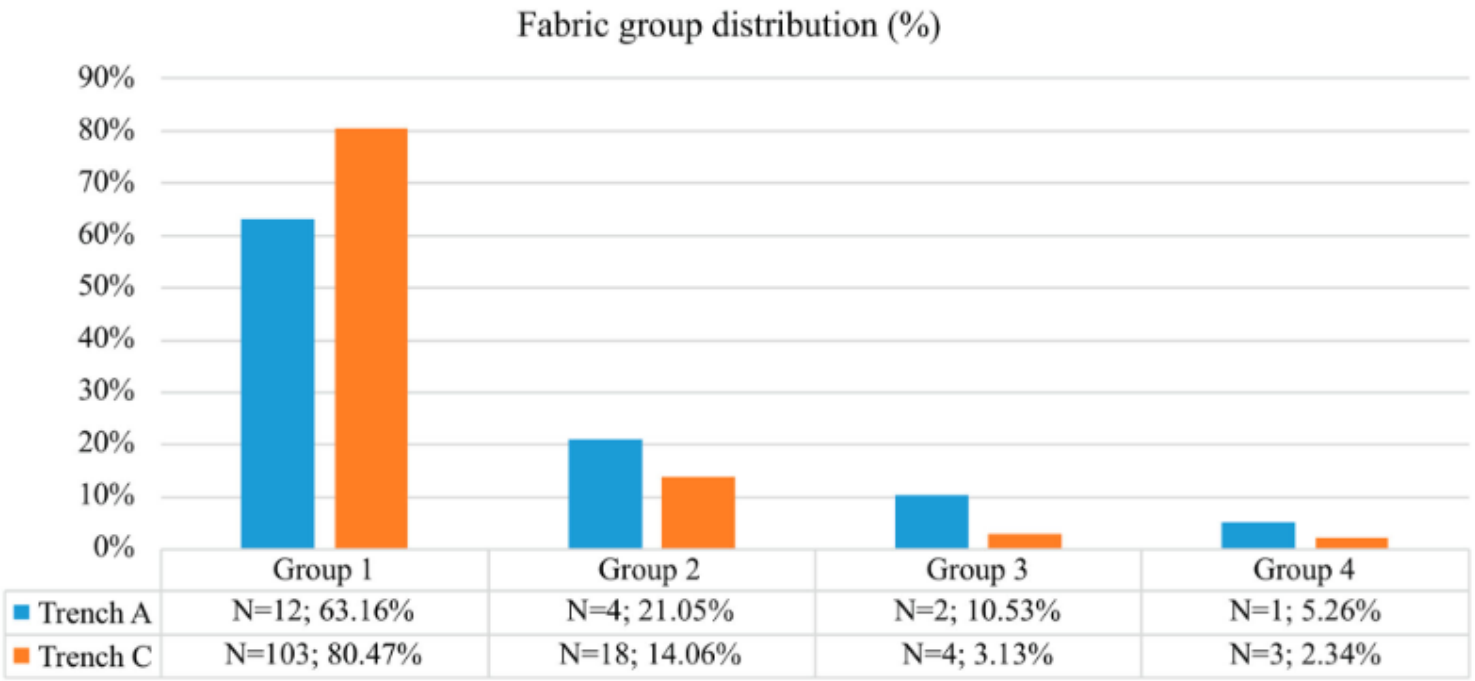

Figure 9. The distribution of fabric groups between Trenches A and C.

mostly completely refitted and is an open bowl with a handle. There is no decoration, but the vessel's exterior is polished, and the interior is burnished. Vessel G is mostly completely refitted and is a constricted bowl with two perforated lugs. The vessel has no motif, but it is burnished on both the interior and exterior. The final vessel, H, contains the entire profile, with 40% of the rim intact, and is a bellied jar with incised downward-facing triangles containing diagonal lines on the shoulder.

