

■ NIGERIA

Research Note: A Preliminary Mapping Survey of the Dukke Wells Site, Yankari Game Reserve, Bauchi State, Nigeria

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Originally numbering more than 130 wells within an area approximately 80 x 40m, many have collapsed due primarily to vegetation overgrowth and erosion. Currently approximately 90 remain relatively intact, though still under stress. During the course of fieldwork, two other cultural loci of unknown age and relation to the well complex were identified near-by. The rapid demise of the site, coupled with a general lack of archaeological investigation, complicates our understanding of the wells' original use(s). This project represents the most comprehensive investigation of the site to date, consisting of a preliminary archaeological survey project undertaken in December 2009.

Introduction

Located within the Yankari Game Reserve in Bauchi State, Nigeria, is a series of supposed wells dug into the laterite sandstone. A sign explains that the Dukke Wells are the remains of a resting point along a 19th century slave route, but no evidence is cited for the interpretation.

Despite knowledge of the wells by park personnel and researchers since Yankari Game Reserve was officially established in 1955 (Geerling 1983: 285; see also Soper 1965; Thomas and Sikes 1971: 175), only one visual assessment (Aremu 1997, 2000) and one archaeological survey (Horlings 2010) have been carried out.

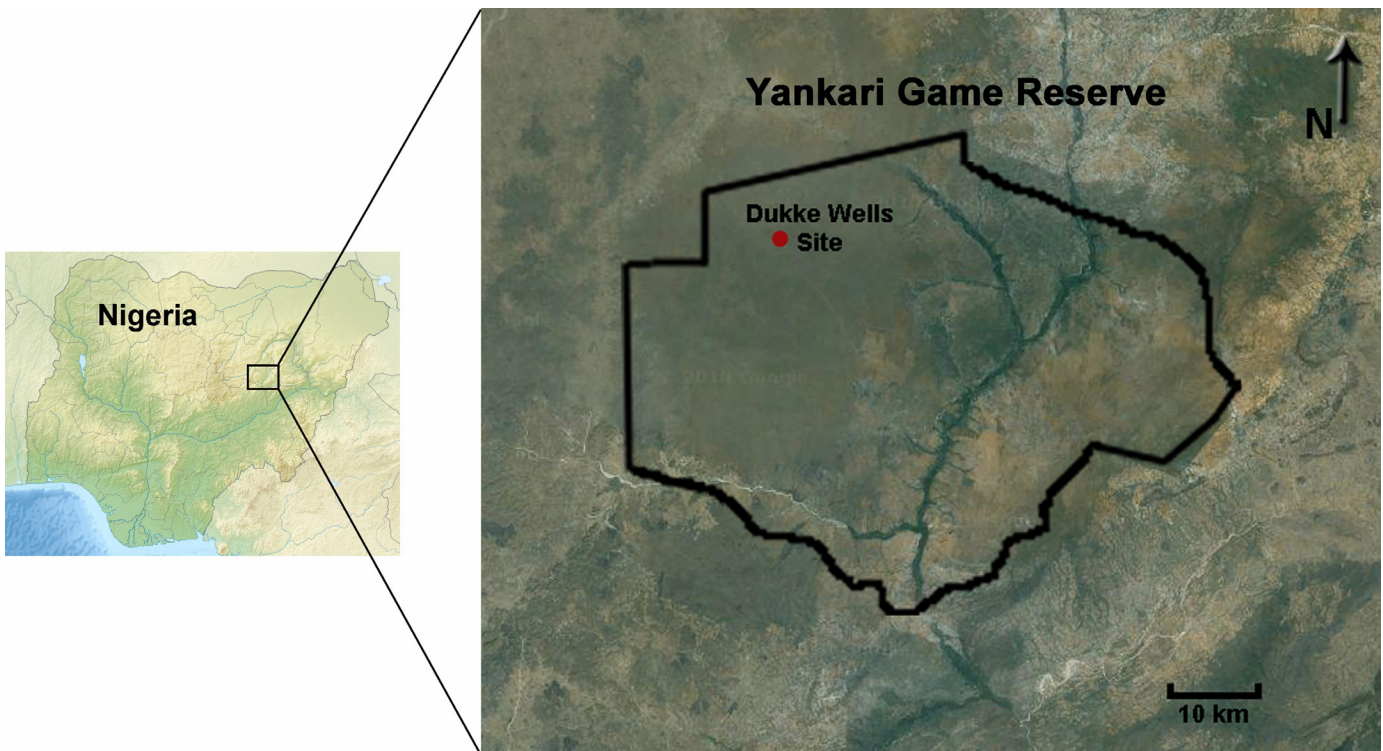


Figure 1: Located in northeastern Nigeria, Yankari Game Reserve comprises about 2240 square kilometres of scrub and grassland savanna and small river valleys. The Dukke Wells site is located in the drier grassland area (base relief maps from Wikimedia Commons and GoogleEarth 2011).

The author’s survey and a brief visit to the site in February, 2011, provide the bulk of the descriptive data and assessments presented here. For purposes of this article, the features are referred to as ‘wells’ following their current interpretive signage, but it is not yet known with certainty if this was their original or adapted purpose. As with a number of sites containing pit features in Nigeria and West Africa (i.e., Hambly 1935: 379), there is no local

memory for use of the wells. The intriguing nature and uncertain origins of the site, combined with the unfortunate fact that much of it is being degraded by vegetation and erosion, provided the impetus for documenting its condition and initiating research into its origins. The goal of the preliminary project was to create a comprehensive site map of the extant wells to document their current condition(s) and provide fundamental/baseline data on the site.

