Quaternary International 404 (2016) 2–19

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Subsistence strategies in the southern Cape during the Howiesons Poort: Taphonomic and zooarchaeological analyses of Klipdrift Shelter, South Africa

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ARTICLE INFO

Article history:
Available online 20 August 2015

Keywords:
Middle Stone Age
Howiesons Poort
Taphonomy
Zooarchaeology
Subsistence intensification
Late Pleistocene

ABSTRACT

The Howiesons Poort techno-complex of southern Africa was a particularly significant phase in the development of complex cognition in *Homo sapiens* and new sites are crucial to our understanding of this period. Here, we present the results of a taphonomic and zooarchaeological analysis of Klipdrift Shelter to investigate subsistence strategies during the Late Pleistocene. In particular, we focus on the taphonomic history of the assemblage. Our analysis shows that the Klipdrift Shelter faunal assemblage is extensively fragmented; probably as a result of anthropogenic processing and post-depositional alteration. As a result, little significant information can be extrapolated from the analysis of skeletal-part abundance per layer. Human involvement in the accumulation of ungulate, small mammal, carnivore and tortoise remains is apparent in all layers. We show evidence of disarticulation, marrow extraction, skinning, filleting and carnivore consumption and document the processing of low-ranked game and elements. We also discuss the possibility of remote-capture technology at Klipdrift during the Howiesons Poort.

1. Introduction

The newly excavated Klipdrift Shelter (KDS) – with its recovered engraved ostrich eggshell from the Howiesons Poort (HP) layers – promises to be an important site in exploring behavioural complexity during the Late Pleistocene. The development of complex or cognitively 'advanced' behaviour in African hominins in the Middle Stone Age (MSA), from *ca*. 300 ka to 30 ka, is particularly prevalent in the HP techno-complex of southern Africa during MIS 4 (Ambrose and Lorenz, 1990; Deacon and Shuurman, 1992; Wadley, 2001; Jacobs et al., 2008; Henshilwood and Dubreuil, 2011; Hodgskiss, 2014). Sophisticated lithic reduction techniques and evidence of innovative behaviour (such as possible bow-and-arrow use) during the HP suggests that humans then were as cognitively modern as those in the Upper Palaeolithic/Later Stone Age (Mellars, 2006; Lombard and Phillipson, 2010; Lombard and Haidle, 2012; Wurz, 2013). Zooarchaeological studies have made significant contributions to our understanding of hominin behaviour in the Late Pleistocene (Bunn and Kroll, 1986; Stiner et al., 1999; Klein and Cruz-Uribe, 2000; Clark, 2011; McCall and Thomas, 2012) and taphonomic analyses are a crucial step in unravelling subsistence strategies at African Pleistocene sites (Klein, 1975; Brain, 1981; Blumenschine, 1986; Marean et al., 1992; Marean and Kim, 1998; Milo, 1998; Marean et al., 2000; Thompson and Henshilwood, 2011). Yet, except for Sibudu (e.g., Clark and Ligouis, 2010), relatively few HP sites – especially in the southern Cape – have faunal remains from well-stratified contexts that have been taphonomically analysed (but see Faith (2013)). In this study, we focus on the

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http://dx.doi.org/10.1016/j.quaint.2015.07.041

taphonomic history of KDS and describe and analyse the fauna recovered from the MSA in general, and HP layers in particular.

1.1. Background

In recent years HP subsistence strategies have been extensively studied (e.g., McCall, 2007; Lombard and Clark, 2008; McCall and Thomas, 2012; Dusseldorp, 2014). Some of these analyses interrogate the role that resource intensification plays in subsistence behaviour (McCall, 2007; Clark, 2011; McCall and Thomas, 2012). Subsistence intensification has been defined as the extraction of increased amounts of energy from a given area at the expense of foraging efficiency (Schoener, 1974; Munro, 2009: 141). Initial research on foraging intensity focused on its effect on pre-agropastoralist subsistence economies (Binford, 1968; Flannery, 1969) but more recent studies have looked for evidence of intensive foraging in the Late Pleistocene (Stiner et al., 2000; Stiner, 2001; Munro and Bar-Oz, 2005; Speth and Clark, 2006; Bar-Oz and Munro, 2007; Steele and Klein, 2009; Clark, 2011; Speth, 2013). Research suggests that population pressure may play a role in intensive foraging (Stiner et al., 2000; Jerardino, 2010; Clark, 2013). Jerardino (2010) argues that increasing populations sizes during the Holocene resulted in the shell 'megamiddens' located along the western Cape. She sees evidence of over-harvesting of molluscs and an increase in smaller bovids and tortoises at Elands Bay Cave and surrounding sites as indicative of intensive subsistence exploitation during that period. Henshilwood and Marean (2003) argue that benign environmental conditions were likely to encourage population expansions, ultimately resulting in a reduction of exploitable land and resources. This, they contend, was particularly relevant during the shift from interglacial to glacial periods. McCall and Thomas (2012) see evidence of longer-term residential occupation at HP sites and suggest that this would have resulted in increased demographic pressure and the rapid depletion, and thus intensification, of available resources. Yet Dusseldorp (2014: 27) maintains that there is no evidence of a 'southern Africa-wide demographic crisis' through MIS 4 and MIS 3. Faith (2013) argues that the contrast between low-occupational intensity at Boomplaas Cave and higher-density occupation at coastal sites likely reflects a shift in populations to the coast during the HP. Certainly, environmental conditions are probably associated with changing subsistence patterns in the Late Pleistocene in southern Africa (Deacon, 1989; Ambrose and Lorenz, 1990; Deacon and Shuurman, 1992; Henshilwood, 2008; Ziegler et al., 2013). McCall (2007), for example, proposes that a reduction in food resources correlates to environmental changes at the Marine Isotope Stage 5a/4 transition which, in turn, is linked to increased mobility patterns and innovative economic strategies. Clark's (2009, 2011) study of the fauna from the HP at Sibudu shows more evidence of resource stress in the HP than in the post-HP period at Sibudu. In the HP, she found that diet breadth (as measured by evenness) is broader and small game and bushpig (a relatively dangerous prey) are more common which, she suggests, may be linked to human adaptations to environmental productivity.