The chronological phase indicated by the diagnostic ceramics appears fairly clear and consistently expressed throughout the assemblage. Vessel A may be Mapungubwe (downward cross-hatched triangle) but could also be late Transitional K2 (TK2; A.D. 1200–1250; Huffman 2007, 279). Vessels B and E may be K2 but could also be of a later facies. However, all other vessels are unambiguously from the K2 facies, indicated by perforated lugs (Vessels C and G), decorative features (Vessels D and H), and the handle (Vessel F). The chronology associated with these vessels overlaps with most of the range from the radiocarbon dating results (A.D. 985–1149).

The fabric analysis was intended to compare the raw materials used in the ceramic assemblages from Trenches A (N = 19) and C (N = 128) to help establish any similarities in technological practices. Four groups were identified: Group 1 consisted of 2–5% inclusions of mottled and course fragmented quartz and sand; Group 2, > 5%; Group 3, < 2%; and, Group 4, uncategorized. Groups 1–3 are probably variants on a sliding scale of a larger technological tradition, while Group 4 fabrics fall outside this pattern. Most of the sherds fell into Group 1, including 12 (63.16%) and 103 (80.47%) from Trenches A's and C's assemblages, respectively. If one examines Figure 9, it shows a preference for Group 1 fabrics in Trench C and a slight preference in Groups 2 and 3 (we do not discuss Group 4) in Trench A. The small assemblage size does not allow for statistical analysis, but the general similarity of the two assemblages suggests each was largely made using the same clay sources. The results, therefore, indicate the assemblages are associated with one another despite being sourced from different areas of the site.

Beads

Shell beads

In total, 220 ostrich eggshell and 16 achatina shell beads were recovered. All were provenanced from Trench C, and most came from a near-complete bead necklace found with only the internal thread missing (N = 229 in GA1, 97.03%) (Figure 10). Across the entire assemblage, the average external diameter of the beads ranges between 4.27 and 4.82 mm (Figure 11), and if a 5% margin is applied, only in GA1, spit 1 would the maximum average external diameter exceed 5 mm (range = 4.06–5.06 mm). Only three beads in the entire assemblage exceed 6 mm in external diameter (1.27%). The internal diameter ranges from 1.4–1.92 mm, if a 5% margin is applied, and an average diameter per unit from 1.47–1.83 mm. No evidence from the excavated trenches indicating that bead manufacturing took place was identified. If it was occurring in an unexcavated area of the settlement, there was no surface evidence suggesting as much.