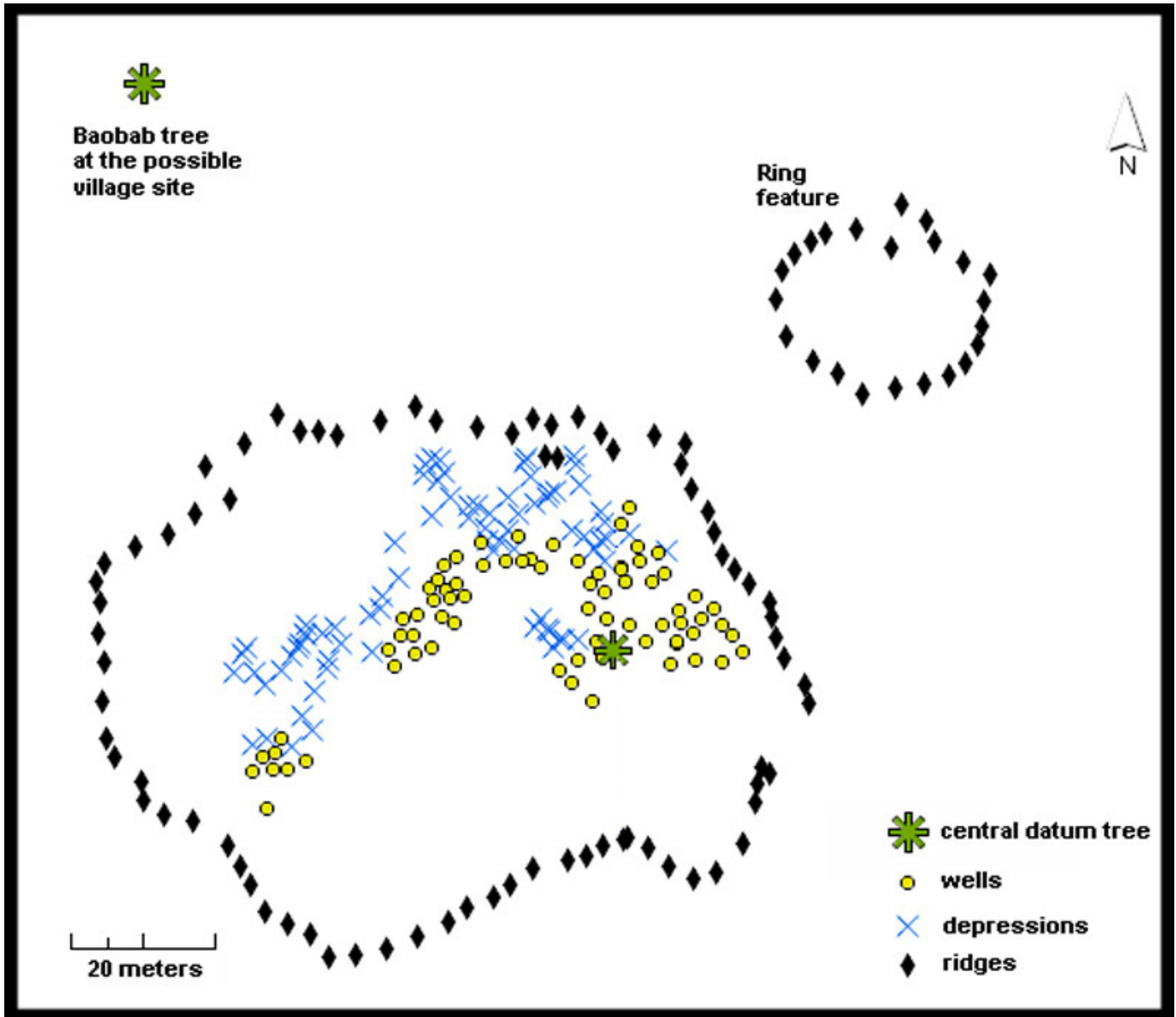


Figure 2: Locations of the wells mapped in 2009 are indicated here; at least 18 more wells were observed after significant clearing in 2011, mostly on the western side. Two additional loci are also recorded: the possible village locus is indicated by the presence of the large baobab tree, and the ring locus was only recorded in its circumference using GPS.

The purpose of this research note is to outline the work that has been conducted to date. While documentary research has also been undertaken, it is not presented here, as the fieldwork is still in its preliminary stages and interpretation based on both fieldwork and other research is limited.

The Dukke Wells

Situated at the northern side of Yankari Game Reserve in Bauchi State (Figure 1), the Dukke Wells site is located on an orange lateritic sandstone outcropping in the savannah. The majority of the wells are clustered in an area approximately

1,500m² in size, most of which was heavily covered and affected by vegetation. In late 2010 much of the area was cleared, however some areas are still affected by vegetation (Figure 2). A smaller cluster of wells on the west side of the site is approximately 120m² in area; most of these were noted in January 2011, after much of the vegetation had been cleared away, and they have not yet been surveyed/mapped. It is most likely that these wells, in addition to others not yet identified, were part of the larger site and are simply separated due to vegetation and collapse, a regular occurrence throughout the site (Figure 3). This high rate of collapse and/or in-filling of wells is a strong indication of the rapid degradation of the site, and the urgent need to fully record and protect it.



Figure 3: This collapsed area at the north side of the site likely represents multiple wells that have collapsed. A very small shaft of light in the center of the darkest area highlights the connection between one of the collapsed wells and an intact one located behind it (photo R. Horlings).

The extant and visible wells vary in their size, form and current condition (Table 1). Some are single straight shafts, while others open into bell-like chambers at the base of a short shaft. Some of the wells, including straight shafts and bell-shaped features, have underground connections between them (Figure 4). At the surface the wells are generally spaced between one and five metres apart from each other (Figure 5). While some wells still contain water, most are now dry; all are in-filled to some extent due to erosion and other natural factors. The presence of water in several wells even in the dry season, however, suggests that although at present we do not know their full depths, they were/are deep enough to access the aquifer.

| | |
|---|-----------|
| Straight shafts/ No other apparent morphology | 48 |
| Bell-shaped/ Cistern | 16 |
| Probably Bell-Shaped/ Cistern | 5 |
| Possibly Bell-Shaped/ Cistern | 3 |
| Identified in 2011 but not yet surveyed | 18 |
| Connected to at least one other well | 18 |
| Total Visible Wells | 90 |

Table 1: Out of the reported 132 wells in the Dukke Wells site, as of January 2011, only 90 were intact and accessible. They vary in form and likely in function.



Figure 4: Both the in-filling of the well and a connecting tunnel are visible in this image (photo R. Horlings).

