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# Acheulean prepared core technologies from the eastern Zimbabwe Escarpment, Maunganidze (Manicaland)

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A R T I C L E I N F O

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A B S T R A C T

Evidence for an Early Stone Age occupation of the Zambezian zone prior to the late Acheulean is meager. In this article, we present an Acheulean site from eastern Zimbabwe called Maunganidze between the Limpopo and Zambezi, containing a wealth of large prepared cores, blanks, and large cutting tools that illustrate diversity and complexity in stone reduction. Acheulean hominins visited cobble-bed streams and outcrops as quarry sites leaving behind cores, blanks, hand axes, cleavers, and knives. The lithics studied were made on three main raw materials: quartzite, basalt, and rhyolite. Simple platform reduction and preferential prepared core technology dominate the assemblage. Blanks were obtained from large prepared cores. Three techniques for blank production were documented: side-struck prepared cores, sliced cobbles, and opening-flakes. The side struck assemblage shows significant preparation of the upper surfaces and a standardized approach for sub-triangular tabular supports, even highly symmetrical tear-drop blanks. The nearest comparative baseline comes from the South African Victoria West, documented 1300 km to the southwest. There are significant similarities and differences between the two sets. The site of Maunganidze represents the first Acheulean locus straddled along the transitional ecoregion that links southern, central, and east Africa. It is also the first time that the Victoria West industry has been documented outside South Africa's temperate zone, in the tropics.
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## 1. Introduction

In spite of decades of field survey for early sites across the natural passages that link central, east, and southern Africa along the tropical woodlands of Zambia (Barham et al., 2011; Barham, 2000; Clark, 1969, 2001b; Duller et al., 2015), Malawi (Clark, 1966; Clark and Haynes, 1970; Thompson et al., 2012), Tanzania (Willoughby, 2012; Willoughby and Sipe, 2002), and Mozambique (Mercader et al., 2009; Mercader et al., 2008; Mercader and Sillen, 2013), Acheulean occurrences have remained elusive in the Zambezian zone (Clark, 1964, 2001a; Cole, 1967; Cooke, 1962; Davies, 1954; McBrearty, 1991). Claims of 'Early Stone Age' occupations from surface materials, whether collected during colonial times or more recently, often conflate evidence from multiple periods and are open to speculation (Clark, 1964, 2001a; Cole, 1967; Cooke, 1962; Davies, 1954). In this article, we present excavation data from a stratified Acheulean site between the Limpopo and Zambezi rivers from the Zambezian ecozone of eastern Zimbabwe. The site, known as Maunganidze, contains a wealth of giant prepared cores, blanks, and large cutting tools (LCTs) that illustrate a diversity and complexity in stone reduction approaches during the Early Stone Age.

It has been suggested that prepared core technology could be a marker of the cultural transformations that characterize a mid-Acheulean stage against the earliest Acheulean without prepared cores (Beyene et al., 2013; Diez-Martín et al., 2015) and younger Acheulean phases (de la Torre et al., 2014) with reduction sequences somewhat comparable to the Middle Stone Age's 'Mode 3' (Foley and Lahr, 1997; Kuman, 2014; Sharon, 2009; Tryon and Potts, 2011). In southern Africa, a standardized production of blanks from prepared cores for LCTs was recognized almost a century ago (Jansen, 1926), and whether the morphological similarities between Acheulean and Middle Stone Age (MSA) prepared cores result from a precursory role (Kuman, 2001) or just convergence (Lycett, 2009), the main obstacle to exploring the origins of this technical approach is the dearth of information from stratified sites. Few systematic excavations have recovered complete assemblages and various flake extraction techniques. Moreover, in this part of the continent the origins of prepared core technology take on special relevance because they portray the onset of increasingly

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complex behavioral and adaptive variability (Barham and Mitchell, 2008), and expansion into arid ecosystems (A.C.A.P., 2012; Butzer, 1974; Helgren, 1978; Netterberg, 1969; Sampson, 2006).