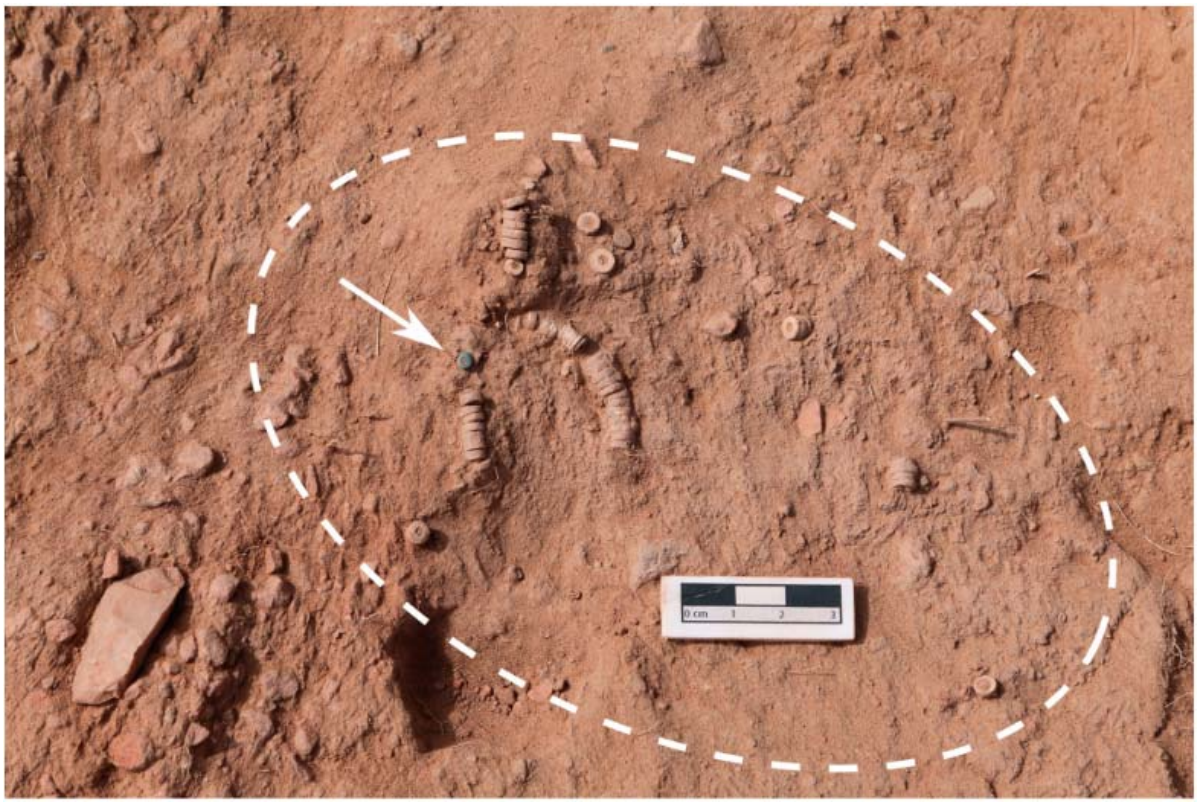

Figure 10. An ostrich eggshell (mostly) and achatina bead necklace from Trench C still in situ. All of the beads are within the dashed oval, and the arrow indicates the location of a glass bead.

Glass beads

Only four glass beads were found. This includes two K2 garden rollers, which are melted glass beads reformed in a clay mold, in the vicinity of Trench B and one from the surface around Trench C, as well as a K2 bead found in situ with the ostrich eggshell bead necklace (see Figure 10). Garden rollers are strongly associated with the K2 period and are the only known glass beads to have been produced locally (see Wood 2000, 81–82 for manufacturing details).

Faunal remains

The faunal remains amass to 342 g. As with the cultural material, the majority was sourced from Trench C (329 g, 96.2%). Only seven specimens could be identified as Bovid II (23–85 kgs; Brain 1974), one of which is a sheep/goat. Some rodent remains and a bird specimen were also recovered, but these may be intrusive. The small and highly fragmented assemblage does not offer any reliable insights into consumption patterns on-site other than the distribution of finds.

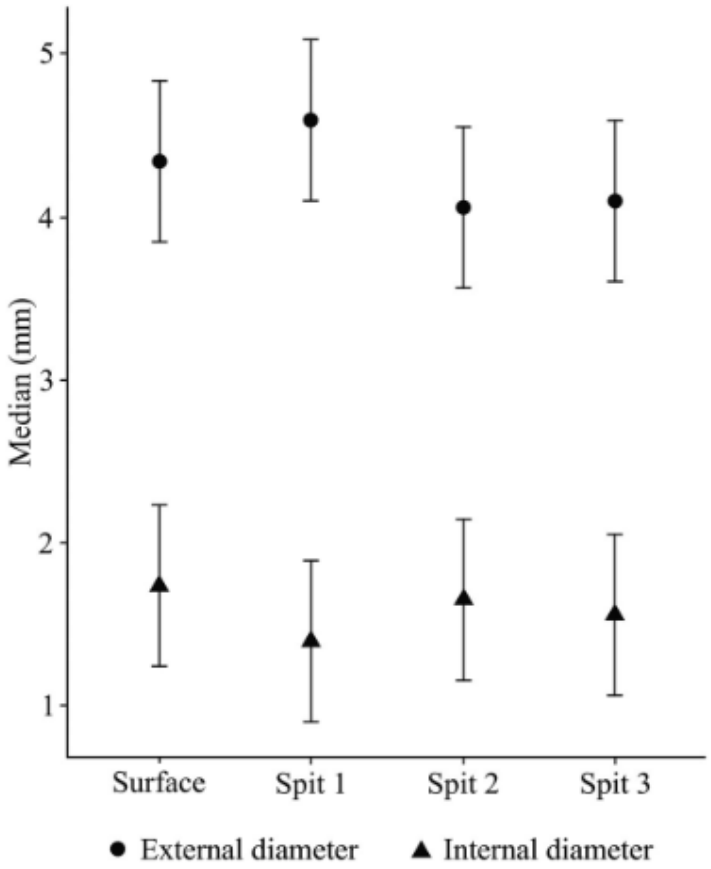

Figure 11. The average external bead and internal perforation diameter with a 5% margin displaying the generally small size of the beads