At least 24 of the wells either are clearly bell-shaped or have some indication of this morphology. While all the wells demonstrate in-filling to varying degrees,

in some cases the bell shape is just visible towards the bottom of the shaft. For most of the bell-shaped wells, the belling occurs approximately between 1



Figure 5: Of the four wells visible in this image, at least two are connected to each other, and perhaps to others as well. The surface of the laterite is relatively clear in this area, but the vegetation in the background will take over if not kept in check (photo R. Horlings).

and 1.5m down the shaft of the well, although for others it is somewhat deeper (up to 3 meters for one well) (Figure 6). In at least ten cases this belling also indicated that the well was connected underground to at least one other well, and in at least three cases they were connected to two or three, although it was not possible to definitively establish this for all of the wells displaying this feature. For many of the wells that were connected, light was visible between them, confirming the connection; 18 wells were recorded as being connected to at least one other well. Since it appears that all the wells are impacted in some way by sedimentation and in-filling, it is not possible to determine exact depths of the original

wells without archaeological excavation. It is also not immediately apparent why some wells are significantly filled-in and others in near proximities appear to have considerably less in-filling.

A 1.5-2m high ridge-like feature predominant along the southern and eastern sides of the site was recorded using GPS and photography, but its relation to the site is unclear. It may be a feature associated with the site, but it may also be a recent addition related to road construction or some other park activity. There is no record of its construction in park documents, however, so this an additional area in need of further investigation.