## 2. Context

The Zambezian ecological region covers an area of 3,700,000 km$^2$ from 3° to 26°S (White, 1983) (Fig. 1) and supports the widest range of woody flora in Africa, linking central, east, and southern Africa (Fig. 1A: sector VII). The wetter part of this region is traversed by the natural passages of the East African Rift System (EARS), which in the Zambezian zone are best expressed in the southern rift segment of the Western Branch (Malawi/Niassa–Urema/Dombe) and the transverse fault zone along the Zambezi–Mwanza basins from Zimbabwe to Mozambique (Chorowicz, 2005). Two smaller grabens connect the Luangwa (Zambia) and Save (Zimbabwe) basins to the rest of the EARS. This paper presents the results of archaeological research in the Chimanimani and Chipinge districts of Manicaland (Fig. 1A: sector VII) from eastern Zimbabwe (Fig. 2) during 2013–2015. The study area (Fig. 2A) is bound by a rugged mountain range to the east (Chimanimani 2440 m a.s.l.) and the Save basin to the west (498 m a.s.l.) (Fig. 2B, C). The most salient geographical feature is a dual bioclimatic domain that supports a marked east to west gradient in rainfall and temperature from the eastern Afromontane zone towards the western woodlands. Annual precipitation varies from >1300 mm (highlands) to 750 mm (lowlands) and even 400 mm in the down-faulted valleys of the Save and Odzi (Watson 1969). Average temperature is between 16 °C and 22 °C (Department of Meteorological Services, 1984). The complex interplay of topography and rainfall over short distances creates a diversity of ecosystems and vegetation types with a high level of endemism which includes contrasting flora and fauna in Afromontane forests and grasslands, lowland evergreen forest, thicket, and several kinds of woodland and grassland (Chapano and Mamuto, 2004). Not only do these mountains have the richest and most diversified floras in the country, they share a strong affinity with the montane 'archipelago' (White, 1978) that occurs from the Ethiopian highlands to the South African Drakensberg range (Fig. 1A).

Zimbabwe's modern relief and drainage are bisected by a SW/NE divide that places the Zambezi's watershed to the north and the Limpopo's to the south, with the Save's half-graben structure forming a barrier between the Chimanimani montane zone and the Zambezi tributaries (Moore et al., 2009; Swift, 1962; Watson, 1969). From a geological point of view, the basement schist is unconformably overlain by a Precambrian system regionally known as Umkondo comprised of gneiss, quartzite, siltstone, shale, crystalline limestone, and variably fine-grained dolerites (Watson, 1969). Veins of quartz and chert are ubiquitous. Basalts from the upper Karroo system crop out in the Save catchment. Within the Umkondo, the calcareous series forms the lowermost horizon of the system, and all streams within the drainage basin contain a high level of dissolved calcium that results in travertine and tufa precipitates in the low valley reaches (Watson, 1969: 40–45).

### 2.1. Topography and geological stratigraphy

Maunganidze (S19°56′53.7″/ E32°22′11.9″) (Fig. 2) is situated on a topographic high (519-527 m a.s.l.) along the southern bank of the Changadzi River, an eastern tributary of the Save River roughly 2.5 km to the west. In its lower course, the Changadzi is a meandering channel that cuts through the schist basement while in its higher course, only 15 km to the east, the river has the steep gradient that characterizes mountain environments. The study area is located in the lower course where topography is typical of a mid-elevation to low gradient plain flanked by terraces adjacent to the eastern foothills (Fig. 2B, C). The modern flood plain is about 70 m wide and supports alternating meandering bends that have perpendicular axes NW/SE. Maunganidze