Discussion

We rely on multiple strands of evidence to argue in favor of a forager presence in the Euphorbia Kop homestead, following the studies of Maggs (1980) and Hall (2000). Simply having stone tools present at a site, even when in associated contexts, might not indicate co-residency. As Hall (2000) noted, sweeping and cleaning activities in a farmer settlement could have mixed pre-existing forager assemblages into farmer remains, giving the impression that the two were linked. Conceivably, farmers might also have settled on top of earlier forager occupations, which might be likely around a koppie. Due to deflation in these contexts, an earlier forager assemblage that would have otherwise been below ground could be exposed at the time of the farmer settlement. The stone, shell bead, and ceramic assemblages from Euphorbia Kop, however, show that none of these are likely and that a forager presence is the most plausible outcome.

Had farmers settled upon an earlier forager camp, the vertical or stratigraphic distribution of finds would indicate as much. For the most part, forager material would occur below the farmer settlement, or at its base, and if swept up and disposed of, this would be in refuse middens outside the homestead (Comaroff 1985). If foragers were part of the settlement, as occupants or visitors, their activities would be found in other areas mixed with the farmer assemblage. We see this in Trenches A and C. In Trench A, stone tools occur in both FG1 and

CG1 along with ceramics (see Tables 3, 4). CG1 also includes formal stone tools. Stone tools and ceramics in Trench C's two units, GA1 and HC1, were recorded and in far higher frequencies in the former strata, which is also where all of the beads were found. This indicates a similar trend of activity consistency between
these units. The findings from these two trenches, in particular, suggest an overlapping presence of forager and farmer identities at the site.

Supporting this is the fabric analysis. The results from Trenches A and C show clear overlap. Both assemblages exhibit similar densities of Groups 1 and 2, suggesting that, for each, a similar or the same clay source was used. Clay sources are important locations, and a potter will protect that source, regularly returning to it when clay is needed (e.g., see Wilmsen, Griffiths, and Killick 2019). The overlap between Trenches A and C, therefore, suggests continuity in the ceramic assemblage across the site. The association between these zones is important, because it supports the conclusion that the areas were occupied and used contemporaneously by a community in a symbiotic relationship.

The stone tool assemblage is particularly small, with a limited number of formal tools (2.56% of the total assemblage). Their frequency falls slightly below the ratio of formal tools from other sites in the area. In K2-Mapungubwe period levels at Mafunyane Shelter, the formal tool component is 4.38% (Forssman 2016b), whereas at Balerno Main, it is 3.66% (Van Doornum 2008), 2.95% at Tshisiku (Van Doornum 2007), 2.73% at Kambaku, which was occupied after Euphorbia Kop between A.D. 1480 and the early 1800s, and 2.25% at João (Forssman 2016a). Little Muck has a particularly high occurrence of formal tools at 7.51%, more than double that of any other local site (Van Doornum 2000). Considering these figures, while Euphorbia Kop has a lower representation of formal tools compared to other sites, it is not by much, and it is most like João, a site with a similar context.

The formal tools are also comparable to those recovered from other forager contexts, as Hall (2000, 43) noted with the assemblages he studied. The four scrapers easily fit the same typology used by van Van Doornum (2005) and Forssman (2014), leaving little reason for questioning whether they are morphologically related. Therefore, the frequency and form of the formal tools falls within what would be expected at rock-shelter sites occupied by foragers. In these contexts, and as Wadley (1996) suggests with regard to the scrapers from Broederstroom, they were possibly used to work hides (see also Walker 1994). In a recent study from Little Muck examining use-wear along scraper edges, evidence from working rigid materials such as wood and bone was identified (Forssman, Seiler, and Witelson 2018). Scrapers were used for producing goods that may or may not have been exchanged, which could have included a range of different craft types, such as prepared hide, wooden items, or worked bone. It is purely speculative to make assumptions about the use of scrapers at Euphorbia Kop, since they have not been examined appropriately for wear traces, but it is likely that they were used in similar ways.

