

## ■ ZIMBABWE

### Possible Evidence for Early Woodland Burning by Agropastoralists in Northwestern Zimbabwe at 2,000 years ago

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Here we report radiocarbon dates and other information that may indirectly indicate the earliest appearance of land-clearance by agropastoralists in northwestern Zimbabwe, specifically in Hwange National Park. The data are ambiguous but nonetheless worthy of consideration because so little is known about the critical phase of western Zimbabwe's Later Stone Age just before agropastoralism developed.

### The Transition from Foraging to Farming in Northwestern Zimbabwe

Northwestern Zimbabwe may be near or on one route of diffusion or migration of agropastoral elements southward, as proposed by Bousman (1998), Mitchell (2002) and others (Figure 1). The arrows on Figure 1 (after Bousman 1998) suggest the routes of spread of livestock, based on radiocarbon dates. Mitchell (2002a:227-299) summarizes other models of the spread of livestock, domesticated plants, and early farming communities. Figure 1 also shows the locations of key areas in this study, such as Hwange National Park and the Matobo Hills in Zimbabwe.

Agropastoralism did not move into southern Africa as a package at one time or on one pathway.

In Botswana the adoption of stock-herding preceded the earliest iron and appearance of rondavel huts, as evidenced in sites containing stock enclosures with preserved dung deposits (Robbins *et al.* 2005). Live-stock herding may have moved into southern Africa when it did in response to changes in the distribution of tsetse fly, possibly after drying climate opened up woodland, or as a result of deliberate woodland clearing carried out by livestock herders.

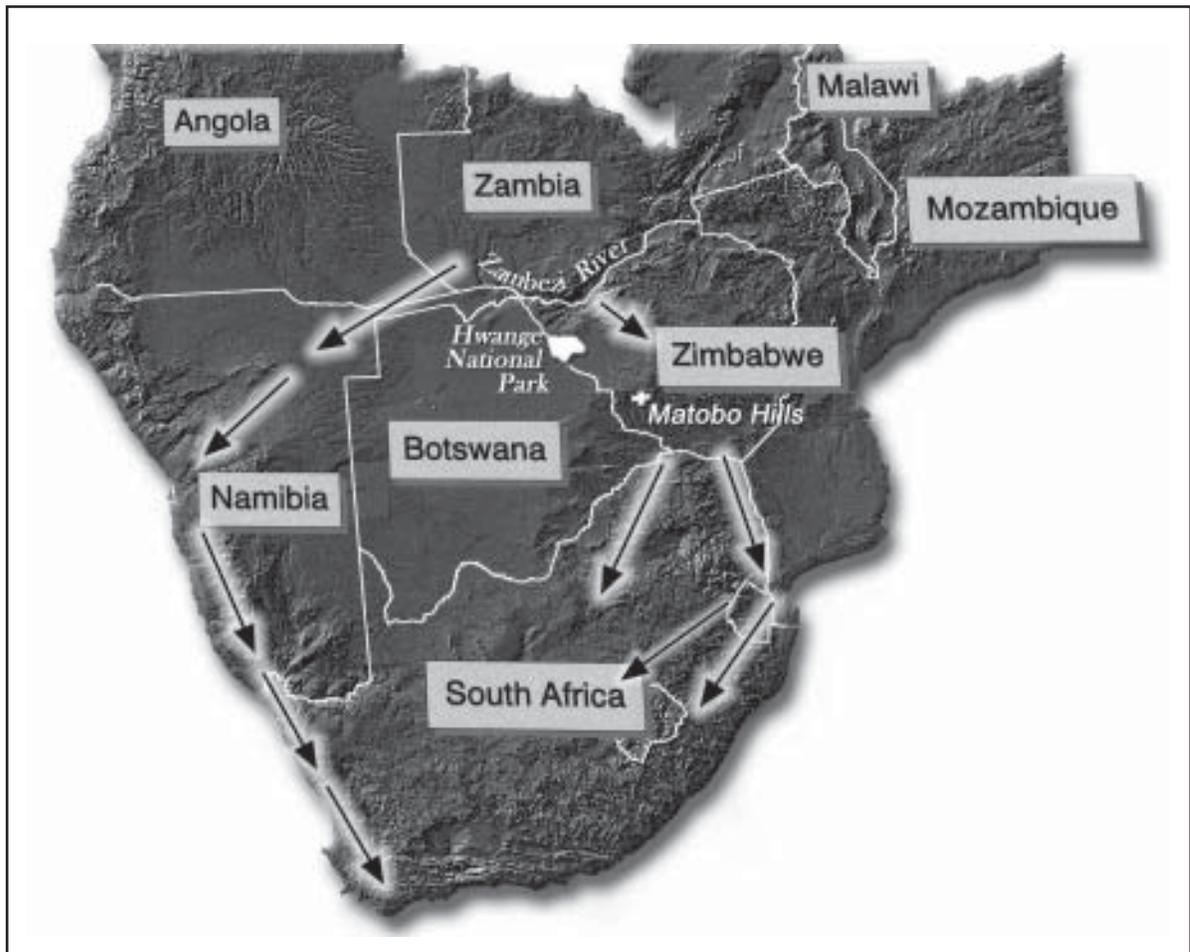
Archeological data from northwestern Zimbabwe are not adequate to reveal if LSA subsistence and settlement in western Zimbabwe gradual transitioned from foraging to farming or was abruptly replaced by immigrant human populations. Models from the rest of southern Africa suggest a date of around 2 ka<sup>1</sup> for the beginning of the shift in lifeway (Robbins *et al.* 2005; Wilmsen 1989; Denbow and Wilmsen 1986).