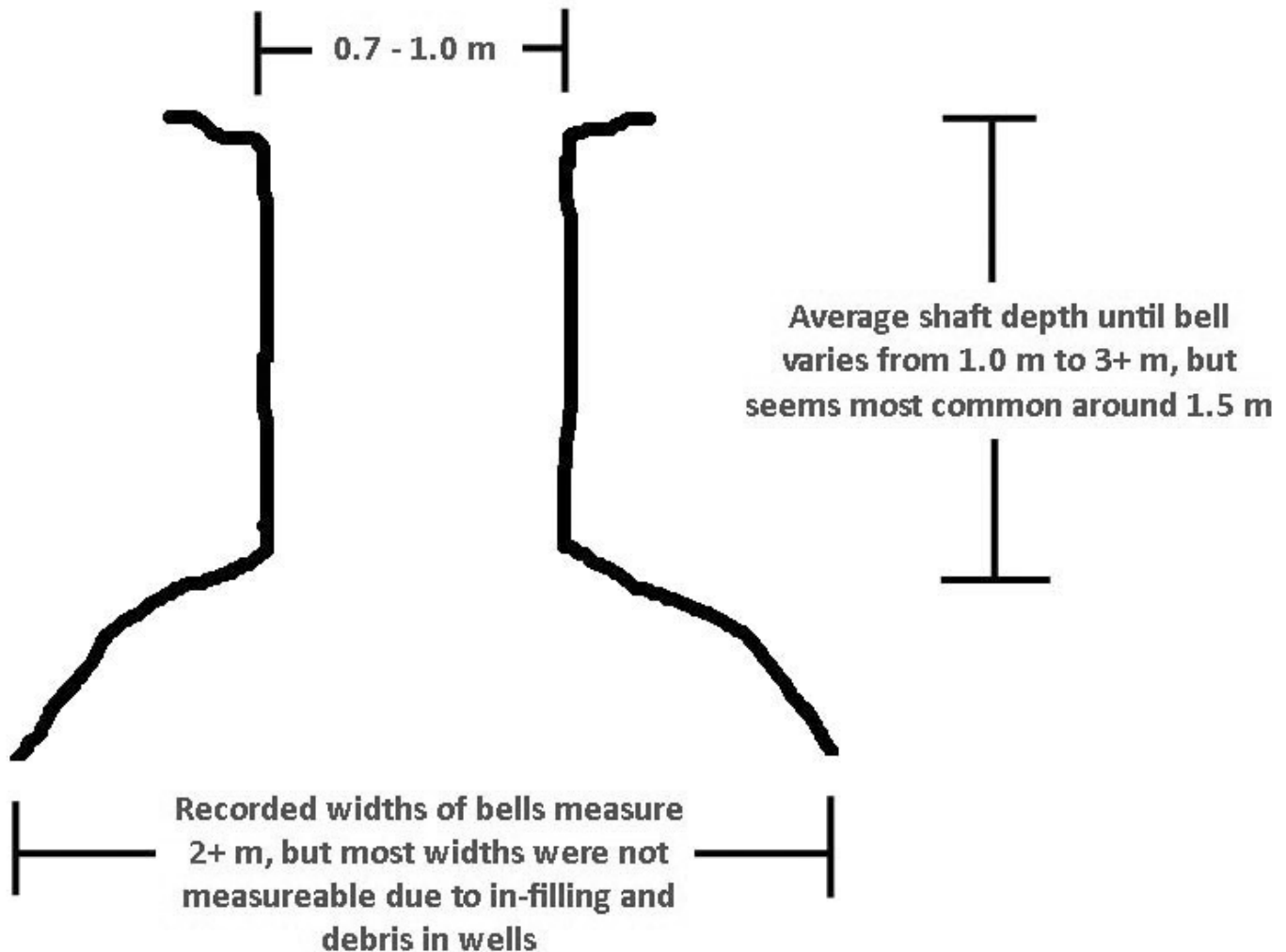


Figure 6: This simple sketch displays approximate proportions of shafts and bells, although individual wells vary and at present it is not possible to access more than approximately 0.2m of depth of any bell.

Other Identified Loci/Features

Archaeological survey in 2009 (Horlings 2010) identified two other areas near the wells that likely represent cultural sites. While these loci were identified and briefly recorded in the 2009 survey, they have not been investigated in the same detail as the wells (Figure 2 above). The first locus, located approximately 60m to the north-northwest of the wells, is an area with a large baobab tree surrounded by formations of stones, likely representing structures in some sort of a village or living site (Figure 7). Baobab trees are commonly associated with habitation sites (Okoro 2002; Wickens 1982: 179), and the while

the baobab tree is tall with a diameter of more than 1.5m, it cannot be used as an age estimate, as this is very difficult to do (i.e. Patrut *et al.* 2007), and its temporal association with the site is uncertain. This area is fairly clear of stones, except for those that appear to have been architectural. The probable house foundations, grinding stone fragment, and numerous pottery sherds in the vicinity lend support to the site’s interpretation as some sort of village or living area. The cultural area is approximately 45m by 25m, although lack of visibility at its periphery may have obstructed other cultural features.

The second locus, located approximately 30m north-northeast of the well cluster, is a

large circular or oval feature that may represent the collapsed walls of a round building or small structure (see Figure 2 above). Due to the dense vegetation cover, it was not possible to get an accurate measure of the size of the feature, but GPS points taken around its periphery indicate that it measures more than 25m across its east-west axis and more than 20m north-south. The edges of the feature are raised between about 0.5m and 1.5m above the surrounding land, and the flat area in the center of the feature may be slightly lower than the topography surrounding the ridge/walls. The walls appear to be primarily loose stone and sand, and it does not appear that there are any identifiable associated features inside the ring, but dense

vegetation made any further observations difficult.