Evidence for stone tool manufacturing is fairly limited. Nonetheless, the presence of SFD, chunks, and cores all indicate that some form of stone tool processing was occurring. But, given the small stone tool assemblage, if foragers were living in camp, as opposed to spending time there, they were possibly relying less on their own toolkit and more on farmer material culture, hence producing a small and mostly informal tool assemblage. If

this was the case, one should not necessarily expect to find ample evidence indicating on-site stone tool manufacturing.

The ostrich eggshell bead assemblage is of particular interest. Tapela (2001) found that shell beads made by San communities in Ghanzi ranged from 3.3–7.4 mm in external diameter, with internal diameters ranging from 0.6–2.2 mm (Tapela 2001). He also noted that farmer beads range from 1.5–13.5 mm externally and internally from 1.2–3.2 mm. Farmer assemblages, he found, typically include beads within the range of 6.1–13.6 mm externally (only three beads exceeded 6 mm at Euphorbia Kop). These patterns have been noted archaeologically in, for example, the Northern Cape, where smaller beads (< 5 mm) are found in forager assemblages pre- and post-dating the arrival of herder communities (e.g., Jacobson 1987; Orton 2008). If these measurements are followed, the Euphorbia Kop beads indicate a forager producer. It may be that foragers were producing beads and exchanging them with Euphorbia Kop's farmer residents, but it is not possible to show the movement of these goods in this context (e.g., Mitchell 2003). The lack of manufacturing remains could indicate an off-site production strategy, with traders entering the settlement with ready-made goods, but further assessment of the site would be required to support this, given the limited excavations presented here.

The consistency of the formal tools' morphology with forager tools recovered from shelters, evidence of stone tool production, a bead assemblage within the forager size range, and ceramic fabric similarities between the shelter and kraal zones, coupled with the chronology, indicate foragers were present in the site between A.D. 987 and 1151 at the same time as farmers. At all shelters, barring Balerno Main, forager cultural material densities decline rapidly in the K2 phase (Van Doornum 2005; Forssman 2014). However, it is from this period that João and Euphorbia Kop were occupied, indicating that part of the shift occurring during this time included foragers becoming, in some cases, more entrenched in farmer society. These settlements may capture a single response by foragers during this period that may be linked to the gradual abandonment of rock shelters. That these were not reoccupied, as far as can be determined from the current cohort of excavated shelters, may suggest that living in a homestead or open-air context became the preferred residential pattern for foragers who remained in the valley (see Elton 1872 and Dornan 1917 for comments in this regard).

Shifting to open-air homestead settlements may reflect changes in social relations between foragers and farmers that manifested themselves in forager settlement habits and decisions and were part of broader social change in the valley. The period of Euphorbia Kop's occupation was notably marked by intense social contact, in addition to socio-political developments. These interactions brought together incumbent Zhizo- and arriving K2-producing farmers. Subsequently, some Zhizo-users abandoned the valley, while others appear to have remained and fulfilled a lower status in society and are archaeologically recognized by Leokwe ceramics (Calabrese 2000). They acted as craftsmen, herders, or ritual specialists (Huffman 2014). These roles were thought to have been performed previously by a segment of the local forager population, who were increasingly excluded from local networks and markets from this period onwards (Hall and Smith 2000; Forssman 2015; Forssman, Seiler, and Witelson 2018). Forager-farmer relations changed during this period, and it is part of a mosaic of transformations ahead of the eventual establishment of state-

level society at Mapungubwe (Huffman 2000). The findings from Euphorbia Kop, therefore, provide additional layering to a socially complex and changing phase that was clearly highly nuanced.