Technological innovation may have also influenced subsistence strategies during the HP. Lombard (2011) and colleagues (Lombard and Phillipson, 2010; Lombard and Haidle, 2012) argue for evidence of bow-and-arrow technology at Sibudu during the HP. Research by Clark (2009, 2011) and colleagues (Clark and Plug, 2008; Lombard and Clark, 2008) indicate that small fauna dominates the HP assemblage at Sibudu. While they concede that this may be a result of environmental conditions (given that smaller, more solitary fauna favour the closed, bushy habitat prevalent during the HP), they also suggest it may be associated with remote-capture hunting strategies. Indeed, Steele and Klein (2013) show a similar predominance of small fauna in the HP layers at Diepkloof. Wadley (2010) posits that the prevalence of small, taxonomically-diverse fauna is one of several indicators that may suggest snaring or trapping. This, she argues, implies people with enhanced working memory that were, for all intents and purposes, modern.

1.2. Analytical framework

Here, we use taphonomic, skeletal-abundance and mortality data to investigate subsistence strategies of southern Cape populations during the HP. Under the assumption that fauna was foraged optimally, it should be expected that foragers would have chosen higher-valued skeletal-parts such as prime meat-bearing or marrow-rich long-bones over low-valued elements to transport back from kill-sites (Jochim, 1979; Winterhalder, 2001). This is especially true if prey was procured at great distance from the shelter where the economic cost of transporting complete carcasses outweighed the benefits (Metcalfe and Barlowe, 1992; Faith, 2007; *cf.* Clark, 2011: 277). Skeletal-part patterns are therefore assessed with transport distances in mind. Due to a lack of comparative data from pre- and post-HP periods, we are unable to assess if subsistence strategies were comparatively more or less intensive in the HP at KDS. Nonetheless, we record evidence of the processing of low-ranked game (e.g., rodents and hyrax) and low-utility elements such as phalanges (Munro, 2004; but see Jin and Mills (2011)), pelves and calcanei (Binford, 1978; Morin, 2007). These data could be used in future research on subsistence behaviour in the southern Cape. Our study was conducted in an analytical framework comparable to the methods employed by previous researchers (e.g., Stiner et al., 2000; Munro, 2004; Steele and Klein, 2009; Clark, 2011). In particular, we look for: 1) evidence of the exploitation of low-ranked prey and low-utility elements; 2) variable foraging ranges; and 3) mortality patterns in the faunal assemblage.

1.3. Site background

The Klipdrift Complex (34°27.0963′S, 20°43.4582′E) is situated in the De Hoop Nature Reserve on the coast of the southern Cape of South Africa, about 10 km west of the mouth of the Breede River (Fig. 1a). It consists of two known sites – Klipdrift Cave and Klipdrift Shelter – within a wave-cut cliff *ca*. 17 m above sea level (Fig. 1b). Deposit layers in KDS are defined by texture, composition, colour, thickness and content and named with the top layers alphabetically preceding the lower layers (e.g., PBC above PBD) (Fig. 2a). Sediment in KDS is generally fine-grained and varies from loose and powdery to consolidated and 'sticky' with numerous, small inclusions of quartzite and calcrete resulting from spalling of the roof and walls. Many of these consolidated and sticky patches are likely caused by dripline water mixed with ashy sediment and organic material. The deposits from PCA to PBA/PBB are generally black and grey layers with a relatively high number of hearths or ash features. PAZ and PAY are lighter and grittier while the upper deposits (PAW – PAU) are also characterised by black and grey layers with some red or orange/brown patches.

Excavations were conducted following a grid system established with a Trimble VX Spatial Station (Fig. 2b). The site floor was divided into 50 × 50 cm squares. Identifiable bone and bone tools were individually plotted and all remaining excavated material was sieved through 3 mm and 1.5 mm mesh screens. At KDS about 7 m^2 of severely truncated deposits lie behind the dripline at about 39° to the horizontal (Fig. 2c). The truncation was likely the result of raised sea levels which probably washed out sediment during the Holocene from the front of a more expansive Klipdrift Complex. The deposits in KDS are from Layers PE to PAL. Using single-grain optically stimulated luminescence (OSL), the MSA layers at KDS