Local, low-fired ceramics at both of these locations superficially resemble the ceramics at the wells site but have not been studied in detail. Photographs were taken of diagnostic artifacts, including a grinding stone and some ceramics from the possible village site, and ceramics from the ring feature and well areas, but no artifacts were collected as the intention of the project was primarily to map the site. The proximity of the sites to each other and to the wells, in addition to the apparent homogeneity of the pottery sherds in the area, suggests that at least at one point in time there was a connection between them, but further research is needed.



Figure 7: The west end of the possible village site has a line of stones at its edge (dashed box area). Strewn throughout the rest of the area are discrete clusters of rocks that may represent house foundations, granary foundations, or other architectural features. The blackness visible on the ground is the result of recent burning of the area (photo R. Horlings).



Figure 8: Taken from the northern side of the Dukke Wells site looking southeast, the ridge to the south is visible on the right hand side of the image. Examples of single wells (bottom right-hand corner), and collapsed groups of wells (bottom center), are visible. Although significantly cleared at the time of the photo, much of the vegetation, including trees, is growing out of wells (panorama S. Korthuis).

The Survey

Because the site is very over-grown with thorn bushes and trees, considerable effort was expended clearing brush and thorns in order to be able to access the wells and surrounding features. Where possible, wells were recorded using tape measurements, GPS recordings, and photographs. However, as a result of the dense overgrowth of the site, some well features and all the collapse features were recorded only using the GPS. A 45m baseline was laid through the approximate center of the site; a large tree in the center was marked for a datum and GPS points were taken along the baseline. All measurements to accessible wells were made from this baseline; in areas where excessive vegetation prevented direct access, wells were measured using distance and bearing from wells that had been measured directly from the baseline. Diameters and current depths of each well were measured, and each was photographed. GPS points were taken in the center of each well. Areas of collapse of two or more wells were generally recorded by photos and by walking around them with the GPS (where feasible due to vegetation), taking as many GPS points around the peripheries as possible.