Such change did not only occur in the valley. Evidence of foragers shifting their settlement decisions in Botswana have been recorded at several localities. Near Bosutswe, for example, foragers began living in the vicinity of the late 1st millennium A.D. farmer site, presumably to interact and trade with resident farmers (Denbow et al. 2008). Sites such as Khubu la Dintša, near Bosutswe, may have been used as temporary camps to facilitate interactions and were possibly smaller, short-lived homesteads (Klehm 2017). These site types were important points on the landscape and demonstrate a diverse way of living that incorporated multiple ethnic groups (Mothulatshipi 2008; Klehm and Ernenwein 2016). It was also a means of accessing resources and was part of the local operational systems, such as the trade in wildlife or the movement of goods, found in early states (Wilmsen and Denbow 1990). In northern Botswana, relations between forager and farmer groups included sharing resources, performing activities for one another, intermarriage, and farmer groups drawing on forager spirituality through rock art (Wilmsen 2014; Denbow 2017). However, more work is needed in these areas to confirm the association of farmer homesteads and stone tools, likely produced by foragers, where they occur in these contexts (see Denbow and Wilmsen 1986). Nonetheless, the vicinity and contemporaneity between shelter occupations and homestead sites, similar to the middle Limpopo Valley as well, suggests social interactions between forager and farmer groups took place during a period of widespread social change.

The process of foragers visiting or occupying homesteads may have conformed to local social developments. Denbow (2017) suggested that the complex network of relations between forager and farmer, which included, but was not limited to, settlements in proximity to one another and foragers in farmer homesteads, developed social hierarchies. Given the developing social landscape in the valley, which led to complex society, it appears that foragers were incorporated into these hierarchies (Forssman 2017). Their presence at Euphorbia Kop in a spatially distinct area of the site, which is also in a lower portion of the tiered settlement, could, in this sense, indicate their lower status within the site's social structure. This follows Hall's (2000) and Denbow's (2017) emphasis on spatial relations and their meaning. However, while their status may have been low-tier, their inclusion in this hierarchy is significant. It indicates that foragers became components of a system that ultimately formed the basis of the Mapungubwe kingdom. It shows that they were active within the socio-political landscape and participants in the developments that led to state-level society. Their precise role and extent of engagement cannot be established as of yet, but at the very least, there is now tangible and clear evidence that they were present and part of the local network during these formational phases, in some contexts, rather than inactive and sheltered from change.

Conclusion

During Euphorbia Kop's occupation, ensuing social changes at the end of the 1st millennium A.D. in the middle Limpopo Valley ultimately led to an increase in social complexity and the establishment of the Mapungubwe polity. It is also a period during which evidence for foragers in rock shelters diminishes at almost all of the excavated sites. Euphorbia Kop adds to a small number of sites that indicate a shift in forager settlement patterns took place that

included residency in farmer homesteads. This is supported by the physical remains of forager material culture within the settlement contained in the same narrow radiocarbon date range as the farmer-associated artifacts. Social relations in the valley were changing, and foragers would have had to renegotiate their role within these spheres, finding a suitable niche for their lifeways and lifestyle. These findings demonstrate the entangled nature of identities in the valley and help us better understand the position of foragers in a far more inclusive social network than what is generally acknowledged.

To better understand this period, more work is needed. Further excavations at Euphorbia Kop may be advantageous and certainly at sites in similar contexts. Since forager remains are scarce at such sites, excavating more of them, and larger units, may yield considerable assemblages and therefore greater clarity regarding foragers in farmer spaces. Additional studies are needed at sites such as Balerno Main, where forager cultural material persists until ca. A.D. 1300, and at Little Muck, where it declined suddenly and a farmer assemblage appears ca. A.D. 1000. Understanding the flow of identities in different spaces is important in the context of the developing socio-political landscape. Until recently, the forager sequence had hardly been considered when discussing the rise of state-level society, but studies like the one carried out at Euphorbia Kop demonstrate that foragers participated in broader networks. It also shows the importance of thinking beyond the confines of a shelter when studying foragerfarmer interactions, in particular the period after A.D. 1000 when shelter spaces became underutilized. Examining contact following archaeological partitions, such as “forager” or “farmer” spaces, introduces issues of identification and boundedness, which Euphorbia Kop appears to show did not exist in the past.

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Disclosure Statement

The authors declare no conflict of interest. No potential competing interest was reported by the authors.

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