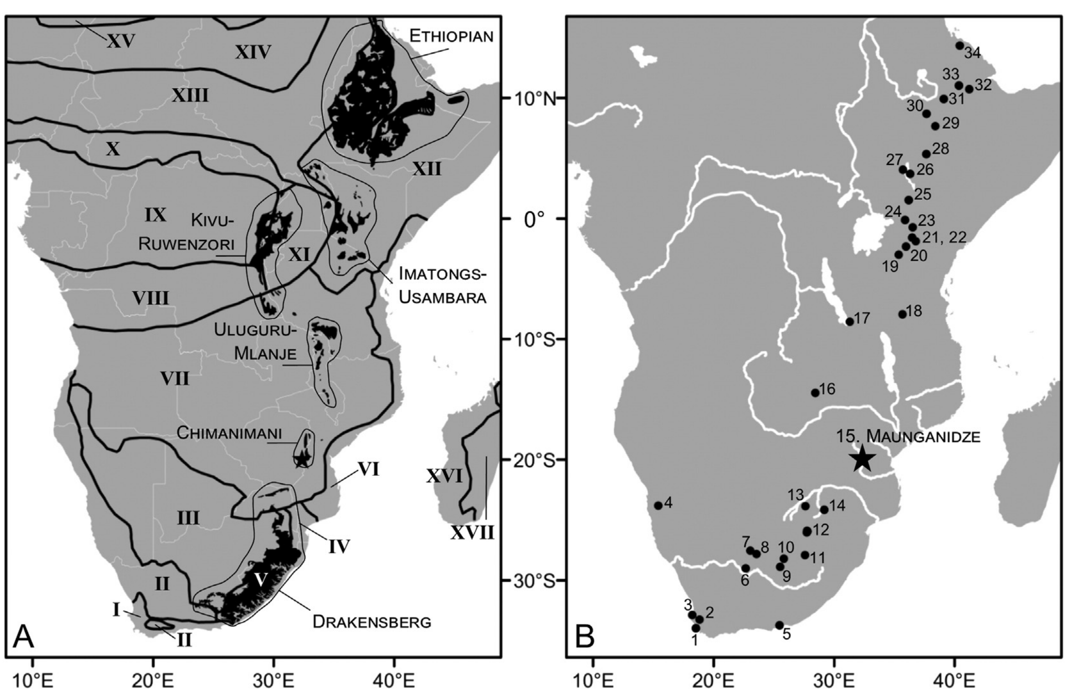


**Fig. 1.** A. Map showing montane vegetation archipelagos bordering the East African Rift System (after White, 1978). Climate/vegetation zones according to White (1983): I. Cape. II. Karoo–Namib. III. Kalahari–Highveld. IV. Tongaland–Pondoland mosaic. V. Afromontane VI. Zanzibar–Inhambane VII. Zambezian. VIII. Guineo–Congolian/Zambezian transitional zone. IX. Guineo–Congolian. X. Sudano/Guineo–Congolian/transition. XI. Lake Victoria. XII. Somalia–Masaai. XIII. Sudanian. XIV. Sahel. XV. Sahara. XVI. West Malagasy. XVII. East Malagasy. B. Acheulean sites and relevant loci from sub-Saharan Africa: 1. Duinefontein. 2. Montagu. 3. Elandsfontein. 4. Namib IV. 5. Amanzi. 6. Rooidam. 7. Kathu Pan 8. Wonderwerk. 9. Power's Site. 10. Rietputs Formation 11. Cornelia. 12. Sterkfontein, Kromdraai, Swartkrans. 13. Olieboomspoort. 14. Makapansgat. 15. Maunganidze. 16. Broken Hill. 17. Kalambo Falls. 18. Isimila. 19. Olduvai Gorge. 20. Peninj. 21. Olorgesailie. 22. Isenya. 23. Kariandusi. 24. Kilombe. 25. Kapthurin. 26. Koobi Fora. 27. Kokiselei. 28. Konso-Gardula. 29. Gadeb. 30. Melka Kunture. 31. Bodo. 32. Bouri. 33. Gona. 34. Buia.

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