### Cultural Chronology in Western Zimbabwe

A key source of potential clues about later Holocene stone-age human adaptations (Mitchell 2002a:161-166) is the Matobo Hills sequence from over 350 km to the south of Hwange National Park (Cooke 1963; Walker 1995). But excavations there have not uncovered LSA assemblages representing the critical period 3.8 to 2.2 ka, when several poorly defined lithic traditions existed in different parts of Zimbabwe (Walker and Thorp 1997) just before foraging gave way to stock-keeping and farming. The Matobo Hills also do not provide a complete or detailed paleoenvironmental record, so later Holocene LSA adaptations there cannot be placed in the necessary context. In the rest of western Zimbabwe even less is known about late Holocene paleoenvironments.

Only a provisional chronology can be constructed for northwestern Zimbabwe's prehistory, based on little more than unrepeated dating, underreported assemblages from Hwange National Park and environs (Haynes and Klimowicz 1998), and guesswork. The earliest human presence is undated except through its ESA technology (Acheulean). An MSA phase followed, with a possible date of 93-110 cal ka taken from a single site's

**Figure 1.** Location map also showing proposed routes of movement of agropastoralist cultural elements into southern Africa.



ostrich eggshell fragments associated with antelope horn-cores, elephant ivory, teeth of an alcelaphid and suid, and MSA flakes. The succeeding LSA is better known from numerous surface assemblages and a few rockshelters with microliths and other cultural materials.

The LSA in northwestern Zimbabwe was a period of much more diverse diet, judging from the data recovered at a clustered series of rockshelters on Bumbusi Hill in Hwange National Park (Figure 2). LSA site types are also much more diverse than in preceding phases, consisting of field camps, stations, locations, and residential camps, as indicated by preliminarily analyzed surface assemblages. Debitage consists of core reduction and resharpening flakes. Stone sources are both local and exotic (that

is, carried in from sources located >10 km from sites); used and complete tools were discarded at some sites, while in others only debitage and broken/exhausted cores are found. Assemblage variability ranges from moderate to high from site to site. Most of these characteristics set apart the LSA assemblages from ESA and MSA examples.