A walking survey was conducted of the areas adjacent to the west, north and east of the well cluster. No additional cultural indicators were found west of

the site, but as discussed previously, two additional loci were located, one north-northwest and one to the north-northeast of the site, and the ridge-like feature was recorded on the east and south of the well site. Some photographs of the larger areas of the site were taken in 2009, but it was not until 2011 after the area had been properly cleared by the park that larger perspective images were possible (Figure 8).

A basic site plan of the well area and the ridge feature surrounding it was created using GPS points and the drawn site plan (see Figure 2 above). The possible village area and ring feature were also recorded using GPS. The elevations of the ridges and depths of the collapsed areas vary significantly, and are indicated on the site plan simply as a means of distinguishing the various aspects of the site as a whole. Finally, while many of the depressions clearly represent collapsed wells, without excavation it is not possible to designate all of them as such. In addition to producing a report of the survey (Horlings 2010), Yankari Game Reserve also requested a recommendation for site preservation and protection. These were included in the site report, and as of January 2011, most of the recommendations for the clearing of the site had been carried out, and a regimen for site clean-up ensued. Future fieldwork investigations will develop these recommendations further.

Discussion and Conclusions

As noted, this report presents preliminary survey data on a complex, delicate, and poorly understood site. The intriguing nature and uncertain origins of the site, combined with the unfortunate fact that much of it is being degraded by vegetation, erosion, and other factors, offer the impetus for investigations. Based on these investigations it is not possible to confirm or refute the assertion made on the interpretive sign at the site, as no artifacts or features were identified that point to a 19th century slave trading depot. This lack of obvious surface evidence, however, is clearly not the full story, and there may yet be evidence to support this contention. It is also necessary, however, to consider alternative interpretations, for instance, water management or underground storage, among other possibilities. While the mapping and documentation of the site that has been completed is a good foundation for future work, a great deal more research will be needed to understand and interpret the sites. Answers discovered here may in turn shed light on other similar sites in Nigeria and elsewhere in West Africa, and may guide future investigations, as well as provide information on a phenomenon that may be much wider spread than the isolated incidences reported to date would suggest.

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Bibliography

- Aremu, D.
- 1997 Nigerian parks and their contributions to preservation of our archaeological heritage. *West African Journal of Archaeology* 27(2): 54-62.
- 2000 Nature conservation for promoting archaeology and tourism in Nigeria: a case study of Yankari National Park, Bauchi State. *West African Journal of Archaeology* 30(1): 69-82.
- Geerling, C.
- 1983 Nigeria's star game reserve. *Oryx* 15(3): 285-286.
- Hambly, W.
- 1935 Culture areas in Nigeria. *Fieldiana, Anthropology* 21: 374-383.
- Horlings, R.
- 2010 A Preliminary Survey and Mapping of Dukke Wells, Yankari Game Reserve, Bauchi State, Nigeria. Report on file with the Nigerian Commission for Museums and Monuments and Yankari Game Reserve.
- Okoro, J.
- 2002 Some archaeological indications of the slave market and the baobab trees of Saakpuli, Northern Ghana. *Nyame Akuma* 58: 7-12.

Patrut, A., K.F. von Reden, D.A. Lowy, A.H. Alberts, J.W. Pohlman, R. Wittmann, D. Gerlach, L. Xu, and C.S. Mitchell

2007 Radiocarbon dating of a very large baobab.
Tree Physiology 27: 1569-1574.

Soper, R.

1965 The Stone Age in Northern Nigeria.
Journal of the Historical Society of Nigeria
3: 175-194.

Thomas, M. and S. Sikes

1971 Warm springs and multiple wells at
Yankari. *The Nigerian Field* 36: 171-180.

Wickens, G.

1982 The baobab: Africa's upside-down tree.
Kew Bulletin 37(2): 173-209.