The LSA has a single possible date of around 2.3 ka taken from ostrich eggshell in a Bumbusi Hill rockshelter, which is the only one excavated and analyzed in all of northwestern Zimbabwe. In 1947, this rockshelter in Hwange National Park was excavated by Neville Jones (1949) and other archeologists from the National Museum of Southern Rhodesia, and produced LSA lithics and organic materials such as ostrich eggshell beads. But the results

were never adequately published (Summers 1950; Jones 1949:67). The presence of the Wilton industry was recorded, but the fauna and stratigraphy were poorly described.

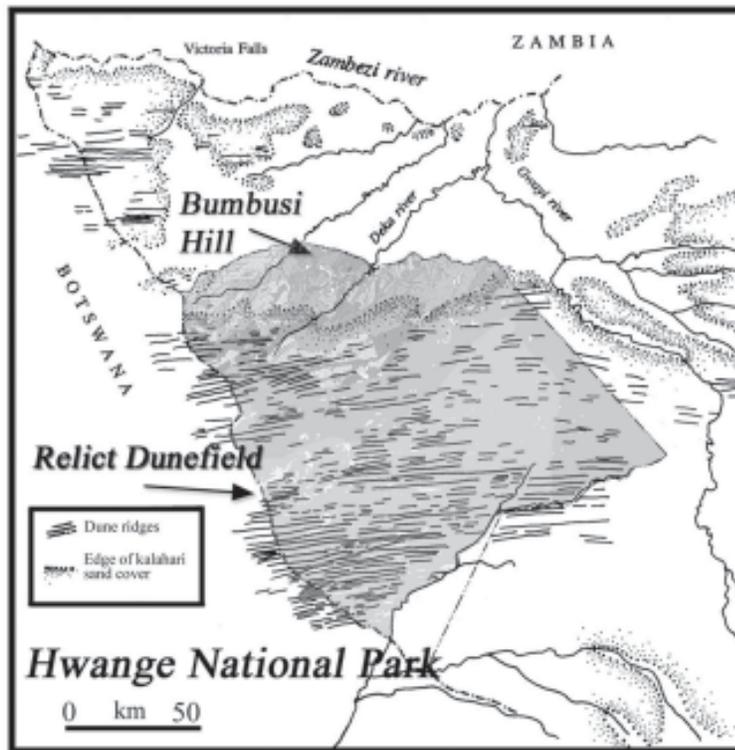
**Dated Charcoal Lenses and Major Fire Events in Hwange National Park**

The next dated event in the region’s prehistory comes from sediments that are non-archeological: buried charcoal lenses with multiple dates clustering just after 2 ka, indicating that very widespread fires occurred then.

The buried charcoal lenses appear to be almost ubiquitous in the Kalahari sands in southern Zambia, northwestern Zimbabwe, and possibly also in eastern Botswana, as suggested by multiple sources, specifically (1) our four earlier excavations in the crests of relict dunes in a large dunefield in Hwange National Park (Figure 1), (2) J. D. Clark’s explorations of a charcoal lens radiocarbon dated around 2 ka and associated with early farming communities

(Clark and Fagan 1965), and (3) an archived file of a 1939 correspondence between a Zambian forester and the Director of the Imperial Forestry Institute at Oxford University about buried charcoal (Zimbabwe National Archives SA 13/2/6/3/10). The horizontally bedded charcoal lenses stand out from the typical diffuse distribution of small charcoal bits because the charcoal fragments are much larger (>1 cm in longest dimension, compared to <0.25 cm elsewhere) and are not vertically diffuse. Notably, the lenses date to fixed time intervals. Samples taken from 1.2–1.5 m depth during our earlier excavations in two different dune crests located 60 km apart were dated 1,970 ± 60 BP (Beta-70844 [AMS]) and 1,960 ± 70 BP (Beta-56918), near the ages Clark reported from Zambia (Clark and Fagan 1965). These are possible signals of a fire that occurred just before or during the shift from foraging to herding or farming. A sample of charcoal from a much deeper lens 4 m below the surface has been dated 26,980 ± 610 BP (Beta-86422). No other noticeable lenses can be found between these two with their widely separated dates.

**Figure 2.** Map of Hwange National Park in Zimbabwe, showing locations of Bumbusi Hill and the relict dunefield sampled for buried charcoal lenses.



An OSL chronology exists for the dune crests (Stokes *et al.* 1997, 1998) and is considered reliable (Thomas and Shaw 2002), although it would benefit from further study of the possible interacting effects of arid-period reactivation and wet-period degradation (McFarlane *et al.* 2005), and dose-rate variability (Munyikwa *et al.* 2000). But there is a cautionary note. Radiometric dates between ca. 2,600 and 2,100 BP require validation (Reimer *et al.* 2004; McCormac *et al.* 2004); atmospheric  $^{14}\text{C}$  variations make dates from that interval inherently inaccurate. Future work will integrate multiple lines of evidence, such as OSL dating of buried sediments, radiometric dating of organics such as ostrich eggshell (Vogel *et al.* 2001), protein-diagenesis dating of ostrich eggshells (Brooks *et al.* 1990), and U-series dating of bones (Pike *et al.* 2002).

It is not known if the fires represented by charcoal layers resulted from natural or anthropogenic causes. A likely natural cause could be lightning strikes, and the concentration of the charcoal in the lenses resulted from the larger amounts of standing fuel from a relatively wetter period. Climatic reconstructions for southern Africa do posit a wetter period that ended around 2 ka (Scott *et al.* 2003). The earlier and later periods without so much charcoal were drier and any charcoal produced by natural fires could have been well dispersed in the sediments. Another possibility is that the lenses are left from old land surfaces that were quickly buried before surficial charcoal could be dispersed by natural processes such as bioturbation; however, the dated depositional history of the dunefields does not include a mechanism for rapid burial of exposed charcoal beds (Stokes *et al.* 1998). A third possibility to explain the charcoal lens dated to near 2 ka is that it resulted from land-clearing fires set by herders or farmers new to the region; the dates are well in agreement with the early spread of domestic stock and earliest farming communities.

The widely separated dates on charcoal lenses may indicate that LSA burning after 27 ka was not a regular event over such a wide area or occurred at a scale that could affect so much regional woodland, until the event dated around 2 ka. Our interpretation of this late Holocene event is that a major and abrupt shift occurred at that time in the region's fire regime; a much more massive firing of the Kalahari woodland took place than had ever occurred before. The fires could have been the result of large-scale land

clearance by herders/farmers. Clark and Fagan (1965) linked Early Farming Community adaptations, including land clearance by fire and the appearance of typologically early ceramics, to similar buried charcoal lenses in the Kalahari sandbeds just north of the Zambezi river (see also Musonda 1987). Both the end-of-wet-period and anthropogenic possibilities to explain the 2 ka charcoal lens have direct implications for the possible spread of livestock through the region, because an important potential impediment to stock-keeping, the tsetse fly, would have been reduced by the thinning or removal of woodlands in the Hwange-Gwayi-Matobo corridor (Summers 1967). Thus, a potential route for the spread of stock south of the Zambezi would have been opened after 2 ka, in agreement with Bousman's (1998), Huffman's (1989), Robbins *et al.*'s (2005), and others' assessments of radiocarbon dates for early livestock or earliest iron-using agropastoralists in the northern part of southern Africa.

The last dated event in Hwange National Park's prehistory is the evidence for established farming communities at 1.1 ka, as recorded at the Kapula vlei site (also called the Masuma Dam site). Cultural developments between 2 ka and 1.1 ka are completely unknown. Only the radiocarbon-dated charcoal lenses exist to (possibly) suggest how the shift took place from hunting and gathering to livestock-herding and farming in northwestern Zimbabwe. Much more archaeological surveying and excavation are planned to help understand this interesting interval of time when human economies and subsistence strategies underwent a major evolutionary change.

## Footnotes

1. All dates in this paper are in radiocarbon years and not calibrated unless so noted.

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